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12 October 2017

Dr Ron Ben-David
Chairperson
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000

Dear Dr Ben-David,

Thank you for the opportunity to submit our comments on the Measuring Productivity in the Local Government Sector – Consultation paper published by the Essential Services Commission (ESC) on 13 September 2017.

Whilst we are supportive of the objectives of increased transparency and accountability for local government, our concerns regarding the Fair Go Rates framework and the inclusion of an 'efficiency factor' remain.

As one of the fastest growing municipalities, not only in Victoria but Australia, Wyndham is faced with a number of opportunities and challenges. We recognise that growth creates opportunities for social and economic development in the municipality. However, it also creates a number of complex challenges for Council and residents, with the most notable being the provision of adequate support services, infrastructure and employment opportunities.

The underlying assumption that an 'efficiency factor' is required to create incentive for councils to operate more efficiently we feel is misplaced. Wyndham City focuses heavily on delivering social value through its service review, planning and budgeting processes. This recognises that 'efficiency dividends' can be delivered to the community in numerous ways and should not be confined to a subjective calculation regarding rates.

If you have any questions regarding the issues raised in this letter or the attached paper please contact either myself or Binda Gokhale, Chief Finance Officer on (03) 9742 0857.

Yours sincerely,

Kelly Grigsby
Chief Executive Officer



1. Introduction

Wyndham City Council welcomes the opportunity to submit our comments on the Measuring Productivity in the Local Government Sector – Consultation paper published by the Essential Services Commission (ESC) on 13 September 2017.

We are strong advocates of accountability and transparency as the fundamental aspects of good governance. Our ongoing community engagement and dialogue supports these objectives as we focus our efforts to contain the cost of living for residents whilst ensuring the financial sustainability of our Council. However, we remain opposed to the imposition of a rate cap and do not support the application of an 'efficiency factor' as proposed in the ESC formula.

As outlined in our earlier submissions regarding rate capping, Wyndham City remains one of the fastest growing municipalities, not only in Victoria but Australia. Our forecasts anticipate that this growth will continue for decades to come, driven primarily by the volume of developable land available within the municipality. While this growth creates opportunities for social and economic development, it also creates complex challenges in the provision of adequate infrastructure and support services.

Our assessment of, and commentary on, the productivity measures and the calculation of an 'efficiency factor' proposed in the consultation paper is therefore based on our need to manage any risks to our financial sustainability and service delivery commitments to our community.

2. Discussion

The following section steps through each of the four possible approaches identified to set an efficiency factor:

Date Envelopment Analysis (DEA):

Since DEA deals with the relationships between inputs and outputs, it is important to select the most appropriate inputs and outputs to obtain accurate and relevant results.

- We do not agree that the model as outlined captures the major outputs for local government. Given the vast number of services provided by local government, the model is inadequate in its measurement of productivity based simply of households and length of roads.
- All five variations of the model estimated a fall in productivity over the period 2010/11 to 2016/17. This in itself suggests that relevant data is not being captured and/or that there are broader economic factors that need to be taken into consideration.
- The report suggests that this fall in productivity is due to decline in technological change. Given the limitations of the modelling identified by the Predictive Analytics Group (PAG), we feel that these empirical findings need to be able to be supported by clear objective evidence before its application is considered.
- Attachment 1 to this submission contains an independent report commissioned by Wyndham from Professor Brian Dollery. Pages 18-19 of this commissioned report clarifies conclusions from Drew, Kortt and Dollery (2015) in terms of population and efficiency outcomes. It stresses that population density and not population size is the key factor in determining service, revenue and

infrastructure needs. For Wyndham, a rapidly changing population and thereby population density is a critical factor in determining service and infrastructure needs.

Small Notional Factor of 0.05%:

The application of a notational factor cannot be supported.

Based on the commentary in the report, it is clear that the 0.05% proposed was chosen in any entirely arbitrary fashion and was also intended to further augment the impact of the rate cap.

There is a value judgement being made that 'efficiency' is delivered only through a reduction in rates. This discounts the benefits and future savings from investment in local infrastructure maintenance and asset renewal.

Proxy Value from Historic Austrian Industry Productivity Data:

As the paper outlines, the proxy method based on ABS data does not include industries which are likely to best reflect the local government sector. Results obtained therefore will be lacking in comparability.

In relation to the treatment of negative efficiency values, we do not agree that these should be ignored as proposed under the recommended option 2. Option 2 effectively requires the local government sector to deliver a more efficient outcome than the rest of the economy.

If the commission were to proceed with the proxy value approach, our view would be that negative values should be included as under option 1 providing for a more equitable outcome.

Victorian Local Government Performance Framework:

The paper correctly outlines the deficiency of this approach in that comparisons are largely based on partial productivity measures.

3. Summary

- We do not support the inclusion of an 'efficiency factor' in setting a rate cap.
- Under current legislation, The Minister can set a rate cap based on the projected CPI together with any other desired adjustment.
- Each of the models presented in the consultation paper have shortcomings that if adopted would produce suboptimal outcomes for the sector.
- It would be more productive to reevaluate the basis for setting the rate cap and establish a Local Government Cost Index based on a basket of goods and services relevant to councils.
- Any rate cap set needs to reflect the different mix of services and costs of each sub-group of councils in Victoria. It is not a case of 'one size fits all'.

Submission to the Essential Services Commission

**MEASURING PRODUCTIVITY IN THE LOCAL
GOVERNMENT SECTOR**

Essential Services Commission

Consultation Paper

September 2017



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Disclaimer

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1. Introduction

Across the world, local government systems frequently operate under restrictive regulatory legislation and Australian state and territory local government systems are no exception (Dollery, O’Keefe and Crase (2010). An especially draconian form of restrictive regulation are state-imposed limits on council expenditure and revenue-raising which go to the heart of local financial autonomy. In essence, the justification for rate-capping – central/state government imposed limitations on increases in property taxes - typically rests on the claim that since local government enjoys a spatial monopoly power in the striking of rates, public policy intervention is necessary to temper potential abuse of this monopoly power (see, for example, Drew and Dollery, 2015; Hay and Martin, 2014; Temple, 1996).

