



Community and Public Sector Union

Kristin van Barneveld – Deputy National Secretary

Ms Chloe Munro
Lead Reviewer
Review of the Bureau of Meteorology 2011

via email: bomreview@environment.gov.au

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Dear Ms Munro

Please find attached a submission from the Community and Public Sector Union (PSU Group) to the Review of the Bureau of Meteorology 2011.

The contact person for this submission is Aidan Nash, Research Officer (03) 8620 6329.

Yours sincerely

Kristin van Barneveld
CPSU Deputy National Secretary

CPSU submission to the Bureau of Meteorology Review

Introduction

The Community and Public Sector Union (CPSU) is an active and progressive union committed to the promotion of a modern efficient and responsive public sector that delivers quality services and quality jobs. The CPSU represents around 60,000 members in the Australian Public Service (APS), ACT Public Service, NT Public Service, ABC and the CSIRO. We also have members in Telstra, commercial television and the telecommunications industry.

The CPSU has members in all areas of the Bureau of Meteorology (BoM). They have strong views on the importance of fully funding a public sector weather forecasting service and they have first hand experience with the challenges that are faced due to current inadequate funding levels.

The CPSU welcomes this review into the resourcing and capabilities of BoM and thanks the Committee for the opportunity to make this submission. In preparing this submission, the CPSU has consulted with union members in BoM about issues raised by the Review Terms of Reference. The feedback received from members forms the basis of this submission. The underlying issue throughout this submission is the need for adequate funding for BoM to establish and maintain staffing numbers to provide sufficient workforce capability to carry out the core functions of the Bureau.

This submission addresses the following Terms of Reference:

- a. the practices, capabilities and resources of the Bureau to respond effectively and efficiently to future extreme weather and natural disaster events;
- b. the Bureau's workforce capability, including areas of technical expertise such as forecasting and hydrology, and its current and ongoing capacity to deal with periods of peak demand; and
- c. the Bureau's capability to conduct seasonal forecasting.

Summary of Recommendations

- The efficiency dividend should no longer be applied.
- BoM should be adequately funded to ensure that it can, without relying on the goodwill of staff to work long hours of overtime: have sufficient staffing levels to carry out its core functions; provide appropriate training for staff; and undertake post-event analysis,
- In consultation with employees and the CPSU, BoM should develop restriction rosters and associated allowances for key staff who support the infrastructure and forecasting services in times of extreme weather and natural disaster events.

- There should be sufficient staffing of engineering services sections so that the risk of key equipment failure affecting forecasting services during extreme weather events is minimised.
- Operating policies and procedures for observers at single person stations during severe weather events should be developed. These policies should be developed in consultation with those observers who work in the field and have expertise about the requirements during severe weather events.
- There should be sufficient staffing of operational weather and flood forecasting areas to allow post-event analysis and continuous improvement of forecasting and warning services.
- There should be sufficient staffing of operational weather and flood forecasting areas to enable at least 11 training days per person per year to allow forecasters to maintain competency and currency in their technical skills.

a. the practices, capabilities and resources of the Bureau to respond effectively and efficiently to future extreme weather and natural disaster events.

BoM works with Australian government agencies, local councils, state emergency services, catchment management authorities, media organisations and state fire weather agencies to predict and respond to extreme weather and natural disaster events. BoM has increased both the range and quality of its services to these stakeholders and to the Australian public over recent years.

Australia has many highly qualified and talented employees working at BoM and is well placed to respond effectively to future extreme weather events and natural disasters. However, staff are currently being overworked. Reduced staffing numbers and increased workload limits the capacity of BoM to respond to such events. To maintain effective responses to these events, more resources need to be committed to ensure that BoM has sufficient staffing capability.

The House of Representatives Standing Committee on Industry, Science and Innovation also acknowledged this. In the 2009 Report on Seasonal Forecasting in Australia (2009 Report), the Committee stated that¹:

The services provided by the Bureau of Meteorology are of far greater value than the relatively modest investment by government, and that the Bureau should be fully funded and adequately staffed to meet the nation's needs.

