EFFICIENCY AND EFFECTIVENESS OF ACT FIRE SERVICES, 2022

A report for the United Firefighters Union, ACT Branch

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INTRODUCTION

Each year the Productivity Commission publishes a large amount of data on the efficiency and effectiveness of fire and rescue services as one component of its report on Government service provision.

For the last 2 years, the ACT Branch of the United Firefighters Union has commissioned me to provide a summary of these data as they relate to the ACT. This is the third report I have produced[1].

The data provided by the Productivity Commission are helpful. But they have limitations – some major, others relatively minor -- arising from problems associated with the Commission's broader performance framework and the difficulties that arise in trying to measure performance in essential services. These are explored in the Appendix to this report. The broad recommendation is that the data should be used with great caution.

1. **Financial trends**

Table 1 shows revenues for the ACT fire services and Australia in 2020/21, and compares these to the situation in 2019/20 and five years earlier (the figures are adjusted for inflation and are shown in constant 2020/21 prices). The table shows total revenues for the ACT fire services per person were 9% higher for the ACT ($198.34) than for Australia as a whole ($181.61). Per person, the ACT's revenues declined by 5%, whereas the decline for Australia was far higher at 19.2%. Why did revenues fall like this? That's because the previous year revenues grew dramatically as a result of the Black Saturday fires, particularly in Victoria and NSW. Over the five year period, total

[1] All the data in this report come from the Steering Committee for the Review of Government Service Provision 2022, Report on Government Services 2022, Productivity Commission, Canberra, (https://www.pc.gov.au/research/ongoing/report-on-government-services/2022/emergency-management/emergency-services, accessed on January 8, 2022). The tables in this report draw on the data provided in the supporting spreadsheet.

revenues (14.6%) and revenues per person (5.9%) increased at a slower rate than Australia as a whole (15.6% in total and 7.9% per person).

Table 1: Total revenues and revenues per person, fire services in the ACT compared to Australia as a whole (constant 2020/21 prices)

		Unit	*ACT*	*Aust*	*ACT as % of Aust*
2020-21					
Revenue		$m	85.6	4 666.3	
Revenue per person		$	198.34	181.61	109.2%
2019-20					
Revenue		$m	90.1	5 778.0	
Revenue per person		$	210.84	226.39	93.1%
2015-16					
Revenue		$m	74.7	4 036.2	
Revenue per person		$	187.35	168.28	111.3%
Percentage change					
2019/20-2020/21					
Revenues		%	-5.0%	-19.2%	
Revenues per person		%	-5.9%	-19.8%	
2015/16-2020/21					
Revenues		%	14.6%	15.6%	
Revenues per person		%	5.9%	7.9%	

Deflated using the General Government Final Consumption Expenditure (GGFCE) chain price deflator.

Source: Table 9A.1

The previous discussion focused on revenues. Now we turn to the major items of expense, shown in Table 2. It should be noted that the data are not comparable across jurisdictions, but are comparable across years within juridictions. They are also adjusted for inflation.

For the ACT, total costs per person ($239.6) are higher than revenues shown in Table 1 ($198.34). They increased more slowly than Australia as a whole over the last year (13% cf 17%), but much faster over the last 5 years (4.8% cf 0.4%). The higher rate of increase in costs over the last half decade is due to capital cost growth. While salary costs for the ACT increased more quickly than Australia as a whole over the last year (6.5% cf 7.2%), they increased

more slowly than Australia as a whole over the last five years (16.3% cf 17.7%).

Table 2: Expenses for fire services by major category, ACT and Australia as a whole, 2018/19, percentage change last year, 5 years and 9 years (constant 2020/21 prices)

	Unit	*ACT*	*Aust*
2020-21			
Labour costs - Salaries and payments	$m	64.8	2 630.0
% change last year		-6.5%	-4.2%
% change last five years		16.3%	17.7%
Capital costs		12.0	581.5
Other costs	$m	26.5	1 459.5
Total costs	$m	103.3	4 671.0
% change last year		-12.5%	-16.6%
% change last five years		13.4%	7.6%
Per person in the population	$	239.36	181.79
% change last year		-13%	-17%
% change last five years		4.8%	0.4%

Deflated using the General Government Final Consumption Expenditure (GGFCE) chain price deflator.