In Australian local government ‘rate-capping’ or ‘rate-pegging’ has been employed in New South Wales (NSW) in its modern form since 1976, the Northern Territory (NT) caps mining and pastoral rates, Victoria introduced property tax limitations in 2016/17 and rate-pegging is presently the official policy of the South Australian Coalition on the eve of the March 2018 election. While rate-capping is controversial, especially owing to its impact on local infrastructure maintenance and renewal, it nevertheless enjoys considerable populist appeal in Australia and elsewhere.

Following the electoral victory of the Andrews Government in Victoria in late 2014, the incoming Minister for Local Government Natalie Hutchins declared that rate-capping would be introduced into Victorian local government from the 2016/17 fiscal year onwards and linked to increases in the Consumer Price Index (CPI). Premier Andrews (2014) justified the implementation of a rate-cap on the argument that ‘councils will be forced to limit rate rises and

detail where every dollar will be spent, because ratepayers deserve a fair go' (Masanauskas and Gillett, 2014)

Critics argued that the timing of the introduction of rate-pegging in Victorian local government was far from ideal. For instance, Drew and Dollery (2015, p. 141) pointed out that 'not only has the Commonwealth Government announced a three-year freeze on Financial Assistance Grants (which represent a substantial proportion of Victorian municipal income), but Victorian councils have also been subjected to defined benefit superannuation imposts in the order of half a billion dollars over the past few years'. They contended that 'if the Victorian Government proceeds with its plan to cap rates – starting from the 2016/17 financial year – one (or more) of three responses must occur (in the absence of an increase in funding from higher tiers of government): (a) additional debt must be incurred; (b) local services must diminish; or (c) operational efficiency must increase'.

Despite opposition from Victorian local government, the Andrews Government introduced rate-capping in the 2016/17 financial year. In terms of section 185D of the *Local Government Act 1989*, the Victorian Minister for Local Government is empowered to determine an 'average rate cap' on the basis of the projected increase in the CPI for the financial year in question, together with any other desired adjustment. In order to decide on an appropriate value for the average rate cap, since 2016/17 the Minister has sought the advice of the Essential Services Commission. The Commission (2017, p.2) duly recommended the inclusion of an 'efficiency factor' to the rate-peg to be 'set at zero for the year 2016/17 and 0.05 per cent for the year 2017/18'. However, for both the 2016/17 and 2017/18 financial years the Minister decided that the average rate cap would be based on the forecast CPI alone with no efficiency factor adjustment.

The Essential Services Commission (2017, p.2) nonetheless anticipates that it will continue to be asked for advice by the Minister for Local Government on an appropriate rate-cap. Moreover, despite the fact that the Minister has twice rejected its advice to include an efficiency factor by way of an adjustment, the Essential Services Commission (2017, p.2) contends that it will reiterate its earlier recommendation that an efficiency factor be included.

In order to determine the optimal method to calculate the efficiency factor in the rate-cap formula, the Essential Services Commission commissioned the Predictive Analytics Group as well as Deloitte Access Economics for advice on how best to compute the efficiency factor. In addition, in September 2017, the Essential Services Commission published a Consultation Paper entitled *Measuring Productivity in the Local Government Sector* and called for submissions on this paper by 13 October 2017.

Measuring Productivity in the Local Government Sector investigated the underlying productivity trends in the Victorian local government sector in order to establish a foundation for calculating an efficiency factor which can create incentives for Victorian local councils to operate more efficiently. It proposed four alternative approaches to calculating an efficiency factor: a notational value of 0.05% annually, a proxy measure for productivity derived from Australian Bureau of Statistics (ABS) data, Data Envelopment Analysis (DEA) employing a Malmquist productivity index, and a local government performance reporting framework. The efficiency factor is intended to encourage local councils to aim to reduce input costs to obtain the targeted efficiency gain over a fixed period of time. Using 2010/11 to 2015/16 data derived from the Victoria Grants Commission, the DEA Malmquist productivity index has been used to decompose total factor productivity change into technical efficiency and technological change.

Measuring Productivity in the Local Government Sector examined the advantages and disadvantages of each of these four alternative approaches against five criteria: objectivity, accuracy, applicability, defensibility and cost effectiveness. *Measuring Productivity in the Local Government Sector* determined the DEA approach best met these criteria, but nonetheless had serious disadvantages. The present Report represents a response to the call for submissions by the Essential Services Commission to its deliberations in *Measuring Productivity in the Local Government Sector*.

The Report is divided into seven main parts:

- Section 2 discusses nature of rate-capping and the challenges it poses.
- Section 3 considers longstanding debate in NSW on the merits of rate-capping.
- Section 4 summarises the international empirical evidence on the impact of rate-capping.
- Section 5 outlines Australian empirical studies on the effects of rate-pegging.
- Section 6 briefly summarises the four methodological approaches for calculating the efficiency factor offered by the Essential Services Commission (2017) in its *Measuring Productivity in the Local Government Sector* and assesses their strengths and weaknesses.
- Section 7 outlines how the Essential Services Commission (2017) ranked the four approaches to calculating the efficiency factor.
- Section 8 concludes the Report by *inter alia* arguing that there is no need for an efficiency factor in a rate-pegging system, such as the *Fair Go* system, and presenting the case for an alternative approach to the basis of rate-capping using a Local Government Cost Index.

2. Rate-capping

Rate-pegging represents a sub-set of a larger category of public sector regulation dealing with state-imposed limitations on expenditure and taxation by local authorities, including property taxes (Anderson, 2006; Drew and Dollery, 2015). Rate-capping has generated a substantial theoretical and empirical literature with a strong American institutional focus (see, for example, Mullins and Wallin, 2004; McCubbins and Moule, 2010) largely since state-wide limitations on local taxes, fees and charges, including property taxes, are relatively common in the United States, often deriving from referenda (Figlio and O’Sullivan, 2001). In addition to this American literature, some scholarly work has been undertaken on tax limitations in local government in other parts of the world, including Australia (Dollery, Crase and Byrnes, 2006; Dollery and Wijeweera, 2010; Dollery and McQuestin, 2017; Drew and Dollery, 2015).

