Fire Load and Resource Capacity Survey

Preliminary Trends Noted by Agencies during Data Gathering Stage

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Methodology:

The consultant met with Ontario staff on January 30, 2012 for a first run through of the data collection spread sheet. A three question interview process was established for subsequent conference calls with all agencies to discuss the data gathering process, solicit any recent reports about fire load and resource capacity that agencies may have developed and to gather any initial trend information of which agencies are aware for the recent past and potential impacts for the future.

All agencies were interviewed initially between January 30 and February 14, 2012.

This document summarizes the responses gathered in the third part of the initial interview that asked agencies to identify any trends they have seen in the past 10 years to their fire load and resource capacity that could be investigated with the data being collected in this survey.

Agencies were also asked to identify any future impacts to fire load and resource capacity.

Agency trends were sorted into key trend categories and an assessment was made about whether an appropriate data element and data were collected related to the agency trend. If not suggestions were made about what additional data elements would be required.

Recommendations are made for further analysis required for trends with the data elements collected for this survey or with new data elements in a document titled Fire Load and Resource Capacity Survey Overview for the Wildland Fire Management Working Group.

Agency Trends

All agency trends are documented in Appendix 1.

Key Trends

Key trend categories have been identified from the agency interviews and agency trends have been sorted under each key trend category for Fire Load and Resource Capacity.

The key trend categories are:

Key Trends – Fire Load
Seasonal Length
Seasonal Variation
Fire Intensity
Fire Response Policy Changes
Urban Interface
Evacuations

Key Trends – Resource Capacity
Resource Sharing
Personnel Availability
Demographics
Air Tanker Fleet
Funding
All Risk Impact on Resource Availability

Key Trend Analysis

An assessment of which or whether a Data Element (DE) is currently collected is noted for each of the trend points or as a final point in the trend category in bolded ***italics***. NCC is used for Not Currently Collected. Other sources for data or new data elements are suggested for trends if appropriate. Recommendations for further analysis for key trends are also made.

For some preliminary trends that require simple data analysis an initial trend is indicated as well. These preliminary trends were provided during initial agency interviews before the data was provided.

Key Trends – Fire Load

Season Length

- Fires seasons seem earlier and longer – fire fighter availability at shoulder season is adversely impacted by students going or coming from school. (MB)
- Extensions of fire season being experienced. (PE)
- Fire seasons are longer but not more intense fires. (NL)
- Fire season has been going into October. (NL)
- Fire load is starting earlier and is lasting later in the year. (PC)
- ***DE: All of the Season Length trends noted above should be analyzed using the Date of the first and last fire of the calendar year (at least 10 years of data available for 11 of 13 agencies).***

Seasonal Variation

- The trend is that numbers of fires are going up but can see that cycling is evident. Not sure if there is an upward trend. (AB) ***DE: annual number of fires.***
- Not sure climate change is increasing fire load yet. After last year's light winter (10/11) didn't get the busy season expected. Perhaps it is moderating fire load rather than increasing it. (SK) ***DE: annual number of fires.***
- Only 3 of the last 10 years had a sustained busy fire season. (SK) ***DE: annual number of fires (30 years of data for all agencies).***
- Probably not getting more fires and perhaps fighting fewer. (MB) ***DE: annual number of fires (30 years of data for all agencies).***
- Weather is more severe: rain, lightning, drought. (MB) ***DE: NCC.***
- Forecasting of weather patterns is not as good. (MB) ***DE: NCC.***

- Still have peat fires going overwinter. (MB) ***DE: NCC.***
- Climate Change (ON) ***DE: NCC.***
    - more variability and extremes of fire season severity: more wet years, more extremes of late seasons and more weather patterns that are unusual
    - more storm-damaged fuels
    - consensus climate change forecasts are for higher temperatures, more weather variability, more weather extremes, and longer fire seasons
- QC has experienced over the past 10 years somewhat higher lightning caused fires and fewer human for same total fires. (QC) ***DE: Number of lightning and human caused fires (at least 10 years of data for 11 of13 agencies – 27 years for QC).***
- QC has had more multiple fire days (from lightning). (QC) ***DE: Days/season w/multiple new starts but not by cause. (At least 10 years of data for 10/13 agencies).***
- Fire load has been dropping annually for the last 5 years. The Prevention program for "can you burn today" line has been credited with reducing resident fire starts. Note: March 7th: Found going thru the data collection for this study NB has reversed their impression for this initial trend in that the number of fires actually increased. "Should be doing this kind of analysis more often". (NB) ***DE: annual number of fires (30 years of data for all agencies).***
- 1999 was last big season with abnormal lightning fire occurrence. (NB) ***This is confirmed in NB's data.***
- Climate – north doesn't get as cold as in the past. (NS) ***DE: NCC.***
- Fire numbers are dropping with two of the lowest seasons ever in the last two years. The majority of fires historically occur in Labrador and on the East Coast but the weather has been wetter in recent years in those areas. (NL) ***DE: annual number of fires (30 years of data for all agencies).***
- Air attack dispatch on initial attack is used more now (past 5 years or so) then in the past which is keeping fire sizes down. (NL) ***DE: Annual Hectares Consumed but no data collected to tie to air attack.***
- One prediction of climate change was an extension of the fire season in the far north – will be interested in seeing if this is so – Have been seeing more wet seasons from mid-July on. (NT) ***DE: This should be analyzed using the Date of the first and last fire of the calendar year (at least 10 years of data available for 11 of 13 agencies).***
- Seasonal variation maybe interesting – YT thinks lightning fires are starting earlier in the season (YT). ***DE: the Season Variation trends could be analyzed using the Date of the first and last fire of the calendar year but no data is currently collected by fire cause/date (at least 10 years of data available for 11 of 13 agencies).***
- More slow years lately. Last big fire year 2004 and late 1990s before then. Haven't been getting the lightning starts but are getting lightning earlier. One brief period last year before green-up got multiple fires. (YT) ***DE: Season variation trends noted could be analyzed using the Date of the first and last fire of the calendar year but no data is currently collected by fire cause/date (at least 10 years of data available for 11 of 13 agencies).***

