Survey of Local Governments

on

Managing Fire Risks in

BC Interface Zones

August, 2000

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Executive Summary

In the spring of 2000, the Auditor General of British Columbia initiated a project to study how fire risks in the wildland / urban interface zone are managed throughout the province. The survey assesses the level of preparedness among governments for major interface fires, and identifies options for improvement. The report describes the major findings from the survey, expressed in a series of charts, written summaries, and comments. Notable conclusions comprise the following:

Awareness – The term "interface fire event" is widely understood among local government representatives, but few agree on a formal definition that allows counting the number of these fires or measuring the losses they inflict. Local elected officials often fail to receive the awareness message, even in areas of high or moderate risk. Most respondents thought their local governments should be doing more to raise awareness.

Risk Assessment – Most of the BC residents at risk from interface fire reside in two types of areas: 1) Subdivisions or fringe areas where homes at risk account for less than 20 percent of the total community population, and 2) Smaller communities surrounded by forests and other wild lands. Only about one-third of the jurisdictions in high or moderate risk areas have prepared written risk assessments, including maps.

Risk Reduction / Mitigation – Only about half of the communities with high or moderate risks have mitigation strategies in place, and most involve controls on burning. Few measures are in place for other types of risk control, such as prescribed burns or fire-resistant construction materials. Some communities are working on water supplies, roadway access, and signage, but the effort does not seem to be widespread, even in high or moderate risk areas.

Response Planning – Most fire departments have a clearly defined response structure that includes Unified Command in dealing with interface fires. Their relevant responsibilities are fairly well defined, and about three-fourths of the communities have access to training and equipment suitable to their response roles. Most fire chiefs in the province see the Ministry of Forests Operating Guidelines as adequate, although some improvement is needed in implementation. About one-third of the fire chiefs in high or moderate risk areas indicated they had never exercised their crews with an interface fire scenario.

Evacuation – About three-fourths of the jurisdictions represented in the survey are either very little prepared or not at all prepared for an evacuation from interface fire. More than half of the high or moderate risk jurisdictions have no evacuation plans for interface fire events in any specific neighbourhood, subdivision, or location. Local residents are often not aware of evacuation plans. Most local governments do not currently involve Native communities in emergency planning, although they are willing to do so.

Recovery – Few local authorities have considered recovery issues or prepared recovery plans to deal with the aftermath of an interface fire. Most local governments have not considered community redevelopment following an interface fire, and have not anticipated an organizational structure for recovery from such fires.

Information Flow – There is little evidence available to quantify the extent of the interface fire threat in BC. As the province continues to develop outside major cities, the risk is growing but cannot be measured without concerted effort. Important information on the extent of the interface problem may be available, but no agency has the mandate for assembling, reviewing, or interpreting such information.

Overall Assessment – About half of the respondents indicated their jurisdiction was only somewhat prepared for interface fire. Another one-third considered their communities to be very little prepared. Less than 10 percent of the jurisdictions in high or moderate risk areas are very well prepared for interface fire, according to survey respondents.

There is currently no clear provincial coordination or focus on public safety in dealing with interface fires. The Ministry of Forests has a mandate for forest resource protection, and must divert limited personnel and equipment to public protection when interface fires threaten, however the main responsibility lies with local jurisdictions many of which do not have the capability to lead this initiative.

1.0   Introduction

Background

In the spring of 2000, the Auditor General of BC undertook a comprehensive study of how fire risks in the interface zone are managed throughout the province. The audit will assess the level of preparedness among governments for major interface fires, and will identify options for improvement.

To enhance the understanding of the current level of preparedness, the Auditor General <u>worked with</u> RiskWorks Consulting, Inc., to conduct a survey of municipalities, regional districts, and other representatives of local government. The results of the survey provided evidence for drawing conclusions about the level of preparedness in the province and for charting effective improvements.

Survey Objectives

The survey was designed to help assess the current status among municipalities and regional districts on a number of issues related to interface fire risks and protection. The results were used to understand more clearly the existing local levels of interface fire risk, evaluate the strengths and weaknesses of emergency response capabilities, and consider the province's future needs for an effective interface fire risk management program.

The survey was structured to address the following objectives:

1. To identify the definitions used throughout the province for discussing and measuring the extent of the interface fire problem.
2. To assess the level of awareness of interface fire risks among local and regional communities.
3. To understand how risk is measured and the level of interface fire risk in local and regional jurisdictions.
4. To gain an overview of the status of emergency preparedness among BC communities, including evacuation and recovery.
5. To collect observations and insights from community representatives who have experienced a significant interface fire on the benefits of key activities.
6. To evaluate the overall preparedness of local and regional jurisdictions for interface fire.
7. To collect suggestions on what must be done to better prepare local and regional jurisdictions for interface fires.

The topics covered by the survey instrument addressed wildland / urban interface risks, mitigation, response, recovery, and preparedness, and other related aspects of emergency management. The survey encompassed all fire protection districts, municipalities, and regional districts in British Columbia.

Survey Methods

The scope of the project involved the design and conduct of a survey using a self-response questionnaire. To accomplish the objectives noted above, we began by anticipating the information most useful to the evaluation process and the audit report.

Tasks

The survey method consisted of the following tasks:

    Task 1 – Design Survey Questionnaire
    Task 2 – Assemble Contact Data
    Task 3 – Test and Revise Questionnaire
    Task 4 – Distribute and Follow-up
    Task 5 – Receive and Analyze Results
    Task 6 – Prepare Draft and Final Reports

Survey Instrument

Limited pilot tests were carried out with six individuals to ensure that the questions were understandable and yielded appropriate types of responses. Pilot testing involved representatives from each of four participant groups from around the province. Some wording changes were made on the basis of the pilot tests.

Copies of the 4 survey questionnaires are provided in Appendices B – E.

Subject Pool Identification

The survey team recognized early in the design process that many individuals currently hold knowledge about preparedness for interface fires in the province. Primarily, these persons represent fire protection districts, local governments, and regional governments, and hold the following positions:

- Fire Chief
- Emergency Program Coordinator
- Development / Planning Officer
- Chief Administrative Officer

We developed a focused survey instrument for each of these four groups, and included several identical questions in each to permit response comparisons among the groups.

The survey team identified the intended participants by researching a number of existing directory services and personal contacts. Initial efforts focused on government programs at the provincial level, with later inclusion of data from fire chief and planning associations in BC. Identification of the subject pool relied on information from the following organizations:

- Office of the Fire Commissioner
- Provincial Emergency Program
- Ministry of Municipal Affairs
- Planner's Institute of BC

Distribution and Follow-up

The survey team distributed all survey forms via regular mail, and sent additional forms by facsimile upon request.

Members of our team contacted survey recipients by telephone between May 25 and June 6, 2000, to encourage response. The majority of follow-up calls were conducted during traditional working hours, 9:00 am to 4:30 pm, Monday through Friday. A few contacts were accomplished during evenings and weekends.

Data Analysis

In addition to overall frequency and percentage tables, we conducted comparative analyses between selected questions, such as the presence of high or moderate risk areas.

Survey Results

Response Rate

Preliminary estimations of the number of fire chiefs, emergency program coordinators, development / planning directors, and chief administrative officers in the province totalled about 943 individuals. This sum includes a number of fire districts and fire response organizations identified through the Office of the Fire Commissioner. We conservatively assumed the number of emergency program coordinators, development / planning directors, and administrative officers each reflects the number of incorporated municipalities and regional districts in the province.

The estimate of 943 potential participants is no doubt high. Two factors tend to limit the actual number of potential participants. First, a number of the presumed positions at the local and regional levels do not exist or are not filled. The position of Emergency Program Coordinator, for example, is currently vacant in some municipalities, and about half of the regional districts in BC are not required to have such a position.

Secondly, some participants serve in more than one position, yet completed only one survey form. These factors tend to reduce the number of actual potential participants in the survey, and therefore increase the observed response rate.

Assuming the original estimates for each participant group, the response rates are summarized below:

Item	Fire Chiefs	Emergency Program Coordinators	Development / Planning Directors	Chief Administrative Officers	Total
# Survey Forms Sent	411	170	181	181	943
# Responses Received	176	53	70	87	386
Response Rate	43%	31%	39%	48%	41%

The 411 fire chiefs identified by the Office of the Fire Commissioner comprised the largest single group among the survey recipients. This segment of the survey population included all identified fire protection districts in the province, in addition to cities, district municipalities, and other incorporated areas. We heard from 176 of these fire chiefs, for a response rate of 43 percent. Overall, representatives among the four

groups returned 386 of the 943 survey forms, accounting for a total response rate of 41 percent.

Responses by Community Type

The assessment of returned surveys also identified the type of community, specifically if the respondent represented a regional district, city, district municipality, village, or town. The table below summarizes the responses received by community type.

Item	Regional Districts	Cities	Districts	Villages	Towns	Total
Survey Form Sent to:	28	44	54	40	15	181
Responses Received from:	16	40	51	27	12	146
Response Rate	57%	91%	94%	68%	80%	82%

When viewed from the perspective of incorporated communities, the response rate is much higher (82%) than by individuals (41%). Our follow-up calls revealed that, in some municipalities, representatives among the four participant groups shared their information and submitted just one completed survey for their community. For many jurisdictions, the chief administrative officer or emergency program coordinator submitted a completed survey where the fire chief did not. Appendix A lists the responding incorporated municipalities and regional districts.

In addition to responses from 146 regional districts, cities, and other incorporated jurisdictions, we also received responses from 93 fire protection organizations, mostly volunteer fire departments in unincorporated areas of the province. With an estimate of about 250 such organizations, the response rate from fire chiefs in volunteer departments is about 36 percent.

2.0   Findings

This section of the report presents a summary of the overall results associated with the experience, observations, and opinions respondents expressed about interface fire risks in British Columbia. The results that follow represent a number of focus areas worth highlighting.

First, the responses of the fire chiefs participating in the survey serve as the baseline for the findings. Some survey questions were duplicated among the four target groups, and we used the fire chief results to represent the community where their responses were similar to those from development / planning directors, emergency program coordinators, and chief administrative officers. More fire chiefs responded to the survey than representatives from the other three positions at the local level.

Second, some of the findings represent those communities where respondents indicated a high or moderate level of risk from interface fire. One would expect a greater level of effort in mitigation, preparedness, and planning among jurisdictions that faced a significant threat. We screened the responses to some questions to focus on these communities.

Third, many respondents took the time to write specific observations and recommendations for improving the management of interface fire risks in the province. Overall, we received more than 1,400 comments that embellish the responses summarized in the charts. For selected topics, we have included some excerpts to represent these helpful observations.

The following findings are organized along the lines of the survey questionnaire addressed to the fire chiefs, with a few additions from other surveys, where appropriate.

Awareness

The survey questionnaires contained nine questions related to awareness of interface fire.

1. Interface Fire Definition

For the first question of the survey, we explored the level of common understanding of the term "interface fire." Although the first page of the survey form included a definition, we hoped to gain the opinions of local community officials on what the expression should represent. Figure 1 shows the survey findings.
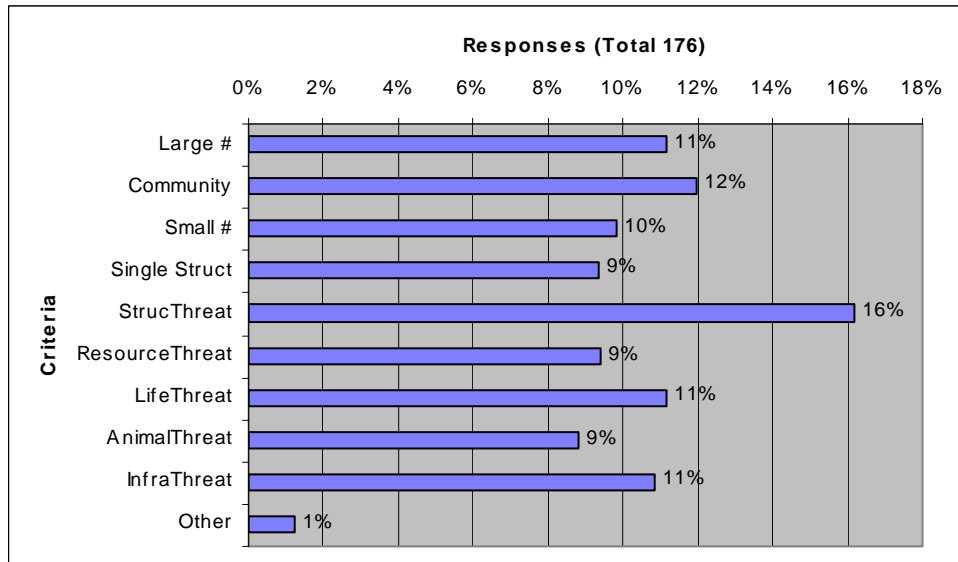
Responses (Total 176)

Criteria	Percentage
Large #	11%
Community	12%
Small #	10%
Single Struct	9%
StrucThreat	16%
ResourceThreat	9%
LifeThreat	11%
AnimalThreat	9%
InfraThreat	11%
Other	1%

Figure 1. In your opinion, which of the following help define the term "interface fire event?"

The results shown in Figure 1 indicate the definitions of interface fire in use today are broad and inclusive. Most respondents agreed on common elements, such as a fire that has potential to threaten a community of structures, noted by 16 percent of respondents. Follow-up calls with fire officials, however, revealed widespread confusion about the term and an inability to distinguish interface fires from events that affect strictly wild lands or structures.

Many selected definitions are not limited to structural loss. Some comments included with the survey forms noted the importance of considering recreation and economic losses from the threat of interface fire as well. This makes sense because the mere threat of fire may result in losses, such as in an evacuation. It also suggests, however, that it will be difficult to identify any given fire as an interface event without further defining what constitutes a threat.

The question asked respondents to include "all that meet your definition," and the results may be helpful in further defining a term that meets common expectations in the future.

2. Level of Local Awareness

The ability to manage the threat of interface fire depends on an awareness of the risks. In this question, we recognized that different elements of the community may have different levels of awareness. We asked fire chiefs to rate awareness levels among several community groups. Figure 2 shows the results.
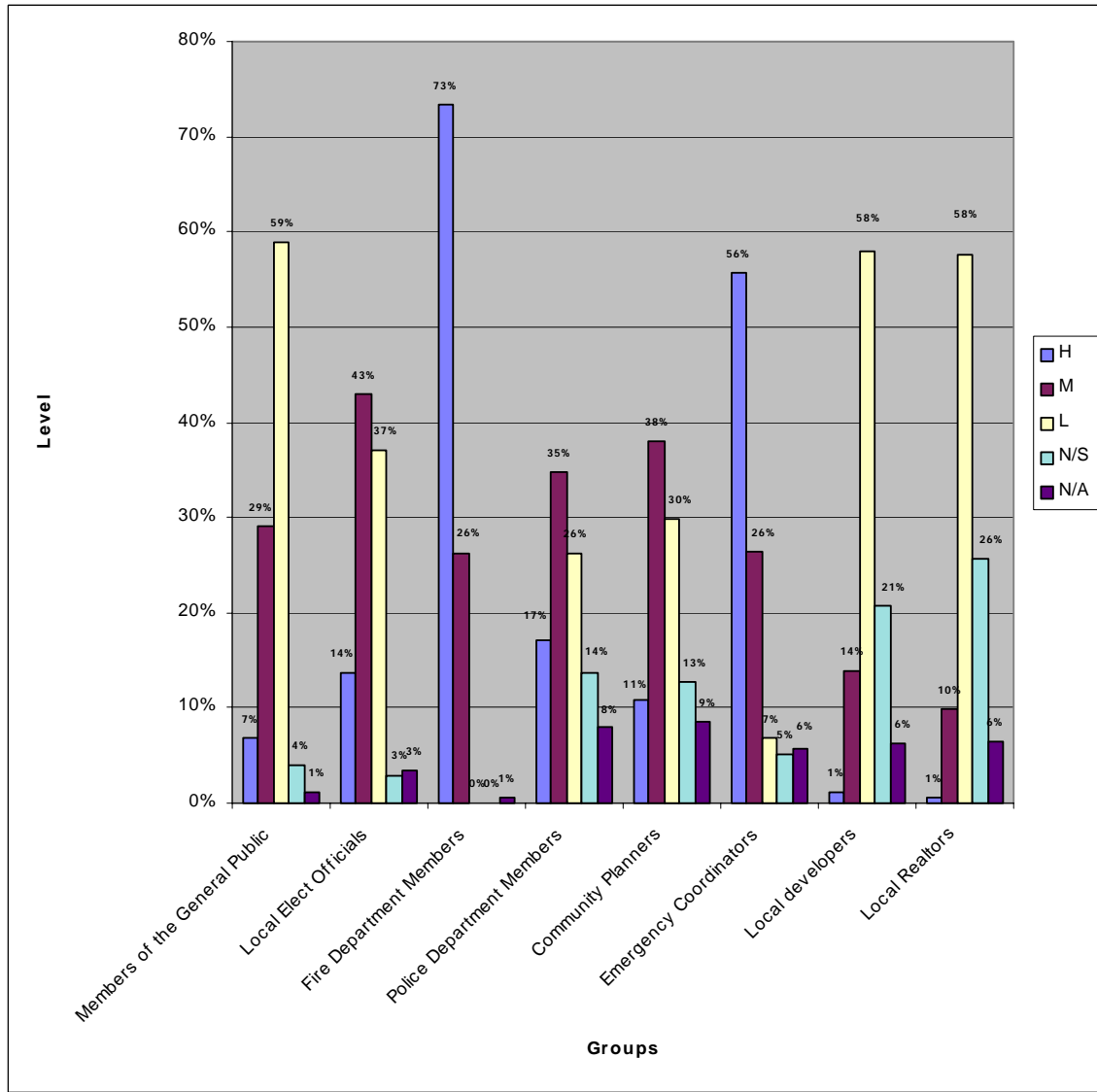
Figure 2. How would you rate the level of awareness of interface fire risks among the following groups in your jurisdiction?

As illustrated in Figure 2, fire chiefs throughout the province consider fire department members (73%) and emergency program coordinators (56%) among those with the highest awareness levels. Development officers (11%) and elected officials (14%) ranked among the lowest in awareness level, according to fire chiefs, with very little awareness noted among developers, real estate agents, and members of the general public. These observations are similar to responses received from the other participating groups, including emergency program coordinators, development / planning directors, and chief administrative officers.

The disparity in awareness level perhaps indicates a lack of interface fire risk in the community, but the results were similar when we considered

only those areas with high or moderate risk of interface fire. The results most likely reflect a lack of risk communication or apathy among all community members. There is some local knowledge of fire risks, it seems, but the information is not readily shared.

The rate of change among community residents also has an effect on risk awareness. Where there are many new community members in high or moderate risk areas, awareness programs must be offered more frequently to have an impact.

Experience with major emergencies is likely the best indicator of awareness. One community with a very high awareness level commented that this was due to a widely publicized interface fire in 1998. Another community noted that:

> *Our community has never been threatened by a forest fire in recent history and therefore very complacent about the issue. We are very aware of other threatening disasters, such as floods.*

3. Council or Board Awareness Presentation

The next question relates to the level of awareness among local officials, noted in the previous question. For all respondents, less than one-quarter (23%) of municipal councils or regional district boards had taken part in an awareness presentation on interface fires in the last three years.

We explored answers to this question for those jurisdictions that also reported high or moderate risks areas. The results are shown in Figure 3.
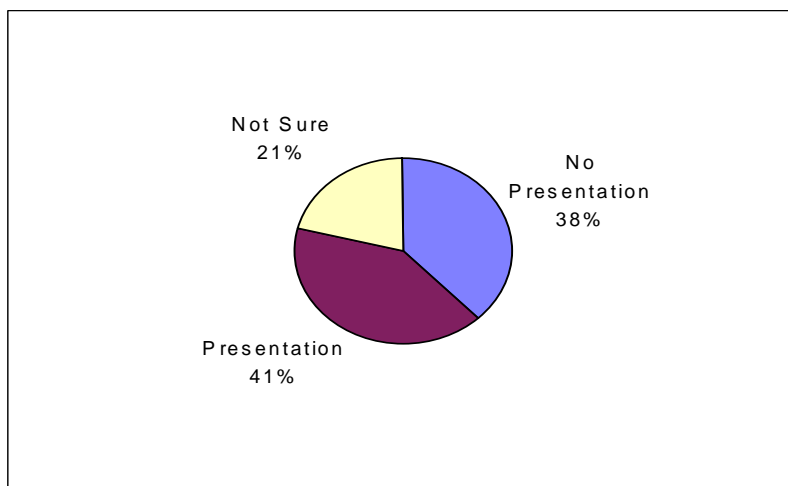

Figure 3. For high or moderate risk areas, has your municipal council or regional district board taken part in an awareness presentation on interface fires in the last three years?

When we consider only those responding jurisdictions with high or moderate risks, only 41 percent of the fire chiefs said council or board had participated in such a presentation. This suggests that council or board members in about 60 percent of communities where there is high or moderate risk areas may not be aware of the risks.

Turnover among local elected officials may also represent an important factor in risk awareness. Some communities may find it difficult to support sustained long-term programs when new community leaders are elected every year or so.

4. Current Role of Ministry of Forests

We recognize the Protection Program of the Ministry of Forests as one of several key players in the interface fire risk picture. The Ministry of Forests responds to wildfire events to protect Crown resources throughout the province. Representatives of the Ministry also participate in local fire chief committees, regional fire chief meetings, and local fire department practices and simulations.

Early follow-up calls indicated some confusion concerning the role of the Ministry of Forests in controlling interface fire risks. This question explores the level of common understanding among fire chiefs, who must work with Ministry of Forests personnel in interface fires.

Figure 4 illustrates the responses to the question on the role of the Ministry of Forests. Note that the question did not specify where actions were to take place, either within or outside incorporated areas.

The results of this question indicate a fairly good match with the actual roles of the Ministry of Forests. The Protection Program identifies high hazard areas (23%), provides wildland firefighting training to local firefighters (18%), and provides local firefighters access to wildland firefighting equipment (16%). It is also true that Ministry of Forests personnel are not authorized to enter burning buildings (1%).

One of the more essential roles of the Ministry of Forests, according to comments collected in the survey, relates to the communication of hazards. One respondent wrote:

> *(The Ministry of Forests) communicates hazards to residents and others in area. BC Forest Service does this by supplying us with pertinent weather information, brochures and other handouts, and by keeping us up to date, thus enabling us the opportunity to pass this information along to the public.*
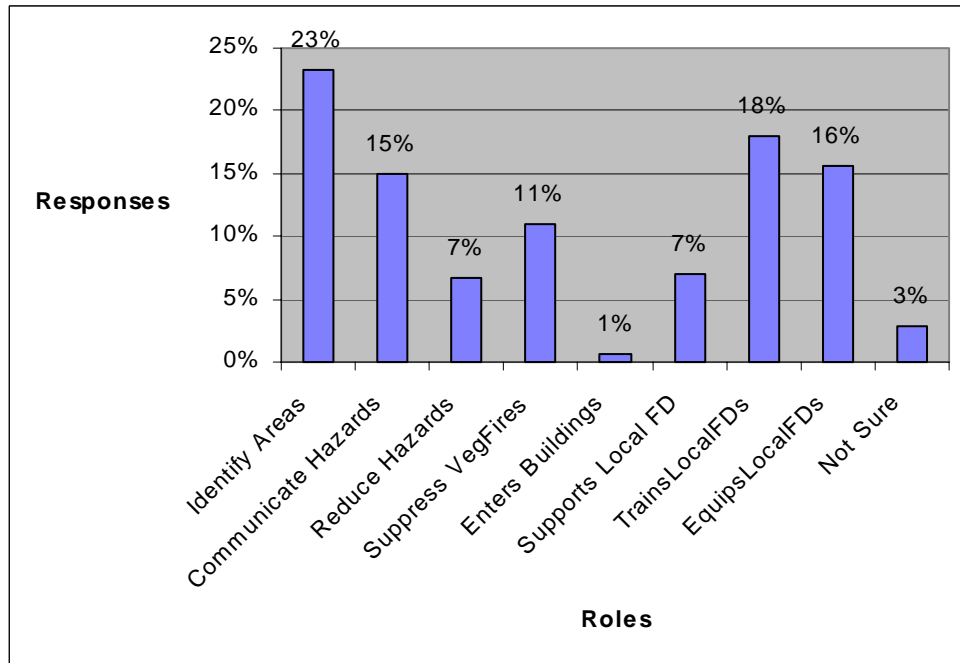
Figure 4. What do you understand is the current role of the Ministry of Forests in relation to interface fires?

The Ministry of Forests engages in hazard reduction in some areas of the province. While most communities seem to acknowledge and appreciate this service, not everyone agrees it is the best approach. One development / planning director made the following observation related to the role of the Ministry of Forests:

> *Ministry of Forests is good but needs to review how to get the most bang for their efforts. They do a lot in neighbourhoods, but not enough with local government policy. They focus on "doing" hazard reduction, but should focus more on entrenching reduction in local policy.*

The Protection Program is currently reviewing their responsibilities and developing specific policies for interface fires.