The economic foundation for rate-capping is straightforward: local government typically holds a monopoly in providing local services. As a result, local councils can deliver these services at excessive prices and/or inefficiently, thereby justifying regulation by higher levels of government aimed at the efficient and equitable provision of local services (Bailey, 1995). In general, property tax limitations have two main objectives. Firstly, in terms of economic efficiency, optimal regulation should strive to achieve (a) allocative efficiency, where local community preferences should be reflected in the range of local services, and (b) productive efficiency, where local services should be delivered at least-cost. Secondly, policy intervention regulation also should aim at equity objectives, such as ensuring essential local services are provided to all households at reasonable prices.

Effective regulation is notoriously difficult to implement, including in local government (Hillman, 1995). Intervention is further complicated since councils possess taxation powers,

absent in the private sector and most public utilities. Finally, rate-pegging poses particular problems since regulatory intervention does not target specific local services but instead the ‘tax-price’ of a basket of local public services (which are mostly unpriced) and which differ between different local councils.

3. NSW Debate on Rate-pegging

In NSW local government, the Independent Pricing and Regulation Tribunal (IPART) (2009, p.55) has identified four major arguments in favour of rate-pegging:

- Rate-pegging ‘prevents the abuse of monopoly power’ in the provision of basic local services.
- Rate-pegging limits the ‘provision of non-core services and infrastructure that might prove unsustainable to ratepayers’.
- Rate-capping may reduce ‘the risk of poor governance in the local government sector’.
- Rate-pegging ‘limits the ability of councils to divert funds from essential infrastructure to other projects’, especially outlays on ‘marginal services’ better provided by private firms.

The 2006 Independent Inquiry into the Financial Sustainability of NSW Local Government offered two further arguments:

- Compared with other Australian local government systems, NSW rate-pegging had been effective in its primary aim of restraining increases in rates.
- Rate-pegging had obliged NSW councils to become more efficient, especially in limiting overheads and administrative costs.

Dollery, Crase and Byrnes (2006, p.15) proposed a public choice case for rate-capping in Australian local government. Drawing on Wittman (1995), they argued that the ubiquity of ‘local

government failure' in Australia had stimulated a demand by ratepayers for strict regulatory oversight of councils by state regulatory agencies, especially in financial matters. Accordingly, in NSW rate-capping, ““watchdog” institutions will form an agency relationship with local government voters to demystify fiscal illusion by monitoring council revenue and expenditure decisions on behalf of voters’.

However, rate-pegging in NSW has also come under sharp criticism. For example, IPART (2009, p.13), has pinpointed four lines of attack:

- Rate-pegging ‘limits councils’ capacity to provide local services.
- Rate-pegging prevents ‘infrastructure backlogs from being addressed’,
- Rate-pegging has caused municipalities to impose ‘higher user pays charges which could result in pricing inequities’.
- Rate-pegging runs counter to ‘local democracy’.

The NSW Local Government and Shires Association (2008, p.14) – now Local Government NSW – proposed a more general argument against rate-pegging. In particular, rate-capping has created ‘public expectations about maximum rate increases, placing political pressure on councils to stay within the limit and not seek special variations’. Similarly, rate-pegging enables NSW local councils to engage in politically expedient ‘blame shifting’ onto the NSW Government. In particular, rate-capping offers political ‘default option’ since all rate increases can be attributed to the NSW Government agencies, community consultation is avoided, and local authorities can ‘blame the state government for their financial deficiencies’. It is claimed that these factors have given rise to the ‘under-provision of community infrastructure and services’ and a substantial local infrastructure backlog.

4. International Empirical Evidence on Rate-pegging

While comparatively little is known about the effects of expenditure and tax constraints on local government, the empirical literature has shown that these measures can have substantial unanticipated effects (Bae, Moon and Jung, 2012; Kousser, McCubbins and Moule, 2008; Skidmore, 1999). For example, Temple (1996) found evidence indicating that state-wide limits on property taxes induced a relatively larger reduction in local services than local administration. In a similar vein, Vigdor (2004) established that tax limitations succeed because they allowed voters to lower tax rates in local communities other than their own where they hold property, invest or work, but have no vote.

Two findings in the international empirical literature have particular significance for Australian debates over rate-pegging. Firstly, property tax limitations often induce local authorities to increase income from other revenue sources. For instance, in a study of 29 American states, Shadbegian (1999) found many local councils shifted income away from property taxes toward 'miscellaneous revenue'. Skidmore (1999) found analogous results in his analysis of 49 American states. In their US study, Kousser, McCubbins, and Moule (2008) established that most states increased charges and fees following the introduction of tax limitations. Along similar lines, Mullins and Joyce (1996) examined 48 American states from 1970 to 1990 concluding that while tax limitations reduced local taxes, these reductions were offset by increases in fees and charges. In an analysis based on 1,400 American municipalities, Preston and Ichniowski (1991) demonstrated that revenue limits decreased property tax revenue but increased 'other revenue'.

Secondly, available empirical evidence suggests that the impact of tax limitations is not uniform across local authorities and depends instead on the characteristics of local councils. For instance, Brown (2000) found that in Colorado local government the effects of limitations depended on

council size and were more potent in small councils. Similarly, Mullins (2004) established that limitations were most effective in poor municipalities.

5. Australian Empirical Evidence on Rate-pegging

Two empirical analyses have been undertaken on the impact of rate-pegging in Australian local government (Dollery and McQuestin, 2017; Drew and Dollery, 2015). Both papers followed a similar methodological approach by comparing the performance of NSW local government (which has had ongoing rate-capping since 1976) with (a) Victorian local government prior to its implementation of rate-pegging in 2016/17 and (b) SA local government prior to its possible introduction of rate-capping in the aftermath of the SA state election in March 2018.