- Seeing more lightning near the ice fields near Kluane (which hasn't been the case in the past) with 10 year old pine beetle kill nearby but haven't been getting starts. Timber is also starting to come down in windstorms that could cause problems when fires get into it. (YT) ***DE: NCC for lightning without fires or fires in damaged fuels.***
- Fire management activity has increased significantly over the past 20 years both in number of fires and area burned. Current research predicts a further increase in wildfire frequency and severity with climate change.(PC) ***DE: annual number of fires and area consumed (30 years of data for all agencies). Climate change predictions not collected for this survey.***
- **Most agencies identified Seasonal Variation trends that included changes to fire/area burned numbers but not a clear trend with some agencies increasing while others are declining. The data collected for this survey when added to previous analysis reported by Stocks (2010) continues to support "the highly episodic nature of area burned in Canada, with significant fire years interspersed with relatively quiet years…"**
- ***DE: Seasonal Severity is also available to characterize seasonal variation (at least 10 years of data available for 9 of13 agencies).***
- ***DE: Percent Number of days in High to Extreme FWI provided for all agencies (except PC) for 30 years is available to characterize seasonal variation. Initial analysis shows west has more days than east over past 30 years. In last 10 years there is a slight increase in the west and a decline in the east.***

Fire Intensity

- Fires are bigger on arrival. This may be related to fuel loading and comes from individual observations. (BC) ***DE: have Fires >200ha but this is for final size. Would need to collect fire size on detection or initial attack. Fuel loading data was not collected as part of this survey.***
- Fires are ending up larger – may be related to fuel loading again. (BC) ***DE: have Fires >200ha (at least 10 years of data available for 11 of 13 agencies) Would need to collect fire size on detection or initial attack. Fuel loading data was not collected as part of this survey. This is being investigated as part of the WFMWG's fuels management study.***
- Pine beetle has become more manageable except in Grand Prairie. The problem is not spreading as fast. (AB) ***DE: NCC***
- Fires are still getting big even though resources are stable or increasing. This may be severe weather related or perhaps experience related. (MB) ***DE: Fires >200 ha should be compared to resource inventory numbers to confirm trend (at least 10 years of data available for 11 of 13 agencies).***
- More storm-damaged fuels. (ON) ***DE: NCC This is being investigated as part of the WFMWG's fuels management study.***
- Fire load: NS is having insect problems and is anticipating budworm and sawfly damage. NS has had some spruce beetle kill. No increase in fires so far. (NS) ***DE: NCC damaged fuels. Have annual Fire numbers.***
- Fire seasons are longer but not more intense fires. (NL) ***DE: All of the Season Length trends should be analyzed using the Date of the first and last fire of the calendar year (at least 10***

years of data available for 11 of 13 agencies). No specific data on fire intensity. Seasonal severity may provide support for trend.

- Seeing more lightning near the ice fields near Kluane (which hasn't been the case in the past) with 10 year old pine beetle kill nearby but haven't been getting starts. Timber is also starting to come down in windstorms that could cause problems when fires get into it. (YT) ***DE: NCC would need to analyze lightning occurrence versus lightning fire arrivals compared to damaged fuels.***
- Fires are taking longer to extinguish. There may be some relation to the increasing use of modified response to fires. (PC) ***DE: NCC would need to collect reported and out dates to analyze and compare to response priority used.***
- ***Overall fire intensity trends may be indicated but not clearly discernable in the Fire Season Severity data (at least 10 years of data available for 9 of13 agencies).***