A 2007 study of the UK Met Office has shown that investment in a national weather service benefits the nation far more than it costs. The study specifically examined the Met Office's Public Weather Service (PWS) which is responsible for weather forecasting and climate prediction. The total PWS budget of £UK83.2 million was contrasted to the 'public value' of £UK353.2 million which the service generates from saving lives, property and delivering financial benefits while serving ten different government

¹ House of Representatives Standing Committee on Industry, Science and Innovation, *Seasonal Forecasting in Australia Report*, November 2009, p 85

departments, over 600 different agencies, and the UK public². This shows that relatively small investments in the national weather service can provide exponentially greater benefits to the public.

However, far from increasing the resources of BoM, the Australian Government, via the efficiency dividend, continues to place further pressure on the Bureau's budget.

Efficiency dividend

BoM has suffered successive funding cuts over many years due to the efficiency dividend. This is having a debilitating effect on the Bureau's resources. Over the past 20 years, successive federal funding cuts have reduced the size of the Bureau of Meteorology 'by 45 per cent' according to its former research chief Professor Neville Nicholls.³

Despite a 2010 election commitment to reduce the efficiency dividend to 1 per cent from 1 July 2011, in the 2011/12 Federal Budget, the government increased the dividend to 1.5 per cent in 2011-12 and 2012-13, before returning it to 1.25 per cent for 2013-14 and 2014-15.⁴

The 2011 Finance *Report of the Review of the Measures of Agency Efficiency* recommended that the efficiency dividend should be applied on a portfolio level allowing bigger agencies to absorb the cuts to other agencies without the capacity to find further efficiencies⁵. This recommendation was adopted by the Government, but, due to Portfolio decisions, the efficiency dividend continues to be applied at the same rate of 1.5 per cent to BoM and is projected to continue to apply in coming years⁶. The efficiency will require the Bureau to make further savings of approximately \$11.5 million over the next 4 years.⁷

BoM has already made all of the efficiencies that can be made. The current funding levels for the Bureau are now leading to underinvestment in staff which is putting great pressure on current employees and reducing the capability of BoM to carry out its core services.

BoM management drew attention to the problems arising from the Commonwealth government's public sector funding models in its 2008 submission to the Senate Inquiry on Climate Change and the Australian Agricultural Sector⁸:

Despite the best efforts of the Bureau to rationalise its basic monitoring networks and to continue to improve efficiency through the introduction of

² UK Met Office Public Weather Service Customer Group, *The Public Weather Service's Contribution to the UK Economy*, May 2007

³ Rosslyn Beeby, 'Cutbacks hurt Climate monitoring', *The Canberra Times* 10 May 2008;

⁴ Transcript: Doorstop Interview, Brisbane, Wayne Swan and Julia Gillard, 18 July 2010,;Media release by the Hon Penny Wong, "Driving Efficiencies in Government", 21 April 2011

⁵ Department of Finance and Deregulations, *Report of the Review of Measures of Agency Efficiency*, March 2011

⁶ Portfolio Budget Statements 2011-12, Budget Related Paper No.1.17, Sustainability, Environment, Water Population and Communities Portfolio; Portfolio Budget Statements 2011-12, Budget Related Paper No. 1.14, Innovation, Industry, Science and Research Portfolio

⁷ *ibid*

⁸ Australian Bureau of Meteorology, *Submission to the Senate Standing Committee on Rural and Regional Affairs and Transport inquiry into Climate Change and the Australian Agricultural Sector*, p 8

the latest technology, the relentless pressure of “productivity dividends” will inevitably place the integrity and future continuity of Australia’s climate record in jeopardy.’

Further, the parts of BoM that are most affected by the efficiency dividend are those that provide services to the public. Sections of BoM that provide services for the aviation and defence industries are externally funded so most of the federal funding cuts take their toll on the public forecasting services.

This is having an effect on staffing budgets which is reducing the capabilities of BoM to manage periods of peak demand.