In their empirical assessment of rate-pegged NSW local government and uncapped Victorian local government to assess whether the longstanding policy of rate-pegging in NSW had produced any statistically significant differences in inter-municipal equity, financial sustainability and council efficiency between the two states. Drew and Dollery (2015, p.165/6) found that ‘NSW councils have lower levels of inter-municipal residential revenue equity, higher levels of debt and diminished levels of asset renewals’. They concluded that ‘our analysis of efficiency provided no conclusive evidence to support the claim that rate-capping enhances municipal efficiency’ and ‘we thus conclude that our analysis provides little support for rate-capping’. They noted further that ‘our findings support the unintended deleterious consequences cited in the international literature on property tax limitations’.

Following the same general approach, Dollery and McQuestin (2017) examined rate-pegged NSW local government and uncapped SA local government on three separate key measures

(revenue effort, financial sustainability and efficiency) for the period 2013 to 2016. Dollery and McQuestin (2017) drew the following conclusions from their analysis:

‘With respect to revenue effort, the results from our stratified sample show that rate-capping in NSW has not served to reduce inter-municipal revenue effort inequities. It is thus most unlikely to minimise these inequities in SA local government. Similarly, the claims made by advocates of rate-pegging that it improves financial sustainability are rebutted by our findings. Using council debt per capita as a proxy for financial sustainability, our analysis demonstrates that NSW local authorities have much higher debt than their SA counterparts despite the four decade long rate-pegging regime in NSW. Finally, the argument that the operational efficiency of councils improves under rate-capping is not borne out by our results. In common with other empirical work in the area, we use municipal expenditure per capita as a measure of the operational efficiency of local authorities. Our results show that that rate-pegging does not increase the efficiency of local councils: for each year in our sample, the efficiency of NSW councils falls well below SA councils. In sum, on all three dimensions of local government examined in our empirical analysis, we find SA councils performance better than NSW local government notwithstanding the latter’s longstanding rate-pegging policy’.

6. Methodological Approaches Examined by the Essential Services Commission (2017)

Under the Victorian Government's *Fair Go* rates system, an annual rate-cap limits the amount by which local authorities can increase their general rates without special approval. The system obliges the Essential Services Commission to perform several functions, including advising the Minister for Local Government on the annual average rate cap as well as evaluating council applications for a higher cap.

In its final report *A Blueprint for Change: Local Government Rate Capping & Variation Framework Review* on how the *Far Go* system should operate, the Essential Services Commission (2015) recommended that the rate-peg encompass annual forecast changes in the Consumer Prices Index (CPI) and the Wages Prices Index (WPI) as well as an 'efficiency factor'. The claimed purpose of the efficiency factor is to generate incentives for local councils to operate more efficiently and ensure that efficiency gains are passed on to local residents through lower rates.

If an efficiency factor is > 0 , then it will lower the value of the rate-cap and further inhibit the collection of income from council rates. The Essential Services Commission (2015) recommended that the efficiency factor should initially be set at zero in 2016/17 and thereafter increased by 0.05 percentage points annually from 2017/18 onwards.

The calculation of the proposed efficiency factor is problematic, given the high degree of diversity of council characteristics in the Victorian local government system. In order to decide upon an optimal approach, *Measuring Productivity in the Local Government Sector* considered four main methodologies:

Method 1: A small, notional factor of 0.05 per cent cumulatively (i.e. ‘each year add 0.05 per cent to the previous year’s efficiency factor, but capped in the longer term’, as proposed in the Essential Services Commission’s (2015) *A Blueprint for Change, Local Government Rates Capping & Variation Framework Review: Final Report*)

Method 2: A proxy value drawn from historic Australian industry productivity data collected and calculated by the ABS.

Method 3: A value calculated using data from the data envelopment analysis (DEA).

Method 4: Using performance data from the local government performance reporting framework to determine the efficiency factor.

In order to determine which of these methods to employ to calculate a realistic efficiency factor, the Commission sought advice from the Predictive Analytics Group and Deloitte Access Economics. *Measuring Productivity in the Local Government Sector* outlines the advice received from these consultants on a suitable methodology for calculating an appropriate long-term rate for the efficiency factor. We now consider each of these four approaches in the order in which they are dealt with in *Measuring Productivity in the Local Government Sector*.

6.1 Data Envelopment Analysis

In its *Local Government: Measuring productivity using a direct method*, the Predictive Analytics Group (2017) used DEA to estimate productivity trends in the Victorian local government sector in order to calculate an efficiency factor. DEA can be employed *inter alia* to determine (a) annual changes in technical efficiency (i.e. movements along a given frontier) and (b) annual technological change in local government resulting from new processes and improved technologies (i.e. shifts to a higher frontier). The product of (a) and (b) generates a Malmquist index which enables the calculation of a total factor productivity change (TFPC) index: $TFPC (\%) = (\text{Malmquist index} - 1) \times 100$

Since DEA deals with the relationships between inputs and outputs, it is obviously important to select the most appropriate inputs and outputs in order to obtain accurate and relevant results. In its *Local Government: Measuring productivity using a direct method*, the Predictive Analytics Group (2017) recommended five possible input/output combinations for a DEA aimed at determining annual technical efficiency and total factor productivity change in Victorian local government.