Note: data are not comparable across jurisdictions

Source: Table 9A.13

2. Human Resources

Table 3 shows data on the people who work in the fire services in the ACT and Australia as a whole. In the year to 2020/21, the ACT's paid firefighting workforce increased by 3.7% compared to a slight fall for Australia as a whole (-0.2%). This slight increase in the ACT's workforce relative to Australia's reversed a much stronger pattern in the previous five years, when the Australian firefighter workforce grow much more strongly (20.3%) than that of the ACT (2.5%). The pattern for the support workforce is slightly different, with a slight fall last year in the ACT (0.8%) contrasting to strong growth for Australia as a whole (6.0%). Over the previous five years, the ACT

support workforce grew much more slowly than for Australia as a whole (3.5% cf 20.9%). Clearly, growth in the ACT firefighting and support workforce has lagged well behind that for Australia over the last five years.

The attrition rate for the ACT firefighting workforce is almost a percentage point lower than for Australia (5.1% compared to 6.1%), suggesting that the paid firefighting workforce in the ACT is slightly more settled.

Table 3: Fire service labour force: professional and volunteers, 2015/16/-2020/21

	Unit	*ACT*	*Aust*
2020-21			
Firefighting workforce (FTE)		363	17459
Change last year		3.7%	-0.2%
Change last 5 years		2.5%	20.3%
Support workforce	no.	117	5 301
Change last year		-0.8%	6.0%
Change last 5 years		3.5%	20.9%
Total (e)	no.	480	22 759
Change last year		2.6%	1.2%
Change last 5 years		2.8%	20.5%
Firefighting workforce attrition	%	5.1	6.1
Firefighting workforce (proportion of total)	%	75.6	76.7
Firefighting workforce per 100 000 people (f)	rate	84.1	67.9
Change last year		2.7%	-0.9%
Change last 5 years		-5.2%	12.2%
Volunteers			
Firefighters	no.	1 277	144 159
ratio of volunteers to professional		3.5	8.3
Volunteers per 100 000 people (f)	rate	296.0	781.4
Change last year		3%	-1%
Change last 5 years		-18%	-17%

Note: paid employees are EFT; volunteers are headcount

Source: Table 9A.3

There is one other eye-catching difference between the ACT and Australia as a whole shown by Table 3. This is the relatively small size of the ACT volunteer firefighting service, and the corresponding significance of the professional service. The ACT is highly dependent on its professional firefighters, with only 3.5 volunteers per paid firefighter in the ACT compared to 8.3 for Australia.

The ACT's position is in reality rather more perilous than is suggested by these data on the volunteer firefighter workforce. The Productivity Commission's numbers combine the Rural Fire Service Volunteers (RFS) and Community Fire Unit (CFU) Volunteers. The latter are described on the Emergency Services Agency's Website as:

> a team of local residents who live close to bush land areas across the ACT. These local volunteers are trained and equipped by ACT Fire & Rescue to safeguard their homes during a bushfire until the fire services arrive. CFU members are a part of ACT Fire & Rescue and take direction from ACTF&R Officers but they are not fire-fighters. (https://esa.act.gov.au/join-us/volunteering/community-fire-units)

If we exclude the Community Fire Unit volunteers, the reported number of volunteers per 100,000 people would fall to less than 100. This underscores the heavy reliance of the ACT on paid firefighters.

To summarise the story so far:

- The ACT fire services appears to receive more revenue per person in the population than fire services in Australia as a whole (but note that the data are not strictly comparable)
- The ACT spends more per person on its fire service than is the case for Australia as a whole. Costs have been falling over the last year, and the increase is less than 13.4% over the last five years. When adjusted for population size, the increase is less than 5%

- Last year labour costs in the ACT fell by 6.5% compared to a fall of 4.2% for Australia as a whole
- The ACT has far fewer volunteers per 100,000 population than Australia as a whole, leaving it with a much thinner total frontline firefighting establishment than the country as a whole.
- The relative importance of the paid firefighting workforce in the ACT suggests that the ACT fire service requires a bigger spend per person compared to Australia as a whole
- Despite their relative importance to the ACT, the number of paid firefighters in the Territory per 100,000 people has fallen by 5% over the last five years. The number of paid volunteer firefighters has fallen by a large 18% over the same time period.