5. Current Interagency Committees

A few local and regional communities in BC have joined with provincial representatives in a standing committee to coordinate preparedness for interface fires. Called "inter-agency interface committees" because they include a wide range of interested parties, these groups indicate the regional level of awareness and effort being devoted to interface fires.

In asking this question, we intended to discover the extent of such agencies operating in the province, especially the inclusion of the Ministry of Forests, the Ministry of Transportation and Highways, and other non-local agencies. Among all respondents, about 36 percent indicated they knew of an inter-agency interface fire committee operating in their area. Some fire chief respondents may have interpreted the question to include any regular meeting of the local agencies, such as fire, police, and emergency program.

One respondent commented that the committee referenced in their response consisted of representatives from their fire department, the RCMP, and the Ministry of Forests only. Also, some all-hazard committees are forming in the province that address a range of threats, including floods, severe storms, and interface fires.

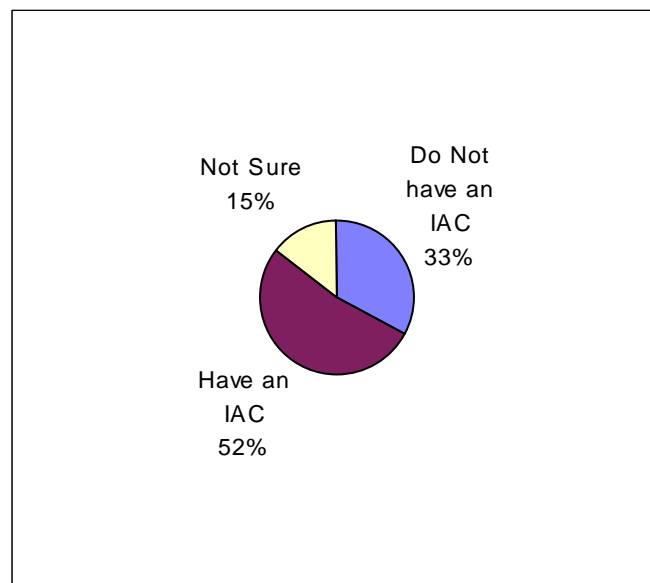We filtered the responses for high or moderate risk areas; the results are shown in Figure 5.

Figure 5. For high or moderate risk areas, is there an interagency interface fire committee currently operating in your area?

Where the analysis focused on high and moderate risk areas only, the proportion of positive responses increased to 52 percent. Fire Centre Managers with the Ministry of Forests have identified three on-going interagency interface committees within their areas (Thompson-Okanagan, Coastal, and Kootenay), and two such committees currently under development (Cariboo and North West).

Perhaps of greater interest are the results of the second part of the question: *If yes, does your Fire Department participate in the Committee?*

Only 30 percent of fire chiefs with an inter-agency interface fire committee operating in their area indicated their fire department participates in such a committee. A full 70 percent said they do not.

One Fire Centre Manager noted in a separate assessment that a Regional Fire Commissioner had played a major role in establishing the Thompson Okanagan Interagency Committee, the first such committee in the Province. After a time focusing on interface fire issues, the emphasis shifted to an "all-hazards" emergency committee, but the organization did not function well. Members subsequently re-adopted the interface fire focal point with emphasis on improving awareness, training personnel, and cataloguing resources.

6. Information Distributed by Fire Department

In this two-part question, we first asked the fire chiefs if their departments distributed public information on interface fire risks. We were curious about the methods currently in use, noting the advantages of applying a range of mechanisms to enhance communication.

For all respondents, 56 percent of the fire chiefs indicated they distributed public information. When considering only those jurisdictions with high or moderate risk, however, the results were surprising. The number of fire chiefs distributing public information dropped to 45 percent.

Overall, a wide range of methods are used throughout the province, as shown in Figure 6.

In terms of the most common mechanisms for public information, the fire chiefs indicated they most often rely on brochures (36%), school programs (14%), and the Wildfire Risk Meter developed by the Protection Program of the Ministry of Forests (12%). Several respondents added newspaper articles to their list of most commonly used mechanisms for public information.

Emergency program coordinators noted that other mechanisms in use include fire awareness videos prepared by the Ministry of Forests and the Office of the Fire Commissioner, (e.g., "Fire Safe Inside and Out"), trade fairs, and information brochures offered during the building approval process.
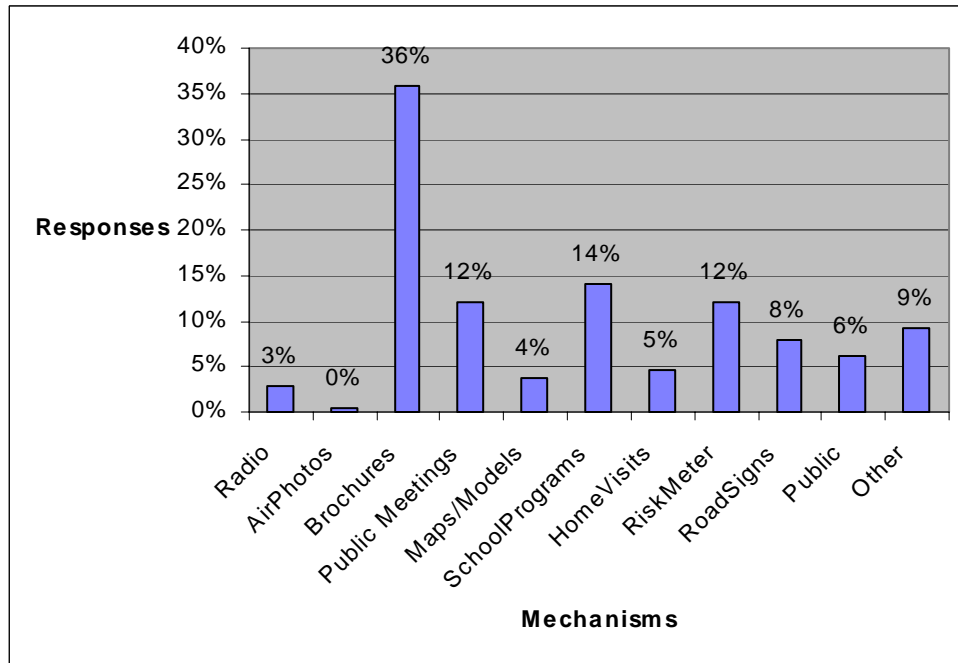
Figure 6. If your fire department distributes public information on interface fires, what mechanisms does your fire department use to educate the public about interface fire risks?

Few fire chiefs (4%) noted the use of hazard maps and models in public information, a surprising finding given the usefulness of risk maps in increasing awareness. This public information activity by local fire departments may be tempered by ongoing efforts by the Ministry of Forests.

7. Coordinated Information Activities

A coordinated message represents an important feature where public information is concerned. In distributing the interface fire message, we wanted to know if fire chiefs were coordinating their efforts with other key agencies. Figure 7 displays the results.

It is apparent that more agencies are involved in public information than just the Ministry of Forests, as indicated in Figure 7. Where fire chiefs distribute public information materials, they most often work with representatives of the Ministry of Forests (22%). They also work with the local Emergency Program Coordinator (16%) and the Fire Commissioner's Office (16%) in coordinating public information activities.
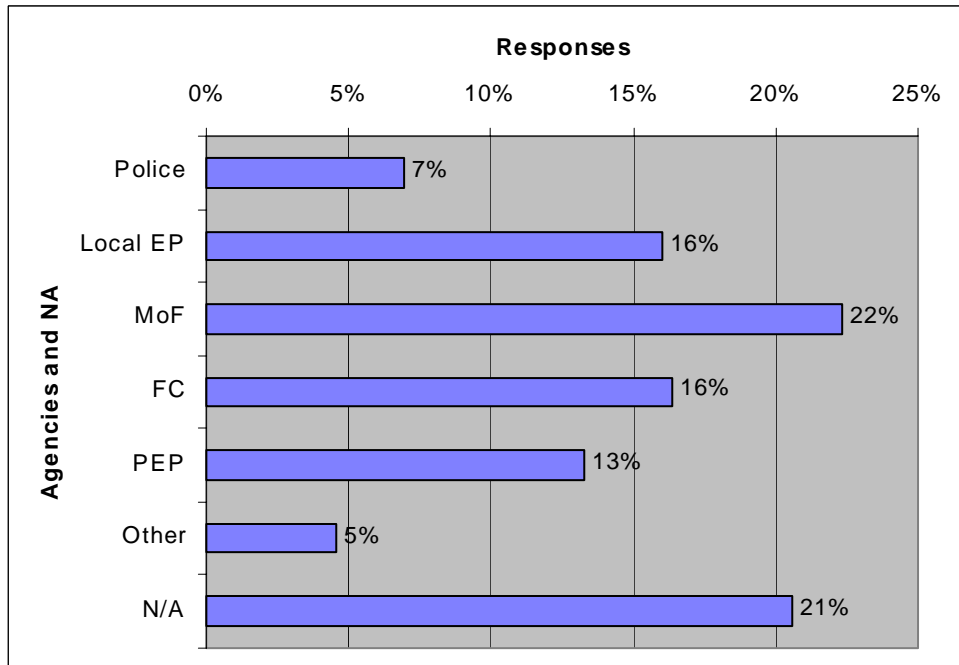
Responses

Agencies and NA	Percentage
Police	7%
Local EP	16%
MoF	22%
FC	16%
PEP	13%
Other	5%
N/A	21%

Figure 7. Are your public information activities coordinated with those of the following agencies?

The fire chiefs indicated they work with the Provincial Emergency Program in 13 percent of the responses. Police departments ranked at the lowest frequency for involvement in public information on interface fires (7%). A few respondents noted they currently work with their regional districts to coordinate public information activities.

Emergency program coordinators added that their information programs are coordinated with search and rescue organizations, emergency social services, and local government engineering, building, and planning departments.

8. Measuring Success of Public Information Program

Given the importance and potential costs of an interface fire public information program, we were curious if jurisdictions measure the success of past or current efforts. Measuring success of such programs is difficult, especially given the potential time spans between wildfire events. Some fire departments, however, apparently combine their interface fire messages with other fire prevention programs. Figure 8 shows the results from this survey question.
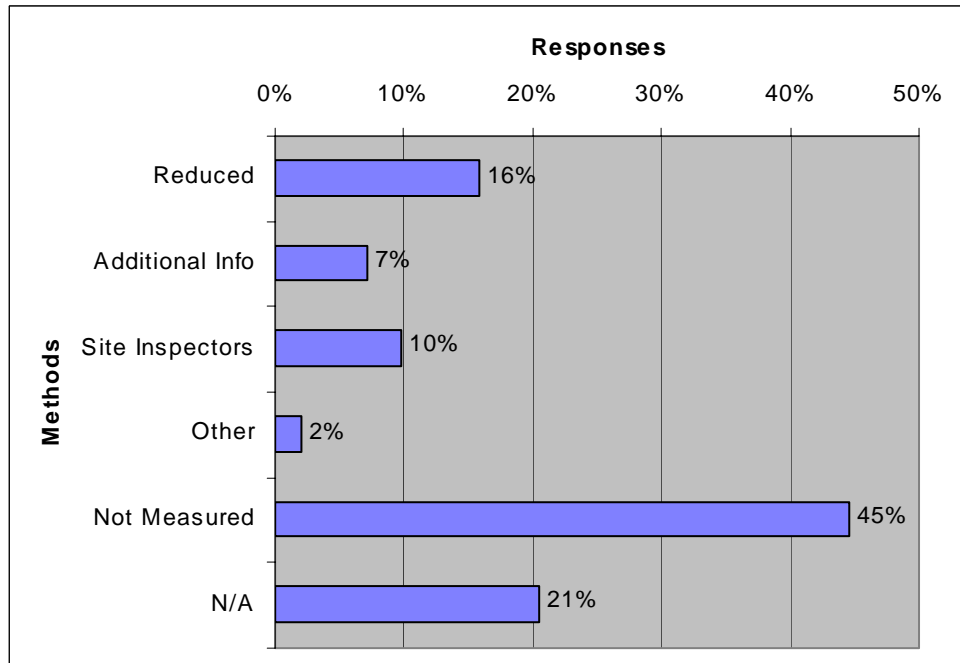
Figure 8. What methods are used to measure the success of your public information / education program?

The largest portion of respondents (45%) indicated they did not measure the success of their public information or education programs. This observation may indicate a lack of confidence in methods to measure communication success, or that such activities are given lower priority when time or resources are in short supply.

At least some jurisdictions (16%) measure information success by tracking the incident of interface fires. This suggests that some local communities or regional districts maintain a record of interface fire events.

9. Awareness Efforts by Government

Local authorities are responsible for emergency management under the 1993 BC Emergency Program Act. Wildfires know no boundaries, however, and coordinated solutions must involve the full range of authorities and private citizens. In this question, we sought the opinions of local jurisdictions on the current efforts of key government agencies in raising the awareness of interface fire risks. Figure 9 summarizes the responses received.
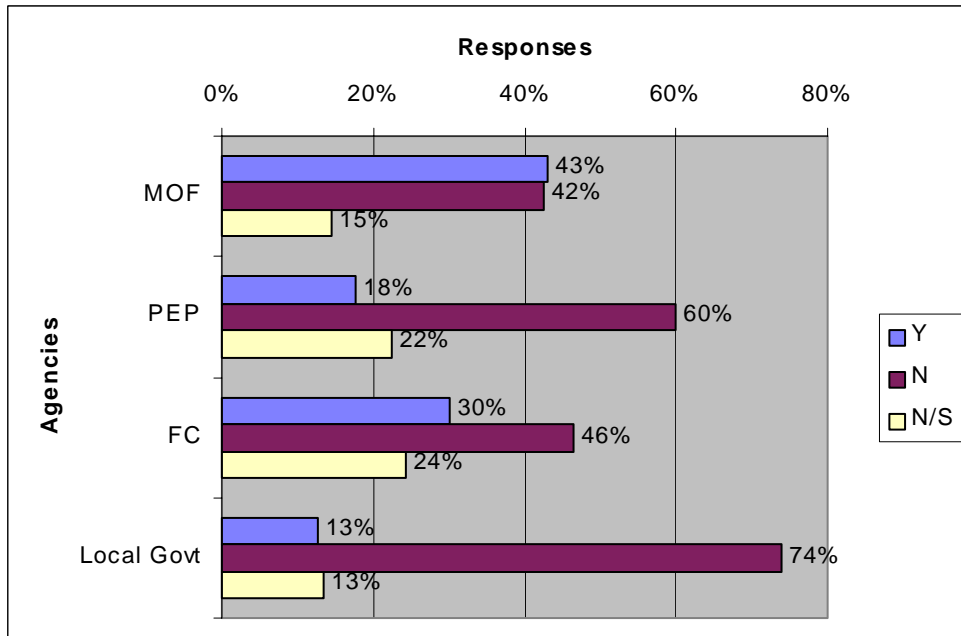
Figure 9. In your opinion, are the following government agencies doing enough to raise the level of awareness of interface fire risks and hazards among affected residents and businesses in your jurisdiction?

The Ministry of Forests (MOF) received an overall rating of 43 percent, highest among all categories. A nearly equal number of fire chiefs (42%), however, said the Ministry of Forests was not doing enough in this area. The Fire Commissioner's Office (FC) was doing enough according to 30 percent of the respondents, and received the highest number of "not sure" votes.

Only 18 percent of the fire chiefs thought the Provincial Emergency Program (PEP) was doing enough to raise awareness. More than half (60%) thought PEP was not doing enough in their jurisdiction.

Local governments received the lowest scores for raising awareness levels in their own jurisdictions. About three-fourths (74%) of the fire chiefs responding to the survey indicated their local government was not doing enough to raise awareness among affected residents and businesses. About half (52%) of the development / planning directors said either their jurisdiction was not doing enough to raise the level of awareness among affected individuals, or they were not sure.

This survey question generated a number of additional comments. Some representative observations are noted below:

- *Wildland interface problems are not taken serious enough, especially trying to achieve some prevention, mainly due to costs.*

- *What information is being put forward by agencies is being largely ignored by the public who want treed lots.*
- *Very little awareness of hazards given to residents in forested areas. "Beware & Prepare" is not promoted enough.*
- *The public really need to hear it from someone else than fire services.*
- *The (regional district) and the Ministry of Forests need to develop and enforce standards for new construction in high-risk areas.*
- *(Regional district) does not discuss fire hazards for new subdivisions with developers. A very small portion of our regional district is in a fire department area (less than one percent of the regional district). We do have brochures from other agencies available, but we do not have the budget to promote this.*
- *It would be nice to see these government agencies work with the smaller volunteer fire departments in smaller communities.*
- *It appears all above agencies do less every year. Downloading more financial and operational responsibilities to fire dept.*
- *Forestry (Ministry of Forests) does some, but the other three do not have visible presence unless the sky falls and that is too late. Should be out there more talking to departments.*
- *Political hot potato. Low community tolerance to any "tree work."*
- *We are involved in the interagency committee, and we have had education programs, but there is no political will or agreement on part of public to actually put regulations in place (e.g., development permit areas).*
- *Have tried to get local bylaws written or rewritten to reflect our needs for water supply and regulations regarding open burning, only to be turned down by Ministry of Municipal Affairs.*
- *Unless the province and its agencies work with the municipalities, it will not happen.*

Risk Assessment

An understanding of risks should help local authorities develop appropriate programs, set priorities, identify cost-effective protective measures, and ensure the greatest effort is devoted to the greatest need. The surveys included seven questions on how interface fire risks are measured and communicated in the province.

10. High Hazard Interface Areas

The objectives of this survey included a desire to assess the level of
interface fire risk in the province. There are currently no accurate means
of measuring the extent of the problem among BC communities, and
anecdotal evidence varies greatly. In this question, we asked for opinions
of fire chiefs on the presence of high hazard areas within their
jurisdictions.

A full 92 percent of responding fire chiefs indicated their jurisdiction
contained at least some high hazard interface fire areas. About 7 percent of
the respondents thought their communities held no high hazard areas, and
only 1 percent said they were not sure, perhaps due to the uncertain
definition of the term.

These findings were likely skewed somewhat in favour of a positive
response when we targeted high-risk areas for follow-up calls. The high
percentage of communities with interface fire areas, however, supports the
widespread concern for this issue evident in follow-up calls.

For fire chiefs who identified high hazard areas, we further asked what
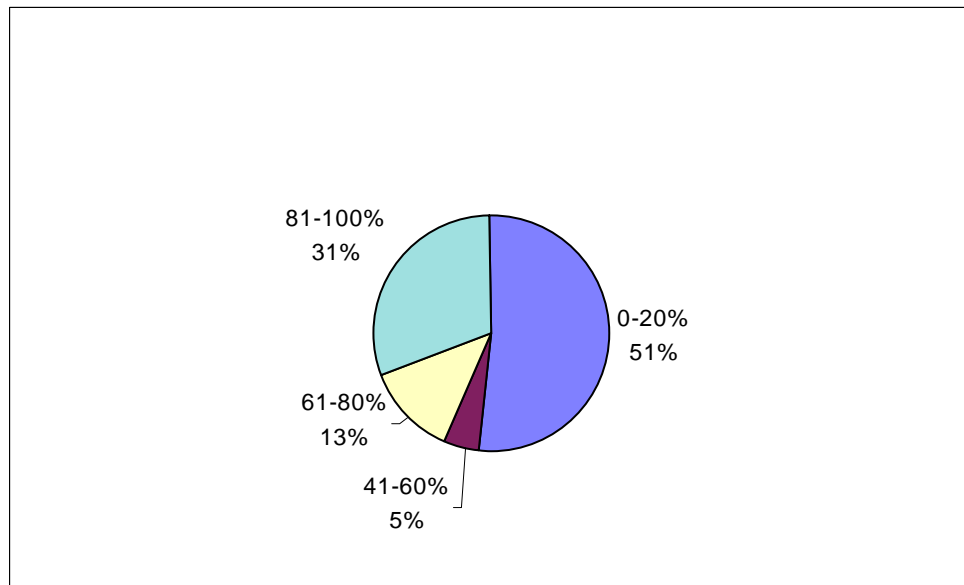percentage of dwellings are included in such areas. Figure 10 shows the
results.

*Figure 10. If yes, approximately what percentage of the dwellings in your
jurisdiction are included in such areas?*

The results of this question indicate two basic types of communities with interface fire concern. More than half of the fire chiefs (51%) with any high hazard areas in their jurisdictions indicated such areas include 20 percent or less of the total number of dwellings. This suggests fringe subdivisions in larger communities, such as Kelowna and Kamloops.

The second largest group (31%) said that 80 to 100 percent of their dwellings are in high hazard areas. These likely represent smaller communities surrounded by forest and other wildland features. One community respondent noted that:

> *We are a rural area which is surrounded by forest, which has years of blow-down on the ground.*

Some urban and suburban communities, such as Victoria and New Westminster, have no adjacent wildland areas. Many coastal communities are located in natural areas with fire-return periods of many decades and therefore lower risk.

These findings suggest that risk communication, mitigation, evacuation planning, and response preparedness should address the neighbourhood or small community scale, not necessarily large cities. Further, future efforts should target well-defined audiences, defined by location.

11. Ranking Interface Fire Risk

As a second measure of the extent of interface fire in the province, we asked fire chiefs how they would rank the level of interface fire risk in their jurisdiction. This question also served as a baseline division between two respondent groups, those with either high or moderate fire risks, and others with low risks.

Figure 11 illustrates how fire chiefs ranked their communities.

Overall, 45 percent of the fire chiefs indicated a high risk of interface fire in their jurisdiction. About 36 percent noted a moderate risk, for a total of 81 percent with either high or moderate rankings. Again, such results are likely skewed by the targeted calls to encourage response to the survey.
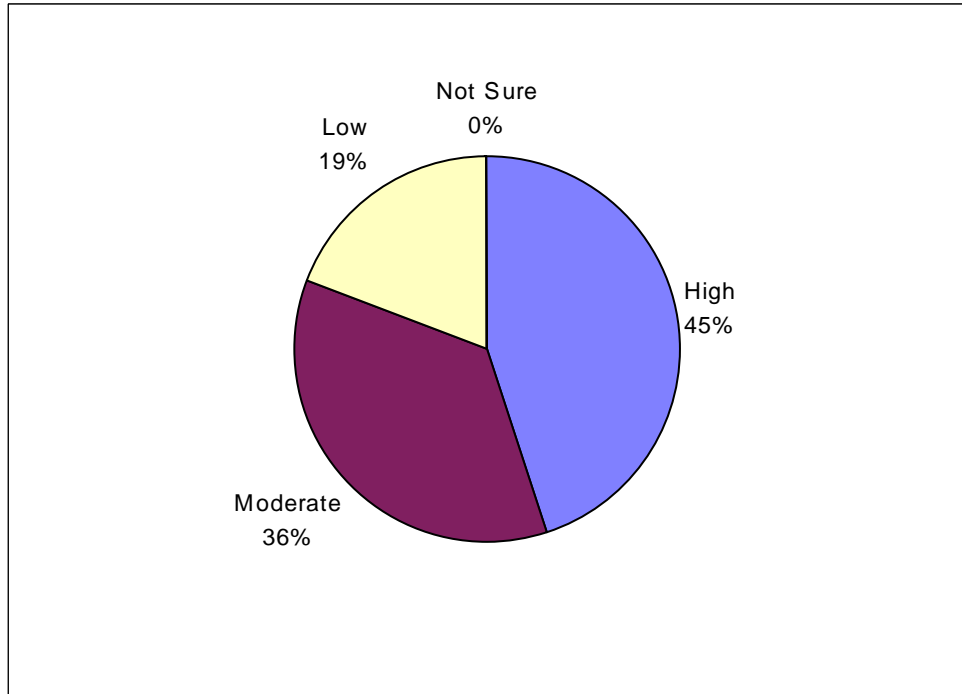
Figure 11. Overall, how do you rank the level of interface fire risk in your community?

As with Question 10, these results support the high level of concern in the province for interface fire issues. It also points out that the interface fire issue in the province has broad application in terms of the number of communities affected, in full or in part, by the fire threat.

12. Awareness of NFPA 299

The US National Fire Protection Association (NFPA) has prepared and distributed a useful set of standards for reducing the risk of interface fire in small communities. *NFPA 299, Standard for Protection of Life and Property from Wildfire*, addresses such community features as water supplies, road widths, signs, and construction, and is available for adoption in full or in part by BC jurisdictions.

Figure 12 shows the percentage of fire chiefs who are aware of the contents of the NFPA 299 standard.