Recommendations
<ul style="list-style-type: none">• The efficiency dividend should no longer be applied.• BoM should be adequately funded to ensure that it can, without relying on the goodwill of staff to work long hours of overtime: have sufficient staffing levels to carry out its core functions; provide appropriate training for staff; and, undertake post-event analysis.

b. the Bureau’s workforce capability, including areas of technical expertise such as forecasting and hydrology, and its current and ongoing capacity to deal with periods of peak demand

At the same time that budget constraints are mounting, expectations of the Bureau from stakeholders are also increasing which is leading to a greater, and at times unmanageable, workload for BoM staff. The following examples reported to the CPSU are additional tasks that have been required to be performed by BoM forecasters in the last few years:

- There are no longer observers working in the forecasting centre. This means that the forecasters have to do the work previously done by the observer in addition to their forecasting work. In the Victoria regional office, forecasters now have to field phone calls from the public or specific users, plot charts every 3 hours, order chart plotting supplies including specific maps and ink, and monitor river heights in situations when a flood watch is active. Reports from other regional forecasting centres suggest that the experience is similar in other centres.
- The aviation forecasting load has increased. The Melbourne Airport forecast used to be valid for 24 hours. Although the frequency of forecasts remain the same, the aviation industry now requires forecast to be valid for 30 hours.
- Having the observers removed from the East Sale RAAF base (and other smaller offices including Canberra and certain times of the day in Cairns) means that the forecasters now have to do the half-hourly aviation observations on top of their official forecasting duties.
- The expectations of BoM by Emergency Services have increased significantly in recent years. In Victoria, the number of prescribed (fuel-reduction) burning forecast requests has increased significantly, creating extra work for

forecasters. Weekly briefings with the State Emergency Service have also been initiated in recent years due to the increased need to be aware of possible critical weather situations ahead of time. In Victoria there is now a dedicated forecaster who works at the State Control Centre all year round (paid for by the agencies). This has increased the workload on other forecasters because when there is a significant weather event, the State Control Centre expects 24 hour forecasting support (ie the single dedicated forecaster is not sufficient) so forecasters from the regional office have to back fill. Forecasters at the State Control Centre are now involved in planning meetings and regularly attend press conferences.

- Forecasters around Australia are now responsible for issuing advices and communicating about Tsunami Warnings. This service did not exist a few years ago.
- Loss of regional administration staff (they have been centralised) has resulted in more errors in pay with forecasters spending extra time chasing up what went wrong. This is particularly true with applying for leave, which has to be linked to a specific roster in the online HR system.
- Forecasts issued from the graphical forecasting editor (GFE) are now available out to 7 days for many regional locations. A few years ago, a 7 day forecast was only available for the capital cities with other areas having shorter range, easier to calculate forecasts of between 1 and 4 days.
- The amount of data available to a forecaster (from observations, satellites, model guidance) is always increasing. The forecaster is expected to be aware of this information and to include it in forecasting calculations but has no extra time to process and analyse this data, leading to workload issues and the possibility of increased errors.
- There has been a marked increase in the number of media requests made of BoM operational areas since news outlets moved to online 24/7 news coverage. Each regional forecasting centre has only one Media and Community Relations Manager. These managers struggle to keep up with the torrent of media requests, particularly during a severe weather event.

Understaffing

The increased pressure on staff resulting from increased workloads has not been alleviated by increased staffing, simply because BoM does not have the funding to hire additional employees. In some areas, staffing levels have actually decreased. The 2009 Report by the House of Representatives Standing Committee on Industry, Science and Innovation acknowledged this issue by stating⁹:

The Committee is concerned by the erosion of qualified staff from the Bureau of Meteorology and recommends that steps be taken to ensure adequate staffing levels for the Bureau.

