

Non-Capital Costs in the Access Arrangement for Envestra: Response to Benchmark Economics Letter



Pacific Economics Group, LLC
Economic and Litigation Consulting

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Larry Kaufmann, PhD
Partner

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PACIFIC ECONOMICS GROUP

22 East Mifflin, Suite 302
Madison, Wisconsin USA 53705
608.257.1522 608.257.1540 Fax

At your request, this report responds to the July 24, 2006 letter from Margaret Beardow of Benchmark Economics (the BME letter) to Andrew Staniford of Envestra. The BME letter, in turn, responded to my June 2006 report *Non-Capital Costs in the Access Arrangement for Envestra: Report to the Essential Services Commission of Australia*. None of the conclusions reached in my June 2006 report are undermined by the BME letter; indeed, the letter acknowledges the validity of many of these points.

The fundamental point of the BME letter is that “the points raised (in the PEG critique of BME’s original study) are more appropriate to large sample, multi-period data sets, not the simple analysis of the Australian gas sector operating and maintenance costs. For the Australian gas sector there are 10 observations with data limited to a few years. Different techniques and standards must apply to reflect these differences; it would be unrealistic to expect otherwise” (p. 1).

I disagree. The fundamental objective of **any** benchmarking analysis must be to obtain a reliable inference on the efficiency of the management of the enterprise (or group of enterprises) in question. This standard must apply regardless of the amount of data that are used for the analysis.¹ When benchmarking the efficiency of Envestra’s outsourcing contract with OEAM, it is especially important for benchmarking assessments to be robust since outsourcing arrangements between related corporate parties raise inherent regulatory concerns. This issue was discussed extensively in my June 2006 report, in particular in the following passage (p. 13):

...benchmarking evidence is not as direct or unambiguous as competitive market tenders in assuaging regulators’ concerns about the terms of outsourced contracts to related parties. Accordingly, we believe that benchmarking studies must satisfy a very high standard to be persuasive and justify the costs of such contracts. At a minimum, satisfying this standard requires high quality data; rigorous benchmarking techniques that take account of relevant operating conditions and lead to robust benchmark evaluations; and demonstration of superior cost performance relative to a well defined and verifiable standard.

¹ BME appears almost to be advocating an inversion of this basic relationship; that is, instead of carefully using available data to make a reliable inference on efficiency, BME suggests that the standard used to evaluate efficiency must be cut to fit the data used in the analysis.

Thus far from supporting lowered standards, I believe the context and motivation for benchmarking Envestra's operating expenses call for especially high standards.

For all the reasons detailed in my report, BME's analysis fails to satisfy these standards. The BME study is "...problematic with respect to the data chosen, the definition of non-capital costs that excludes network marketing expenditures, the benchmarking techniques employed, the selected operating condition variables, and the standards used to evaluate efficiency. Overall, the benchmarking studies presented on behalf of Envestra do not provide persuasive evidence that Envestra's non-capital costs inclusive of the network management fee deliver the lowest sustainable cost of providing service" (p. 32). None of the points raised in the BME letter alter these conclusions from my original report, which I address in turn.

Data Chosen My main concern about BME's choice of data is that it relies on allowed rather than actual opex costs for distributors other than Envestra-SA. As discussed in my report, using allowed cost data is both conceptually invalid and almost certainly biased in favor of positive benchmarking evaluations for Envestra. A secondary point is that efficiency evaluations should be based on multiple years of data rather than a single cross section, as in BME's original report.

BME defends the use of allowed cost data on two grounds. First, to avoid charges of "data shopping," BME decided to use the same type of data that ESCOSA used in its analysis. Second, actual data may vary widely over the regulatory time period.

With respect to the first rationale, it must be noted that if BME wished to use data that are consistent with those used by ESCOSA, this objective did not extend to the critical issue of whether marketing costs should be included in the cost data. BME did adjust the cost data used in ESCOSA's benchmarking analysis to eliminate marketing costs. BME defended this change by saying it was necessary to yield a more reliable benchmarking assessment, which required that "activity sets be defined on a like for like basis." Hence BME was willing to diverge from, and modify, ESCOSA's data sources to satisfy the broader aim of obtaining (purportedly) more reliable benchmarking measures.

However, if the goal is to obtain the most reliable benchmarking inference (as it should be), there is no reason to restrict modifications of ESCOSA's dataset to the one

change selected by BME. BME could have pursued a variety of alternative databases and techniques that would have made better use of available data. As discussed in my original report, international datasets on gas distributors' opex costs and relevant operating conditions are readily available and could have been used by BME. Even if the analysis was restricted to Australian data, bootstrapping techniques applied to actual cost data would likely have yielded superior benchmarking results. Any of these techniques would have been preferable to using data on the costs allowed by regulators, which is fundamentally unsuited to benchmarking utility cost performance and should have been rejected out of hand.