The Predictive Analytics Group (2017) qualified these combinations by adding a caveat the input/output combinations must ‘encapsulate the broadest possible range of inputs and outputs which are common to all local governments and account for the full scale of their operations’, outputs used must be the ‘key council outputs’ and the ‘main influences on costs and productivity’. Furthermore, the Predictive Analytics Group (2017) noted that ‘good modelling practice indicates that there can be risks of including larger numbers of marginal variables, and this may result in double counting and errors in the analysis’, adding that this is why it

deliberately limited the number of variables employed. Table 1 sets out the Predictive Analytics Group (2017) the input/output combinations:

Table 1: Predictive Analytics Group (2017) input/output combinations

Model	Inputs	Outputs
Model 1	council staff (\$) capital (\$)	households, businesses, length of roads (km)
Model 2	council staff (FTE) capital (\$)	households, businesses, length of roads (km)
Model 3	council staff (\$) capital (\$)	households, businesses, length of roads (km), waste collected (tonnes)
Model 4	capital (\$) operating expenses (excl. depreciation) (\$)	households, businesses, length of roads (km)
Model 5	operating expenses (excl. depreciation) (\$) + depreciation (\$)	households, businesses, length of roads (km)

Source: Predictive Analytics Group (2017)

In its assessment of these five proposed models, the working group drawn from Victorian local government offered the Essential Services Commission (2017) a number of observations:

- Where municipal services are outsourced, staff costs may not be adequately reflected in models using only council staff. This was addressed by including operating expenses, as in model 4 and model 5.
- Given the lumpiness of capital expenditure through time, depreciation is a more appropriate measure of inputs than capital expenditure in a given year, as in model 5.
- Given great variation across the local government sector, waste data is not reliable and should not be included in the modelling. Accordingly, waste was only included in model 3 to reflect waste collection as a major council activity.

Other observations offered by the working group were not pursued further, including (a) both household and business numbers may result in some double counting where residential properties also serve as businesses, (b) vacancy rates could be used to adjust the number of households to more accurately reflect current population size, and (c) service quality was not addressed in the models. Table 2 shows the results of the model estimations conducted by the Predictive Analytics Group (2017):

Table 2: DEA Estimation Results on Malmquist Index and TFPC, 2010/11 to /2016/17

Model	Average	Average TFPC	Average	Average TFPC
	Malmquist Index Single Group Analysis	Single Group Analysis (%)	Malmquist Index Single Group Analysis	Multiple Group Analysis (%)
Model 1	0.993	-0.7	0.993	-0.7
Model 2	0.994	-0.6	0.994	-0.6
Model 3	0.993	-0.7	0.993	-0.7
Model 4	0.984	-1.6	0.985	-1.5
Model 5	0.977	-2.3	0.976	-2.4

Source: Predictive Analytics Group (2017)

The results in Table 2 must have come a something of a surprise to both the Predictive Analytics Group and the Essential Services Commission since all five models yield a decline in the average TFPC score. In essence, this means that all five models estimate that productivity over the period 2010/11 to 2016/17 fell.

The Essential Services Commission (2017, p.10) offered the following explanation:

‘Predictive Analytics Group found that the decreases in overall productivity are due to reductions in technological change. While most of the models show that technical efficiency change increased slightly, this is more than outweighed by falls in technological change... In other words, historically councils have improved their efficiency using existing technology (moving closer to the frontier) but their efficiency from utilising new technology declined by a greater amount (a decrease in technological change means the whole frontier has contracted). This results in a decline in overall performance’.

By contrast, the Predictive Analytics Group (2017) postulated several limitations to its approach to calculating productivity in Victorian local government:

- DEA calculates relative measures of efficiency: a given council is thus compared to the most efficient council and not to optimal efficiency.
- Some important inputs may not have been included in the DEA, such as community volunteers assisting in service delivery.
- Delays between when input are measured and when resulting outputs are recorded.
- Non-discretionary factors outside of council control which decisively affect technical efficiency and productivity.
- The Victoria Grants Commission data used in the analysis was not audited.

Given the highly implausible claim by the Essential Services Commission (2017) that Victorian local government is in technological decline, it is worthwhile considering why the five models in the Predictive Analytics Group (2017) DEA estimation exercise all produced a fall in TFPC.

Several reasons exist which can explain the highly implausible estimates that technological decline was present over the period 2010/11 to 2015/16:

1. In this regard, it is useful to consider in detail the conclusions offered by Drew, Kortt and Dollery (2015) in their paper which examines how DEA specification can have a critical bearing on the value of its estimations for public policymaking. The Essential Services Commission (2017, p.27) - and Predictive Analytics Group (2017) - erroneously claim that Drew, Kortt and Dollery (2015) find that ‘population levels had a positive effect on a council’s technical efficiency’.

In fact, Drew, Kortt and Dollery (2015, p.255) drew the following conclusions from their DEA analysis of the determinants of efficiency in NSW local government, which we quote at length:

‘This paper focusses on the estimation of a number of relative efficiency scores produced from four different DEA specifications for 2011. Starting with a commonly employed DEA specification, we have drawn on recent developments in the empirical literature to develop a dynamic approach to the problem which yields both appropriate measures of inputs and outputs as well as the effects of miss-specification on the efficient frontier. In so doing, we have demonstrated the critical nature of DEA specification for correctly identifying the determinants of municipal performance.

For the VRS cross-sectional model 4 – our preferred specification based on conceptual considerations – evidence of statistically significant negative associations were found for the quantum of total liabilities and the total value of infrastructure. Positive associations were also found for population density, the quantum of grants, depreciation and length of unsealed roads. However, the range of the confidence intervals was such that the direction of the statistically significant ATSI and sealed roads could not be definitively determined. It is worth stressing that population size was not a determinant in the cross-sectional CRS model (or VRS model), suggesting that it has little bearing on municipal performance. The panel regression models confirmed the direction and statistical significance of population density, quantum of liabilities and length of sealed and unsealed roads. Population size was again not a statistically significant regressor for either the panel CRS or VRS models.

The public policy implications arising from these empirical estimations are significant. In first place, the empirical estimates generated in this paper appear to refute the common (if largely unsubstantiated) “bigger is better” council population size arguments employed to justify

compulsory council consolidation. Second, as we have seen, the empirical results obtained from the alternative model specifications demonstrate the critical nature of correctly specifying and selecting accurate proxies for DEA inputs and outputs. Finally, the empirical *modus operandi* developed in this paper can serve as the basis for empirical work on other local government systems to produce robust empirical evidence on the determinants of municipal performance’.