⁹ House of Representatives Standing Committee on Industry, Science and Innovation, *Seasonal Forecasting in Australia Report*, November 2009, p 85

However, such steps to ensure adequate staffing levels are yet to be taken. The following comment from a CPSU member conveys the pressure put on forecasting staff in the severe weather section:

“The GFE system implemented by BoM in 2008 - originated the US where there are around 120 offices for the same size area as Australia - where most 'area domains' are the size of metro Melbourne, with the exception of a couple. Therefore the complexity of GFE in Australia has a far greater workload and stress load on forecasters trying to use a system that was designed for smaller areas. The sheer number of fire weather grids [and processes to create and check] now is phenomenal. Such an increase of workload on forecasters - without actually increasing the number of staff to produce this new workload - (the severe weather section was REDUCED) - has placed extreme stress on the forecasters on duty - which in turn will lead to forecasting errors.”

To add to this pressure, the CPSU has received consistent reports of positions not being backfilled when staff are ill or on other leave, and of staffing levels operating below the normal rosters for long periods of time.

The outcome of reduced staffing levels is that either work is not done, or employees work long hours of overtime in order to complete the work. There is a positive culture among BoM employees. They are passionate about the work they perform and realise the importance of that work. Therefore, rather than seeing the work not get done, staff will agree to work long hours and come in on their days off. BoM relies on this goodwill of its employees to carry out many of its core functions. This has a particular detrimental effect on employees in regional offices that operate on a small roster to begin with, because it is the same one or two people who are continually required to fill extra shifts. If nobody is available to cover the shift, the people who are on shift take on the extra work. This creates a problem due to the cumulative effect of shift work and overtime on fatigue levels.

The CPSU received the following illustration of staffing shortages from one member:

Severe weather section has been understaffed since at least 2007. There are three positions in the section and they have not been filled by substantive staff since 2007. The supervisor (SPOC) position has not been filled for over 12 months. Both SPOC and PO2 positions need to be backfilled by staff in the RFC. This only happens in summer when we have critical forecasts to perform. This results in a backlog of work in severe weather section.

One important area of work that does not get done due to insufficient staff numbers is post-event analysis. This is critical for understanding of extreme events and for continuous improvement of forecasting and warning services. Since moving to the GFE system, forecasters have not received any verification information about their forecasts and warnings. The observation grids are not trusted to be an accurate representation of what really happened. Therefore there is a missing link in the process. As one CPSU member stated:

It is well known that forecasts and warnings improve when rigorous verification is conducted as near to real time as possible so that forecasters can adjust any system biases. Without any verification information, forecasters are "flying blind".

In the Victorian Hydrology Section, there are a number of flood prediction models that have not been updated since the mid-1990s due to lack of time for non-operational work and staffing shortages in the section. This increases the risk that the model output will not be as good as it could be with an updated model.

The reduction in numbers of observers has also negatively affected the capacity of BoM to respond to severe weather events and perform seasonal forecasting. One CPSU member pointed out that:

'The models used to produce long-term forecasts rely on good observations as a starting point for their computations and for verification of the model, after the season has past. Despite this important role, the number of human observers in the Bureau is decreasing. Funding needs to be made available to support full-time ongoing positions in the climate forecasting area and the observer area.'

Observers have told the CPSU that being forced to operate on reduced rosters has resulted in program targets not being met. For example, in Broome, there are normally only two people working a three person roster. This means that only two balloon flights can be performed each day instead of the required three. When there are cyclones, extra balloon flights are required. If there are only two observers in the region, the only options are for someone to come in on their day off or for the employee on duty to extend their 12 hour shift by an additional 4 hours. One CPSU member recently mentioned that they have been required to work three 16 hour days in a row, and on other occasions had worked for 8-10 days without a day off.

There has been a trend at BoM to reduce staffing levels in favour of more automation and a greater investment in technical equipment. An example is the increased use of single person observer stations. This presents difficulties in periods of peak demand. A CPSU member has described the issue in the following way:

In a severe weather event, a single person station will be hard pressed to maintain an adequate presence in the community, attend disaster district management group meetings and perform routine duties. The officer may need to be absent from the office for lengthy periods of time attending meetings and with only 1 staff, the office will be vacated, leaving no local BOM contact point for the media or community. Additionally, at present, no indication has been given by management on how exactly a single person station is to operate, what policies and procedures are to be undertaken during a severe weather event. The operating policies and procedures eventually decided upon will have a bearing on how and which weather services will be available to a local community from local staff during a severe weather event.