Fire Response Policy Changes

- Don't have observation or modified zones except something in far north – now starting to move the reduced response line farther south over past two years. (AB) ***May be a future impact trend in fire load and resource capacity.***
- Caribou habitat may be a higher impact for spending more money to keep fires small in a fairly large area in the province. (part of Species at Risk initiatives - the target area is from the northern boundary along SK side down to about Ft McMurray). This is an area where they are also looking at a more modified suppression response option. (AB) ***May be a future impact trend in fire load and resource capacity (area burned, expenditures) .***
- Forest companies are not identifying new cut areas to protect anymore with slump in forest economy. (MB) ***DE: NCC***
- Still have protection zones though companies aren't identifying new cut areas.(MB) ***DE: NCC***
- Expanded Need for Protection (ON) ***DE: NCC May show in future trends.***
    - more interface development resulting in more risk
    - protection of far north "Ring of Fire" mining developments, including transportation and communication infrastructure corridors
    - possible expanded protection for far north communities,
- Reduced Effort for Protection (ON) ***DE: NCC May show in future trends.***
    - investigating trading off the savings and risks of having more fire on the landscape in what are now effectively fire-exclusion zones.
- Have to analyze how effective the natural fire policy has been since 1995. Has this settled down the spikes in area burned? (NT) ***DE: Annual area consumed available for NT for past 30 years in data provided by CIFFC.***
- Barren ground caribou habitat pressure which started about three years ago has resulted in suggested fire size limits in corridor areas – caribou won't cross greater than 10,000 ha often. Also related to burn severity and studies are ongoing. (NT) ***DE: future trend to watch for in area burned once response policy put in place.***

- …large fires can provide ecosystem and community safety advantages by placing fire patterns (lower fuel hazard) back on the landscape. Need to consider suppression priority on large fires to balance against maintaining the high level of resources required.(NT) ***DE: NCC response policy data – some agencies(QC, SK) have broken down data into response zones (Annual Fires/Area Burned, Human versus Lightning fires, IA versus SA fires, fires >200 ha(QC), fire season severity(SK)).***
- Fires are taking longer to extinguish. There may be some relation to the increasing use of modified response to fires. (PC) ***DE: NCC would need to collect reported and out dates to analyze and compare to response priority used.***

Urban Interface

- Have a lot more fuel than they used to have 100 years ago and lots more people. (AB) ***DE: NCC This is being investigated as part of the WFMWG's fuels management study.***
- Need more community protection with increase from 322 to 500 communities over time so more to protect. (AB) ***DE: NCC would need to collect data elements related to development (number of communities, population density etc).***
- Working strongly on FireSmart now - should see this impact on fire load. Should save $4 in suppression for every $1 invested in FireSmart. (AB) ***DE: NCC would need at least pre-suppression versus suppression and preferably FireSmart expenditures versus Suppression.***
- SK is experiencing more urban interface impact. (SK) ***DE: NCC would need urban location to compare to various fire load data elements.***
- More urban interface risk and more fire occurrences in these areas. (MB)) ***DE: NCC would need urban location to compare to various fire load data elements.***
- Don't have a high number of dumps any more (more regional landfill sites) and the number of dump fires have decreased. (NB). ***DE: NCC would need breakdown of human causes to analyze change in dump fire or other cause trends.***
- Railway stopped running in early 80s and number of fires were reduced following this. (NL) ***DE: NCC would need breakdown of human causes to analyze change in cause trends.***
- A lot fewer people are going into the woods so fewer recreational fires. (NL). ***DE: NCC would need breakdown of human causes to analyze change in cause trends.***
- Prescribed fire – Haven't done any in last 10 years. Fire use severely limited by the screening requirement of the Mackenzie Valley Land Use Act which came in to effect in 1999. (NT) ***DE: have Other Indicators (Number of PBs, Area Burned, Objective) but data is sparse (11-30 years of data from 6 of 13 agencies). This is less a PB trend than a fire use restriction.***
- Are looking at community protection objective for Prescribed burning in 2012.(NT) ***DE: Future trend in Prescribed burn data elements.***
- Having more smoke issues generated both internally and externally. But large fires can provide ecosystem and community safety advantages by placing fire patterns (lower fuel hazard) back on the landscape. Need to consider suppression priority on large fires to balance against maintaining the high level of resources required. (NT) ***DE: NCC Need more pattern of fire on the landscape work. This is being investigated as part of the WFMWG's fuels management study.***

Evacuations

- Not specifically mentioned as a past or future trend by agencies.
- Data has been difficult to collect.
- Two recent papers by Beverly et al suggest two conclusions.
    - Interactions between wildfires and people in Canada (1980-2007) exhibited a unique regional pattern and within the most densely populated regions of the country evacuations can be considered 'low-probability, high-consequence' events.
    - The Atlantic Multidecadal Oscillation(AMO) positively correlated with national time series of very large fires(>10,000 ha), wildfire-related evacuations and fire suppression expenditures of the period 1975-2007.
- ***DE: data has been collected for evacuations (Number of communities evacuated, number of people evacuated, number of person days). Data is available for 11-30 years from 8 of 13 agencies.***
- ***Jennifer Beverly has provided a suggested set of data elements that could be collected if the intent was to annually collect data to regularly update the results Beverly and Bothwell produced for 1980-2007.***