BME addresses the issue of data variability, and the use of a single section, by presenting a figure (Figure One) that shows time series data on the opex of Australian distributors for the 1999-2001 period. BME concludes that "a fairly stable relationship existed between the expenditure levels for the Victorian, NSW and South Australian businesses...there is no evidence of the temporary or one time factors referred to in the PEG report that may bias results" (p. 4). However, these data are meaningless because they do not and cannot correspond to actual cost figures (*i.e.* because the referenced data extend beyond the current year). These are, presumably, the costs allowed by regulators. Thus, by showing that there are similar temporal patterns in allowed opex across jurisdictions, Figure One simply shows that several AA determinations in Australia have reached similar decisions regarding the trend rate of change in allowed opex. This finding has no bearing whatsoever on whether the single year of data used by BME yields reliable benchmarking results for Envestra (even ignoring the fact that the data themselves are flawed).²

Definition of Benchmarked Costs On the issue of whether marketing costs should be included in the analysis, BME presents a new argument, by saying "within the context of the wording and intent of the Code...the issue is whether such costs are accurately

² Even if BME's interpretation of "a fairly stable relationship" among cost data is accepted (p. 4), it should be noted that this apparently contradicts BME's claim that "actual data may vary widely over the regulatory time period" (p. 3). Although BME does not explicitly state that this is the case, a logical resolution of this contradiction is that BME showed a preference for allowed rather than actual cost data because the former were more stable.

defined as operation costs. The Code requires the regulator to approve an Access Arrangement only if it is satisfied that it takes into account, inter alia, ‘the operation and technical requirements for the safe and reliable operation of the pipeline’ and the ‘economically efficient operation of that pipeline’” (pp. 2-3). BME argues that market development costs are not necessary for safe and reliable pipeline operation and “assessing the efficiency of market development costs is not an easy task” (p. 3).

Each of these points was treated in my original report. PEG is not qualified to judge whether market development costs satisfy the Code’s legal requirements for defined operating expenses but, as a matter of economics, these costs are clearly relevant for evaluating “the economically efficient operation” of a gas distribution network. Pages 14-16 of my original report contained a detailed analysis of this issue and demonstrated that efficiency evaluations could be biased if marketing development costs were excluded from operating costs. My original report also agreed that benchmarking “is not an easy task” but concluded that “it is preferable for researchers to quantify exogenous factors (that can impact marketing costs)...and include these variables in benchmarking studies instead of simply eliminating nettlesome (marketing) costs from the analysis” (pp. 19-20), as BME chose to do. Thus, while the BME letter recasts its decision to exclude marketing costs in terms of Code requirements, it ultimately provides no new information or arguments to support this decision, which was unwarranted for the reasons discussed in my original report.

Benchmarking Techniques Employed My main concern regarding BME’s benchmarking technique is that it “regresses its unit cost measure against only a single variable at a time. This is unduly restrictive and cannot consider how various cost driver variables may interact. The failure to consider relevant cost driver variables in a regression can also lead to ‘omitted variable bias,’ or a biased estimate of the parameter for the variable that is in fact used in a given regression. Biased parameter estimates naturally lead to biased benchmarking predictions and are not consistent with the objective of robust benchmarking. PEG suspects that the BE parameter estimates are characterized by omitted variable bias. Cost functions that regress a cost measure against a single variable are almost certainly too simple to capture the complexities of gas distribution

technologies. We therefore believe they are unlikely to yield robust benchmarking inferences” (p. 23).

The BME letter simply ignores these fundamental points and asserts, in various places, that its techniques lead to robust benchmarking assessments. Indeed, the BME letter goes well beyond this unwarranted conclusion and says “there is little margin in Envestra’s costs to allow for a reduction and still operate and maintain the pipeline in a safe and reliable manner.” There is no foundation for such a broad inference in the BME report.³ While the use of econometrics represents a step in the direction of greater rigor, the BME results are nevertheless flawed and do not produce reliable benchmarking inferences for the reasons detailed in my original report.