The current trend of diminishing the manual observations network in the favour of more automation also presents problems when insufficient engineering staff are engaged to maintain the equipment. One CPSU member stated the problem in the following way:

Automation needs installation and maintenance and communication equipment to get all the observations back to the Bureau. Yet the engineering staff nearly always get overlooked in this equation. No engineering staff, no equipment maintenance, no communications, no observations.

For example, on Black Saturday, February 7 2009, the Laverton radar failed at a critical time of the day when a cold front was approaching Melbourne. Engineering staff were required to work on their day off at short notice to fix this essential piece of equipment. Thankfully on that day, an engineer was available and the radar was fixed within three and a half hours. Also on Black Saturday, there was a problem with the relative humidity reading at Melbourne Airport. The observer on duty was able to fix this once it had been logged as an error. Given that engineering staff do not work a restriction roster requiring them to be on call, with unpredictability of extreme events it is by pure luck and goodwill that these staff are available.

Capacity at peak periods

In periods of peak demand, during severe weather events and natural disasters, the impacts of staff shortages become more acute. Forecasters are required to split their time between their forecasting work and communicating with stakeholders. Lots of warnings must be issued and media requests responded to. Given that BoM has no reserve capacity to respond to these periods of peak demand, it falls on rostered staff to work additional hours and non-rostered staff to work on their days off.

The large amount of overtime worked in these periods can lead to staff becoming burnt out, especially when the peak periods last for several days. This then causes mounting fatigue that reduces the effectiveness of BoM to deal with situations that are concurrent or last more than a day or so.

An example of this is the work of the flood forecasting staff in Victoria. From August 2010 to August 2011, there have only been 6 weeks when there was no flood warning issued. During September 2010, when the whole state was in flood, staff issued 78 flood warnings in one day. Like the engineering staff, hydrology staff do not work a restriction roster so when weekend and night work is needed the goodwill of staff helps the Bureau provide these vital services.

Another example is the Great Divide Fires that burned in Eastern Victoria for a period of 69 days from early December 2006. Fire weather forecasters had to provide 24/7 forecast coverage for much of that time with support from interstate and overseas forecasters.

Quite simply, BoM maintains a staffing level that does not have the capacity to adequately respond to periods of peak demands – and these demands are increasing. As one CPSU member put it:

The Bureau really relies on the goodwill of staff to work above and beyond their normal working hours just to provide the services required for community safety.

This is an unsustainable and risky way for the Bureau to operate and it puts great amounts of pressure on staff. The Bureau should be adequately funded to ensure that it has the staffing capacity to better cope in these periods.

Restriction rosters and associated allowances should be implemented for key staff who support the infrastructure and forecasting services in times of extreme weather and natural disaster events. This includes:

- the engineers who fix the automated equipment;
- the severe weather forecasters;
- the hydrologists/flood forecasters; and,
- other support people who are called in to help with the media communication and briefing roles.

Training

Maintaining the Bureau's workforce capability requires all staff to receive sufficient ongoing training to keep up their skills and understand new forecasting techniques. This equips staff to better handle severe weather situations. However, CPSU members have commented that BoM does not place sufficient emphasis on the importance of training.

Staff shortages have a flow on effect for the training of staff. BoM has implemented training in extreme weather events including: tsunami, fire weather, tropical cyclones and thunderstorms. However, the ability of staff to undertake this training is limited by staffing pressures.

In addition to restricted access to professional development in technical skills, operational forecasters have limited access to development in leadership skills such as strategic thinking, achieving results, developing productive working relationships and communicating effectively. These capabilities form part of the APSC's integrated leadership system and are particularly important during extreme weather events because forecasters are required to make quick decisions in a high pressure and often stressful environment.

There are two major factors that have been reported by CPSU members which limit the training and assessment capacity of BoM staff in severe weather events. The first is the roll-out of the new graphical forecasting editor (GFE). When GFE is being implemented in a region, it takes about seven months of training activities. During this time there is absolutely no capacity for forecasters to do any training in other key areas.