Key Trends – Resource Capacity

Resource Sharing

- Country hasn't been busy for years or all big exporters haven't been busy at same time and other agencies like MB are less reluctant to ask for resources than they may have been in the past. More willing to ask for resources. (MB) ***DE: a variety of data elements on resource sharing has been provided by CIFFC for 30 years which should be analyzed for resource sharing trends.***
- During extended fall fire season in October last year MB couldn't get resources needed nationally. (MB) ***DE: NCC CIFFC reports that resources are filled 99% of the time. Agencies may not be ordering resources if they know they will not likely be available. CIFFCs resource ordering system should be modified to collect unfulfilled orders and dates. Agencies should be encouraged to order what they need rather than what they think they can get.***
- Know that NT is under-resourced for maximum fire load. Doesn't take as many multiple fire days before NT has to start importing resources. (NT) ***DE: have CIFFC resource sharing history for NT and all agencies for 30 years.***
- Small organization and capacity is fairly light – run out of resources quickly and have to go outside. (YT) ***DE: have CIFFC resource sharing history for YT and all agencies.***
- Human resource sharing as measured by the total annual number of export days has remained stable over the past 9 years. Of note is the increase in the number of export days per person indicating that the same number of export days are being supported by fewer staff. (PC) ***DE: have CIFFC resource sharing history for all agencies. PC has provided graph of PC export history.***

Personnel Availability

- Resources: Initial Attack (IA) better than ever but low on Sustained Attack(SA)resources. Used to hire emergency fire fighters. Not as available because economy is taking these people. As a result there are fewer fire fighters of lower quality (experience and training). (AB) ***DE: Fire fighter inventory trends provide numbers for the various types of fighters (but nothing on experience and training). Data is available for the last 1- 30 years from 11 of 13 agencies.***
- Trying to bolster SA with contract T1 SA – May move into something like BC with 20-person crews. (AB) ***Watch for future SA trends.***
- Overhead: Losing certified overhead. Have fewer staff over all. In the mid-90s had 9-10 Incident Management Teams (IMT) - now have 4. (AB) ***DE: numbers of Overhead available. (There is 1-20 years of data available from 11 of 13 agencies).***
- We should be looking for options to improve team availability. AB suggested the formation of a national interagency team would be appropriate. (AB) ***DE: IMT1 and 2 (there is 2-20 years of data available from 11 of 13 agencies or 10+ years from 8 of 13 agencies).***
- Alberta is conducting a more detailed inventory of certified personnel (number of folks in each Incident Command System (ICS) position). This will lead to a gap analysis to determine where we are short ("we know this intuitively"), and then to come up with a strategy for increasing our resources. Expect this to take a year or two. (AB) ***DE: NCC need Gap analysis for personnel.***
- Potential reorganization may result in more or less personnel resources. Current fiscal policy is to cut government spending by 4% for four years – two more years coming – this is for full time staff. Will impact on personnel availability. (SK) ***DE: numbers of Overhead available. (There is 1-20 years of data available from 11 of 13 agencies).***
- Other resources are likely to remain stable except Type 3(T3) fire fighters which are harder to get with the booming economy. Having to import more fire fighters. (SK) ***DE: Resource sharing of fire fighters (CIFFC Data available for past 30 years for all agencies)***
- Have been upgrading resources rather than losing them lately. (MB) ***DE: Resource inventories available for resources in general.***
- During extended fall fire season in October last year MB couldn't get resources needed nationally. (MB) ***DE: NCC would need to collect unfilled resource orders and dates.***
- Fire fighter availability at shoulder season is adversely impacted by students going or coming from school. (MB) ***DE: NCC would need to collect contract periods or number of fire fighters by month or week.***
- Over the season got more Fire Departments (FD) involved because of increasing Office of Fire Commissioner involvement – one incident in October/2011 saw 30-40 FDs. This is the highest occurrence historically. This is related to extending seasons and shorter seasonal resource availability. (MB) ***DE: NCC FDs could be collected in Other Government Services in the future.***
- Looked at the 1986, 10 day flap and did a resource capacity test. Managed a high number of fire starts without having to go out of province for resources. If NB had the same flap in 2012 believe they would run out of resources by dinner time on day two. (NB) ***DE: compare number of fire fighters in NB for 1986 and 2011. (Data provided by NB is for 2011 only)***

- They no longer hire off the street as they did then because of the requirement for training. (NB)
- Expecting to see an increase in Type 1 fire fighters over the next several years with requests for funding. (NB) ***DE: NCC Watch for future trend.***
- Total personnel capacity expected to be reduced with restraints and reorganization – no vacancies being filled currently. (PE) ***DE: NCC Watch for future trend (no data provided by PE for this survey)***
- Completed a fire program review starting in 2009 and have been running past territorial government since. Suggested some increase in resources(NT)
    - 6 person crew from 5 to allow split to 2x3s for intermediate rotary transport. ***DE: watch for future trend in fire fighter numbers (latest NT trend shows decrease)***
- Small organization and capacity is fairly light – run out of resources quickly and have to go outside. (YT) ***DE: Resource sharing of fire fighters/overhead (CIFFC Data available for past 30 years for all agencies).***
- Field level is drawing more on national PC resources to maintain what they used to do locally (i.e. sometimes even for a duty officer). (PC) ***DE: PC export data internally has been collected and a graph has been provided.***