Having considered data on funding and staffing, we now turn our attention to various measures of effectiveness.

3**. Effectiveness: fire deaths and injuries**

The number of fire-related deaths each year in the ACT is low, at between zero and 8. In 2 of the last five years, the number was zero. The rate per million persons is therefore misleading. One or two fires in dwellings with no working fire alarm or in a difficult location can be the difference between an excellent or poor result. There were 3 fire deaths in the ACT in 2020. There were no landscape fire deaths in the ACT over the last 5 years.

Table 4: Fire deaths ACT and Australia, 2016-2020

	Unit	*ACT*	*Aust*
Deaths per million people			
Fire deaths			
2020	Rate	7.0	4.7
2019	Rate	–	4.0
2018	Rate	19.0	3.5
2017	Rate	–	3.7
2016	Rate	9.9	4.1
Landscape fire deaths			
2020-21	Rate	–	–
2019-20	Rate	–	1.3
2018-19	Rate	–	0.2
2017-18	Rate	–	0.1
2016-17	Rate	–	0.1
Number of deaths			
Fire deaths			
2020	no.	3	122
2019	no.	–	101
2018	no.	8	88
2017	no.	–	91
2016	no.	4	99
Landscape fire deaths			
2020-21	no.	–	1
2019-20	no.	–	34
2018-19	no.	–	5
2017-18	no.	–	2
2016-17	no.	–	2

Source: Table 9A.4

The number of fire-related hospital admissions in the ACT is also low, being between 30 to 50 per year. Expressed per 100,000 people, this translates into a fire injury rate that has been much lower than for Australia as a whole over each of the last five years (11.5 cf 14.5 in 2019/20).

Table 5: Fire related injuries ACT and Australia, 2015/16-2019/20

	Unit	*ACT*	*Aust*
Hospital admissions due to fire injury			
Per 100 000 people			
2019-20	rate	11.5	14.5
2018-19	rate	9.2	13.8
2017-18	rate	9.1	13.9
2016-17	rate	10.1	14.7
2015-16	rate	9.3	14.2
Total fire injury admissions			
2019-20	no.	49	3 697
2018-19	no.	39	3 466
2017-18	no.	38	3 436
2016-17	no.	41	3 574
2015-16	no.	37	3 416

Source: Table 9A.5

4. Effectiveness: buildings

Confinement of fire to room of origin is one of the most well recognised measures of firefighting effectiveness. The ACT's performance on this measure is patchy compared to other jurisdictions. Over the last year, the ACT contained a smaller percentage of all structure fires to their room of origin compared to Australia (67.3% cf 78.8%). Although slightly better than the previous year, the rate of containment remained behind Australia as a whole. The same is true for accidental structure fires, but the ACT's performance in containing incendiary and suspicious fires is better. For most years, the ACT's performance is superior to that of Australia, although last year it fell behind (58.3% cf 63.8%).

Unlike data on deaths, injuries and hospitalisations, the ACT's fire services on this measure are less effective than fire services elsewhere in the country.

Table 6: Confinement of fire to room of origin, ACT and Australia, 2016/17-2020/21

	Unit	*ACT*	*Aust*
Structure fires by all ignition types			
2020-21	%	67.3	78.8
2019-20	%	65.6	75.8
2018-19	%	68.9	75.7
2017-18	%	69.9	76.1
2016-17	%	69.4	75.5
Accidental structure fires			
2020-21	%	72.8	85.7
2019-20	%	72.5	83.6
2018-19	%	76.4	83.1
2017-18	%	76.7	84.0
2016-17	%	76.6	83.3
Incendiary and suspicious structure fires			
2020-21	%	58.3	63.8
2019-20	%	68.6	58.5
2018-19	%	61.5	58.9
2017-18	%	64.6	58.1
2016-17	%	70.0	56.2
Structure fires by other ignition types			
2020-21	%	57.9	60.9
2019-20	%	38.1	58.7
2018-19	%	52.2	57.5
2017-18	%	53.3	57.6
2016-17	%	45.0	57.8

Source: Table 9A.6

Another measure of effectiveness is accidental structure fires expressed at a rate per 100,000 people. This is shown in Table 7, for the ACT and Australia as a whole. The ACT consistently performs better than Australia as a whole on this measure. Despite a substantial increase in 2020/21 over the previous year, the ACT nevertheless had fewer structure fires (72.2 per 100,000) than Australia as a whole (75.1 per 100,000).