It is evident Drew, Kortt and Dollery (2015, p.255) are at pains to stress the importance that *population density* –and not population size as claimed by the Essential Services Commission (2017, p.27) – plays a key role in local government performance. This is far from controversial and it is entirely intuitively plausible.

After all, trends population density have profound implications for the composition of local government services, revenue, infrastructure utilization and future infrastructure needs, expenditure patterns and almost all other aspects of local governance. While local councils can exert some influence over population flows and thereby population density directly and indirectly through efforts to attract or deter new residents, planning regulations, local economic growth strategies, and so forth, in the main demographic characteristics should be considered ‘non-discretionary’ variables in the sense that they lie beyond the control of individual municipalities.

A few examples can serve to illustrate the contention that important linkages exist between local government performance and demographic trends. For instance, local infrastructure utilization is related to population density since physical infrastructure, by its very nature, is a fixed asset. For example, roads are rarely ripped up in response to a population decline while a population trend increase is typically required to justify connecting new homes to water and sewerage systems.

Similarly, rapidly changing population size (and thereby density) is a critical factor in determining the need for expensive new infrastructure.

While these examples illustrate the pervasive impact of demographic change on local government, its effects are further exacerbated by associated changes in the composition of population densities. For example, low-income household movement has clearly been an important component in migration to coastal regions in NSW (Hugo and Bell 1998). This has important ramifications for local government largely due to the range of partially council-funded concessions in place for low-income recipients. For instance, pensioner concessions represent a significant drain on the resources of local government in particular areas and Dollery, Johnson and Byrnes (2008) found that the councils in NSW that had the lowest per capita incomes also had the highest per capita expenditure on pensioner rebates.

It would thus appear that the highly implausible DEA results generated by the Predictive Analytics Group (2017) can be ascribed in part to model miss-specification in general and the neglect of population density in particular.

2. It appears that the Predictive Analytics Group, Deloitte Access Economics and the Essential Services Commission have overlooked the essential nature of DEA analysis. DEA is a well-established method to estimate technical efficiency and productivity change of decision-making units (DMUs). This method is especially appropriate for estimating operational efficiency using multiple inputs and outputs of DMUs in service sectors, such as education, health and local government, where information about prices is often unavailable.

However, DEA has numerous drawbacks which limit its applicability. Several of these are worth emphasizing in the context of *Measuring Productivity in the Local Government Sector*. First, it

assumes all deviations from the efficient frontier are due to inefficiency without allowing us to distinguish between managerial inefficiency and statistical ‘noise’. Second, the effects of environmental factors cannot be integrated into the original DEA model unless a second-stage DEA is applied. Third, any outliers which are present in the surveyed sample can cause serious biases in the resultant efficiency scores if DMUs are not homogeneous, an obvious and serious defect in the context of the highly heterogeneous Victorian local government sector. Finally, the number of inputs and outputs relative to the number of observations must be carefully scrutinized since too few observations relative to total number of inputs and outputs can cause biases, incorrectly giving DMUs very high efficiency scores. Based on the methodological aspects, the following matters should be considered:

Given these limitations of the DEA approach, several questions arise with respect to the analysis in *Measuring Productivity in the Local Government Sector*. For example, two generic DEA approaches exist: input orientation and output orientation. It is far from clear which of these generic approaches is being advocated in *Measuring Productivity in the Local Government Sector*. Similarly, the Essential Services Commission (2017) indicated that the variable returns to scale (VRS) variant of DEA had been used. This means that scale efficiency should be pursued to indicate how much local councils can potentially improve their efficiency if they were to operate on an optimal scale.

Essential Services Commission (2017, Table 2.1, p.8) proposed five models for analysis of the DEA Malmquist productivity index. What are implications for these models to be tested separately? Why has the Essential Services Commission (2017) not adopted a combined model of four inputs (council staff, capital, operating expenses and depreciation) and four outputs

(households, businesses, roads and waste collected (or some other more accurate generic variable))?

Essential Services Commission (2017, Table A.1, p.29) showed a huge difference between council sub-groups (small rural, large rural, regional centre, interface and metropolitan) based on length of roads (km), average number of businesses and average number of households. It follows that if we place all of these council sub-groups into a single group analysis (i.e. an overarching frontier) as suggested, then it would induce bias in the efficiency scores due to heterogeneity of the local council sample. In other words, outliers (as identified by very high efficiency) will inevitably influence the relative efficiency of the bulk of councils.

Essential Services Commission (2017, Appendix E) has listed the number of councils (observations) in each group, in which the number of observations of interface and regional centres sub-groups are 10 councils for each respectively. These figures are small relative to the number of inputs and outputs in the DEA models proposed in Table 2.1. This will lead to a reduction in discriminatory power of the DEA models. Put differently, the efficiency scores of these DMUs tend to be quite high, thereby not reflecting accurately the operational efficiency of councils. According to Banker, Charnes, and Cooper (1984), the number of observations and the number of inputs and outputs used in a given DEA model should follow a fundamental rule of thumb: $(p+q) \leq (n/3)$, where n = the number of DMUs, p = number of inputs and q = number of outputs. This means that the number of observations in each group should be at least 15 (i.e. much higher than the current 10 in each sub-group).

Sub-groups of councils in Victoria are classified on the basis of distinctive shared characteristics which differ markedly between different sub-groups. It follows that if we place all sub-groups groupings in a common metafrontier framework, there will be a substantial technological gap

ratio (TGR) between individual sub-group frontiers and the overarching frontier. This TGR should be measured under the metafrontier framework that would help to determine a more appropriate efficiency factor for each council group. In other words, the characteristics of the different council sub-groups are sufficiently different to warrant different efficiency factors for each sub-group. For example, interface councils, such as Wyndham City Council, have markedly different characteristics from small rural councils, like West Wimmera Shire Council. It is neither intuitively plausible nor statistically prudent to lump them together.