<u>Demographics</u>

- Biggest future impact is retirement of knowledge in next 5 years. (BC) ***DE: NCC future trend.***
- BC has a demographic study for wildfire branch – need a gap analysis for retirement knowledge loss. (BC) ***DE: NCC Gap analysis could be collected.***
- Had personnel gain a lot experience in the 1980-90 busy seasons. These folks have moved on. (AB) ***DE: may be reflected in a decline in numbers of Overhead.***
- Recruitment of fire fighters is changing – more students – change in demographics – less locals.(MB) ***DE: NCC would need details of fire fighter background.***
- Training: need more training with 30% turnover each year. (MB) ***DE: NCC Are training gaps identified by the CIFFC Training working Group?***
- Students don't have bush sense. (MB) ***DE: NCC Has CIFFC Training WG identified this and considered training programs?***
- T3 are now younger and less experienced (fire /bush knowledge and work ethic). (SK) ***DE: NCC Has CIFFC Training WG identified this and considered training programs?***
- Lots of retirements and change in demographics. Newer staff members do not have the same long term commitment to fire program and move on to other jobs more. This affects experience level of fire staff. Also has an impact during hiring freezes filling positions (keeps positions vacant – no experience built). (MB) ***DE: NCC***
- Fires are still getting big even though resources are stable or increasing. This may be severe weather related or perhaps experience related. (MB) ***DE: NCC Need experience data.***
- Retirements and workforce capacity reductions (ON) ***DE: May be reflected in numbers of Overhead. (There is 1-20 years of data available from 11 of 13 agencies).***
- Demographics will impact NS in the near future with the average age 45-50 with senior staff. A lot of trained overhead will be retiring in the next five years. There are many younger staff but

there is a gap in knowledge and experience. (NS) ***DE: May be reflected in numbers of Overhead. (There is 1-20 years of data available from 11 of 13 agencies). Gap analysis would need to be collected.***

- Retirement impacts – Next three years will see the majority of experienced fire staff retired. (PE) ***DE: NCC watch future trend in overhead numbers.***
- Capacity – aging fire fighters impacting on fitness levels. Fifty percent are over 50 years old. (NL) ***DE: NCC The impact of fitness on numbers of fire fighters may show up in Numbers of Fire fighters available starting in 2012 when the National Fitness Test is required. An initial indication was provided in the fitness testing completed in the development of the Fitness Test. In future should collect annual fitness test success stats from testers. Overall numbers of fire fighters may not be directly affected assuming failed fire fighters will be replaced by those who pass.***
- Having issues finding personnel to run the organization. Retirement having some impact and next generation less interested in fire work. (NT) ***DE: Overhead availability may provide an indication of reduced numbers (NT numbers have remained stable over past 11 years). No data collected on retirement or next generation recruitment issues.***
- Hard to get local fire fighters with the level of mining activity competing for workers. There is low interest in fighting fire. (YT) ***DE: NCC May show up in reduced fire fighter numbers (none provided by YT).***
- There is an increased need for qualified fire management personnel. (PC) ***DE: look for trends in Overhead availability.***
- Twenty-two percent of PC fire management personnel will be eligible to retire in five years. This is an increase from six percent who were eligible to retire in 5 years in 2006. A ten percent retirement rate over 8 years is cited as manageable with effective succession planning. (PC) ***DE: NCC PC provided their retirement data. Some other agencies mentioned the existence of agency studies. In future RMWG should collect retirement data to support impacts and develop gap analysis.***
- Effective succession planning for fire management is critical because of the length of time it takes to develop qualified incident management capability. For example for staff to gather the training and experience required to become a certified Type 1 Incident Commander can take 14-23 years. PC currently has a gap at the entry level of the process. (PC) ***DE: NCC Could collect gap analysis data for hiring and training requirements.*** **Agencies and the CIFFC Training Working group could cooperate on a national training program to address the gaps.**

<u>Air Tanker Fleet</u>

- Aircraft resources are adequate. (AB) ***DE: Numbers of aircraft in inventory data. Should analyze unfilled aircraft resource orders when this data is available.***
- Other resources ok with more long term helicopters and conversion to 415s. (MB)
- QC thinks that generally scooper availability has been reduced with agencies selling off 215s. (QC) ***DE: check number of skimmer aircraft trends in inventory data. For 215/415, data is available for at least 10 years for all 7 agencies operating them. Initial trend shows that for all***

current operators of Canadair skimmers, numbers of aircraft have remained stable except for QC who over the past 30+ years have reduced their fleet size (23-14) but upgraded from a mix of Cansos(6) and early 215 models to a mix of 215s, 215ts and 415s.