Only about 38 percent of the fire chiefs were aware of NFPA 299. One respondent noted they use the standard on a case-by-case basis as part of the subdivision approval process. Nearly two-thirds (62%) of the fire chiefs responding to the survey were not aware of the NFPA 99 standard.
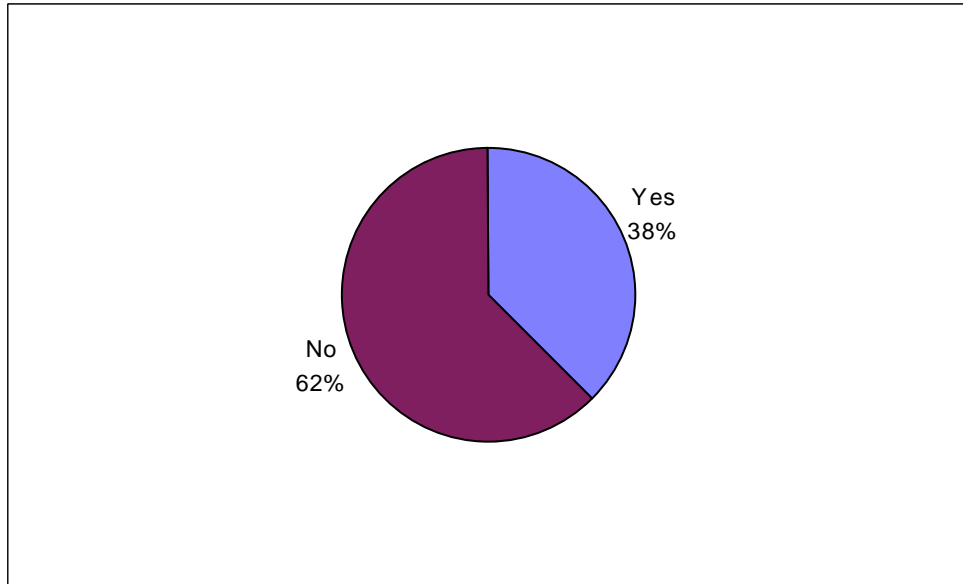
Figure 12. Are you aware of the content of the US National Fire Protection Association (NFPA) 299 Standard for "Protection of Life and Property from Wildfire?"

We expected a greater level of awareness, especially given the fact that other NFPA standards are consulted and adopted in various BC communities. Combined with the results of Question 10, with 92 percent of the jurisdictions with high hazard interface areas, the low level of awareness of this useful standard is worth noting.

13. Adoption of NFPA 299

Further to an awareness of the NFPA 299 standard, we wondered how many communities had actually adopted all or part of the standard for protecting their communities. The adoption of such provisions would depend on the level of interface fire risk in the community.

Although 38 percent of the respondents were aware of the content of NFPA 299 (from Question #12), only 6 percent of all responding fire chiefs said their jurisdiction has formally adopted all or part of the standard. When results were screened for high and moderate risk areas, the percent use of NFPA increased, as shown in Figure 13.
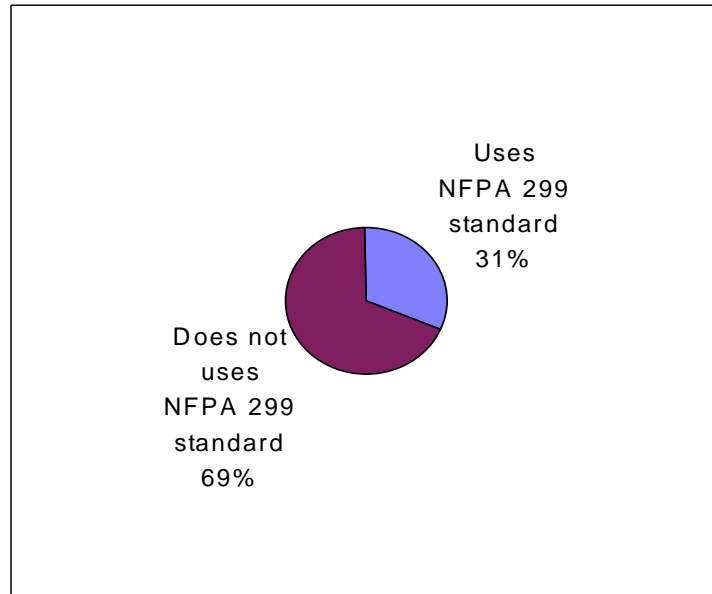
Figure 13. For high or moderate risk areas, has your jurisdiction formally adopted all or part of the US NFPA 299?

When considering high or moderate risk areas only, the percentage of adoption jumps to 31 percent of the respondents. These results demonstrate that at least some communities consider NFPA 299 as a useful standard. About 69 percent of the fire chiefs in high or moderate risk areas indicated their jurisdiction has not formally adopted all or part of NFPA 299.

14. Awareness of Beware and Prepare Community Planner

In addition to NFPA 299, BC communities have access to a useful set of guidelines prepared by the BC Ministry of Forests and the Office of the Fire Commissioner, entitled the *Beware and Prepare Community Planner*. We asked fire chiefs if they were aware of these standards.

More than half of the responding fire chiefs (55%) indicated their awareness of the *Beware and Prepare Community Planner*. We further asked those aware of the BPCP if their jurisdiction uses all or part of these standards, and then screened the findings for those communities with high or moderate risks. Figure 14 shows the results.
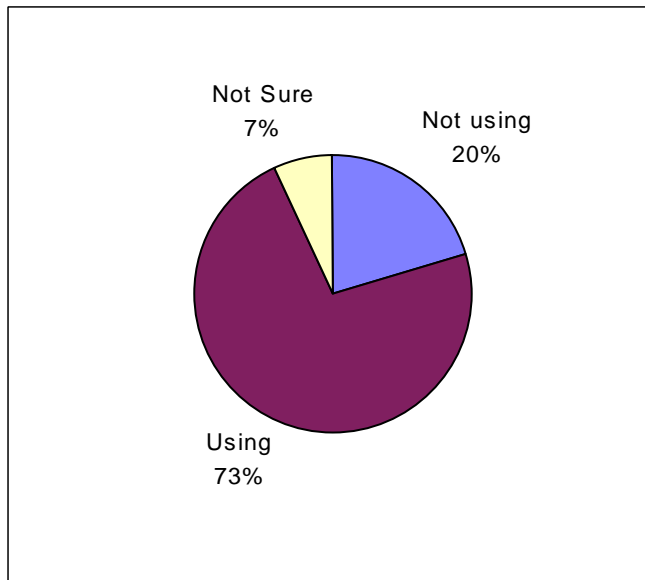
Figure 14. For high or moderate risk areas, does your jurisdiction use all or part of the Beware and Prepare Community Planner *standards?*

Considering high and moderate risk areas, about 73 percent of responding fire chiefs noted their community uses the *Beware and Prepare Community Planner*. This finding highlights the usefulness of this document and suggests other communities may benefit from applying selected standards.

15. Written Risk Assessment

Some jurisdictions have prepared written risk assessments, including maps, to communicate the level of interface fire concern and key locations. Written assessments are useful in targeting action, communicating risks to others, and tracking the extent of the problem. We wondered how widespread this practice was in BC, especially in areas with high or moderate risk.

Overall, only 18 percent of responding fire chiefs noted the existence of a risk assessment in their jurisdiction written in the last five years. The proportion increases, however, for high and moderate risk areas, as shown in Figure 15.
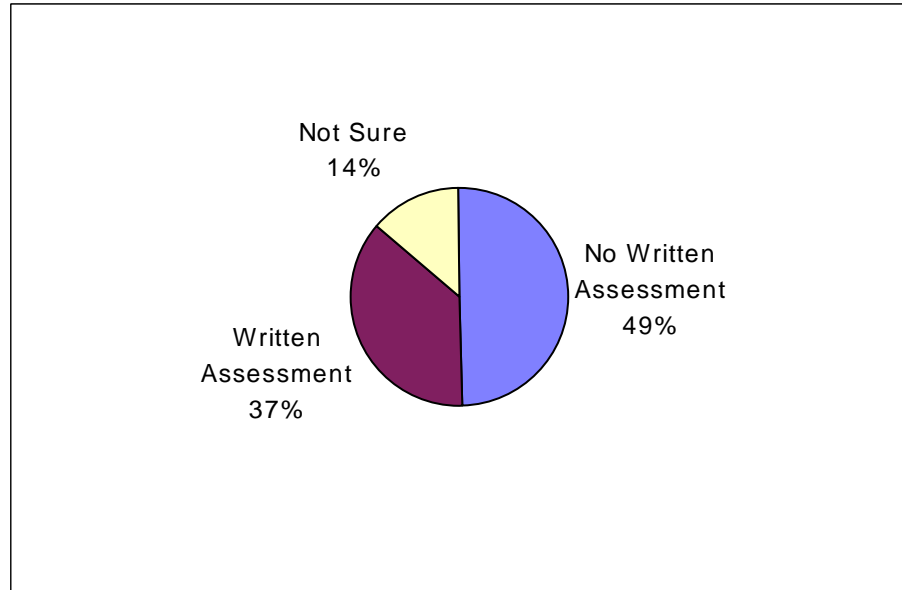
Figure 15. For high or moderate risk areas, is there a written assessment of the risks of interface fire in your jurisdiction prepared within the last five years?

Among jurisdictions with high or moderate risks, 37 percent of fire chiefs indicated that written assessments have been prepared in their jurisdiction in the last five years. About half (49%) of all high or moderate risk areas have no written assessments.

One respondent noted that the maps prepared by Ministry of Forests were of such large scale that they can not discern any useful details. Hazard mapping specific to each jurisdiction is needed.

16. Standards Used in Risk Assessment

The use of standards in a written risk assessment enhances the consistency of the analysis from one jurisdiction to the next. Standards also reduce inadvertent research bias and allow comparisons among affected areas. Figure 16 notes the findings concerning standards in written risk assessments of interface areas.
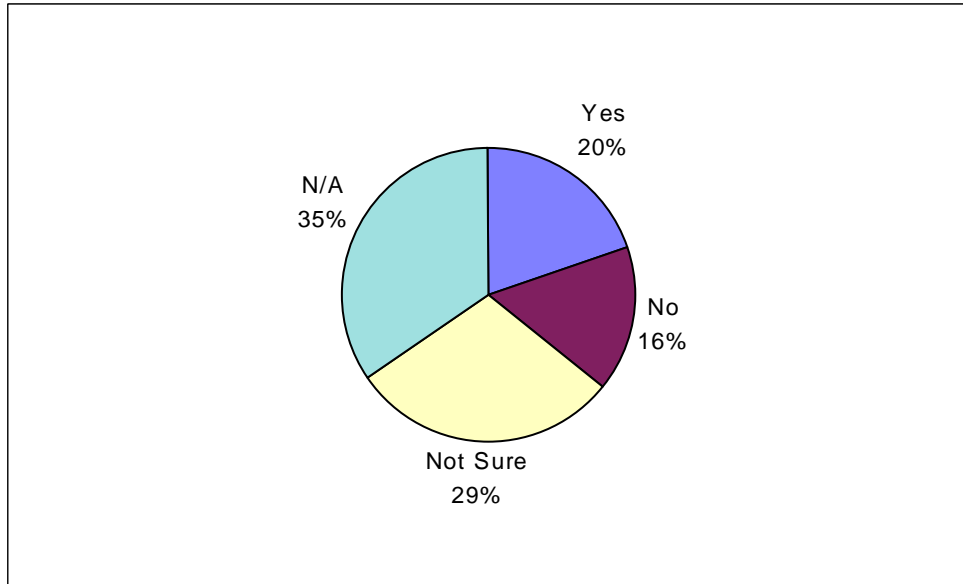
Figure 16. Were recognized standards used to prepare the written assessment of the risks of interface fire in your jurisdiction?

Only about 20 percent of the fire chiefs indicated that standards were used in preparing risk assessments for their jurisdiction. The largest fraction of respondents (35%) noted that the question did not apply to them, presumably because a written assessment had not been prepared within the last five years.

A subsequent question in the survey asked respondents to indicate the source of standards, if any were used in compiling written assessments. About 64 percent of responding fire chiefs noted that risk assessments made use of the Ministry of Forests standards. This finding suggests that the Protection Program may have prepared many of the assessments on behalf of communities, although the question does not ask this directly. Another 30 percent commented that sources of standards included the Beware and Prepare Community Planner (BPCP).

Risk Reduction / Mitigation

Mitigation programs are designed to prevent or reduce the consequences of interface fires. Measures include risk control activities, like fuel reduction, building codes, land use management, and insurance incentives. These fall generally in the purview of various government agencies. Disastrous events like wildfires that cannot be prevented demand efforts at mitigation and risk reduction. In this section of the surveys, we asked nine questions related to risk reduction and mitigation of interface fire risks.

17. Mitigation Strategy

In reducing risks of interface fires, BC communities have the option of developing a long-term strategy for mitigation. Such a program includes all efforts that reduce the likelihood of structural damage from wildfire and the magnitude or severity of any consequences. The extent of such programs in the province, particularly in high hazard areas, would indicate the level of commitment to risk reduction.

Figure 17 illustrates the percentage of jurisdictions with mitigation strategies, according to fire chiefs responding to the survey.
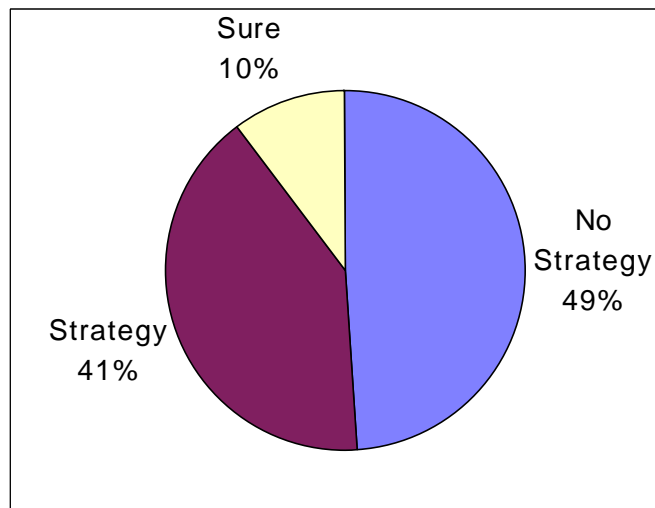

Figure 17. For high or moderate risk areas, has your jurisdiction developed an ongoing strategy to mitigate interface fire risks in high hazard areas?

About 41 percent of the fire chiefs in high or moderate risk areas indicated their jurisdiction has a mitigation strategy. Nearly half (49%) have no strategy, and another 10 percent were not sure. Responses from the chief administrative officers from high or moderate risk areas reflected similar findings.

Where high or moderate risks are recognized, a lack of action signals communication problems, scant resources, or apathy when considering interface fire risks.

18. Steps to Reduce Risks

Although less than half of the high-risk jurisdictions have an ongoing strategy, survey results indicate that 59 percent of the jurisdictions have taken some steps to reduce interface fire risks in high hazard areas. More than one-third (36%) have taken no steps, and another 5 percent of the fire chiefs were not sure if such steps had been taken. Figure 18 displays the types of action for those jurisdictions that had undertaken any steps.
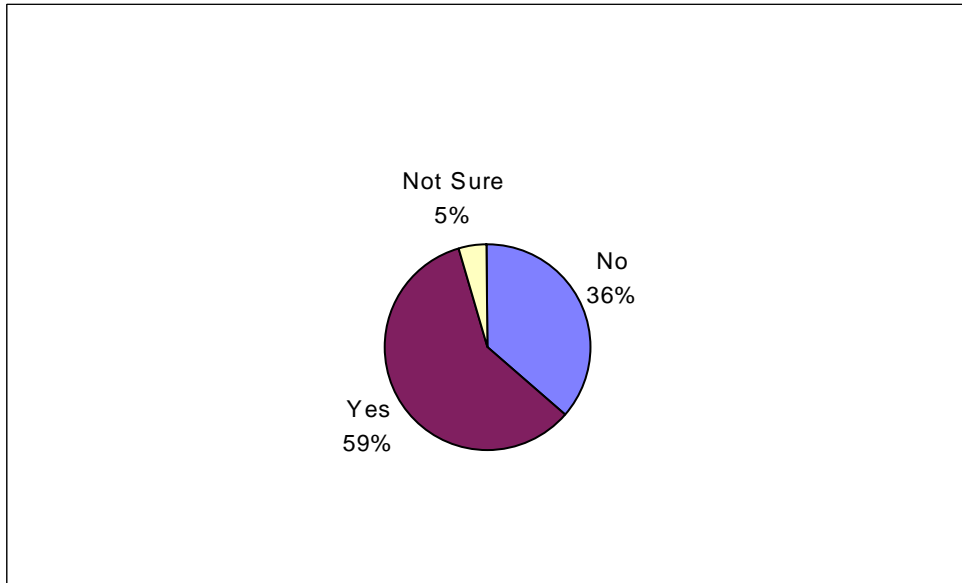

Figure 18. For high or moderate risk areas, and if your jurisdiction has taken any steps to reduce interface fire risks in high hazard areas, through what actions?

The most common steps included controls over fire ignition (burning) at 34 percent. Many jurisdictions have burning restrictions to control smoke and the ignition of fire under high-risk conditions.

Results indicate a tie for the second most common method at 17 percent, including educational activities (e.g., door-to-door hazard assessments) and input on development plans from the fire department or Ministry of Forests.

Very few fire chiefs (7%) noted the use of legal mechanisms aimed at existing properties, such as restrictions on fuel build-up addressed in such standards as the Beware and Prepare Community Planner and NFPA 299.

Comments from respondents include other means of reducing interface fire risks, including the posting of risk signs, community fire patrol, and the construction of fire guards by the Ministry of Forests.

19. Mitigation Actions Adequate

With the presumption that at least some jurisdictions were engaged in interface fire mitigation, we wondered if fire chiefs considered the level of such activity to be adequate, particularly in high or moderate risk areas. Our rationale for requesting such information considered that fire chiefs are likely among the community members who are most aware of the risks, mitigation activities, and the need for additional steps in risk reduction. Figure 19 shows the results.
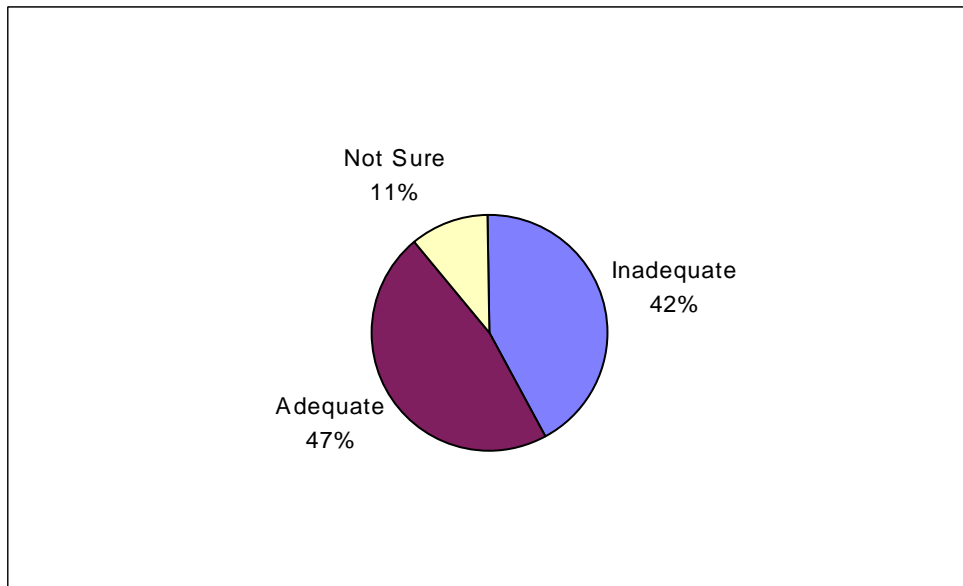

Figure 19. For high or moderate risk areas, in your opinion, are these (risk reduction) actions adequate?

About 47 percent of the fire chiefs in high or moderate risk areas consider that risk reduction activities within their jurisdiction are adequate. About 42 percent of the respondents indicated their jurisdiction's activities to reduce interface fire risk were not adequate. The remaining 11 percent were not sure. These results are reflected in similar findings among the other three participating groups, including emergency program coordinator, development / planning director, and chief administrative officer.

Combined with the observation in Question 17 that nearly half (49%) of the high and moderate risk jurisdictions have no strategy, these results point out the fact that fire chiefs see a wide-spread failure to adequately mitigate or reduce the risks of interface fire, even in communities with high or moderate risks.

20. Types of Controls

With the state of risk in the province, we were curious as to the current use of mechanisms to control risks. Many options are available through the Beware and Prepare Community Planner and NFPA 299. The next question explores the use of detailed development and building controls within jurisdictions. The experience in other jurisdictions in various countries points to the benefits of certain required measures that reduce the rate of fire spread or speed response.

One would expect the use of such controls specifically in high or moderate risk areas, and Figure 20 focuses on this subset of respondents.
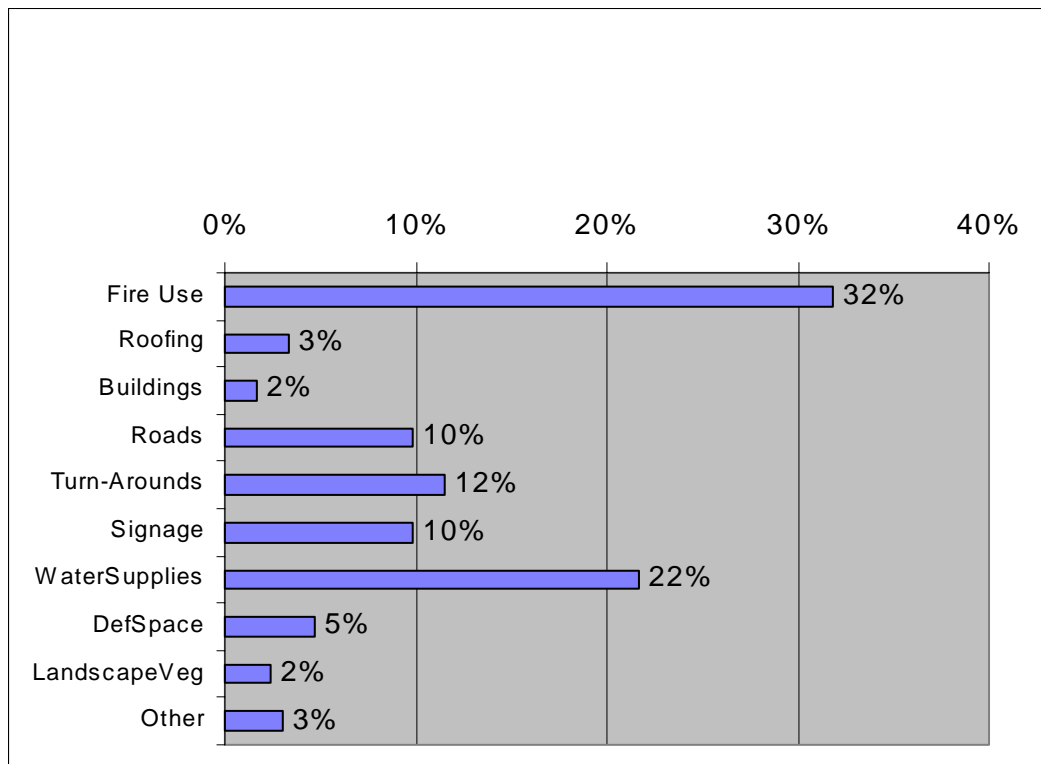

Figure 20. For high or moderate risk areas, does your jurisdiction use controls over any of the following items to reduce interface fire risks and hazards?

The control noted most often by fire chiefs related to the use of fire (32%), such as through burning bylaws. This confirms the findings in Question 18, and likely reflects the community need to control smoke and ignition sources.

Water supplies were noted by 22 percent of the fire chiefs as the second most frequently applied type of control. Water supplies may serve not only

the needs of wildfire, but may also be provided to meet insurance requirements for structural fire protection. Other controls that are targeted to interface fire situations, such as defensible space around structures (5%) and use of landscape vegetation to control fire spread (2%) are very seldom used.

Respondents offered these additional comments related to risk controls:

- *Restrictive covenants and NFPA standards applicable to wildfire are employed in new developments in forested areas.*
- *Our new houses are fully sprinklered by bylaw. We prohibit outdoor burning and we post hazard advisory notices.*

21. Official Community Plan

Long-term solutions to the interface threat must deal with land use issues on a regional or at least community scale. Controls on development have been used in other jurisdictions outside BC to help manage the risks. The Official Community Plan (OCP) is used by incorporated municipalities in the province to help direct long-term community development. We wondered how many communities address interface fire risks in their Official Community Plan. Figure 21 shows the results for those jurisdictions that also reported high or moderate risks.
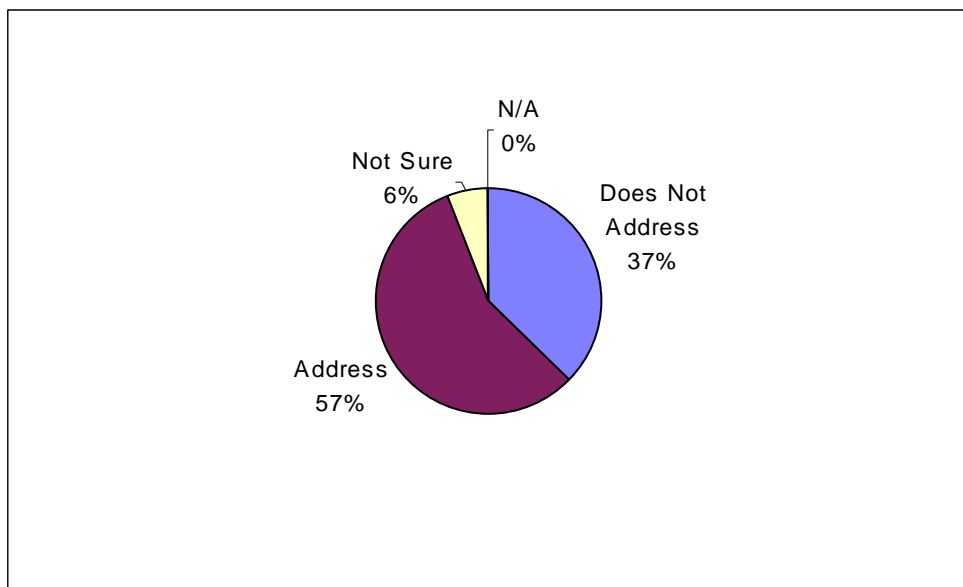

Figure 21. For high or moderate risk areas, does the Official Community Plan or other plans in your jurisdiction address interface fire risks?