Operating Conditions One criticism regarding BME’s choice of operating condition variables is that the “gas uptake” measure of gas penetration is not an appropriate independent, or right hand side, variable because the values this variable takes are not in fact independent of the cost measure that appears on the left hand side. The BME letter responds by saying that “gas penetration rates were identified as cost drivers but only for explaining the variations in non-capital costs. They were specifically not used in the cost estimation models” (p. 3), purportedly because they depend on resource endowments and state energy policies rather than what BME considers business operating conditions. However, this response misses the point; it doesn’t matter whether you call it a business operating condition or not, the gas uptake measure should not appear at all on the right hand side of the regression equation because it is not an independent variable. Moreover, if one accepts the BME conclusion that gas penetration rates are cost drivers, excluding them from cost estimation models *must* lead to the omitted variable bias problem mentioned above. Variables that are beyond management control and “explain the variation in non-capital costs” should be included, rather than purposely excluded, from regressions that attempt to determine managers’ efficiency in

³ The conclusion that “there is little margin in Envestra’s costs to allow for a reduction and still operate and maintain the pipeline in a safe and reliable manner” necessarily involves an assessment of the relationship between Envestra’s costs and the long run, sustainable cost frontier, which is not possible from BME’s analysis since, *inter alia*, it does not use frontier benchmarking methods.

controlling these costs; excluding relevant variables can only introduce biases in the benchmarking assessments. Thus, taking the BME letter at face value, it provides further information to support the point in my original report that the BME regressions yielded biased regression results and therefore biased benchmarking evaluations.⁴

Standard for Evaluating Efficiency My original report provided a lengthy discussion (pp. 24-29) on how rigorous standards for evaluating efficiency could be adopted and utilized by regulators examining benchmarking evidence. BME says these principles are not disputed but also “not apposite to the actual analysis. The objective was not to identify the superior cost performer, an implausible task given the sample and data limitations. Rather, the objective was to demonstrate the role of business conditions in affecting relative cost positions and to identify an efficient cost outcome appropriate to a business with Envestra’s operating environment” (p. 6). However, the principles identified in my original report were devoted to this same objective, and provided a rigorous basis for determining whether a company’s actual costs could be viewed as “efficient.” Regulators using these standards could make concrete judgments on whether a given set of benchmarking results were indicative of efficient performance (assuming the benchmarking methods themselves were robust and the data used in the analysis of high quality).

In its letter, BME proposes a different efficiency standard. BME’s standard for efficiency is “the level of costs appropriate to a given set of business conditions” where “the level of appropriate, and hence efficient, costs was derived from the trend estimated by the linear regression models” (pp. 6-7). Even if the data and benchmarking techniques used in the BME analysis were appropriate and robust (and they are not), this would not be a proper efficiency standard. BME is essentially arguing that “efficiency” is equivalent to the cost prediction from an average cost model (*i.e.* expected cost) which is estimated using utility cost data. For the reasons discussed on pp. 26-29 in my report, if such a standard was applied in a competitive market, it would not be sufficient for

⁴ PEG and BME essentially agree that heating degree days is a relevant exogenous business condition that can affect gas penetration rates although other variables may also be relevant; for example, see the last paragraph on p. 18 in the original PEG report.

evaluating whether a given company's performance is "efficient." I am also not aware of any regulator worldwide who has used expected utility cost as an appropriate efficiency standard (and there are many examples to the contrary), and it is very unlikely that any regulator would accept such a standard.⁵ For these reasons, I would recommend that ESCOSA reject BME's proposed efficiency standard.

Cost Sustainability As discussed in the original report (p. 29), "cost 'sustainability' necessarily involves a consideration of whether expenditures can be maintained over a multi-year period while still providing service at what regulators (and the public) believe are appropriate quality levels. This inherently multi-year concept cannot be evaluated from a single cross section examination" (typos from original quote corrected). The BME letter rebuts this criticism by pointing to the stability of the earlier referenced cost series but, as previously noted, these cost data are meaningless for benchmarking evaluations since they pertain to companies' allowed rather than actual operating costs.

Operating-Capital Cost Allocations The BME letter says its capital expenditure regression "found no evidence of cost shifting" between capital and operating costs. However, it also found no evidence that costs were *not* being shifted between capital and operating costs. It is not possible to find any evidence one way or the other because, as discussed in the original report, "fundamentally, this is an issue of accounting and not econometric cost drivers. An econometric cost model cannot distinguish whether the selected dependent variable does or does not contain the correct cost components" (p. 30). The BME letter does not respond to this basic point.

⁵ This conclusion is based in part on work I recently completed for the Bundesnetzagentur (BNA), the newly established energy network regulator in Germany. I led an international consortium that prepared a report for the BNA that examined the experience with incentive regulation and benchmarking in various countries throughout North America, Europe and Australia/New Zealand. Even the jurisdictions that use average cost econometric benchmarking (such as the UK and Massachusetts) have used standards other than expected cost (*e.g.* upper quartile performance) as the basis for evaluating efficiency.