- Equipment and a/c are expected to remain stable. (NS) ***DE: Resource Inventory numbers are available for a mix of periods and agencies.***
- Aircraft/equipment numbers have remained stable. (NL) ***DE: Resource Inventory numbers are available for a mix of periods and agencies.***
- Believe NL will lose two older 215s (harder to keep running) and it will be difficult to get funding to replace them with 415s. Scooper numbers will show a decline.(NL) ***DE: Air tanker numbers available – this will be a future trend.***
- Completed a fire program review starting in 2009 and have been running past the territorial government since. Suggested some increase in resources (NT):
    - Switching from DC 4s land-based air attack to Electras
    - CL-215 aging - in future will need to replace with turbine – ongoing study for other options in the future.
    - ***DE: Air tanker numbers available – this will be a future trend.***

<u>Funding</u>

- Funding is probably staying stable. (AB) ***DE: NCC currently only collecting total suppression expenditures which reflects both pre-suppression and suppression costs. Funding may be best reflected by pre-suppression expenditures which have been provided by a few agencies.***
- Impacts of changing demographics compounded by hiring freezes for keeping jobs filled with experienced people. (MB) ***DE: NCC for hiring freezes or funding numbers***
- Workforce and Budget Challenges(ON) ***DE: NCC***
    - retirements and workforce capacity reductions
    - budget reductions
- Budget impacts have reduced numbers of personnel. Should see this in the numbers. (NS) ***DE: number of Overhead and Fire fighters (available for a variety of periods from 1-20 years for 9-11 agencies.) For NS Overhead numbers have increased from 30-45 over the past 12 years. For IA fire fighters the numbers have been reduced from 8 to 5. For SA fire fighters the numbers have remained relatively stable (117-120).***
- Total personnel capacity expected to be reduced with restraints and reorganization – no vacancies being filled currently. (PE)) ***DE: number of Overhead and Fire fighters (available for a variety of periods from 1-20 years for 9-11 agencies.) (No data provided by PE)***
- Have significant challenges with budget level remaining stagnant with no increases and spending always exceeding budget even in slow years. (YT) ***DE: currently collecting total suppression expenditures only. Can`t compare to actual base funding levels except perhaps for those agencies which provided pre-suppression figures (QC, NS, NB).***
- The shift in capacity with the Federal Government reorganization is causing a decline in resource capacity and the decline is expected to continue. (PC) ***DE: resource inventory numbers available for a variety of periods and agencies. This is a future trend to monitor.***

All Risk Impact on Resource Availability

- More all-risk response: floods, wind damage with fire resources. Impacting on MBs ability to share fire fighting resources with other agencies .(MB)
- MNR role in other provincial emergencies. (ON)
- YT is evolving into an all risk organization. (YT)
    - ***For all risk impact DE: Other Incidents responded to data was available for limited historical periods. Many agencies provided a breakdown of types of incidents that they are assigned the responsibility to plan to respond to or tasked to assist with when the incident occurs.***

Appendix 1: Agency Trends

British Columbia

Fires are bigger on arrival. This may be related to fuel loading and comes from individual observations.

Fires are ending up larger which again may be related to fuel loading.

The largest future impact is retirement of knowledge in next 5 years. Succession planning needs to be built into the analysis. BC has a demographic study for wildfire branch and need a gap analysis for retirement knowledge loss .

Alberta

AB has a 50 year fire arrival numbers and area graph that John Brewer discussed.

The trend is that numbers of fires are going up but can see that cycling is evident. Not sure if there is an upward trend.

Have a lot more fuel then they used to have 100 years ago and lots more people.

Need more community protection with increase from 322 to 500 communities over time so more to protect.

Working strongly on FireSmart now - should see this impact on fire load. Should save $4 in suppression for every $1 invested in FireSmart.

Don't have observation or modified zones except something in far north. Now starting to move the reduced response line farther south over past two years.

Caribou habitat may be a higher impact for spending more money to keep fires small in a fairly large area in the province. (part of Species at Risk initiatives - the target area is from the northern boundary along SK side down to about Ft McMurray). This is an area where they are looking at more modified suppression response option.

Resources: Initial Attack(IA) better than ever but low on Sustained Attack(SA) resources. AB used to use emergency fire fighters. Not as available because economy is taking these people. As a result there are fewer fire fighters of lower quality (experience and training).

Trying to bolster SA with contract T1 SA. May move into something like BC who use 20-person crews.

Aircraft resources are adequate.

Overhead : Losing certified overhead. There are fewer Full Time Equivalents (FTE) over all. In the mid-90s had 9-10 IMTs; now have 4. Fire staff gained a lot experience in the 1980-90 busy seasons. These folks have moved on.

We should be looking for options to improve team availability. Perhaps the formation of a national interagency team would be appropriate.

Pine beetle has become more manageable except in Grand Prairie. The problem is not spreading as fast.

Funding is probably staying stable.

Alberta is conducting a more detailed inventory of certified personnel (number of folks in each Incident Command System (ICS) position). This will lead to a gap analysis to determine where AB is short (they know this intuitively), and then to come up with a strategy for increasing resources. AB expects this to take a year or two.