Among those jurisdictions with high or moderate risk of interface fire, more than half (57%) of the development / planning directors indicated that such risks are addressed in the Official Community Plan or other

plans. These results seem high, and may reflect the interpretation by respondents of "other plans" to include emergency response plans and not just development or zoning plans. About 37 percent of the development / planning directors said their OCP and related plans do not address interface fire risk, and the remaining 6 percent were not sure.

When asked if their jurisdiction included wildfire hazard assessments in land use planning, less than half (45%) of the chief administrative officers in high or moderate risk areas indicated they did. An equal number said they did not include hazard assessments in land use planning, and the remaining 10 percent were not sure.

22. Developers and Controls

Where jurisdictions have enacted controls to reduce interface fire risk, they still face the challenge of non-compliance by developers. Risk mitigation often promises long-term results, but developers operate on relatively short-term bases. We wondered about the experience fire chiefs had with developers in complying with the controls mentioned above.

Only 16 percent of the fire chiefs indicated that developers always comply with controls in their jurisdictions. Nearly half of the respondents (46%) said that developers sometimes comply with control requirements, indicating a widespread challenge in mitigation. Even if a community adopts a set of risk reduction measures, they may have difficulty in implementing such controls.

We also wondered about the reasons for non-compliance, if developers sometimes or never complied with jurisdictional requirements. Figure 22 shows the results.
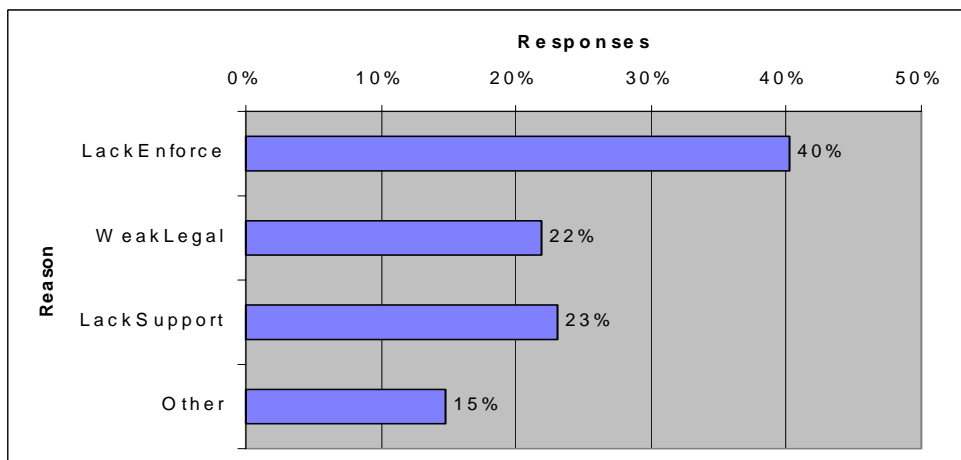

Figure 22. If developers operating in your jurisdiction sometimes or never comply with the above controls, what are the reasons for non-compliance?

About 40 percent of the fire chiefs reported that a lack of enforcement resources accounted for the non-compliance among developers. Another 23 percent of all respondents noted that control laws lacked political support, and a nearly equal number (22%) suggested that weak legal avenues contributed to non-compliance.

Additional comments from respondents shed some light on these answers:

- *Unincorporated village with no set infrastructure.*
- *Inadequate land use bylaws by regional district.*
- *(Regional District) building inspection and Forestry (Ministry of Forests) seem not to have any real input when it comes to subdivisions being planned.*
- *Local bylaws contain too many "mays" and not enough "shalls."*
- *Lack of fire department manning resources to actually enforce and educate.*
- *Enforcement of bylaws in a small community creates political fallout.*
- *Developers have political pull.*
- *Developers get away with everything they can. Do the least possible for profit. Fire department concerns appear to be a nuisance, i.e., emergency equipment, road width, and slope access.*
- *Builders and developers will build their road and buildings, apply for an inspection. We turn them down, give them reason in a written form, and then they do nothing about it. We have no recourse, i.e., advising insurance companies that they are not in compliance.*

23. Owners and Controls

In addition to developers, property owners can have a significant influence on community risks from interface fires. We asked similar questions about the compliance of property owners with risk reduction controls, and received similar answers. Only about 10 percent of the fire chiefs said the property owners always comply with controls in their jurisdictions, less than with developers. More than half of the respondents (56%) said that owners sometimes comply with control requirements.

The survey asked for the reasons property owners may not comply with jurisdictional controls on interface fire. Figure 23 highlights the responses from the fire chiefs.
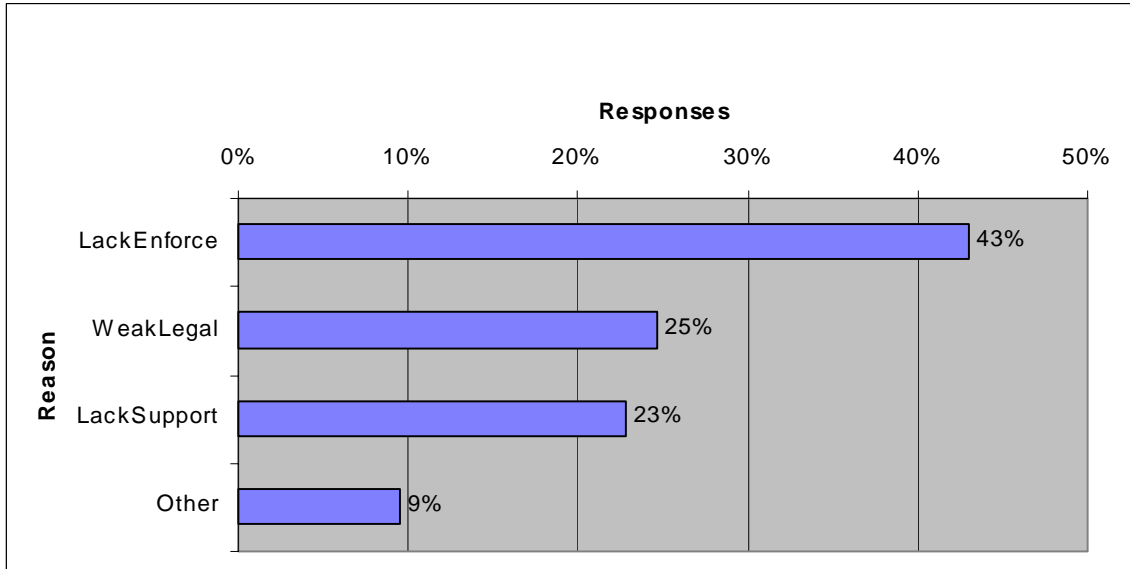
Figure 23. If property owners in your jurisdiction sometimes or never comply with the above controls, what are the reasons for non-compliance?

As with developers, the fire chiefs consider lack of enforcement resources as the leading reason for non-compliance (43%). Weak legal avenues (25%) and lack of political support (23%) contribute to this overall picture of mitigation. These results amplify concern for implementing restrictions intended to mitigate interface fire risks, and suggest that apathy and competition for scant local resources are factors to consider in the interface fire challenge.

Additional comments from respondents:
- *Transient community.*
- *They aren't aware of the regulations.*
- *People like living in a forest. People don't like being told what to build their house out of, etc.*
- *Inadequate land use bylaws and building regulations.*
- *Lack of public will.*

24. Level of Action to Limit Impact

One survey question sought the opinions of respondents on how they would rate the overall actions taken within their jurisdiction to limit the impact of interface fires. We wondered what this knowledgeable group thought about the level of mitigation and risk reduction in BC's high or moderate risk communities. Figure 24 shows the results.
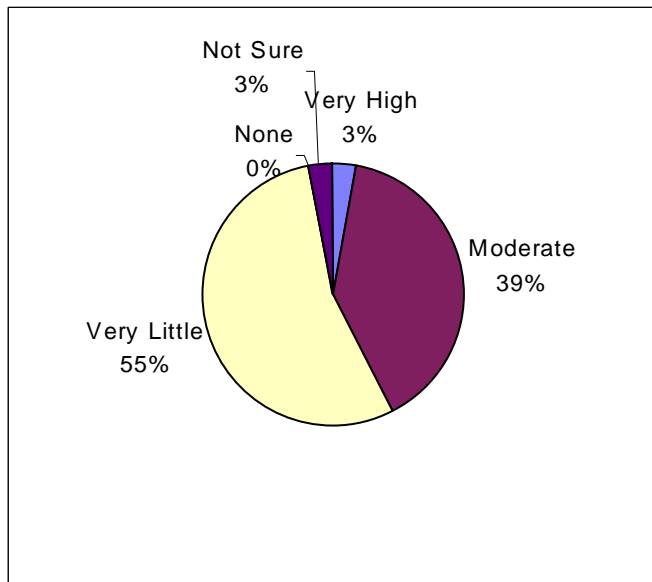
Figure 24. For high or moderate risk areas, in your opinion, how would you rate the overall level of action being taken within your jurisdiction to limit the impact of interface fires?

The majority (55%) of the responding fire chiefs in high or moderate risk areas said that very little was being done in their jurisdiction to mitigate interface fires. Another 39 percent indicated at least a moderate level of action was evident. Only 3 percent of the respondents noted a very high level of activity. Chief administrative officers offered similar observations.

These results support the observations in Question 19 and confirm the general sense among fire chiefs that mitigating interface fires presents a widespread challenge for BC communities at risk.

25. Paying for Risk Reduction

With the acknowledgement that the benefits of risk reduction come at a cost, we wondered about the respondent's opinions on who should pay for programs to reduce interface fire risks. Such programs may include the reduction of fuel loads in or adjacent to populated areas through such means as prescribed burning or mechanical removal. Respondents were asked to check all categories that apply. Figure 25 shows the results.
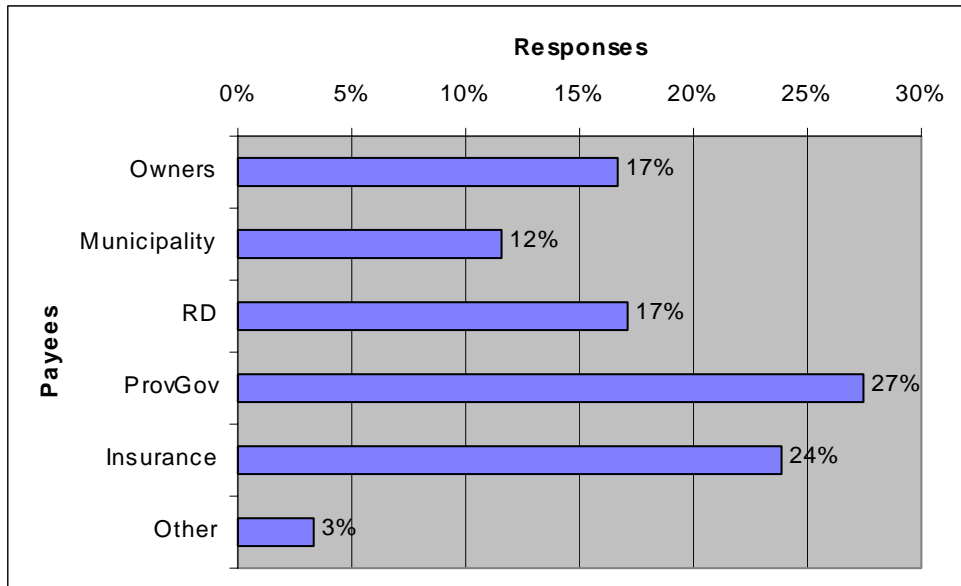
Figure 25. In your opinion, who should pay for programs to reduce the risks of interface fires in your jurisdiction (e.g., fuel load reduction)?

More than one-fourth (27%) of the fire chiefs thought the provincial government should be called upon to contribute to the cost of risk reduction. The category of insurance companies, through premium reduction incentives, was the second-most commonly proposed source of funds for mitigation. Only about 17 percent of the fire chiefs thought that residents, farmers, ranchers and other business owners at risk should pay for programs to reduce interface fire risks. About an equal number (17%) thought that regional district should be involved in paying for risk reduction programs. Municipalities were noted in only 12 percent of the fire chief responses.

A few additional comments from respondents help elaborate on these points:
- *Residents pay for programs through taxes.*
- *Developer of forested properties.*
- *Costs by all must be shared to be effective.*
- *All who have a stake, directly or indirectly, should contribute.*

Response Planning

In essence, planning for response includes developing emergency plans, setting up emergency operations centres, identifying resources, and establishing a trained and equipped response organization appropriate to interface fire. Primary measures include the development of emergency plans, mutual aid agreements, resource inventories, and training. This section of the survey explored the level of preparedness in the province through the following 12 questions.

26. Emergency Response Plans

A community emergency response plan can play a vital role in coordinating all the efforts required for site support in a major interface fire. We asked the emergency program coordinators among the survey participants for their opinions on the current effectiveness of their jurisdiction's emergency response plan in the event of interface fire. The survey results for those jurisdictions with high or moderate fire risks are shown in Figure 26.
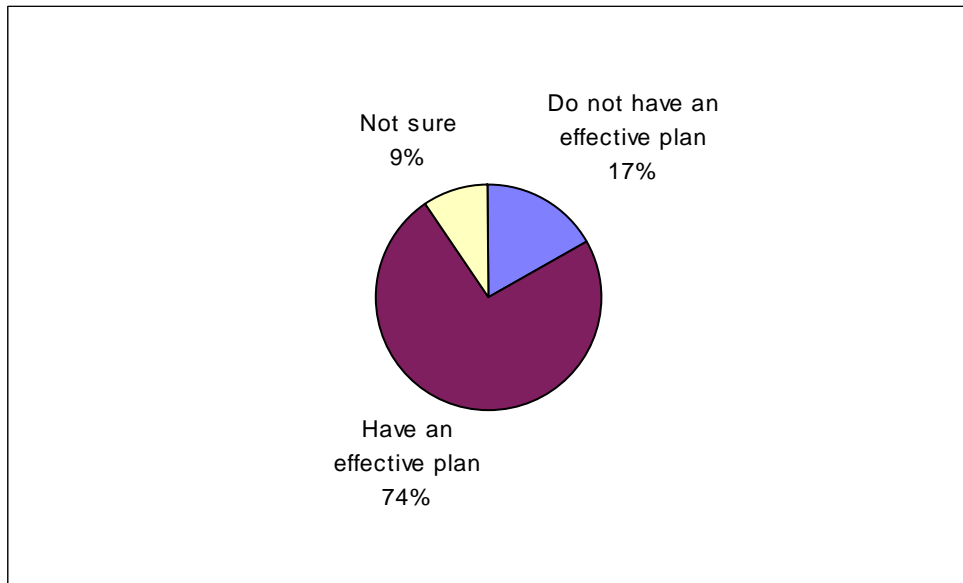

Figure 26. For high or moderate risk areas, in your opinion, is the (emergency response) plan current enough to be effective in the event of an interface fire?

Nearly three out of four emergency program coordinators (74%) in high or moderate risk areas thought the emergency response plan for their jurisdiction would be effective in an interface fire. About 17 percent indicated they did not have an effective plan, and the remaining 9 percent were not sure.

This conflicts with the observation of fire chiefs in high or moderate risk areas, where more than half (51%) thought their jurisdiction was only somewhat prepared for interface fire, and another third (33%) considered the local jurisdiction to be very little prepared.

The experience of emergency program coordinators responding to the question may have a bearing on their answer. Only about 12 percent of the coordinators indicated their position demanded three-quarters to a full-time position. The large majority of emergency program coordinators (76%) devote 25 percent or less of their time to the function, indicating they either serve other community positions, fill part time paid positions, or are volunteers. With little experience with interface fires, they may not be able to adequately judge the effectiveness of written plans.

27. Command Structure

During the survey, we considered the local fire department's command structure and its ability to involve the Ministry of Forests in providing joint response to interface fires.

First, we asked if the command structure was clearly defined in interface fire situations. Nearly three-fourths of all respondents (74%) indicated that their command structure was defined satisfactorily. About 16 percent of the fire chiefs noted that the command structure was not defined clearly enough, and another 10 percent were not sure. Overall, more than one-quarter of the fire chiefs indicated their command structures when working with the Ministry of Forests were in doubt.

We further asked those jurisdictions with a defined command structure if it was based on the Unified Command principles outlined in the provincial standard, BC Emergency Response and Management System (BCERMS). The Interagency Emergency Preparedness Council (IEPC) is currently finalizing the set of standards represented by the BCERMS, and they include a description of Unified Command. The survey results are shown in Figure 27.
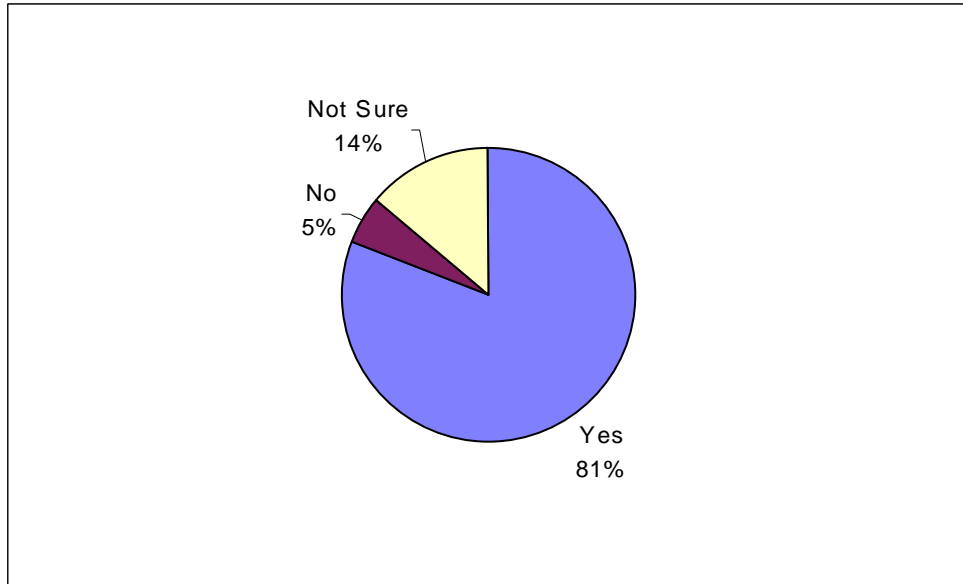
Figure 27. Is the command structure the Unified Command as described in the BC Emergency Response Management System (BCERMS)?

The large majority of fire chiefs indicated that their command structure acknowledge the Unified Command principles laid out in the BCERMS. Another 14 percent were not sure, and only 5 percent said their defined command structure was not based on Unified Command.

As an addendum to this issue, we further asked if efforts were being made to adopt the Unified Command structure among those jurisdictions who answered "no" or "not sure" above. About one-third (34%) indicated such efforts were underway. These results reflect a fairly good understanding of an important aspect of response planning, especially in light of the ongoing development of BCERMS.

28. Responding Outside Boundaries

Because fire response resources are limited throughout the province, we wanted to know if many fire departments go outside their prescribed boundaries to respond to wildland fires. This question does not necessarily represent the extent of mutual aid throughout the province, or the degree of coverage by structural fire departments. The question was limited specifically to wildland fires outside the boundaries of the local fire department. Figure 28 shows the results.
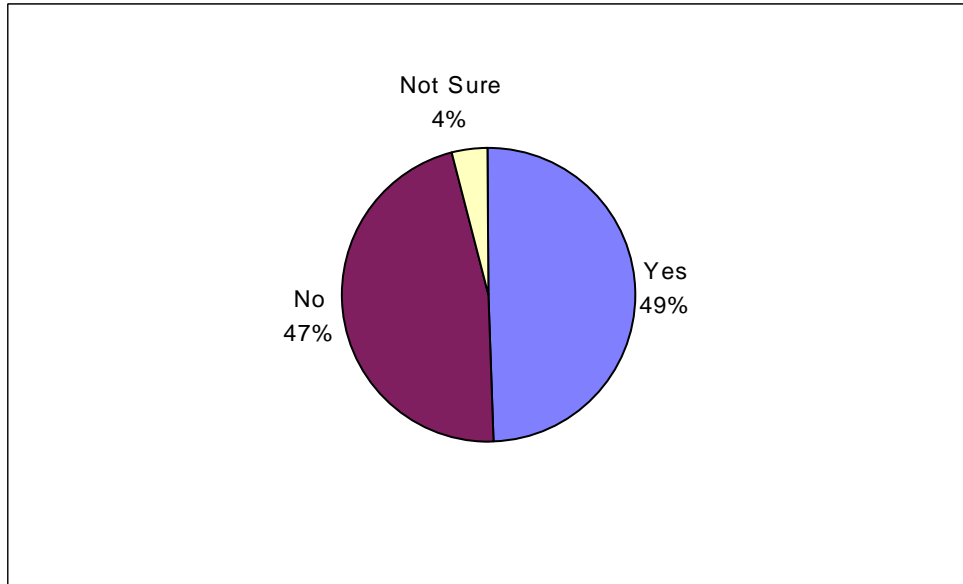
Figure 28. Is your Fire Department permitted to respond to wildland fires outside your boundaries?

Nearly half (49%) of the responding fire chiefs said their fire departments are permitted to respond to wildland fires outside their boundaries. Almost an equal number, however, indicated their fire departments were not permitted to go beyond their boundaries for wildland fire response. Only 4 percent were not sure of their answer.

These results have a bearing on the level of public safety in unincorporated areas, or areas lacking protection by volunteer fire departments, in the event of an interface fire. Much of the province lacks structural fire protection due to low population densities, and many regional districts provide no emergency planning services outside of incorporated municipalities (referred to as "local authorities" by the Emergency Program Act).

29. Forest Service Operating Guidelines

The BC Forest Service has prepared written provisions for repaying local fire departments who assist the province in responding to wildfire threats outside municipal boundaries. These operating guidelines, entitled "Wildfire Suppression with Local Governments," assign responsibilities for wildfire suppression depending on fire location, either within or outside municipal boundaries, and specifies the rate of payment by the Ministry of Forests to local governments for support. The Ministry of Forests responds to calls for support within municipal boundaries at no charge.

We asked fire chiefs for their opinions of the adequacy of the BCFS operating guidelines. The results are shown in Figure 29.
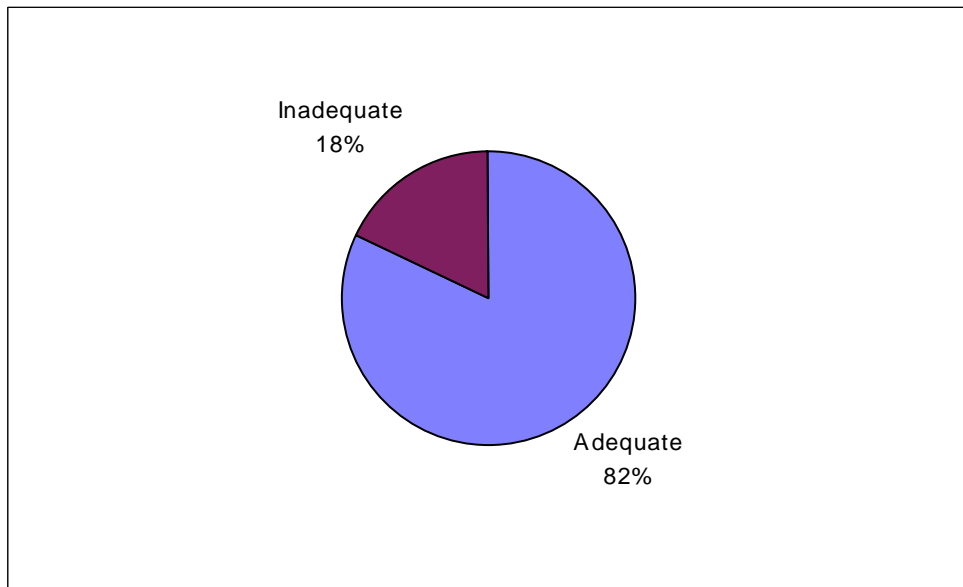

Figure 29. In your opinion, do the current BC Forest Service Operating Guidelines, "Wildfire Suppression with Local Governments," adequately assign responsibilities for wildfire suppression between the BC Forest Service and your local government?

