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Senate Standing Committees on Environment and
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Submission to Senate Inquiry on Recent trends in and preparedness for extreme weather events

The scientific evidence for climate change is now overwhelming and I believe governments should focus on mitigating greenhouse gas emissions and adapting to its predicted impact.

Most of my working life has been involved with bushfires and the likely increase in bushfires that will accompany climate change is the issue I would like to address in my submission. The recent spate of fires effecting eastern Australia is good indication of what is to come.

My back ground is thirty years of front line of fire management as a Forest Officer and Natural Resources Officer with the Victorian Department of Sustainability and Environment (DSE) and more recently as the Municipal Fire Prevention Officer with Ararat Rural City Council.

Areas of Concern

One of the issues which I would like to bring to the Committee's attention is the declining capacity of fire agencies. The Victorian Country Fire Authority (CFA) has a major problem with aging and declining volunteer numbers and communities, particularly those in rural areas, are now facing the prospect of not having a local fire brigade. The DSE has also suffered significant cuts in funding and lost large numbers of experienced fire personnel in recent years. These issues are further exacerbated by the loss of timber industry resources throughout much of Victoria. The timber industry was a major source of bulldozers and skilled bush operators needed to construct fire control lines. These problems are not just limited to Victoria either but occur in most Australian States and Territories.

The implementation of recent Victorian Bushfire Royal Commission recommendations has done little to overcome these problems and the focus on fuel reduction burning of public land will do little to reduce the fire risk. The burning program is broad scale and does not cover private farmland and bush. Even if the proposed 5% of public land is burnt each year, this only amounts to a burn every 20 years. Burning only provides a significant level of protection from bushfires for up to five years. Its effect then declines until ten years after the burn there is no

measurable impact. This means that despite the cost and risks of this burning program, three quarters of the public land will still sustain a bushfire. There has been some discussion about making the burning more strategic but to date the focus is still on area burnt.

The public education program has also largely failed. A 2010 report by the CFA found that 75% of people will not leave until they feel threatened by a fire. By this time it is often too late. This finding has been supported by numerous “lucky escapes” reported in the media coverage of the recent fires.

The combination of increasing fire risk, declining fire suppression capacity, urban sprawl and public apathy will create major bushfire problems for all Australian governments and emergency services.

Possible Solutions

As recent events have shown, bush fires are a national problem for all levels of government. What is needed is an integrated national solution. The Victorian Government has begun the process with its Integrated Fire Management Planning (IFMP) program. This process involves local municipalities working together with state government agencies to develop an integrated approach to fires. This concept should be expanded to the national level. The Australasian Fire and Emergency Service Authorities Council (AFAC) could be used as a basis for a national fire management authority.

The IFMP approach has the potential to address, at least in part, the declining numbers of volunteers. Like most Australian land management agencies, DSE has fire control responsibilities and its staff undertakes fire management roles as required but most of the time these people carry out other roles within the organization. This concept of employees undertaking firefighting when needed could be expanded to other organizations such as local government and other government departments. These people would provide a core of trained professional firefighters able to support or take over roles currently done by volunteers without the need to employ full time firefighters. The cost of fire duties and training could be covered by a property levy such as the Fire Services Levy. Organizations could be subsidized to employ staff in strategic locations to ensure that small rural communities retain a local fire service.

This approach however would only be viable if improved firefighting technology that allowed fewer people to control fires more quickly was also developed.

There is a fundamental truth in firefighting that states *“The safest, most effective and efficient way to control large fires is to put them out when they are still small”*.

Effective initial attack is the key to preventing major bushfires with fewer resources and there are systems available that could deliver that goal. Fires tend to develop

exponentially so increasing the speed of detection and suppression significantly reduces the size and cost of a fire. Halve the time taken to bring a fire under control and you quarter its size.

Camera based detection systems offer the most potential for improving detection speed. They allow 24 hour detection and can provide coverage in areas not presently covered by manned lookouts. These systems are not yet as effective as a trained human observer but are infinitely better than no observer. Australian Federal and State Governments should install camera based systems to areas not presently covered by human observers and support the improvement of this technology.

Improving response capability is both the greatest challenge and potential for reducing the impact of bushfires. The current approach of creating control lines with bulldozers supported by tankers has been the standard for decades but it is very slow. The smaller dozers used in initial attack average less than 500 meters of control line per hour, even in favorable conditions, and large dozers average less than 1 kilometer per hour. Under very high to extreme fire danger conditions fires will spread at more than one kilometer per hour which means the initial attack will not be successful.