Table 7: Accidental structure fires per 100,000 population, ACT and Australia

	Unit	*ACT*	*Aust*
2020-21	rate	72.2	75.1
2019-20	rate	54.0	79.5
2018-19	rate	73.7	82.5
2017-18	rate	70.2	85.4
2016-17	rate	84.7	82.1
2015-16	rate	86.2	82.7
2014-15	rate	89.1	81.9
2013-14	rate	84.1	85.6
2012-13	rate	96.9	94.6
2011-12	rate	114.5	95.5

Source: Table 9A.9

Another measure of effectiveness is the value of insurance claims. These data are shown in Table 8.

Table 8: Building and contents insurance fire claims, number, average value and value per 100,000 population, ACT and Australia, 2016/17-2020/21

	Unit	*ACT*	*Aust*
Number of claims incurred			
2020-21	no.	101	7 066
2019-20	no.	128	15 002
2018-19	no.	80	7 826
2017-18	no.	83	8 915
2016-17	no.	124	9 237
Average value of claims			
2020-21	$	90 010	84 032
2019-20	$	67 365	61 430
2018-19	$	90 004	74 520
2017-18	$	69 659	66 418
2016-17	$	42 612	59 927
Total value of claims per person in the population			
2020-21	$	21.07	23.11
2019-20	$	20.17	36.11
2018-19	$	16.99	23.16
2017-18	$	13.90	23.90
2016-17	$	13.00	22.70

Source: Table 9A.7

On this measure, the ACT is again a strong performer. The ACT consistently has claims per person below the value for that of Australia as a whole and that's even though the average value of claims has increased much faster than Australia as a whole between 2016/17 and 2019/20. In 2021, the average value of claims per 100,000 population was $21.07 compared to $23.11 for Australia as a whole (a difference of almost 10%).

In summary, the Productivity Commission's data on effectiveness show the ACT fire service to be performing relatively well as measured by the low number of annual deaths and injuries, confinement of fires to room of origin, the number of accidental fires and also the value of building and content fire related claims per 100,000 population.

5. Efficiency

The single most widely used measure of fire service efficiency is the time taken to get to a fire.

Care must be taken in interpreting this measure, because travel times are clearly a product of congestion, the time of call out, the reliability of vehicles, the ease of getting a fire truck to the building that is on fire, and so on. It is partly for these reasons that the Productivity Commission recommends not comparing performance across jurisdictions.

The response times by jurisdiction are shown in Tables 4. The top half of the Table shows response times for the 50th or middle percentile (one hundredth) of call-outs. The ACT's performance improved in 2020/21, to be equal best with Victoria at 6.9 minutes. At the 90th percentile, the ACT again was the best performing jurisdiction at 10.8 minutes. Overall, these are a very good set of numbers for the ACT.

Table 9: Response times by jurisdiction including call taking time, 50th and 90th percentiles, 2016/17-2020/21, statewide (mins)

	50th percentile								
	Unit	*NSW*	*Vic* (b)	*Qld* (c)	*WA*	*SA* (d)	*Tas*	*ACT*	*NT*
Response times									
2020-21	min.	7.9	6.9	8.1	9.6	8.0	8.2	6.9	8.5
2019-20	min.	7.8	6.9	8.1	9.3	8.0	9.2	7.5	8.4
2018-19	min.	7.6	6.6	8.1	9.7	8.0	8.5	7.1	8.0
2017-18	min.	7.2	6.9	7.9	8.7	8.0	8.5	7.1	7.9
2016-17	min.	7.5	6.8	8.1	8.7	8.1	9.0	6.8	7.8
	90th percentile								
2020-21	min.	15.0	11.1	12.8	17.2	17.0	16.4	10.8	20.3
2019-20	min.	14.5	10.8	12.5	16.4	17.0	17.9	10.9	19.8
2018-19	min.	14.0	10.4	12.6	17.1	16.0	17.2	10.5	17.5
2017-18	min.	13.5	11.0	12.3	15.5	15.0	20.4	11.3	17.6
2016-17	min.	14.5	10.8	12.5	15.4	12.5	17.5	10.5	18.8