About 82 percent of the responding fire chiefs indicated that the current BCFS operating guidelines were adequate. The remaining 18 percent disagreed.

Written comments on inadequacy include the following observations by respondents:

- *Too much emphasis on structural fire fighters being able to fight wildfires.*
- *Some grey areas.*
- *Not familiar with quoted operating guidelines* (several responses).
- *Leaves a large portion of city forest land the responsibility of structural fire fighters.*
- *It appears to be sufficiently open to interpretation to afford our fire department to opt out of a situation and have BCFS (Ministry of Forests) take over the fire, allowing us to stand by for other calls.*

30. Operating Guidelines and Response

To further explore the opinions of fire chiefs on the Ministry of Forests operating guidelines, we asked if they thought these guidelines facilitated or inhibited response to interface fires outside fire district jurisdiction. Figure 30 illustrates the response.
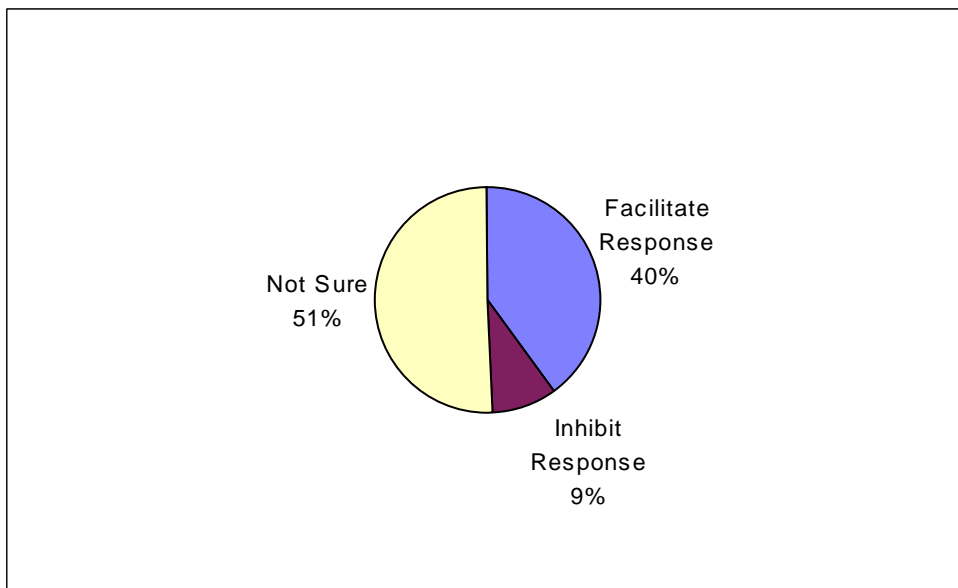

Figure 30. In your opinion, do the Operating Guidelines facilitate or inhibit response to interface fires outside your jurisdiction?

More than half of the respondents (51%) indicated they were not sure of their answer. There may have been some difficulty in interpreting the question, intended to discover any impediments in the current arrangement. About 40 percent of the fire chiefs said they thought the operating guidelines facilitated response.

The remaining 9 percent indicated their opinion that the guidelines inhibited response. This group was further asked for comments, summarized below:

- *The guidelines don't address interface fires and the liabilities of responding to them outside of our jurisdiction.*
- *It is difficult to promote or facilitate cooperation when the province dictates the rules.*
- *Before responding to outside interface fire, permission must be received through certain channels within the Ministry of Forests.*
- *We have to notify BC Forest Service (Ministry of Forests) of our response, and hope that they will cover our costs. As well, they still come along after the fact and tell us what they are and are not paying for.*
- *"Dead" zones that lack jurisdiction of structural fire fighters.*

31. Mutual Aid Agreements for Fire

In addition to the ability to respond to wildland fires outside their jurisdiction, we were curious about the number of jurisdictions that have mutual aid agreements in place with neighbouring fire departments. The ability to call upon other fire departments for fire support enhances the protection given limited resources in interface fires events.

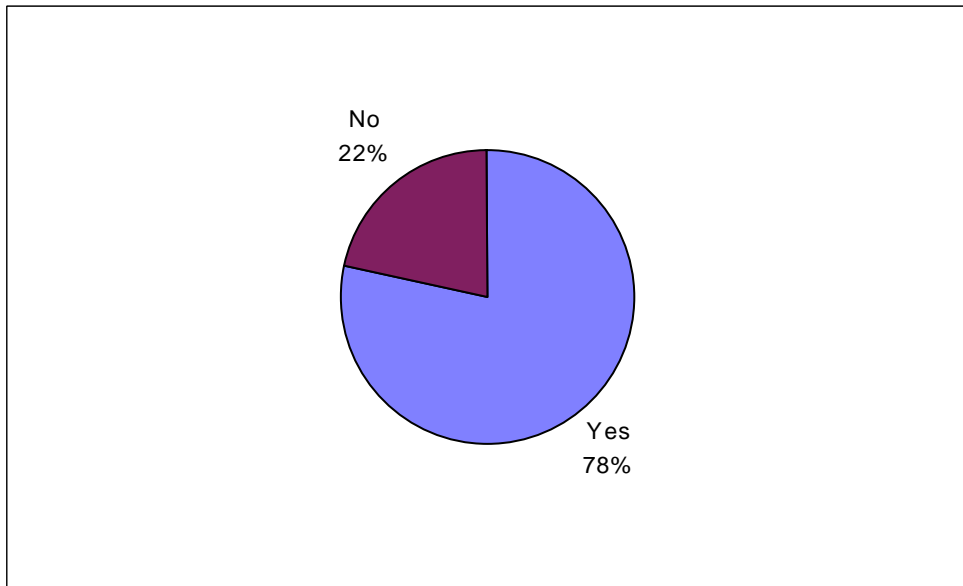Figure 31 shows the survey results.

Figure 31. Do you have mutual aid agreements with any neighbouring fire departments?

More than three-fourths (78%) of the fire chiefs responding to our survey said they currently have mutual aid agreements with neighbouring fire departments. The remainder (22%) do not.

Failure to engage in mutual aid agreements may reflect a number of factors, such as distance between communities, transportation challenges (such as water bodies), or the fact that some smaller communities have so few resources, they cannot help their neighbours without leaving their own community unprotected. Some communities may be concerned with liability in offering mutual aid.

32. Radio Access

Response planning includes checking the capability of communicating with key support agencies. In dealing with interface fires, a fire department will likely wish to communicate with the Ministry of Forests,

any neighbouring fire department, and a representative of the Office of the Fire Commissioner. Communications is often cited as the most persistent problem in coordinating emergency response. We wanted to know the status of radio frequency access among fire departments responding to the survey. Figure 32 illustrates the response.
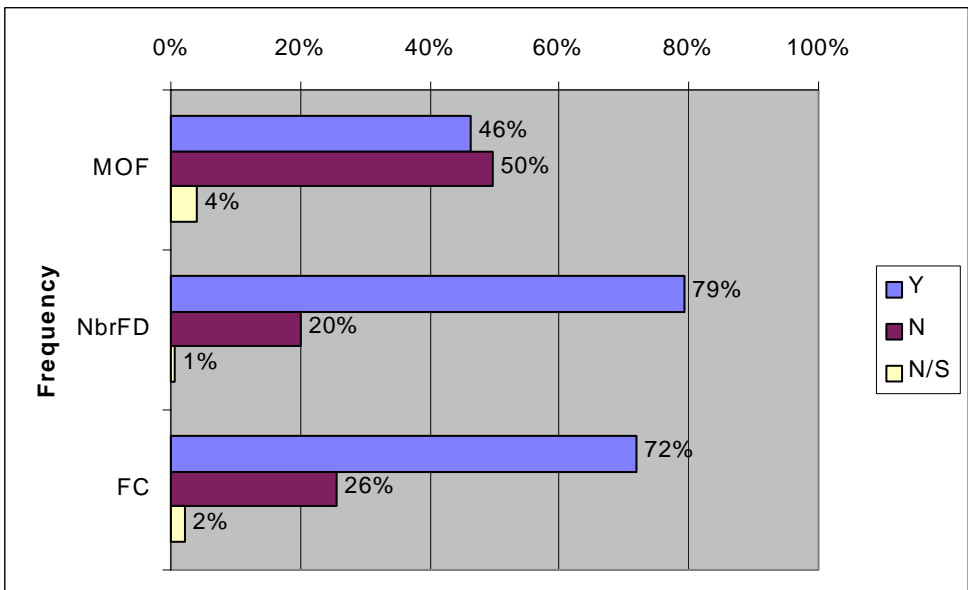

Figure 32. Are your radio communications able to access the following?

Less than half (46%) of the fire chiefs responding to the survey indicated their radio communications systems were able to access the Ministry of Forests frequencies. About 79 percent of the fire chiefs said they were able to use their neighbouring fire department frequencies. Nearly an equal number (72%) noted they had access to the radio frequencies of the Office of the Fire Commissioner.

33. Radio Tests

Where radio communication links exist, it is important to test them periodically to ensure effective operation when the need arises. We asked fire chiefs about the last time these links were tested. Figure 33 shows the survey results.
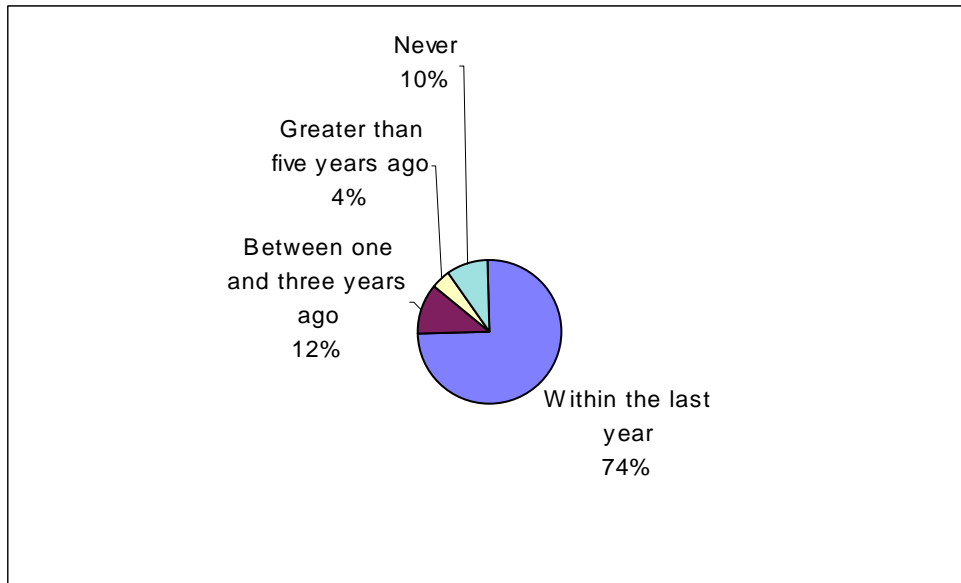
Figure 33. When was the last time these radio communication links were tested?

Nearly three-fourths (74%) of the respondents noted that the radio communication links had been tested within the last year. Collectively, the remaining 26 percent said the links had been tested more than one year ago. About 10 percent of the fire chiefs indicated these radio links had never been tested.

34. Firefighter Equipment

Most firefighters in local government are equipped to respond to and suppress fires in structures. The heavy turnout gear, breathing apparatus, and hoses that serve them well in buildings turn into obstacles in the open spaces where wildland fires occur.

Some fire departments have acquired light-weight protective coveralls, portable water pumps, chain saws, and other equipment that enable them to be more effective in controlling wildland fires that threaten their communities. Other departments limit their roles to protecting the exterior of structures with their existing gear and equipment.

To explore the extent of such preparations, we asked fire chiefs if firefighters in their department were adequately equipped to perform their role in interface fire situations. About 62 percent of all fire chiefs responding to the survey indicated their firefighters were equipped to fulfill their roles in interface fire situations. Nearly one-third of all fire chiefs (32%) felt their firefighters were not adequately equipped to appropriately respond.

The presence of such equipment, however, should relate to the risk levels in the community. Figure 34 shows the results for fire chiefs who also indicated high or moderate fie risk in their jurisdiction.
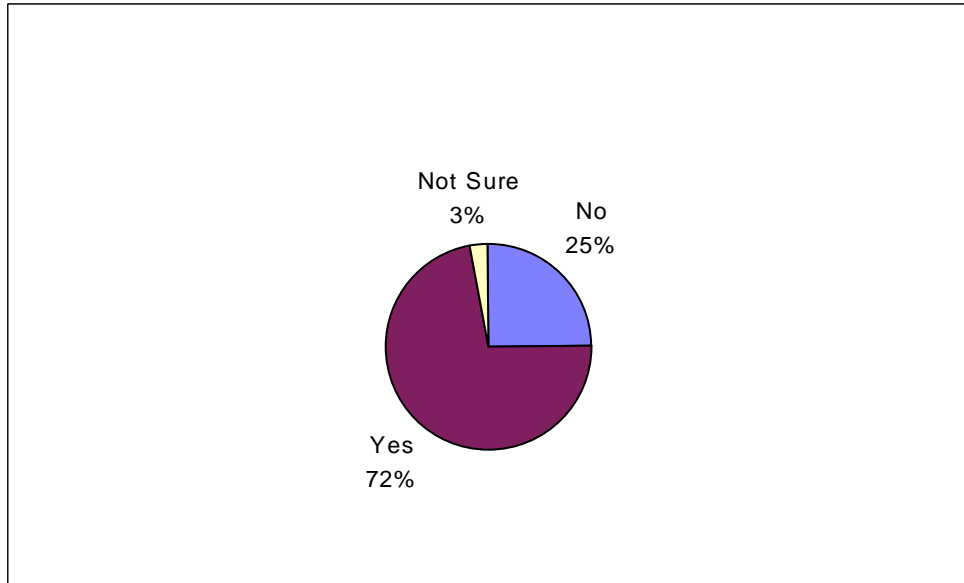

Figure 34. For high or moderate risk areas, are firefighters in your Department adequately equipped to fulfill your role in interface fire situations?

Nearly three-fourths (72%) of fire chiefs in high or moderate risk areas indicated their firefighters had access to the equipment needed to fulfill their roles. Another one-fourth (25%) said they lacked such equipment, and 3 percent were not sure.

35. Firefighter Training

Even if equipment is available to firefighters, training is needed to effectively and safely suppress wildland fires. Training for structural firefighters is available through the Ministry of Forests and the Justice Institute of BC. We asked fire chiefs in high and moderate risk areas about the level of training provided specifically in their role in interface fire situations. The results are shown in Figure 35.
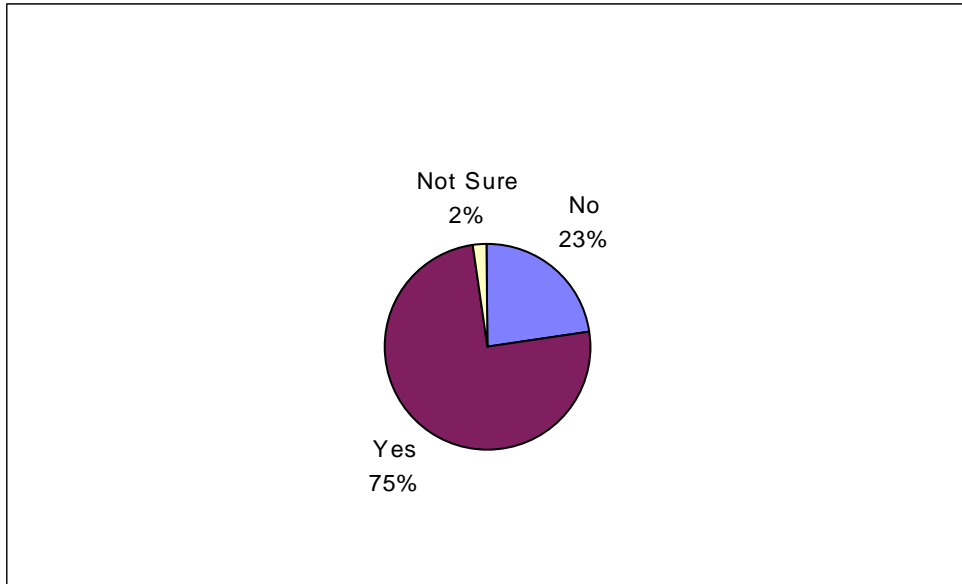
Figure 35. For high or moderate risk areas, are firefighters in your Department adequately trained to fulfill your role in interface fire situations?

About 75 percent of the fire chiefs in high or moderate risk areas said their firefighting crews were trained to meet their role in interface fires, similar to the response to Figure 34 regarding equipment. Another 23 percent indicated their crews were not adequately trained to fulfill their role, and 2 percent were not sure.

36. Last Interface Exercise

Response preparedness includes exercising fire department staff in interface fire situations with the given training and equipment. Jurisdictions that exercise with interface fire scenarios are better prepared to respond when actual events occur. We asked fire chiefs about the last time their fire department had participated in an exercise involving an interface fire scenario. Figure 36 shows the results for areas with high or moderate risk.

The largest response category (35%) came from fire chiefs who had exercised their fire department using an interface fire scenario within the last year. Nearly as many (28%), however, responded that they had never exercised with an interface fire scenario. This is surprising given the fact that these fire chiefs also said their jurisdiction contained high or moderate risk areas. About 23 percent of the fire chiefs said their fire department had exercised with an interface fire scenario between one and three years ago. The remaining 14 percent noted they had exercised interface fire response greater than five years ago.
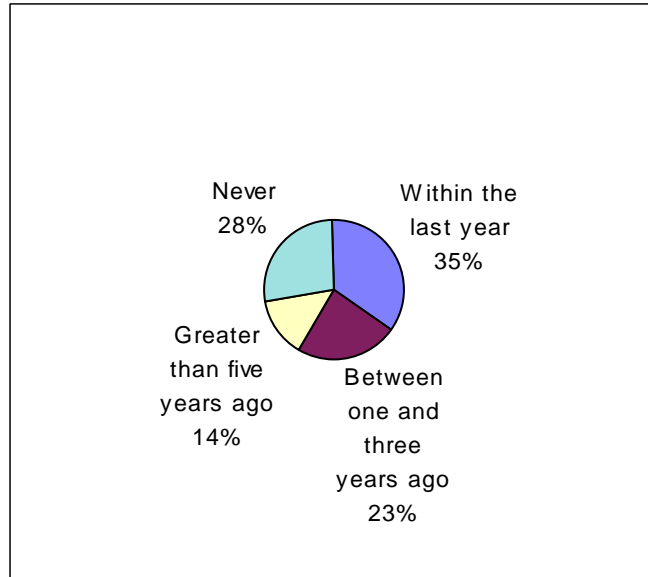
Figure 36. For high or moderate risk areas, when was the last time your Fire Department participated in an exercise involving an interface fire scenario?

In a related question to the emergency program coordinators, we asked if members of the jurisdiction's Emergency Operations Centre (EOC) participated in an exercise at least once a year. Only 39 percent of the coordinators indicated their EOC group exercises at least annually, and only 24 percent said they addressed an interface fire scenario within the last year. More than half (55%) said their EOC did not exercise each year, and the remaining 6 percent were not sure.

37. Exercise Organizations

Interface fire exercises can be more effective when a variety of key response agencies take part. This approach helps test procedures and communications, and allows responders who might interact together in an actual event to develop a working rapport. We asked fire chiefs which organizations normally take part with their jurisdiction in interface fire exercises. Figure 37 shows the results.

The Ministry of Forests (MOF) was the most frequently noted organization (22%) participating in interface fire exercises. Three other organizations received about equal number of notations (11%), including the Provincial Emergency Program (PEP), the Royal Canadian Mounted Police (RCMP), and the BC Ambulance Service (BCAS). Very few fire chiefs (3%) reported that exercises in their jurisdiction involved the Ministry of Transportation and Highways (MoTH).
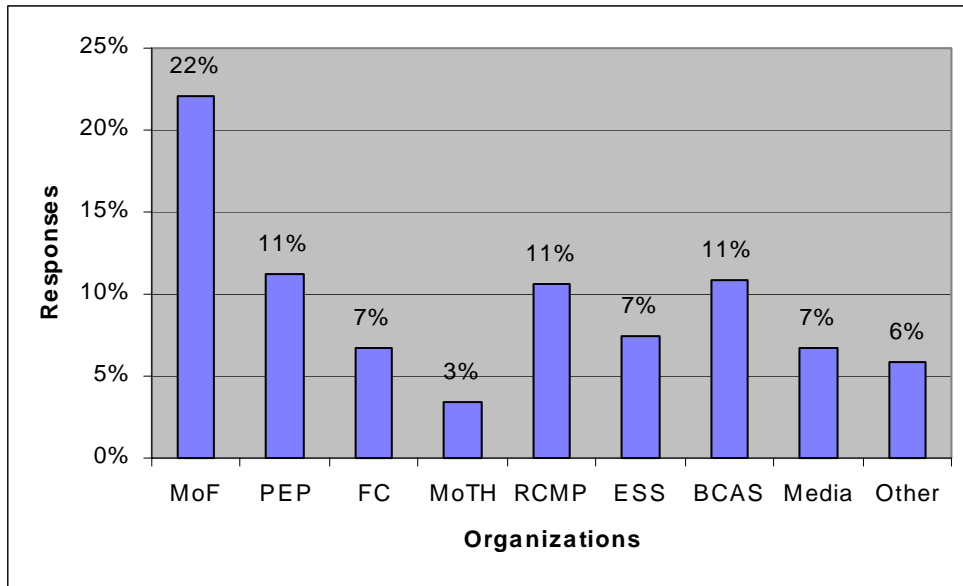
Figure 37. Please indicate which organizations normally take part with your jurisdiction in interface fire exercises?

A few respondents noted that there are no local offices of the referenced agencies. Several respondents noted the following additional organizations should be involved with interface fire exercises:

- *Adjacent municipalities*
- *BC Gas*
- *BC Hydro*
- *Coast Guard*
- *Emergency Social Service (ESS) organizations*
- *Local emergency medical volunteers*
- *Local hospital*
- *Ministry of Health*
- *Parks Canada*
- *Regional District*
- *Search and rescue organizations*
- *Tribal Police*

We also asked for the opinion of the fire chiefs on who should organize and lead these exercises. Most respondents thought the Ministry of Forests should be tasked with organizing such exercises. Most emergency program coordinators, however, thought that their position should develop interface fire exercises, perhaps in conjunction with the local fire service, Ministry of Forests, and the Provincial Emergency Program.

Evacuation

Evacuation planning constitutes an important part of emergency preparedness. The presence of residents and other persons in an area threatened by wildfire can inhibit effective response by fire suppression crews, and can lead to the most adverse of consequences. In addition, some wildfires are unpredictable, responding more to wind and weather conditions than to responder's attempts at control. Evacuation is the only means of ensuring public safety in these extreme events. This section of the survey explores the level of preparedness for evacuation through six questions.

38. Warning Residents

We asked fire chiefs how they would warn residents of a dangerous wildfire situation in their area. Some sample comments are shown in Figure 38.
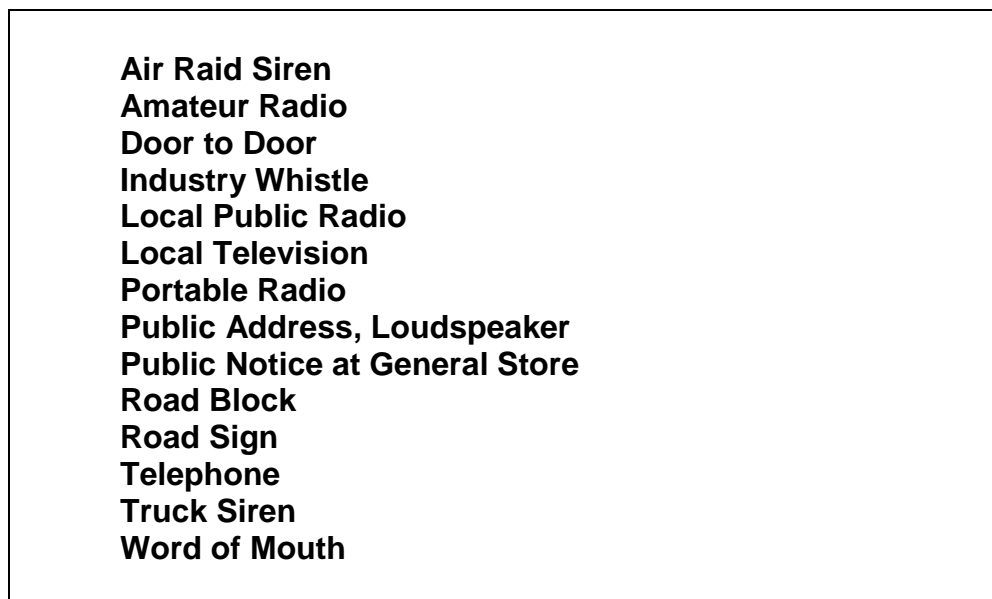
Air Raid Siren
Amateur Radio
Door to Door
Industry Whistle
Local Public Radio
Local Television
Portable Radio
Public Address, Loudspeaker
Public Notice at General Store
Road Block
Road Sign
Telephone
Truck Siren
Word of Mouth

Figure 38. How would your jurisdiction warn residents of a dangerous wildfire in their area?