Saskatchewan

SK is experiencing more urban interface impact.

Potential reorganization may result in more or less personnel resources. Current fiscal policy is to cut government spending by 4% for four years – two more years coming – this is for FTEs. This will impact on personnel availability.

Other resources are likely to remain stable except Type 3(T3) fire fighters which are harder to get with the booming economy. Have to import more fire fighters. T3 are now younger and less experienced (fire /bush knowledge and work ethic).

Not sure climate change is increasing fire load yet. After last year's light winter (10/11) didn't get the busy season expected. Perhaps it is moderating fire load rather than increasing it.

Only 3 of the last 10 years had a sustained busy fire season.

Manitoba

Have been upgrading resources rather than losing them lately.

Fires seasons seem earlier and longer – fire fighter availability at shoulder season is adversely impacted by students going or coming from school.

Probably not getting more fires and perhaps fighting fewer.

Forest companies are not identifying new cut areas to protect anymore with slump in forest economy.

Still have protection zones though companies aren't identifying new cut areas.

Weather is more severe: rain, lighting, drought.

Forecasting of weather patterns is not as good.

There is more urban interface risk and more fire occurrences in these areas.

More all-risk response: floods, wind damage with fire resources. This is impacting on MB's ability to share fire fighting resources with other agencies.

The recruitment of fire fighters is changing – more students – change in demographics – less locals.

Training: need more training with 30% turnover each year.

Students don't have bush sense.

Country hasn't been busy for years or all big exporters haven't been busy at same time and other agencies like MB are less reluctant to ask for resources than they may have been in the past. These agencies are more willing to ask for resources.

There are lots of retirements and changes in demographics. Newer staff don't have the same long term commitment to the fire program and move on to other jobs more. This affects experience level of fire staff. This also has an impact during hiring freezes for keeping jobs filled.

Other resources ok with more long term helicopters and conversion to 415s.

Fires are still getting big even though resources are stable or increasing. This may be severe weather related or perhaps experience related.

During extended fall fire season in October last year MB couldn't get resources needed nationally.

Over the season got more Fire Departments (FD) involved because of increasing Office of Fire Commissioner involvement – one incident in October/2011 saw 30-40 FDs - this is the highest occurrence historically. Again this is related to extending seasons and shorter seasonal resource availability.

Still have peat fires going overwinter.

Ontario

Climate Change:

- more variability and extremes of fire season severity: more wet years, more extremes of late seasons and more weather patterns that are unusual
- more storm-damaged fuels
- consensus climate change forecasts are for higher temperatures, more weather variability, more weather extremes, and longer fire seasons

Workforce and Budget Challenges

- retirements and workforce capacity reductions
- budget reductions

Expanded Need for Protection

- more interface development resulting in more risk

- protection of far north "Ring of Fire" mining developments, including transportation and communication infrastructure corridors
- possible expanded protection for far north communities
- MNR role in other provincial emergencies

Reduced Effort for Protection

- we are investigating trading off the savings and risks of having more fire on the landscape in what are now effectively fire-exclusion zones
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Quebec

The initial thought about the 5 year future trend is that a lot of change is not expected for QC.

QC has experienced over the past 10 years somewhat higher lightning caused fires and fewer human for same total fires. QC has had more multiple fire days (from lightning).

QC thinks that generally scooper availability has been reduced with agencies selling off 215s.

New Brunswick

Looked at the 1986, 10-day flap and did a resource capacity test. Managed a high number of fire starts without having to go out of province for resources. If they had the same flap in 2012 believe they would run out of resources by dinner time on day two. They no longer hire off the street as they did then because of the requirement for training.

Expect to see an increase in Type 1 fire fighters over the next several years as a result of requests for funding.

Fire load has been dropping annually for the last 5 years. The Prevention program for “can you burn today” line has been credited with reducing resident fire starts. Note: March 7th: Found going thru the data collection for this study that NB has reversed their impression for this initial trend in that the number of fires actually increased and suggested they should be doing this kind of analysis more often.

Don’t have a high number of dumps any more (more regional landfill sites) and the number of dump fires have decreased.

1999 was last big season with abnormal lightning occurrence.

Nova Scotia

Demographics will impact NS in the near future with the average age 45-50 with senior staff. A lot of trained overhead will be retiring in the next five years. There are many younger staff but there is a gap in knowledge and experience.

Budget impacts have reduced numbers of personnel. Should see this trend in the survey data.

Equipment and a/c are expected to remain stable.

Fire load: NS is having insect problems and are anticipating budworm and sawfly damage. NS has had some spruce beetle kill. No increase in fires so far.

Climate – north doesn't get as cold as in the past.

Prince Edward Island

Retirement impacts: Next three years will see the majority of experienced fire staff retired.

Total personnel capacity expected to be reduced with restraints and reorganization – no vacancies being filled currently.

Extensions of fire season are being experienced.