Source: Table 9A.10

In summary, the available data show the ACT fire service to be relatively efficient, with small declines in some areas of performance being compensated for by increases elsewhere. This is despite the ACT having far fewer frontline paid and volunteer firefighting resources than Australia as a whole.

6. Conclusion

This report has summarised the latest fire services data published by the Productivity Commission. The data show that the ACT for the most recent

year of investigation has funded its fire service at a slightly higher level than Australia as a whole, and that while it spends more on fire services this probably reflects a need to have a larger paid firefighting force because of very low numbers of volunteers. Over the last 12 months, the ACT's fire service costs have fallen by 13%, but costs for Australia as a whole fell faster, probably reflecting the impact of bushfires the previous year in Victoria and NSW.

Despite falling costs, the ACT fire service has hired almost 4% more professional fire fighters over the last year (compared to almost no growth for Australia as a whole). Nevertheless, over the last five years growth in the professional fire fighting force has been far lower than that of Australia as a whole.

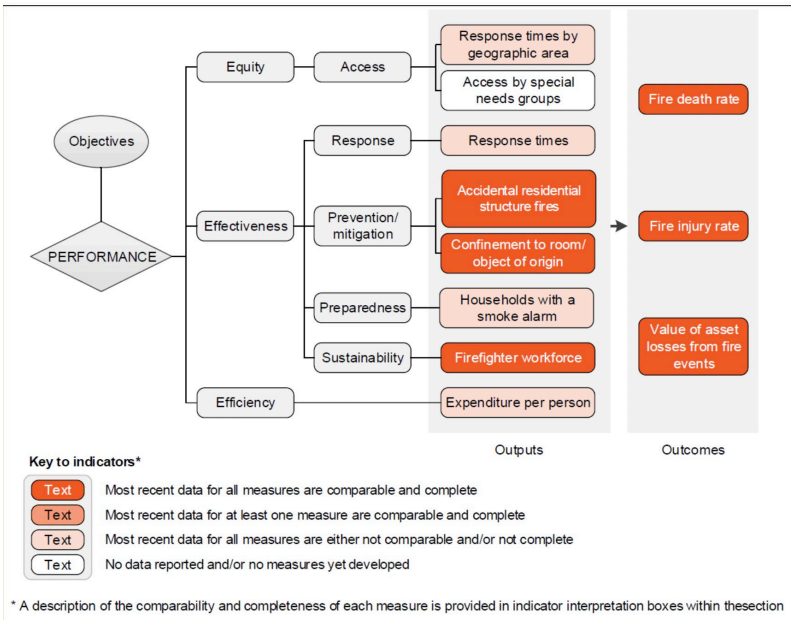
This has compounded one of the main challenges facing the ACT: the relatively low number of volunteers, which per 100,000 people remains at less than 40% of the number for Australia as a whole.

Despite continuing to have fewer paid and volunteer frontline firefighters, the ACT continues to punch above its weight according to the main effectiveness and efficiency measures such as deaths, injuries, insurance claims, containment of fires to rooms of origin and response times.

Appendix: The Productivity Model and its limitations

The Productivity Commission uses a framework of performance indicators to assess the fire services. This is shown in Figure 1.

Figure 1: Efficiency and effectiveness of fire services according to the Productivity Commission



The framework has 3 core elements – equity, effectiveness and efficiency – which are broken down into sub-elements (eg access, response, etc). These are then converted to measures of outputs (eg response times) and then outcomes (eg deaths). This framework has the benefit of being relatively simple and its implications seem clear cut. Intellectually, it derives from a particular logic associated with industrial production, such as car manufacturing, where each input can be isolated and measured discretely before and during the production process, and also when combined as a finished article. It encourages the gathering and use of data to see if outputs are increasing, efficiency is improving, and costs are falling.