Respondents noted a wide variety of potential means for warning residents of a dangerous wildfire in the area. Most methods included door-to-door and personal contact to ensure all residents received the required information. Many noted the value of using the local news media, either public radio or television, to get the message out. Some respondents suggested the use of a community siren or fire truck sirens, followed by the use of public address or loudspeaker systems.

39. Evacuation Plans

In addition to warning residents, jurisdictions that have evacuation plans for specific high-risk neighbourhoods or locations have the ability to quickly move people to safety. The survey asked fire chiefs in high and moderate risk areas if they had such evacuation plans. Figure 39 shows the survey results.
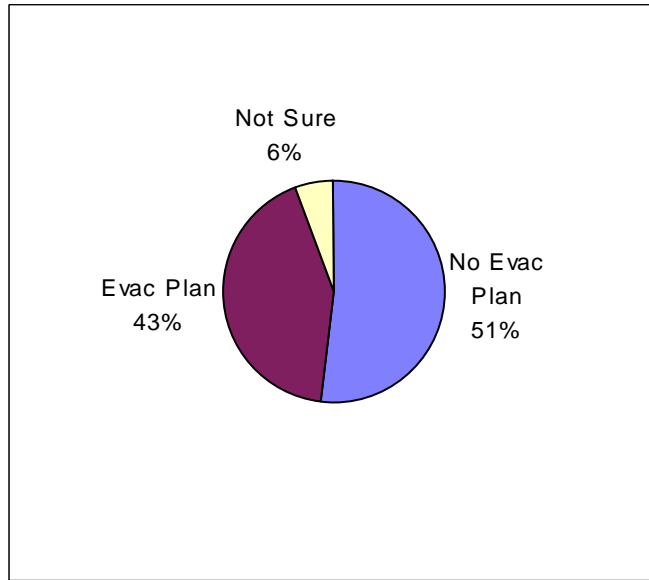

Figure 39. For high or moderate risk areas, does your jurisdiction have evacuation plans for interface fire events in any specific neighbourhoods, subdivisions, or locations?

More than half (51%) of the responding fire chiefs in high or moderate risk areas said their jurisdiction had no evacuation plans for interface fire events in any specific neighbourhood, subdivision or location. About 43 percent indicated they had such plans, and the remaining 6 percent were not sure.

The survey further asked if residents had been made aware of the evacuation procedures where plans had been prepared. According to the fire chiefs, residents had been made aware of evacuation procedures in only one-third (33%) of the jurisdictions.

40. Ordering Evacuations

Legal procedures for evacuation in BC can be confusing. There are a number of ways to order an evacuation in BC and these vary from hazard to hazard. In wildfire emergencies, the Office of the Fire Commissioner or the BC Forest Service may order evacuations. Although rarely needed, the local authority may also order an evacuation after declaring a state of local emergency. Where there is no local authority, the Provincial Emergency Program, acting for the Minister of the Attorney General, may order an evacuation after the Lieutenant Governor in Council declares a state of provincial emergency.

We were curious about the level of understanding of these procedures among fire chiefs in the province. Figure 40 shows the survey results on this question.
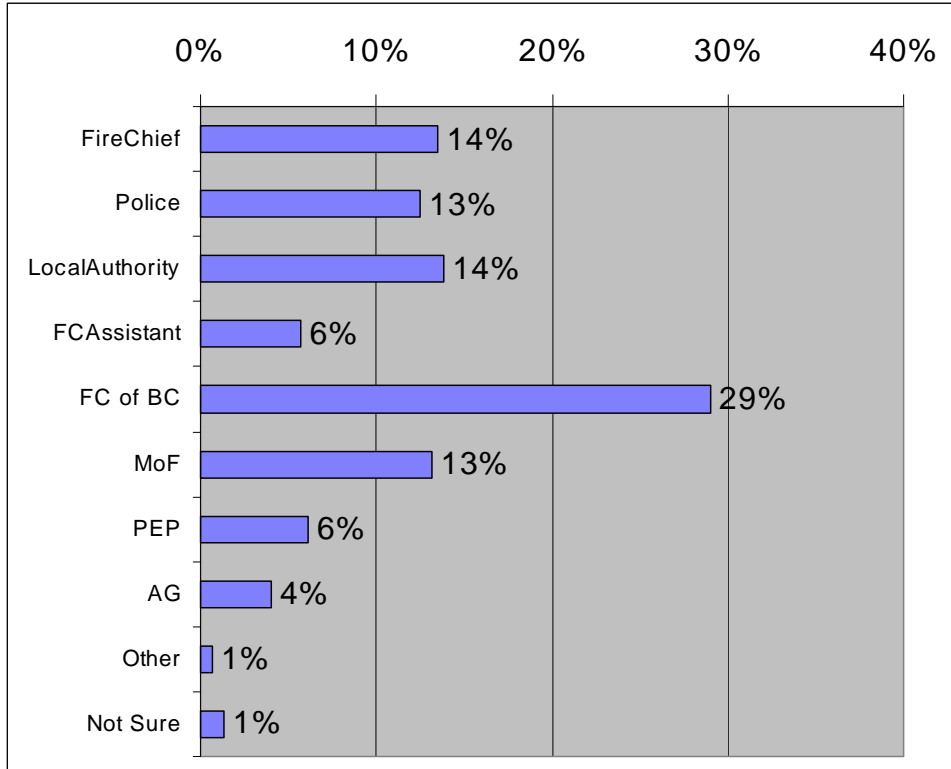
Figure 40. For high or moderate risk areas, to the best of your knowledge, who is responsible for ordering evacuations in the event of an interface fire?

The results indicate a measure of confusion among fire chiefs in high or moderate risk areas on who is responsible for ordering evacuations in interface fires. Many respondents correctly indicated the entities who can order evacuations as the Office of the Fire Commissioner (29%), Local

Authority (14%), the Ministry of Forests (13%), and the Provincial Emergency Program (6%, for areas outside local authority control). Respondents included others with no such authority, including fire chiefs (14%), police (13%) and the local assistants to the Fire Commissioner (6%). These results highlight the need for clarification before emergency events occur, which is especially important in areas of high or moderate interface fire risks.

41. Carrying Out Evacuations

The survey further asked if jurisdictions had identified who would carry out an evacuation order for interface fire situations. Some local authorities have specified that police, search and rescue volunteers, or other agencies would bear responsibility for carrying the evacuation order to the affected residents. Figure 41 shows the results of the survey for high or moderate risk areas.
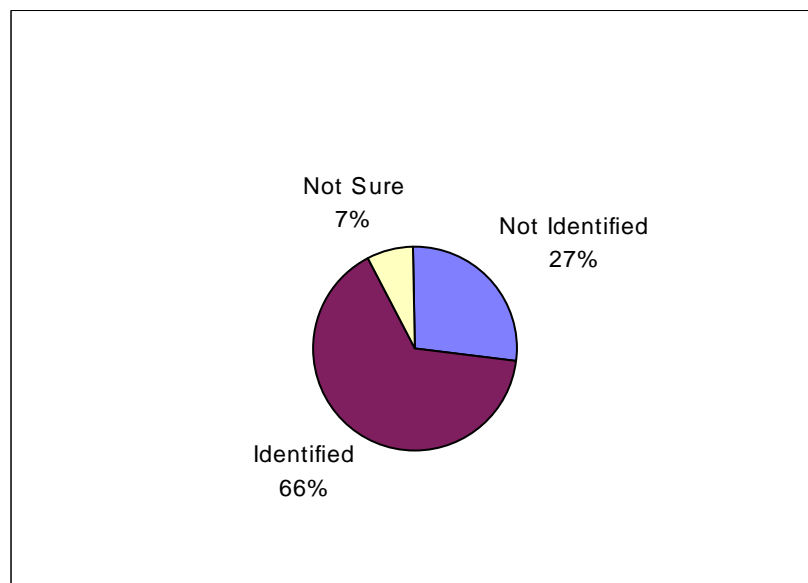
Figure 41. For high or moderate risk areas, has your jurisdiction identified who would carry out an evacuation order for interface fire situations?

About two-thirds (66%) of the fire chiefs in high or moderate risk areas indicated their jurisdiction had identified the persons or organizations who would carry out an evacuation order in the event of an interface fire. More than one-fourth (27%) had not designated such agents for implementing an evacuation order. The remaining 7 percent were not sure.

42. Native Communities

Although responsibility for emergency preparedness on Native reserves is a concern for Band Councils and the federal government, many local communities in BC have voluntarily included their Native neighbours in their emergency programs. Most often, such involvement addresses the mutual aid potential for sharing evacuation notices, routes, transportation, and reception centres. The survey asks fire chiefs if Native communities are located within or immediately adjacent to their jurisdiction.

Less than half (46%) of the responding fire chiefs noted a Native community exists within or adjacent to their fire district. The remaining 54 percent indicated no such presence.

The survey further explores the involvement of Native communities in emergency preparedness, especially in evacuation planning and the services offered through a reception centre. Figure 42 illustrates the results.
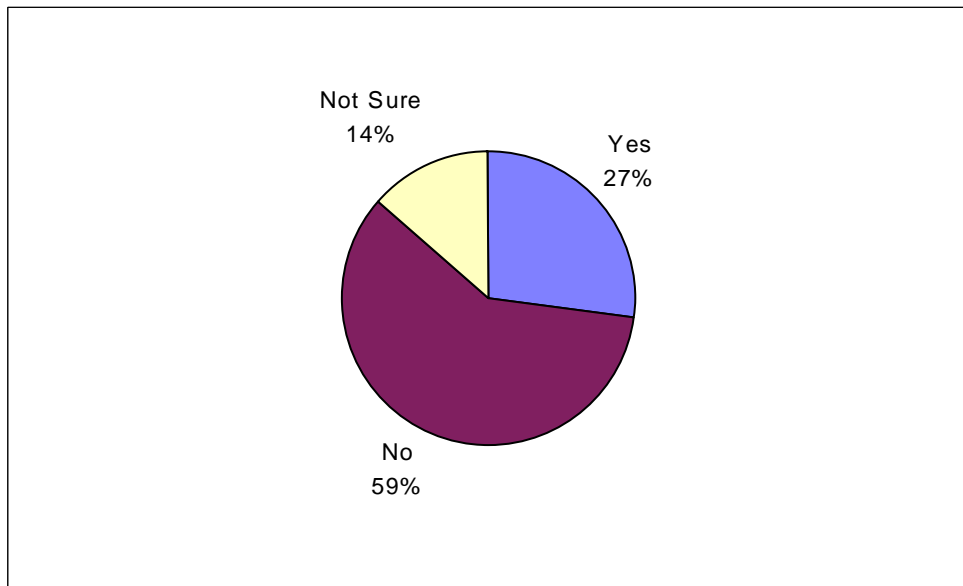
Figure 42. If a Native community exists within or adjacent to your jurisdiction, does your jurisdiction involve them in emergency planning, specifically in evacuation and reception centre services?

A large majority (59%) of fire chiefs indicated that their jurisdiction does not involve Native communities in emergency planning. Another 27 percent offered a positive response, and the remaining 14 percent were not sure.

Additional comments were offered by those responders that involve Native communities:

- *They are invited to attend emergency planning meetings; some of our emergency planners have attended their meetings.*
- *The First Nations group are included in monthly EOC meetings and are part of response area.*
- *If they show up, we will assist with them.*
- *Although a member of the Band Council sits on the Emergency Committee Executive Council, their participation level is very low.*
- *Any emergency situations, they are on the planning committee.*

43. Evacuation Preparedness

The survey asked a critical question to summarize the level of preparedness for evacuation among BC communities at high or moderate risk from interface fires. We wanted to know the opinions of fire chiefs on the level of preparedness within their jurisdiction to carry out an evacuation during an interface fire. Figure 43 contains the results for high or moderate risk areas responding to the survey.
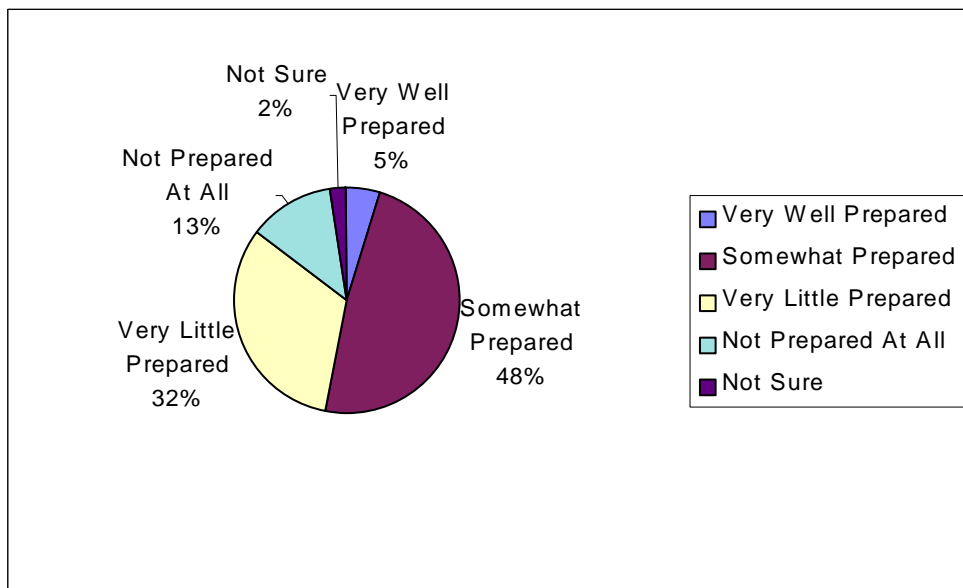

Figure 43. For high or moderate risk areas, in your opinion, how would you rate your jurisdiction's preparedness to carry out an evacuation during an interface fire?

Only about 5 percent of the responding fire chiefs said they thought their jurisdiction was very well prepared for evacuation during an interface fire. About half of the respondents (48%) indicated they were somewhat prepared. About one-third (32%) of the fire chiefs in high or moderate risk

areas noted their jurisdiction was very little prepared, and another 13 percent said they were not at all prepared for evacuation.

One regional district chief administrative officer offered the opinion that "emergency planning in this regional district is up to the Provincial Emergency Program."

Recovery

Recovery includes the physical restoration and reconstruction following a major fire. Actions may include the re-introduction of displaced persons, economic impact studies, counselling, financial assistance programs, temporary housing, and health and safety information.

44. Recovery Plan Elements

In addition to response planning, another way to reduce losses from an interface fire is to speed the recovery of the community and help individual residents return to normalcy. The survey form included a question for emergency program coordinators on recovery planning following interface fires. Figure 44 shows the results.
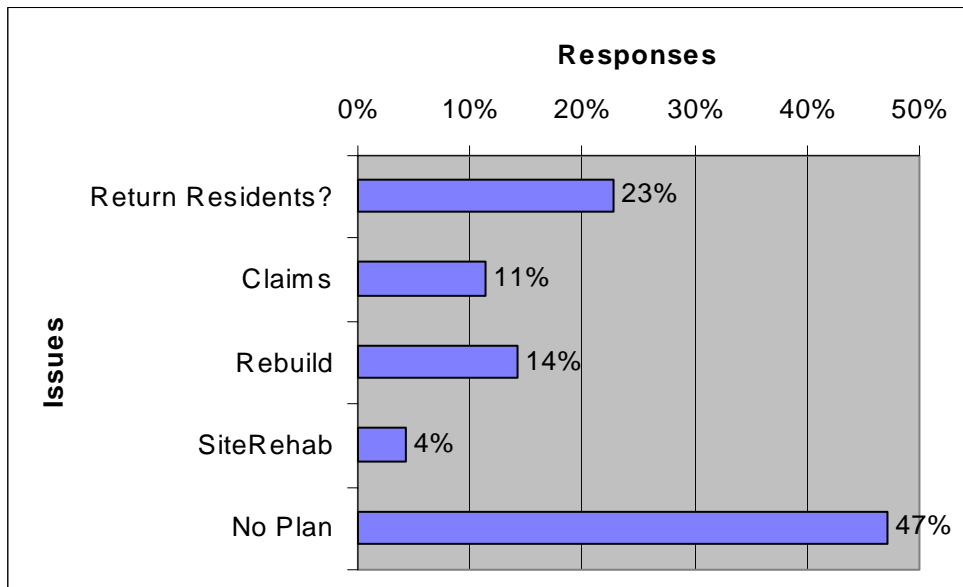
Figure 44. Does your jurisdiction's Recovery Plan address the following interface fire issues?

Nearly half (47%) of the emergency program coordinators responding to the survey indicated their jurisdiction had no recovery plan. The BC Emergency Program Act requires local authorities to consider recovery in their planning process. A further 83 percent responded to a related question by indicating their Emergency Response Plan does not anticipate an organizational structure for recovery from interface fire.

About 23 percent of the respondents indicated their response plans address the return of residents and animals to the community, and another 14 percent said their recovery plans address rebuilding the community. About 11 percent of the emergency program coordinators indicated the recovery plans addressed property claims, and only 4 percent dealt with site rehabilitation.

Information Flow

Governments must periodically evaluate and revitalize their programs for fire risk management by measuring the performance of selected actions and the achievement of desired results. Without reliable statistics on the frequency and cost of interface fires, there is little evidence to support sustained measures to reduce risks. This section of the survey presented two questions on how information on interface fires is collected and shared.

45. Fire Statistics

One of the difficulties in managing interface fire risks on a provincial scale is a lack of information on the number and consequences of interface fires in BC. Each fire department is required to track and forward information on structural fire incidents to the Office of the Fire Commissioner, but there is currently no requirement to report interface fires where no structural damage occurs. Similarly, the Ministry of Forests records the number of wildfires in the province, including interface fires, but no agency collects and summarizes all events of interface fire threat in the province.

To explore the availability of essential data, we asked fire chiefs if they keep statistics on the number of interface fires in their area. The results are shown in Figure 45.
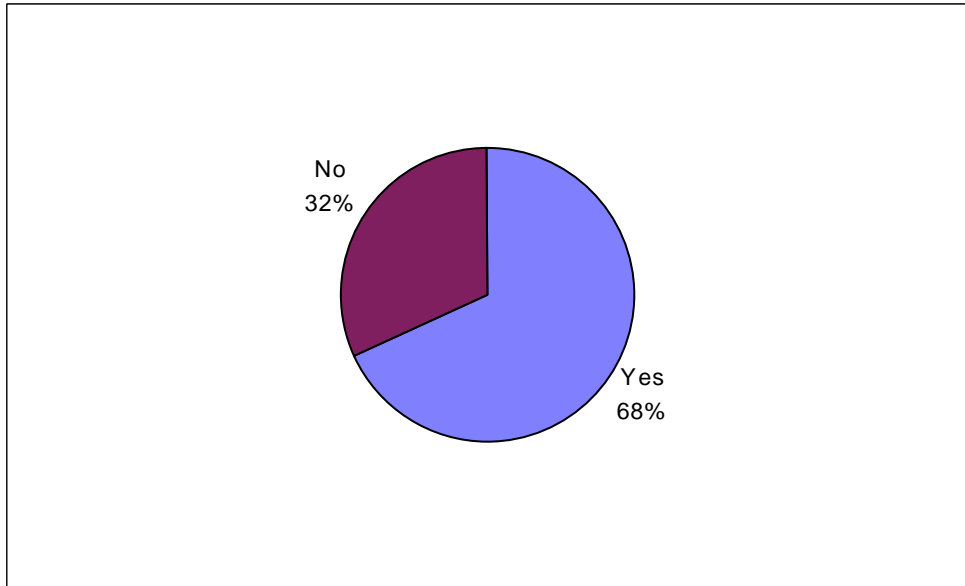
Figure 45. Do you keep statistics on the number of interface fires in your area?

More than two-thirds (68%) of all responding fire chiefs indicated that they keep at least some record of interface fires in their area. These results suggest that some departments use a definition of interface fire to distinguish them from other types of fire. The remaining 32 percent said they do not keep such statistics. This finding may be important to consider in estimating the success of a future system to collect and share information on interface fires.

46. Who Receives Statistics

In a related question, the survey asked fire chiefs who receives information on interface fires collected by the local fire department. Figure 46 shows the results.

A large portion of fire chiefs (39%) report that the statistics they collect on interface fires are not shared with any other agency. This suggests that important data that would help understand the provincial extent of the interface problem are available but not assembled or reviewed. Other fire chiefs said they send statistics to the Office of the Fire Commissioner (16%) and the Ministry of Forests (12%).
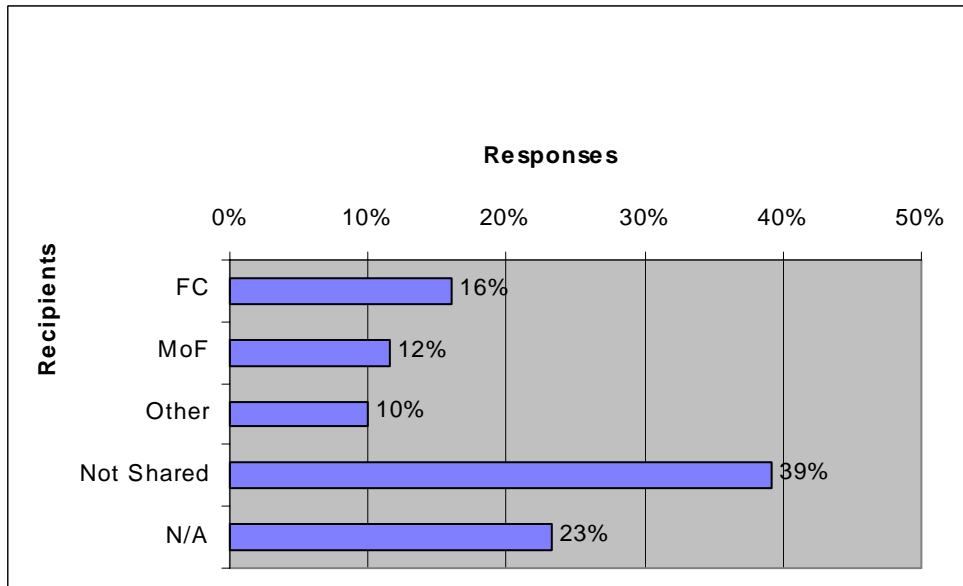
Figure 46. Who receives copies of the statistics you prepare on interface fires?

The survey respondents offered additional comments on this point, including the following:
- *Depends if structure involved. If not, then not shared with other agencies.*
- *(Shared) with Ministry of Forests if a dollar claim is made for fire on crown land.*
- *Regional district*
- *First Nations Emergency Social Services (FNESS)*

Interface Fire Experience

The survey offered an opportunity to explore actual experience with interface fires in BC. This series of six questions gathered the experience of fire chiefs and other community representatives with experience in interface fire response.

47. Interface Fire Experience

Experience in other types of disasters, such as flood, tells us that communities that face more frequent events have a greater appreciation for potential losses and commitment to mitigation and preparedness. To provide a context for all survey responses, we wanted to know how many jurisdictions among the survey respondents have experienced a significant interface fire within the past ten years.

In particular, we were curious about the correlation between the perception of high or moderate risk areas and the incidence of interface fire. Figure 47 shows the results.
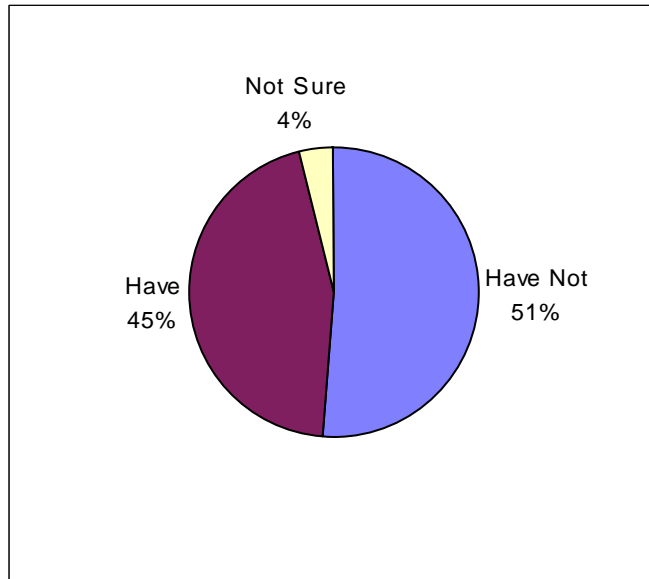

Figure 47. For high and moderate risk areas, has your jurisdiction experienced a significant interface fire within the past ten years?

A little less than half of the responding fire chiefs (45%) in high or moderate risk areas report having a significant interface fire in their jurisdiction within the last ten years. More than half (51%) report no such fires. About 5 percent of the respondents were not sure, perhaps because of the difficulty in applying the interface fire definition.

In addition to answering the question, respondents were also asked to submit a brief description of the fire and to address five additional questions, noted below.