6.2 Small Notional Factor of 0.05%

The second approach considered in the Essential Service Commission's (2017) *Measuring Productivity in the Local Government Sector* is to simply employ a small, notional factor of 0.05 per cent cumulatively (i.e. 'each year add 0.05 per cent to the previous year's efficiency factor, but capped in the longer term', as proposed in the Essential Services Commission's (2015) *A Blueprint for Change, Local Government Rates Capping & Variation Framework Review: Final Report*).

In Chapter 3 of its *Measuring Productivity in the Local Government Sector* the Essential Service Commission's (2017, p.16) carefully qualifies its earlier endorsement of 0.05% annually. It notes that 'the purpose of the efficiency factor is to help ensure efforts by councils to generate savings (in excess of the rate cap) are shared with ratepayers', which could 'take the form of lower rates'. Given that when the efficiency factor was first introduced local authorities 'would have "locked in" costs under some contracts', the Commission 'set the initial efficiency factor at zero, increasing by 0.05 percentage points each year'.

The Essential Service Commission's (2017, p.16) contends that it 'chose 0.05 per cent as a starting point because it seemed unlikely that a council's financial viability would be threatened by an efficiency factor that low'. Moreover, 'if any council's viability was under pressure, it was more likely to be the result of some other factor that could be addressed through the rate cap variation process.' The Essential Service Commission's (2017, p.16) now argues that 'the factor be different from the 0.05 per cent originally proposed'. Moreover, it observes that 'if we adopt this approach we consider it would be reasonable to increase the efficiency factor up to a point where it would be capped'.

It is thus clear that the 0.05% proposed under model 1 was not only chosen in an entirely arbitrary fashion, but it was also intended to augment the impact of the rate. In this regard, it is noteworthy that the Essential Service Commission's (2017) does not consider council investment in local infrastructure maintenance and renewal as an equivalent 'saving' to lower rates to the local community, but nonetheless offers no rationale for this value judgement.

6.3 Proxy Value from Historic Australian Industry Productivity Data

The Essential Services Commission commissioned Deloitte Access Economics to investigate the best proxy measures to use for Victorian local government productivity increases. Deloitte (2017) produced a report entitled *Indirect Local Government Productivity Measurement*.

In this report, Deloitte (2017) noted that in Australia the ABS gathered data at the industry level which could be used to measure changes in productivity (in percentage terms) of a particular industry sector on an annual basis or over time. It argued that the ABS data had several advantages as the basis for calculating a proxy for local government productivity:

- ABS data is publicly available at no cost.

- ABS data is available since 1996.
- ABS data is updated annually
- ABS data is indexed to allow direct comparison between years and measures.
- ABS data is high quality.

The Essential Services Commission has agreed that it is reasonable to use ABS data.

Essential Services Commission (2017, p.20) decided that – given Deloitte’s (2017) findings - a five-year average of a value multifactor approach based on 16 industries is a reasonable proxy measure of local government productivity change. On the basis of Deloitte’s (2017) calculations (shown in Table 3.1), this would be 0.17% average for the period 2010/11 to 2016/17. Should the efficiency factor be negative, then the Essential Services Commission (2017, p.20) resolved to ‘set the efficiency factor to zero when the productivity change is negative and apply any positive result fully’.

6.4 Victorian Local Government Performance Framework

The final approach to calculating the magnitude of the efficiency factor examined by the Essential Services Commission (2017, p.22) was to employ the Victorian local government performance framework developed in 2014. This framework sought to provide ‘a consistent and comprehensive way to measure, assess and benchmark the performance of councils across Victoria’. It encompassed 66 different performance measures in the realm of service delivery, finance and sustainability. Furthermore, it included 24 qualitative measures on governance and management best practice. These performance indicators were aggregated into four ‘indicator sets’ across three broad areas: service performance, financial performance and sustainability. Local authorities are required to report all these indicators and measures in a ‘performance statement’ in annual reports.

The Essential Services Commission (2017, p.23) noted that the performance framework approach has several advantages and disadvantages. In positive terms, the local government performance reporting framework data is ‘publicly available, which promotes transparency and accountability regarding council performance and can help identify where there is scope for improvement’. It also ‘allows comparisons between similar councils and tracking performance over time’. However, in negative terms, it is based on ‘partial’ productivity measures (‘factors that only examine one element of service provision’, such as the cost of garbage bin collection) and ‘it is not really possible to understand overall council performance or efficiency from the local government performance reporting framework system’. The Essential Services Commission (2017, p.23) was thus not able to use it to calculate an efficiency factor.

7. Deciding on an Optimal Approach to Calculating the Efficiency Factor

The Essential Services Commission (2017, p.24) employed five criteria to rank the four methodological approaches consider in its *Measuring Productivity in the Local Government Sector*. These are summarized in Table 3:

Table 3: Five Criteria Employed to Rank Methodological Approaches

Criterion	Definition
Objectivity	Minimal reliance on subjective inputs or arbitrary values
Accuracy	Needs to represent general levels of productivity and productivity change in the local government sector Inputs and outputs need to be measurable and verifiable

Applicability	<p>Aggregate measures must be:</p> <p>Meaningful: related to the entities goals and provide information that is valuable to policy/decision makers</p> <p>Comprehensive: they should capture the most important aspects of an entity's performance</p>
Defensible	<p>Must be 'defendable' in a regulatory context:</p> <p>Consistent with economic theory</p> <p>Calculated in a transparent and understandable manner (i.e. the measure should be simple to calculate and easy to explain to a broad audience)</p>
Cost effective	<p>Must ensure the benefits of change outweigh the costs. This is measured by the cost of implementing the approach.</p>

In its assessment of the five approaches in terms of these criteria, the Essential Services Commission (2017, p.25) found that while 'each approach has strengths and weaknesses', the DEA approach best met the criteria with the highest score of 27. However, whereas the DEA methodology was 'accurate and applicable', it was simultaneously 'the most complex to explain and understand', as well as the 'least cost effective'. In sum, the Commission (2017, p.25/26) found that although the DEA approach best met the criteria, 'the rate capping regime in Victoria is new and its effects on productivity change and technical efficiency are yet to be fully

understood’, which could ‘increase the arbitrary nature of the values used for the expected efficiency gain and timeframe over which it could reasonably be expected to be achieved’.