One limitation of this approach is that it depends on the quality of the data that are available, and this depends heavily on the respective agencies across

the states and territories gathering data in a similar way over time. This is not always the case, as the Productivity Commission readily admits. Care should be taken to ensure the data are comparable before reaching conclusions about what the numbers show.

Even where the data are comparable, they are open to different interpretations; they are rarely clear-cut. Consider for example how we should interpret something as apparently straightforward as declining fire service expenditure. This could be interpreted as a measure of increased efficiency. But that is not necessarily true. It could simply show that fire fighters are being paid less on average than the year before; that more use is being made of less experienced and less skilled firefighters; or less overtime is required because there are fewer fires. That tells us nothing about efficiency, but rather more about the Government's remuneration and employment policies. Far more important are the trends in the relationships between real inputs and outputs, and whether these deliver the quality services expected from them as shown by for example the number of fires, their scale and the damage to life and property arising from them.

There are similar problems associated with data on increased spending. This could be interpreted to mean a decline in efficiency, especially if the number of fires stays the same or even falls. This is also open to dispute. It would be entirely reasonable and expected as good policy for a Government to spend more on fire services at a time when climate change is making it more likely that we will experience with increased likelihood major fire events of the type we saw last summer. The fire services must be ready and available just in case, even if that means having equipment that are rarely used and firefighters that spend a goodly share of their time waiting to be called.

Almost all of the measures of efficiency and effectiveness in the Productivity Commission's model are open to this sort of challenge.

But there is another more important limitation. As was pointed out earlier, a core assumption underpinning the framework and its methodology is that fire services are like a factory where inputs, outputs and outcomes are clearly

separate and easily measured. It is relatively easy to work out the efficiency of car manufacturing, for example, because the inputs and outputs are separate and measurable (people, materials, machinery and the finished vehicles). This is not so in the fire services. Each fire is different to the previous one – some are big, others are small; some are easy to extinguish, others might last for days; some involve toxic chemicals, others are chemical free. Some big fires affect lots of lives and property, yet others may have little impact. Yet all fires must be suppressed and their damage mitigated, and we cannot tell by looking at raw numbers how serious or difficult each fire was. Thus, the number of incidents need not reflect the real resources required to extinguish fires or the potential harm associated with them. The outputs – fire prevention, suppression and mitigation – are all different not just from one another but on a case-by-case basis, and in the case of prevention at least, almost impossible to measure. Yet paradoxically, preventing a fire spreading can be more important than putting it out.

Also, unlike a factory, fires and the ability of fire services to prevent and suppress them are all affected by decisions and activity over which the fire services have no control. Climate change, the use of combustible cladding in buildings, decisions by large companies to underspend on fire prevention and mitigation, and traffic congestion slowing fire response times are all examples of ways in which the ability of fire services to manage the number and severity of fires is a product of decisions and forces that go well beyond the fire service to determine.

A related issue is that fire services must always be available, even in the event that there are no fires; availability is a critical part of an efficient fire service, even if for most of the time the equipment and firefighters are simply on standby. The right equipment needs to be at hand, as does the skilled labour, especially, as is the case now, when the scale and complexity of fires is increasing. And unlike manufacturing, space and time play a distinctive, yet crucial role in the production of fire services. This is because the location of the “inputs” is not where the “output” and “outcome” is delivered. It takes time to get to a fire and put it out. Time is a major determinant of the damage

done to people and property, and each fire presents a different challenge in space and time to others. The “inputs”, “outputs” and “outcomes” are rarely, if ever, located in the one space and at one time. The location of fire stations and the ready availability of skilled fire firefighters are core determinants of whether fire services can be delivered efficiently and effectively. Fire services are not at all like a factory, yet the Productivity Commission effectively assumes that they are.

It is for these reasons that, however attractive they appear for policy purposes, the Productivity Commission’s framework and data should be treated with great care and hasty conclusions avoided at all costs.