The use of aircraft has been put forward as a way of overcoming this problem but they have not proved successful. The problems with using aircraft are they cannot operate in smoke or at night, are expensive and regularly miss their targets. They are able to attack small spot fires and the flanks of larger fires but often not the head due to the smoke. This makes them a useful tool in supporting on ground suppression but not a replacement. Large aircraft like the Sky Crane are even less effective due to their high cost. By the time a fire is serious enough to warrant their cost it's usually too late for them to make a difference.

To suppress fires quickly with fewer personnel requires a new approach to fire control. There is a fire suppression system that would allow small numbers of people to safely and rapidly control a fire and in almost any terrain. It's called Ground Applied Retardant (GAR) and allows fire control lines to be constructed at up to 15 kilometers per hour. When applied with a tracked carrier system there are very few areas that could not be accessed.

The GAR is almost identical to the retardant dropped from aircraft but because it is ground applied the application is even and consistent creating a better control line. Using a high speed track carrier control line could be constructed up to thirty times faster than conventional dozer/ tanker systems thereby dramatically reducing the controlled size of the fire.

Why isn't GAR being used at present? There has been very little research done on GAR anywhere in the world and none in Australia. Agencies are unwilling to trial systems that are unproven even though retardants have been used successfully from aircraft for years. They see the high cost of the retardant as a barrier.

Retardant control lines are three to four times the cost of mineral earth lines and on a straight cost per kilometer basis retardant has been seen as too costly. This approach however ignores the potential reduction in the size of the fire by using GAR. If the size and cost of a fire controlled by dozers and tankers is compared to the likely size and cost if GAR was used the result is a reduction in size of over 95% and controlled cost of over 85% (see attachment 1).

The other reason put forward for not using GAR is the high track maintenance costs of the tracked carrier. Tracked carriers have been used by the Australian Army for decades including controlling fires on the Puckapunyal Tank Range. They are extremely good at transporting material across all types of terrain but they do have high track maintenance costs (around \$1 per kilometer). On the face of it this appears to be a valid reason but if the actual number of kilometers a unit would cover to control a fire is calculated then the likely cost is only \$10 to \$20 per fire. The reason for this is the carrier would be transported to the fire like a bulldozer rather than driven like a tanker. See attachments 2 to 4 for more information on GAR and potential application systems.

While successful initial attack should always be the highest priority for fire management agencies, consideration should also be given to protecting communities if it fails. Unlike broad scale fuel management as recommended by the Victorian Bushfire Royal Commission, strategic fuel management adjoining communities would provide a much greater level of protection. Most homes are lost due to ember attack rather than direct flame contact. While embers can carry a considerable distance, most house losses occur with 400 meters of bush land. State and local governments need to have the ability to manage the vegetation within 400 meters of a settlement regardless of the tenure. This would create a “defendable space” for communities, minimize ember attack and improve the safety of residents.

One of the potential benefits of a national approach to fire management would be standardization of equipment and reduced costs due to combined purchasing. If Australian made equipment such as the Bushmaster vehicle were to become the standard it would benefit local industry and even reduce costs for the Australian Army due to larger production runs. Australia is one of the most fire prone countries in the world and we should be a world leader in fire technology (just as Denmark is a leader in wind power). Climate change will increase the global fire risk and expertise in firefighting technology will become a valuable commodity as other countries look to build their own fire management capability.

Recommendations

1. To manage the increased risk of bushfires as a result of climate change, the Australian Government should establish a national fire management authority to:
 - Co-ordinate and support a national bushfire response
 - Ensure consistent prevention activities are undertaken to protect communities in all areas
 - Develop and standardize firefighting equipment, detection systems and fire management programs nationally.
2. There should be more research and development on improving fire detection and suppression systems in order to maximize the likelihood of successful initial attack. Trialing Ground Applied Retardant with tracked carriers should be a priority for any research and development funding.
3. A national system of fire services levy should be introduced with funding directed to supporting the employment of on ground firefighters, particularly in rural areas.
4. A national standard for firefighting vehicles should be developed with preference given to locally built, multifunction vehicles (Bushmaster/Fireking).
5. National standards for protecting townships and communities be developed with planning and environmental legislation amended to allow the establishment of defensible space for settlements.

Yours sincerely,

Daryl Scherger.

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