48. Impact of Public Information

Fire chiefs who reported a significant interface fire in their jurisdiction within the last ten years were further asked their opinion on the public information activities carried out prior to the incident. We were curious whether such information efforts contributed to the reduction of the fire's impacts on the community. Figure 48 presents the results from this survey question.
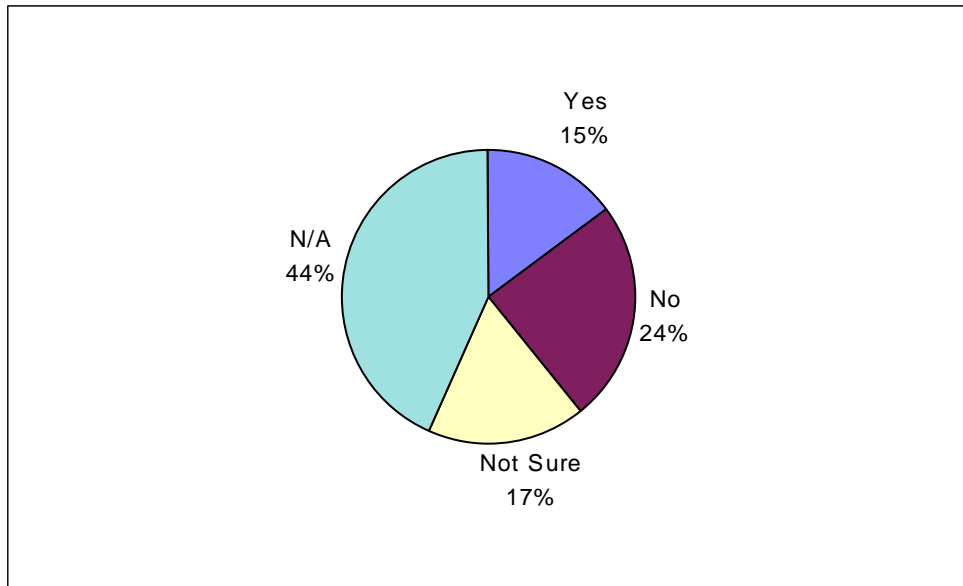
Figure 48. In your opinion, did public information activities carried out prior to the incident reduce the fire's impact on the community?

Only 15 percent of the respondents indicated that public information had a positive impact on reducing fire impact on the community. Nearly one-fourth (24%) said there was no reduction in impact associated with the public information effort. About 17 percent were not sure. The largest category belonged to those who thought the question did not apply to their situation, presumably because either they had not experienced an interface fire in the last ten years, or there was no public information effort.

A few additional comments from respondents highlight the need for public information:

- *Signage indicating danger level assisted people to realize they shouldn't be smelling any smoke because fires were not permitted.*
- *No public activities prior to this incident.*
- *More effort and funds need to be directed towards public education or fund the interagency interface groups to a better level.*
- *I am not aware of any public information activities that address ways to reduce interface fire damage.*

49. Effects of Mitigation

With limited information on the effectiveness of mitigation efforts, program designers are forced to guess at what works and what does not. We wanted to know the opinions of fire chiefs about the role of any mitigation efforts (such as prescribed burning) carried out prior to a specific interface fire and if they reduced the fire's impact on the community. Figure 49 displays the survey results.
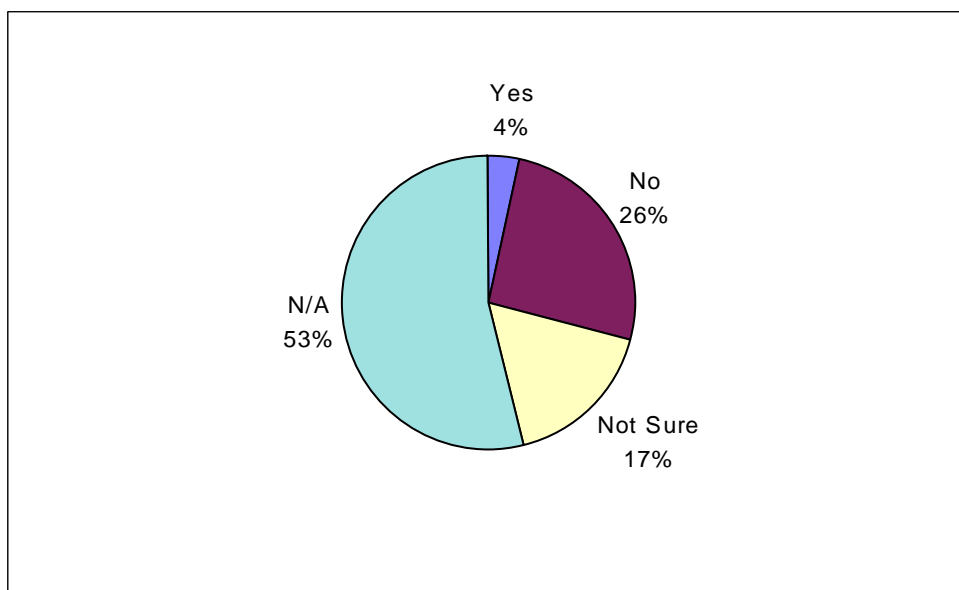
Figure 49. Did any risk mitigation activities carried out prior to the incident reduce the fire's impacts on the community?

The large majority of responding fire chiefs (53%) noted that the question did not apply to the event they had in mind, presumably because no mitigation efforts were taken within the fire area prior to the incident. About one-fourth (26%) of the respondents answered in the negative, noting no reduction in fire impact from mitigation. Another 17 percent were not sure. Only 4 percent could say with confidence that mitigation had reduced the fire's impacts on their community.

The question and the limited response highlight the need to collect well-defined measures on the performance of mitigation efforts and their results in future interface fires.

Respondents offered the following relevant observations:
- *Some property owners affected by the fire actually fuelled fire's advance due to old storage sheds and combustibles piled up over years.*
- *One of these fires would never have occurred if proper mitigation activities had been carried out by the owners of the property.*
- *Some of our biggest problems in the last few years were caused by burning debris from logging, which rekindled weeks later.*
- *Slash pile (e.g., no continuous expanse of ground fuels) may have slowed spread of fire*
- *I don't think there was much conscious mitigation activity.*
- *No risk mitigation activities were engaged in.*

- *A community was allowed to develop without any hydrant protection. This became a real issue during the fire.*
- *Fire confined to road right-of-way.*
- *Permanent water reservoir.*

50. Effectiveness of Cooperative Efforts

Confusion among responding agencies in interface fires has been commonly reported in other jurisdictions. We wondered if local fire departments, Ministry of Forests firefighters, and local emergency responders have worked effectively together in past events. Figure 50 shows the opinions of the fire chiefs on this question.
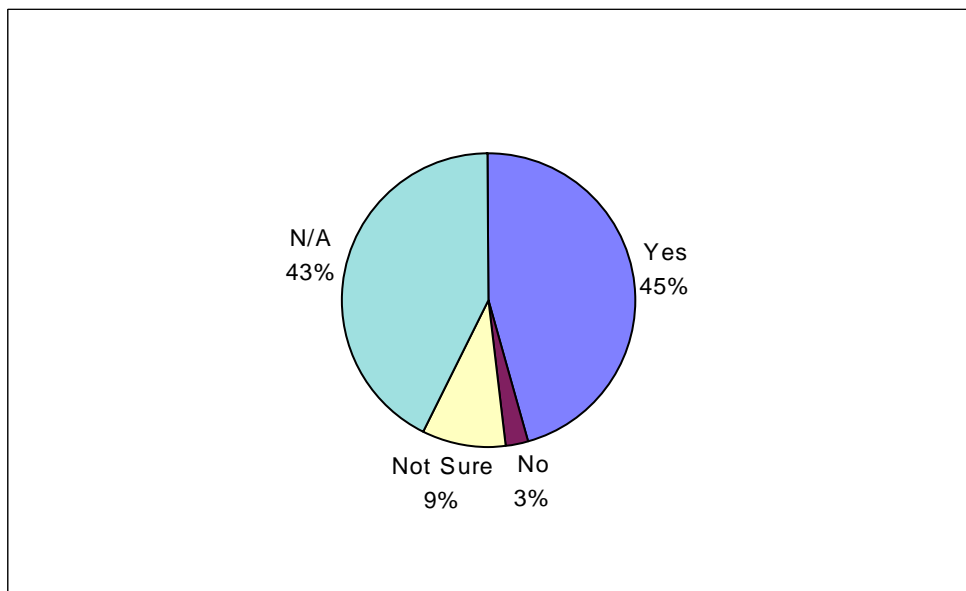
Figure 50. Did the local fire department, Ministry of Forests' firefighters, and the local emergency responders work together effectively to deal with the fire?

The largest response category (45%) among fire chiefs held that these groups worked together effectively to deal with a specific fire they had in mind. Only 3 percent said these groups did not work together effectively. An additional 9 percent were not sure of their answer. A final 43 percent of the fire chiefs said the question did not apply to them, perhaps because the local fire department did not work with the Ministry of Forests or the local emergency responders.

Additional comments from responders:
- *Emergency operations centre was set up in our fire hall with PEP, Forestry, RCMP, Fire Department, and other emergency people. It functioned extremely well.*
- *Local forestry and Fire Dept did not work in a unified way. In fact, our members found this lack of coordination dangerous!*
- *Fire Dept. worked very well with Ministry of Forests and (regional district) firefighters.*
- *Mutual aid from surrounding fire departments was prompt and effective. Confusion over radio frequency.*

51. Evacuation by Responsible Agencies

In addition to fire suppression, it is important that responding agencies work together on other critical functions in incident management, such as evacuation. We asked if the responsible agencies work together effectively if an evacuation was required. Figure 51 illustrates the response.
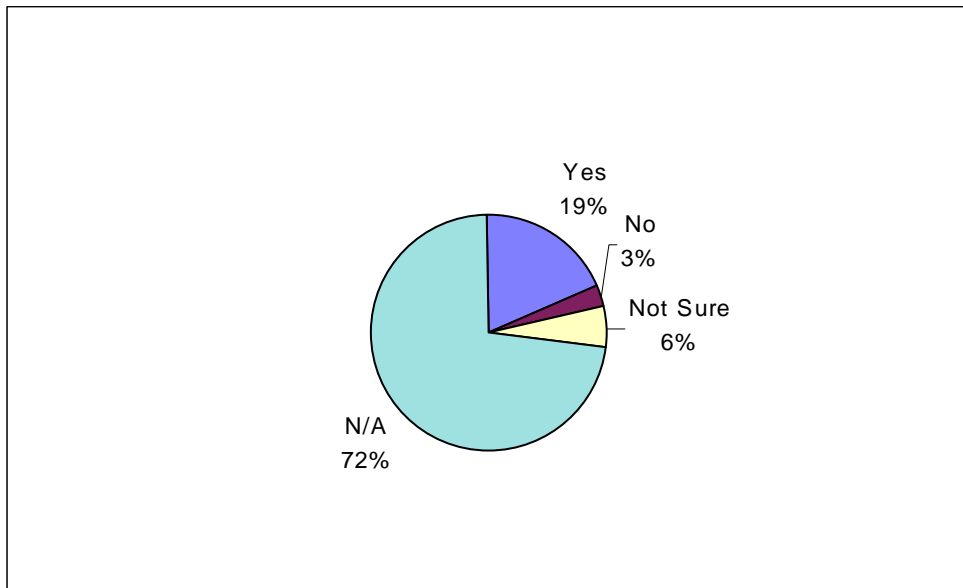
Figure 51. If evacuation was required, did the responsible agencies work together effectively?

Nearly three-fourths (72%) of the responding fire chiefs noted that the question did not apply to them. This finding suggests that evacuations were not required in the fire events they had in mind, or that evacuations did not involve more than one agency. Only 19 percent of the respondents indicated that the responsible agencies work together effectively. A few respondents (3%) noted that the agencies responsible for evacuation did not work together effectively.

Respondents also offered the following comments:

- *Nature of the fire made this difficult.*
- *Evacuation lead by local person familiar with community – worked very well.*
- *Emergency social services operated out of our community hall. RCMP and Fire Dept. members went door-to-door notifying residents. All agencies involved worked together very effectively.*

52. Community Recovery

Community recovery is another important aspect of interface fire risk management. Losses can be reduced significantly by anticipating and planning for key recovery tasks following a fire, such as returning residents to their homes, processing property loss claims, rehabilitating fire sites, and reconstructing buildings. We wondered if the community recovery process following real interface fires in BC worked effectively. Figure 52 illustrates the responses from fire chiefs with specific fire events in mind.
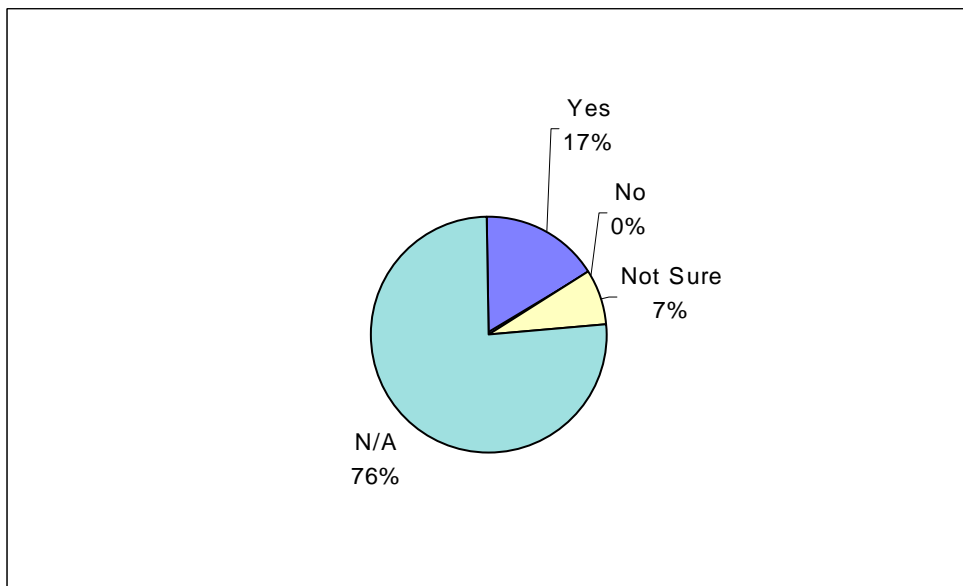
Figure 52. Did the community recovery process work effectively?

More than three-fourths of the responding fire chiefs noted that the question did not apply to the situation they had in mind. This suggests that recovery was not a factor in these interface fires. Other fire chiefs (17%) said that the community recovery process was effective. An additional 7 percent were not sure of their answers.

A few sample comments from respondents on the effectiveness of community recovery:

- *Especially site rehabilitation.*
- *Some residents (who had no insurance) were not happy with lack of government support.*
- *As far as I know, no site rehabilitation has taken place. All dead tress still standing.*

Overall Assessment

The final section of the survey questionnaire asks the participants to consider the overall level of preparedness for interface fire in their community. In two questions, the survey invited respondents to offer their opinions on overall preparedness, and to offer suggestions on what needs to be done to better prepare their jurisdictions.

53. Overall Preparedness

To provide an overview of preparedness from the perspective of the local government, we asked survey respondents to rate their own jurisdiction's overall preparedness for interface fires. Figure 53 shows the results from the fire chiefs who also ranked the level of interface fire risk as high or moderate in their jurisdictions.
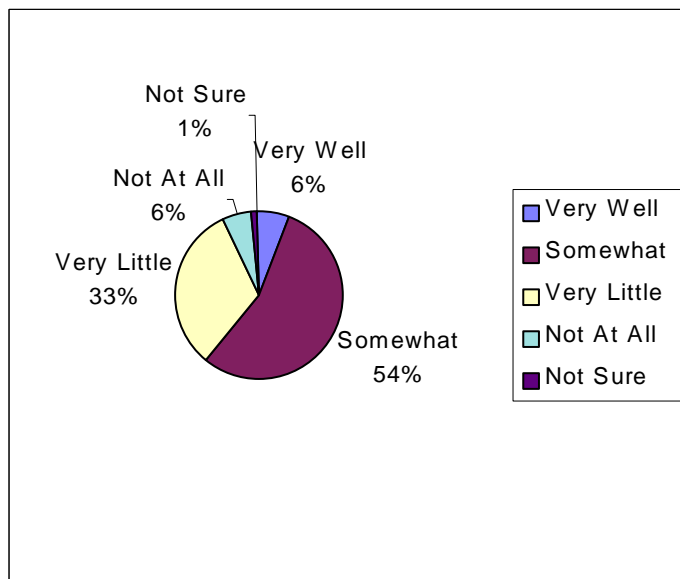
Figure 53. For high or moderate risk areas, in your opinion, how would you rate your jurisdiction's overall preparedness for interface fires?

Only about 6 percent of the fire chiefs in high or moderate risk locations noted they considered their jurisdiction to be very well prepared for interface fire. This contrasts with the perception of preparedness among chief administrative officers where about one-third (37%) indicated their jurisdiction was very well prepared.

About half (54%) of the fire chiefs thought their jurisdiction was somewhat prepared for interface fire, and another one-third (33%) considered themselves to be very little prepared. Few respondents (6%) offered their opinion that their jurisdiction was not prepared at all for interface fire.

54. Need for Better Preparedness

To provide a final opportunity to comment, the survey asked fire chiefs an open-ended question on what they think needs to be done to better prepare their jurisdiction for the risk of interface fire. Figure 54 displays some of the more prominent types of suggestions.

Insurance Incentives
Local Development Bylaws, with Enforcement
More Funding for Equipment, Training
Provincial Codes to Control Development
Provincial Plan for Interface Fire Management
Public Education
Regional District Involvement
Regional Inter-Agency Committees
Response Training and Exercises
Work with Planners, Developers
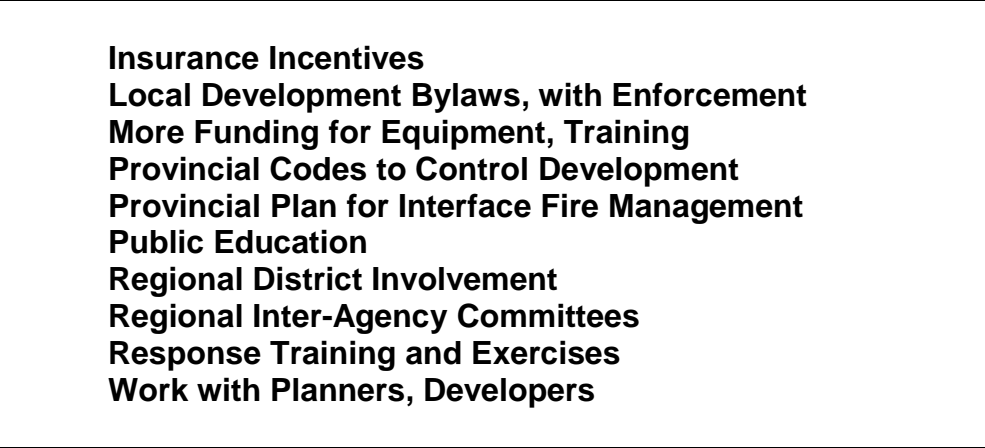
Figure 54. What, if anything, needs to be done to better prepare your jurisdiction against the risk of interface fire?

Collectively, the respondents offered more than 270 suggestions for improving preparedness in their jurisdiction. Some ideas relate to actions best handled at the local level, such as development bylaws and response training. Other recommendations must involve the province, such as an overall provincial plan for interface fire management, and provincial codes to control development. Most suggestions, however, call for a coordinated effort at all levels – local, regional, and provincial.

Additional suggestions from respondents on what needs to be done to better prepare local jurisdictions for interface fire include the following:

Awareness

- *From a regional district perspective, both firm direction and funding is required. The Ministry of Forests educational program could use more funding and support.*
- *We need to help the local government see the need for an urgency in preparing for an interface.*
- *The number one priority is to get local government officials on side. Staff require support before we can spend time and money on better preparation.*
- *Education of all parties involved: Development community, city councils, officials, owners of property.*
- *Public needs to be better educated on how to "Beware and Prepare." This should be the role of the BCFS.*
- *Work with developers and realtors and community planners.*

Risk Assessment

- *Better risk assessments, provincial codes for developers and builders.*
- *Provincial regulations to enforce necessary actions on the part of those listed. Mandate, don't ask!*

Risk Reduction / Mitigation

- *Assistance to homeowners rather than threat of punishment, for prescribed burning and other mitigation measures.*
- *Insurance industry and provincial government needs to provide "carrots" and a big stick for homeowners and the local government. Current standards need to be re-packaged in a format that can easily be turned into bylaws.*
- *Insurance incentives, house by house, would assist greatly.*
- *Stricter building regulations for high hazard areas.*
- *The (regional district) needs to implement new regulations that would mandate developers and property owners that build in high risk interface areas have to meet NFPA or MOF standards.*
- *Realistically, NFPA 299 would need to be adopted provincially or every small (community) like ours will resist implementing it.*
- *As the amount of development increases and land becomes scarce, the risk of fire grows. We need provincial regulations to enforce buffer zones, etc.*
- *Better, perhaps mandatory, intergovernmental planning initiatives. Financial incentives and rewards to encourage voluntary participation / compliance.*

Response Planning

- *We need more money, more training, and local bylaws with some backbone.*

- *Regional district involvement in fire prevention and public education.*
- *Regional District planning needs addressing in Victoria. 50 percent of the local population lives in the regional district and...have no plan.*
- *Funding required for regional interface committees.*
- *More capital dollars for off-road fire attack vehicles.*
- *This (survey) shows another weakness in current plan, which I am updating. We need to do a number of functional exercises. It is unfortunate that some of the key players do not participate in the planning stage and only want mock disasters.*

Evacuation
- *We need to get people aware of the evacuation procedures, if only where to go to get help and information during an event.*
- *We need to get ESS up and running.*
- *More detailed planning of evacuation routes and / or refuge areas.*
- *Training in evacuation, tabletop exercise drills, interagency involvement and training, public education.*

Recovery
- *We need to be more aware of these possible events and get on top of a Recovery Plan for the Emergency Plan.*

3.0　Conclusions

This final section of the Survey Report examines the results presented previously in relation to key survey objectives. Analyses of relevant variables, such as high or moderate risk areas and regional differences, are addressed where appropriate.

One objective of undertaking this assessment was to survey local responders and program planners for their views on current and emerging issues related to interface fires. The survey respondents had little trouble identifying a number of concerns with such topics as risk assessment, mitigation, and preparedness.

Several survey questions offered the opportunity for respondents to comment on the success of interface fire management at the local, regional, and provincial levels. Some issues are inherent in providing fire services in a large and diverse province. Other issues are newer, responding to more recent trends. Each is discussed below.

Awareness

Among the local government positions surveyed, there seems to be widespread comprehension of the term "interface fire" event, but few have agreed on a definition that has enough rigor to distinguish these incidents from purely structural or wildland fires. Therefore, the number of interface fires and extent of the threat in BC remains impossible to measure with confidence.

Awareness is spotty, with a great deal of disparity among communities in high or moderate risk areas. Some public awareness programs exist, but the transient nature of community residents demands continual re-education. The survey points to a critical lack of awareness messages delivered to key positions in the community with long-term influence on risks, specifically elected officials, developers, and real estate agents.

The effectiveness of interface fire awareness programs goes largely unmeasured, with no way to identify weaknesses or possible cost-effective improvements in engaging the public in their own protection. Very few jurisdictions use maps to indicate high, moderate, or low risk areas within or adjacent to their communities.

The Ministry of Forests is seen as a key player in delivering the awareness message and is doing enough to raise awareness, although some

respondents think there is room for improvement among all provincial agencies. Most respondents gave their own local governments the lowest score in terms of raising public awareness, and thought they should be doing more.

Risk Assessment

Survey questions on risk assessments sought information on the current level of risk in the province, and on the methods used by local communities to assess risks.

The large majority of fire chiefs (92%) responding to the survey indicated their jurisdiction contained at least some high hazard interface areas. Two types of risk areas are evident in the comments. Most residents exposed to fire risk reside in subdivision or fringe areas, accounting for less than 20 percent of the community population. The second type includes smaller communities surrounded by forests and other wild lands.

Some standard procedures and consistent criteria are in place for quantifying risks, but few communities are aware of the *Standard 299* available through the US National Fire Protection Association. More are aware of the *Beware and Prepare Community Planner*, available through the Ministry of Forests and the Office of the Fire Commissioner.

Only about one-third of the jurisdictions in high or moderate risk areas have prepared written assessments, including maps. There are no attempts to systematically assess regions of the province to determine their relative interface fire risks, although some Fire Centres of the Ministry of Forests have devoted significant effort to do so in their regions.

Risk Reduction / Mitigation

Mitigation of interface fire risks presents a widespread challenge in BC. Many respondents commented on the importance of risk reduction in managing interface fire risks. Yet, only about half of the communities with high or moderate risks have mitigation strategies in place.

Burning controls was the most frequently mentioned type of mitigation in the survey, but there was little evidence of other types of control, such as prescribed burning. Overall, about half of the communities in high or moderate areas commented on their failure to mitigate risks. There was little mention of coordinated or strategic fuel reduction among local

governments. Few bylaws or legal requirements seem to be in place for fire resistant construction materials.