The other major factor is the difficulty in getting forecasters off shift to do training. Since operational requirements always come first, rostered training days are often eaten up by filling an operational shift due to someone being ill or unavailable. As trainers have a tight training schedule, it can be hard to arrange training at other times. One trainer gave the recent example from a scheduled program.

We had an initial roster with 20 forecasters receiving training over 7 days. Due to staff illness, one forecaster couldn't attend their training day and another forecaster was required to backfill a shift. 2 other forecasters were on leave during the training period and one forecaster had other work-related duties on their rostered training day. This leaves 5 forecasters who need to be trained outside the original rostered time period (or 25 per cent of the group).

One BoM employee who recently undertook a forecaster exchange program in the USA reported that the forecasters there receive 33 days of training each year. According to reports from CPSU members, BoM aims to provide 10 training days per forecaster per year. However, the average number of training days for employees in 2010-11 was closer to 5 days.

Bureau forecasters are praised for their technical expertise by personnel in fire agencies and emergency service agencies across Australia. The lack of opportunity for forecasters to keep their skills up to date, particularly in severe weather service areas where real events are rare, reduces the capability of Bureau staff to respond effectively and efficiently to future extreme weather and natural disaster events and threatens their technical expertise.

Recommendations

- In consultation with employees and CPSU, BoM should develop restriction rosters and associated allowances for key staff who support the infrastructure and forecasting services in times of extreme weather and natural disaster events.
- There should be sufficient staffing of engineering services sections so that the risk of key equipment failure affecting forecasting services during extreme weather events is minimised.
- Operating policies and procedures for observers at single person stations during severe weather events should be developed. These policies should be developed in consultation with those observers who work in the field and have expertise about the requirements during severe weather events.
- There should be sufficient staffing of operational weather and flood forecasting areas to allow post-event analysis and continuous improvement of forecasting and warning services.
- There should be sufficient staffing of operational weather and flood forecasting areas to enable access to additional days of training to allow forecasters to maintain competency and currency in their technical skills. Forecasters should be provided with at least one training day per month.

d. the Bureau's capability to conduct seasonal forecasting

The CPSU has stressed the need for further resources to be put into seasonal forecasting in its submission to the 2009 inquiry into Long-Term Meteorological Forecasting in Australia¹⁰. In that submission the CPSU stated:

CPSU members said that the efficacy of current modelling and prediction systems were satisfactory or good. However members also noted the need for more resources to maintain and improve standards of modelling and meteorological prediction...

Australia is well placed to lead in these fields. One Climatologist pointed out that while the Bureau is 'heading down the right path' with dynamical seasonal outlook modelling 'clearly more resources need to be committed to

¹⁰ Community and Public Sector Union, *Submission to House of Representatives Standing Committee on Industry, Science and Innovation Inquiry into Long-term Meteorological Forecasting in Australia*, 2009

the problem to enable us to be world leaders in this area; something we are well capable of'.

These comments remain relevant two years later. As has already been stated in this submission, staffing levels are dangerously low. Much of what has been mentioned above in relation to understaffing, limitations on training, and the need for human observers applies equally to seasonal forecasting. Increased demands from Government agencies and the public is leading to higher work loads for already stretched staff which reduces the capacity of the Bureau to conduct seasonal forecasting.

In addition, CPSU members have reported that the operational group for seasonal prediction is very small. BoM has put more of its already limited resources into climate change modelling rather than seasonal prediction modelling. Members have also reported that it is hard and costly to get super-computing time to run the seasonal prediction models.

Another limitation on the success of the Bureau's seasonal forecasting is that the output of the seasonal forecasts is not well suited to the wide range of industry users who need the information. It is not in a format that industry users can include in their own models. Since the seasonal forecasting group is so small, there are no resources to liaise with stakeholders to develop a more tailored product that actually meets the needs of the community.

CPSU members in BoM are concerned that the Bureau will struggle to maintain its high standard of work into the future, particularly as the demand for long-term forecasting increases. Effective and efficient seasonal forecasting requires an appropriate amount of investment by the Australian government.