The net result of these deliberations led the Essential Services Commission (2017, p.26) to the following general conclusion that it had three ‘options to set the efficiency factor’:

- Employ the ‘notional value and increase it by 0.05 per cent each year until it reaches 0.2 per cent. 0.2 per cent is at the top of the range of results generated by the three approaches’. This would provide predictability to Victorian councils.
- Employ the proxy approach and calculate a new efficiency factor each year based on ABS data.
- Employ a ‘staged approach where we begin by using the notional value and then when the effects of rate capping are better understood use the data envelopment approach to estimate a long term efficiency factor that could be updated periodically (for example, every four years)’.

8. Conclusion

In this Report on *Measuring Productivity in the Local Government Sector* we have shown that in terms of both the international empirical literature and extant Australian empirical studies on the impact of rate-capping, the empirical evidence is unambiguous: rate-capping has unintended damaging effects on local councils. It not only induces local authorities to increase fees and charges, but it also diverts scarce revenue away from long-run requirements, especially local infrastructure maintenance and renewal, towards maintaining visible and politically sensitive current local services.

Quite apart from these efficiency considerations, rate-capping also has a deleterious equity impact on local government. Empirical evidence shows that it affects local authorities with a high proportion of poor household's comparatively more than affluent communities.

Furthermore, a uniform rate-cap across the different types of local authority does not have a uniform impact. In sum, while rate-pegging might have a short-run populist appeal to state government politicians, it has adverse long-run consequences for local communities.

In this Report we have considered the various arguments offered by the Essential Services Commission (2017) on the optimal method of calculating an annual efficiency factor to be incorporated into the average annual rate-cap. In particular, we have demonstrated that the DEA approach employed by the Predictive Analytics Group (2017) - and considered at length by the Essential Services Commission (2017) – is replete with error and oversight. In particular, it misinterprets Drew, Kortt and Dollery (2015, p.255), who are at pains to stress the importance that population density, and Predictive Analytics Group (2017) instead mistakenly focuses on population size as a key determinant in local government performance. As a result of these problems, *Measuring Productivity in the Local Government Sector* is obliged to report the fact that its five DEA models generate highly implausible estimates of negative productivity in Victorian local government!

It is our view that the quest for a suitable method of calculating an efficiency factor for all councils for the operation of the *Fair Go* rating system in Victorian local government is a chimera for at least three reasons:

- In the first place, in terms of section 185D of the *Local Government Act 1989*, the Victorian Minister for Local Government is empowered to determine an 'average rate cap' on the basis of the projected increase in the CPI for the financial year in question,

together with any other desired adjustment. However, as experience has demonstrated, despite the fact that the Essential Services Commission has previously recommended the addition of an efficiency factor, the Minister has simply ignored this recommendation. Put differently, an efficiency factor is not essential for the ongoing operation of the *Fair Go* rate-pegging system.

- Secondly, as we have argued in this Report, the Victorian local government system is not homogeneous since substantial differences exist in the characteristics of the different sub-groups of councils. Indeed, the differences between the heterogeneous sub-groups is so large as to preclude any ‘one size fits all’ efficiency factor. In other words, a much sounder approach would be to calculate separate efficiency factors for each of the five sub-groups of local authorities in Victorian local government.
- Finally, as the Essential Services Commission (2017, Table 4.2, p.26) has shown its own calculations, efficiency factors of the magnitude it has in mind would make only a trivial difference to council revenue from rates over time.

A more fundamental problem with the Essential Services Commission’s (2017) claim that an efficiency factor is required for the effective operation of the *Fair Go* system resides in its underlying value judgement that any ‘efficiency dividend’ must be returned to local communities by way of lower rates. As we indicated earlier, there are numerous ways that increased ‘efficiency dividends’ can be directed towards local communities by their local councils. Lower rates is only one of many possible avenues and there is no rational justification for privileging it over other approaches. Other possibilities include investing in improved local infrastructure, providing greater amenity through upgraded parks, gardens and the like, offering high quality services, etc. Which avenue is best suited to a specific local community should be

decided by the affected community itself and not the Victorian Government. In this sense, there is no need for an efficiency factor to be calculated since local authorities will in any event use any ‘efficiency dividend’ to fund their chosen activities anyway. How individual councils would use any efficiency dividend would depend in large part on their own characteristics and local circumstances. Thus significant differences can be expected between Metropolitan, Interface, Regional Centres, Large Rural and Small Rural local authorities.

In our view, the Essential Services Commission would be better advised to abandon its quest for a satisfactory method of calculating an efficiency factor and instead expend its energies on developing a better basis for the cost foundations of the *Fair Go* rates system. It is well-known that the CPI is based on a basket of goods and services which reflects the weighting of all the components of consumption across the Australian economy. It thus bears little relevance to the costs experienced by local authorities. The Essential Services Commission (2017) itself recognises this fact by including labour costs by way of the WPI in its average rate cap (ARC) calculation. An alternative approach to the basis of rate-capping would be to use a Local Government Cost Index specifically designed for each the five sub-groups of Victorian councils. This could operate along similar lines to the IPART Local Government Cost Index (LGCI) in NSW which is calculated every four years or the Western Australian Local Government Association’s (WALGA) variant of LGCI in WA.

Each of the sub-groups in Victorian local government offers a different mix of service quantity and quality which involve different cost combinations. For example, ‘growth councils’ must perforce expend more resources on new local infrastructure compared with other kinds of councils. Each of the sub-groups (Metropolitan, Interface, Regional Centres, Large Rural and Small Rural) *mutatis mutandis* will face different cost structures. The Essential Services

Commission could thus profitably calculate a LGCI for each of these five sub-groups as the basis determining the cost foundations of the *Fair Go* rates system instead of the inaccurate and inappropriate CPI.

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