Some communities are working on water supplies, roadway access, and signage, but the effort does not seem to be widespread, even in high or moderate risk areas.

Compliance with mitigation controls is a problem, even when bylaws are in place, due largely to the lack of resources for enforcement at the local level. There is no agency with responsibility for enforcing interface fire prevention in unincorporated areas, through such means as land use planning. Representatives of the Ministry of Transportation and Highways approve subdivision plans, but employ no criteria for interface fire management.

Overall, because interface fire risks around the province have not been assessed, cost effective opportunities to mitigate have not been identified.

Response Planning

Many of the respondents indicated a satisfactory level of response planning when considering interface fires. About three-fourths of the responding fire chiefs indicated their response structure is clearly defined and that it acknowledges the principles of Unified Command.

About half of the responding fire chiefs indicated their departments are permitted to go outside their boundaries, with mutual aid agreements with neighbours being common. A large majority (82%) of fire chiefs indicated the Ministry of Forests Operating Guidelines were adequate; others indicate the need for some improvement.

Responsibilities in interface fire response are fairly well defined, and about three-fourths of the communities have access to the training and equipment suitable to their response roles. Fire department plans address their roles in interface fires, but less than half of the fire departments have radio access to Ministry of Forests frequencies.

About one-third of the fire chiefs in high or moderate risk areas indicated they had never exercised their crews with an interface fire scenario. When they did occur, such exercises most often included members of the Ministry of Forests.

Evacuation

Beyond fire response planning, the ability of a neighbourhood or community to protect its citizens from interface fire can be represented by its preparedness to evacuate residents from harm.

About three-fourths of the responding fire chiefs indicated their jurisdiction was either very little prepared or not at all prepared for an evacuation from an interface fire. More than half of the fire chiefs in high or moderate risk areas said their jurisdiction had no evacuation plans for interface fire events in any specific neighbourhood, subdivision or location. Local residents are often not aware of evacuation plans, or of the roles they can play to protect themselves.

The survey results also indicate a certain measure of confusion among fire chiefs in high or moderate risk areas on who is responsible for ordering evacuations in interface fires. A majority of fire chiefs indicated that their jurisdiction does not involve Native communities in emergency planning, although many comments mentioned their willingness to include them.

Suggestions for advancing evacuation preparedness in the province include the following.

Recovery

In addition to response planning and evacuation, recovery constitutes an essential step in reducing the risks of interface fires. Few local authorities have considered recovery issues or prepared recovery plans. Most local governments have not considered redevelopment of community following interface fire, and have not anticipated an organization structure for recovery from interface fire.

Information Flow

One of the important questions and major findings of this survey relates to the available evidence on interface fire risks in this province. We currently do not understand the extent of interface fire risks in BC, and have no means of collecting the required information. As the province continues to develop outside major cities, the number of residents exposed to the threat of fire will no doubt increase. There is a wide-spread concern that the risk is growing, but it cannot be measured without concerted effort.

Although more than two-thirds of all responding fire chiefs indicated that they keep at least some records of interface fires in their area, the statistics they collect are not shared with any other agency. Important information on the extent of the interface problem may be available, but no agency has the mandate for assembling, reviewing, or interpreting such information.

Interface Fire Experience

The survey specifically sought the experience and recommendations of community representatives who have experienced a significant interface fire. A little less than half of the responding fire chiefs in high or moderate risk areas reported having a significant interface fire in their jurisdiction within the last ten years. In their experience, the local fire departments, the Ministry of Forests, and the other local and regional agencies worked well together to deal with the fire.

Many more respondents, however, noted that they had no direct familiarity with interface fires, and would benefit from the experience of others.

Overall Assessment

Survey respondents rated the level of overall preparedness for interface fire their own jurisdiction. About half of the responding fire chiefs indicated their jurisdiction was somewhat prepared for interface fire. Another one-third considered their communities to be very little prepared. Less than 10 percent of the jurisdictions in high or moderate risk areas are very well prepared for interface fire, according to survey respondents.

In terms of suggestions by survey participants on what needs to be done to better prepare their jurisdictions, respondents offered hundreds of useful recommendations.

Appendix A – Communities Represented in Survey Results

The following table lists the regional districts and municipalities represented in the survey results. Communities are listed alphabetically under their respective regional districts. Although most regional districts are listed, only 16 of the 28 regional districts responded to the survey.

The table also indicates the type of municipality for each community, and displays the 1999 population estimated by BC Stats. The results represent communities with a combined population of at least 2,418,729, about 60 percent of the total provincial population of 4,029,253. This does not include the unknown populations contained within unincorporated areas and represented by the 93 responding fire protection districts.

The column with the heading "Fire Risk" identifies those jurisdictions with interface fire risk ranked at either a high or moderate level by at least one respondent, most often the fire chief of the jurisdiction. Among the high or moderate risk communities, the survey responses account for a total of 1,368,603 residents, about 34 percent of the provincial population.

Regional District Municipality	Municipality Type	Population 1999	Fire Risk * High / Mod
Alberni-Clayoquot			
Port Alberni	C	19,334	*
Tofino	DM	1,479	
Ucluelet	DM	1,764	
Bulkley-Nechako			
Burns Lake	VL	1,888	*
Fort St. James	DM	2,111	*
Fraser Lake	VL	1,283	*
Granisle	VL	456	*
Houston	DM	4,232	*
Smithers	T	6,069	*
Vanderhoof	DM	4,777	*
Capital			
Central Saanich	DM	15,509	*
Colwood	C	14,676	*
Esquimalt	DM	16,423	
Highlands	DM	1,602	*
Langford	DM	19,567	*
Metchosin	DM	5,030	*
North Saanich	DM	10,918	*
Oak Bay	DM	17,900	
Saanich	DM	106,695	*
Sidney	T	11,202	

Regional District Municipality	Municipality Type	Population 1999	Fire Risk * High / Mod
Sooke	DM	9,280	*
Victoria	C	75,283	
View Royal	T	7,325	*
Cariboo			
Quesnel	C	10,589	*
Wells	DM	258	*
Williams Lake	C	11,917	*
100 Mile House	DM	2,046	*
Central Kootenay			
Castlegar	C	7,393	*
Creston	T	5,089	*
Kaslo	VL	1,106	*
Nakusp	VL	1,788	*
New Denver	VL	612	*
Salmo	VL	1,256	*
Silverton	VL	240	*
Central Okanagan			
Kelowna	C	97,385	*
Peachland	DM	4,833	*
Columbia-Shuswap			
Golden	T	4,193	*
Revelstoke	C	8,226	*
Salmon Arm	DM	16,285	*
Comox-Strathcona			
Campbell River	DM	31,295	
Comox	T	12,153	*
Courtenay	C	19,511	*
Cumberland	VL	2,726	*
Gold River	VL	1,800	*
Sayward	VL	432	*
Tahsis	VL	885	*
Cowichan Valley			
Duncan	C	4,781	*
Ladysmith	T	6,878	*
Lake Cowichan	T	3,064	*
North Cowichan	DM	27,346	*
East Kootenay			
Cranbrook	C	19,797	*
Elkford	DM	2,805	*
Fernie	C	5,203	*
Invermere	DM	2,947	*
Kimberley	C	6,916	*
Radium Hot Springs	VL	605	*
Sparwood	DM	4,163	*
Fraser Valley			
Abbotsford	C	114,216	
Chilliwack	C	65,263	
Hope	DM	6,826	*

Regional District Municipality	Municipality Type	Population 1999	Fire Risk * High / Mod
Kent	DM	5,316	*
Mission	DM	32,660	*
Fraser-Fort George			
Mackenzie	DM	6,250	*
McBride	VL	757	*
Prince George	C	80,845	*
Valemount	VL	1,362	*
Greater Vancouver			
Belcarra	VL	707	*
Bowen Island	DM	3,000 (est)	*
Burnaby	C	190,272	*
Coquitlam	C	111,534	*
Delta	DM	101,098	*
Langley	C	24,178	
Langley	DM	88,489	
Maple Ridge	DM	61,970	
New Westminster	C	54,177	
North Vancouver	C	44,640	*
North Vancouver	DM	85,509	*
Pitt Meadows	DM	14,756	*
Port Coquitlam	C	51,130	*
Port Moody	C	23,736	*
Richmond	C	164,009	
Surrey	C	336,034	*
Vancouver	C	558,232	
West Vancouver	DM	42,541	*
White Rock	C	17,573	
Kitimat-Stikine			
Hazelton	VL	367	
Kitimat	DM	11,672	*
New Hazelton	DM	836	
Stewart	DM	702	*
Terrace	C	13,836	
Kootenay-Boundary			
Fruitvale	VL	2,153	*
Greenwood	C	761	
Midway	VL	686	*
Montrose	VL	1,169	*
Trail	C	7,626	
Mount Waddington			
Port Alice	VL	1,293	
Nanaimo			
Nanaimo	C	76,173	*
Parksville	C	10,358	*
Qualicum Beach	T	7,390	*
North Okanagan			
Armstrong	C	4,216	*
Coldstream	DM	9,551	

Regional District Municipality	Municipality Type	Population 1999	Fire Risk * High / Mod
Spallumcheen	DM	5,688	*
Vernon	C	34,227	*
Northern Rockies			
Fort Nelson	T	4,777	*
Okanagan-Similkameen			
Keremeos	VL	1,190	*
Penticton	C	32,627	*
Princeton	T	2,981	*
Summerland	DM	10,856	*
Peace River			
Chetwynd	DM	3,059	*
Dawson Creek	C	11,812	
Fort St. John	C	16,448	
Hudson's Hope	DM	1,152	*
Pouce Coupe	VL	928	*
Taylor	DM	1,211	
Tumbler Ridge	DM	2,858	*
Powell River			
Powell River	DM	13,900	*
Skeena-Queen Charlotte			
Port Edward	DM	772	
Prince Rupert	C	16,985	
Squamish-Lillooet			
Lillooet	DM	2,971	*
Squamish	DM	15,359	*
Whistler	DM	9,430	*
Sunshine Coast			
Gibsons	T	3,885	*
Sechelt	DM	8,387	*
Thompson-Nicola			
Ashcroft	VL	1,974	*
Clinton	VL	737	*
Kamloops	C	81,958	*
Logan Lake	DM	2,516	*
Lytton	VL	320	*
Merritt	C	8,054	*

C   City
DM   District Municipality
VL   Village
T   Town

Appendix B – Survey Questionnaire

Responder Profile - FIRE CHIEF
Name of Your Fire Department:
Name of the Local or Regional Government in which your Fire Department is located:
Your Name:
Your Title:
Your Day-Time Telephone Number (*include area code*):
If you would like to receive a summary of the survey results, please provide your e-mail or mailing address below: _____ _____

Definitions

These key terms apply in this survey: **Risk**:   A measure of the probability and severity of an adverse effect to health, property, or the environment. **Hazard**:   A condition or set of circumstances with the potential for causing undesirable consequences. **Wildland/Urban** A wildland fire that threatens a habitable structure or improvement. **Interface Fire**:

Awareness	
1.	In your opinion, which of the following help define the term "interface fire" event (*choose all that meet your definition*): ❐ A large number of structures are threatened ❐ A community is being threatened ❐ A small number of structures are threatened ❐ A single structure is threatened ❐ Fire has potential to threaten a community or structures ❐ Forest resources are involved or threatened ❐ Human life is threatened ❐ Livestock/animals are threatened ❐ Infrastructure (bridge access to community, water systems, etc.) is threatened ❐ Other? (*please specify*) _____

2.	How would you rate the level of awareness of interface fire risks among the following groups in your jurisdiction? (*circle* **H** *for high*, **M** *for moderate*, **L** *for low*, **N/S** *for not sure and* **N/A** *for not applicable*):
	a. Members of the general public H M L N/S N/A b. Local elected officials H M L N/S N/A c. Fire department members H M L N/S N/A d. Police department members H M L N/S N/A e. Community planners H M L N/S N/A f. Emergency program coordinators H M L N/S N/A g. Local developers H M L N/S N/A h. Local realtors H M L N/S N/A
3.	Has your Municipal Council or Regional District Board taken part in an awareness presentation on interface fires in the last three years? □ Yes □ No □ Not Sure
4.	What do you understand is the current role of the Ministry of Forests in relation to interface fires? (select all that apply): You currently understand that the Ministry of Forests: □ Identifies high-hazard areas □ Communicates hazards to residents and others in the area □ Reduces and/or eliminates hazards □ Suppresses vegetation fires only □ Enters buildings to fight structural fires in areas that do not have fire departments □ Supports local fire departments with defensive actions during structural fires □ Provides wildland firefighting training to local firefighters □ Provides local firefighters access to wildland firefighting equipment □ Not Sure
5.	Is there an Interagency Committee currently operating in your area that deals with the threat of interface fires? □ Yes □ No □ Not Sure If yes, does your Fire Department participate in the Committee? □ Yes □ No

6.	Does your Fire Department distribute public information/education on interface fires?
	    ☐ Yes
	    ☐ No
	
	    If yes, what mechanisms does your Fire Department use to educate the public about interface fire risks? (*select all that apply*):
	    ☐ Radio programs
	    ☐ Aerial photos
	    ☐ Brochures
	    ☐ Public meetings
	    ☐ Hazard maps/models
	    ☐ School programs
	    ☐ Home visits
	    ☐ Wildfire Risk Meter
	    ☐ Fire danger road signs
	    ☐ Public simulations/demonstrations
	    ☐ Other (*please specify*) _____

7.	Are your public information/education activities coordinated with those of the following agencies? (*check all that apply*):
	    ☐ Police Department
	    ☐ Local Emergency Program
	    ☐ Ministry of Forests
	    ☐ Fire Commissioner's Office
	    ☐ Provincial Emergency Program
	    ☐ Other (*please specify*) _____
	    ☐ N/A

8.	What methods are used to measure the success of your public information/education program?
	    ☐ Reduced incidence of interface fires
	    ☐ Requests for additional information
	    ☐ Site inspections
	    ☐ Other (*please specify*) _____
	    ☐ Not being measured
	    ☐ N/A

9.	In your opinion, are the following government agencies doing enough to raise the level of awareness of interface fire risks and hazards among affected residents and businesses in your jurisdiction? (*circle* **Y** *for yes*, **N** *for no*, **N/S** *for not sure*):
	    a. Ministry of Forests Y N N/S
	    b. Provincial Emergency Program Y N N/S
	    c. Office of the Fire Commissioner Y N N/S
	    d. Your local government Y N N/S

	Comments: _____

Risk Assessment

10.	In your opinion, does your jurisdiction contain any high-hazard interface areas (e.g., homes/businesses located in areas with hazards such as forest fuel build-up, hot/dry/ windy conditions, past fire history, steep/hilly terrain)? ❑ Yes ❑ No ❑ Not Sure **If yes**, approximately what percentage of the dwellings in your jurisdiction are included in such areas? _____
11.	Overall, how do you rank the level of interface fire risk in your jurisdiction? ❑ High ❑ Moderate ❑ Low ❑ Not sure
12.	Are you aware of the content of the US National Fire Protection Association (NFPA) 299 Standard for "Protection of Life and Property from Wildfire?" ❑ Yes ❑ No
13.	Has your jurisdiction formally adopted all or part of the US NFPA 299? ❑ Yes ❑ No ❑ Not Sure
14.	Are you aware of the standards designed to address wildfire safety concerns contained in the *Beware and Prepare Community Planner* developed by the Ministry of Forests and the Office of the Fire Commissioner? ❑ Yes ❑ No **If yes**, does your jurisdiction use all or part of these standards? ❑ Yes ❑ No ❑ Not Sure

15.	Is there a written assessment of the risks of interface fire in your jurisdiction prepared within the last five years? ☐ Yes ☐ No ☐ Not Sure **If yes**, does the assessment identify specific areas of your jurisdiction at high risk to interface fires? ☐ Yes ☐ No ☐ Not Sure
16.	Were recognized standards used to prepare the written assessment of the risks of interface fire in your jurisdiction? ☐ Yes ☐ No ☐ Not Sure ☐ N/A **If yes**, indicate the sources of the standards: ☐ US NFPA 299 ☐ Ministry of Forests ☐ Beware and Prepare Community Planner ☐ Other (*please specify*)_____

Risk Reduction / Mitigation

17.	Has your jurisdiction developed an ongoing strategy to mitigate interface fire risks in high-hazard areas? ☐ Yes ☐ No ☐ Not Sure
18.	Has your jurisdiction taken any steps to reduce interface fire risks in high-hazard areas? ☐ Yes ☐ No ☐ Not Sure **If yes**, through what actions? (*select all that apply*) ☐ Educational activities (e.g., door-to-door hazard assessments) ☐ Mitigation activities (e.g., fuel reduction) ☐ Legal mechanisms aimed at existing properties (e.g., restricting fuel build-up) ☐ Legal mechanisms aimed at new developments (e.g., development permits controlling building materials, roadways, water supply, etc.) ☐ Input on development plans from Fire Department and/or Ministry of Forests

	- Controls over hazardous activities (e.g., burning bylaws, recreational activities) - Other (*please specify*): _____
19.	In your opinion, are these actions adequate? - Yes - No - Not Sure
20.	Does your jurisdiction use controls over any of the following items to reduce interface fire risks and hazards? (*select all that apply*): - Use of fire (e.g., burning bylaws) - Roofing materials - Building exterior - Road slope and width - Turn-arounds - Street signage - Water supplies - Defensible space around structures - Type of landscape vegetation - Other (*please specify*): _____
21.	In your experience, do developers operating in your jurisdiction comply with the above controls? - Always - Sometimes - Never - Not Sure - N/A (*please explain*): _____ **If sometimes or never**, what are the reasons for non-compliance? (please select all that apply): - Lack of enforcement resources - Weak legal avenues - Laws lack political support - Other (*please specify*): _____
22.	In your jurisdiction, do owners of developed property comply with the above controls? - Always - Sometimes - Never - Not Sure - N/A **If sometimes or never**, what are the reasons for non-compliance? (please select all that apply):

	❒ Lack of enforcement resources ❒ Weak legal avenues ❒ Laws lack political support ❒ Other (*please specify*): _____
23.	In your opinion, how would you rate the overall level of action being taken within your jurisdiction to limit the impact of interface fires? ❒ Very High ❒ Moderate ❒ Very Little ❒ None ❒ Not Sure
24.	In your opinion, who should pay for programs to reduce the risk of interface fires in your jurisdiction (e.g., fuel load reduction)? (*select all that apply*): ❒ Residents, farmers, ranchers and other business owners at risk ❒ Municipality ❒ Regional District ❒ Provincial Government ❒ Insurance companies through premium reduction incentives ❒ Other (*please specify*): _____
Response Planning	
25.	Is the command structure clearly defined in situations where both your Fire Department and the Ministry of Forests are providing joint response to an interface fire? ❒ Yes ❒ No ❒ Not Sure ❒ N/A **If yes**, is the command structure the Unified Command as described in the BC Emergency Response Management System (BCERMS)? ❒ Yes ❒ No ❒ Not Sure **If no or not sure**, are efforts being made to adopt the Unified Command structure? ❒ Yes ❒ No ❒ Not Sure

26.	Is your Fire Department permitted to respond to wildland fires outside your boundaries? ❑ Yes ❑ No ❑ Not Sure
27.	In your opinion, do the current BC Forest Service Operating Guidelines, "Wildfire Suppression with Local Governments," adequately assign responsibilities for wildfire suppression between the BC Forest Service and your local government? ❑ Adequate ❑ Inadequate (*please explain*) _____ _____
28.	In your opinion, do the Operating Guidelines facilitate or inhibit response to interface fires outside your jurisdiction? ❑ Facilitate response ❑ Inhibit response ❑ Not Sure **If you selected "inhibit response,"** please describe your concerns: _____ _____
29.	Do you have mutual aid agreements with any neighbouring fire departments? ❑ Yes ❑ No
30.	Are your radio communications able to access the following (*circle* **Y** *for Yes,* **N** *for* No, **N/S** *for Not Sure*): Ministry of Forests' frequencies? Y N N/S Neighbouring Fire Department frequencies? Y N N/S Fire Commissioner's frequency? Y N N/S
31.	When was the last time these radio communication links were tested? ❑ Within the last year ❑ Between one and three years ago ❑ Greater than five years ago ❑ Never

32.	Are firefighters in your Department adequately equipped to fulfill your role in interface fire situations? ❐ Yes ❐ No ❐ Not Sure
33.	Are firefighters in your Department adequately trained to fulfill your role in interface fire situations? ❐ Yes ❐ No ❐ Not Sure
34.	When was the last time your Fire Department participated in an exercise involving an interface fire scenario? ❐ Within the last year ❐ Between one and three years ago ❐ Greater than five years ago ❐ Never
35.	Please indicate which organizations normally take part with your jurisdiction in interface fire exercises? (*select all that apply*): ❐ Ministry of Forests ❐ Provincial Emergency Program ❐ Regional Fire Commissioner ❐ Ministry of Transportation and Highways ❐ RCMP ❐ Emergency Social Services ❐ BC Ambulance Service ❐ Local Media ❐ Other *(please list):* _____ ❐ We don't have exercises In your opinion, who should organize and lead these exercises? _____

Evacuation

36.	How would your jurisdiction warn residents of a dangerous wildfire in their area? (ple*ase briefly describe*): _____ _____ _____
37.	Does your jurisdiction have evacuation plans for interface fire events in any specific

	neighbourhoods, subdivisions, or locations? ❑ Yes ❑ No ❑ Not Sure **If yes,** have residents in these areas been made aware of the evacuation procedures? ❑ Yes ❑ No ❑ Not Sure
38.	To the best of your knowledge, who is responsible for ordering evacuations in the event of an interface fire? ❑ Fire Chief ❑ RCMP or Local Police ❑ Local Authority (Mayor, Chair of Regional Board) ❑ Local Assistant to the Fire Commissioner ❑ Fire Commissioner of BC ❑ Ministry of Forests ❑ Provincial Emergency Program ❑ Attorney General of BC ❑ Other (*please specify*): _____ ❑ Not Sure
39.	Has your jurisdiction identified who would carry out an evacuation order for interface fire situations (e.g., police, search and rescue, or other volunteers)? ❑ Yes ❑ No ❑ Not Sure
40.	Are there Native communities within or immediately adjacent to your jurisdiction? ❑ Yes ❑ No ❑ Not Sure **If yes**, does your jurisdiction involve Native communities in emergency planning, specifically in evacuation and reception centre services? ❑ Yes ❑ No ❑ Not Sure If yes, please briefly describe how: _____ _____ _____

41.	In your opinion, how would you rate your jurisdiction's preparedness to carry out an evacuation during an interface fire? ❐ Very Well Prepared ❐ Somewhat Prepared ❐ Very Little Prepared ❐ Not Prepared At All ❐ Not Sure

Information Flow

42.	Do you keep statistics on the number of interface fires in your area? ❐ Yes ❐ No
43.	Who receives copies of the statistics you prepare on interface fires? ❐ Office of the Fire Commissioner ❐ Ministry of Forests ❐ Other (*please specify*): _____ ❐ Not shared with other agencies ❐ N/A

Interface Fire Experience in Your Community

44.	Has your jurisdiction experienced a significant interface fire within the past ten years?
	❐ Yes
	❐ No
	❐ Not Sure
	
	If yes, please attach a brief description of the fire and answer the following questions:
	  a) In your opinion, did public information activities carried out prior to the incident reduce the fire's impacts on the community?
	      ❐ Yes
	      ❐ No
	      ❐ Not Sure
	      ❐ N/A
	      ❐ Comments
	      _____
	
	  b) Did any risk mitigation activities (e.g., prescribed burning, etc.) carried out prior to the incident reduce the fire's impacts on the community?
	      ❐ Yes
	      ❐ No
	      ❐ Not Sure
	      ❐ N/A
	      ❐ Comments
	      _____
	
	  c) Did the local fire department, Ministry of Forests' firefighters and the local

emergency responders work together effectively to deal with the fire?

- ❑ Yes
- ❑ No
- ❑ Not Sure
- ❑ N/A
- ❑ Comments

_____

_____

d) If evacuation was required, did the responsible agencies work together effectively?

- ❑ Yes
- ❑ No
- ❑ Not Sure
- ❑ N/A
- ❑ Comments

_____

_____

e) Did the community recovery process (returning residents to their homes, processing property claims, rebuilding, site rehabilitation) work effectively?

- ❑ Yes
- ❑ No
- ❑ Not Sure
- ❑ N/A
- ❑ Comments

_____

_____

	Overall Assessment

45.	In your opinion, how would you rate your jurisdiction's overall preparedness for interface fire?
	    ❐ Very Well Prepared
	    ❐ Somewhat Prepared
	    ❐ Very Little Prepared
	    ❐ Not Prepared At All
	    ❐ Not Sure

46.	What, if anything, needs to be done to better prepare your jurisdiction against the risk of interface fire? (*include additional pages if needed*):
	
	    _____
	
	    _____
	
	    _____

Thank you for taking the time to comment on this survey.