PE suggested review of the Ecosystem Status and Trends Report – Canadian initiative. (Biodivcanada.ca/ecosystems) Look for national 2010 and thematic report on fire. See ecozone reports in various states of development. Environment Canada initiative (from CCRM).

After call with PE found the following report at the site PE noted:

Trends in large fires in Canada, 1959-2007 (2010 C.C. Krezek-Hanes, F. Ahern, A.Cantin and M.D.Flannigan)

This report is available at the following link:
http://www.speciesatrisk.ca/resource/DOCUMENT/1715No.6_Large%20Fires_Aug%202011_E.pdf

Newfoundland and Labrador

Fire numbers are dropping with two of the lowest seasons ever in the last two years. The majority of fires historically occur in Labrador and on the East Coast but the weather has been wetter in recent years in those areas. Railway stopped running in early 80s and number of fires were reduced following this. A lot fewer people are going into the woods so fewer recreational fires.

Air attack dispatch on initial attack is used more now (past 5 years or so) then in the past which is keeping fire sizes down.

Fire seasons are longer but not more intense fires.

Capacity: aging fire fighters impacting on fitness levels. Fifty percent are over 50 years old.

Aircraft/equipment numbers have remained stable.

Believe NL will lose two older 215s (harder to keep running) and it will be difficult to get funding to replace them with 415s. Scooper numbers will show a decline.

Northwest Territories

Have to analyze how effective the natural fire policy has been since 1995. Has this settled down the spikes in area burned?

Barren ground caribou habitat pressure which started about three years ago has resulted in suggested fire size limits in corridor areas; caribou won't cross greater than 10,000 ha often. Also related to burn severity and studies are ongoing.

IA season has been going into October.

Prescribed fire: haven't done any in last 10 years. Fire use severely limited by the screening requirement of the Mackenzie Valley Land Use Act which came in to effect in 1999.

Are considering a community protection objective for Prescribed burning in 2012.

One prediction of climate change was an extension of the fires season in the far north. Will be interested in seeing if this is so. Have been seeing more wet seasons beginning from mid-July.

Know that NT is under-resourced for maximum fire load. Doesn't take as many multiple fire days before NT has to start importing resources.

Having more smoke issues generated both internally and externally. But large fires can provide ecosystem and community safety advantages by placing fire patterns (lower fuel hazard) back on the landscape. Need to consider suppression priority on large fires to balance against maintaining the high level of resources required.

Completed a fire program review starting in 2009 and have been running past the territorial government since. Suggested some increase in resources:

- 6 person crew from 5 to allow split to 2x3s for intermediate rotary transport.
- Switching from DC 4s land-based air attack to Electras
- CL-215 aging - in future will need to replace with turbine – ongoing study for other options in the future.
- Having issues finding personnel to run the organization. Retirement having some impact and the next generation is less interested in fire work.

Yukon Territories

Seasonal variation maybe interesting – also YT think lightning fires are starting earlier in the season.

YT is evolving into an all risk organization.

Fire load: YT is a small organization and capacity is fairly light. Tend to run out of resources quickly and have to go outside.

It is hard to get local fire fighters with the level of mining activity competing for workers. There is low interest in fire fighting.

More slow years lately. Last big fire year 2004 and late 1990s before then. Haven't been getting the lightning starts but are getting lightning earlier. One brief period last year before green-up resulted in multiple fires.

Seeing more lightning near the ice fields near Kluane (which hasn't been the case in the past) with 10 year old pine beetle kill nearby, but haven't been getting starts. Timber is also starting to come down in windstorms that could cause problems when fires get into it.

Have significant challenges with budget level remaining stagnant with no increases and spending always exceeding budget even in slow years.

Parks Canada

The shift in capacity with the Federal Government reorganization is causing a decline in resource capacity and the decline is expected to continue.

Field level is drawing more on national PC resources to maintain what they used to do locally (ie. sometimes even for a duty officer).

Fire load is starting earlier and is lasting later in year. Fires are taking longer to deal with. There may be some relation to the increasing use of modified response to fires.

A recent draft Integrated Human Resources Plan for the PCA Fire Management Program noted the following trends.

Fire management activity has increased significantly over the past 20 years both in number of fires and area burned. Current research predicts a further increase in wildfire frequency and severity with climate change. This increase coupled with increased development in or near fire prone areas and increasing expectations of the public will result in an increased need for qualified fire management personnel.

Fire management in PC relies on a national mobile workforce that is available to respond to wildland fire incidents on a local, regional, national and interagency level both within PC and through CIFFC's Mutual Aid Resource Sharing Agreement.

Human resource sharing as measured by the total annual number of export days has remained stable over the past 9 years. Of note is the increase in the number of export days per person indicating that the same number of export days are being supported by fewer staff.

Twenty –two percent of PC fire management personnel will be eligible to retire in five years. This is an increase from six percent who were eligible to retire in 5 years in 2006. It is noted that a ten percent retirement rate over 8 years is cited as manageable with effective succession planning.

Effective succession planning for fire management is critical because of the length of time it takes to develop qualified incident management capability. PC currently has a gap at the entry level of the process.