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AURORA ENERGY

**AURORA CPP DRAFT  
DECISION**

BENCHMARKING  
REVIEW

wsp

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## AURORA CPP DRAFT DECISION Benchmarking review

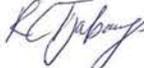
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# EXECUTIVE SUMMARY

The Commerce Commission (Commission) has published its Draft Determination on Aurora Energy's Customised Price Path (CPP) Application. They have proposed minor reductions to network expenditure and some significant reductions to non-network expenditure. Strata Energy Consulting (Strata) assisted the Commission by assessing the CPP Verification report<sup>1</sup>, commenting on the benchmarking undertaken by the Verifier and providing alternative benchmarking.<sup>2</sup>

The purpose of this report is to review the alternative benchmarking assessment undertaken by Strata for

- System Operations and Network Support (SONS) and People Costs, which Strata identified as driving the increases in non-network opex, and
- Vegetation Management.

WSP found that Strata's assessment appears counter intuitive when compared to the level of opex set by the Commission in its DDP3 determination. Strata was proposing a level of opex significantly below the DPP3 determination by the end of the CPP period.

Further WSP found deficiencies in the approach, modelling, key inputs and assumptions made by Strata, as set out below.

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## SONS AND PEOPLE COSTS

Strata's approach to establishing an appropriate level of SONS and People Cost expenditure was to:

- Benchmark Aurora's SONS opex, People Costs opex and non-network opex against five EDBs
- Compare Aurora's proposed SONS opex with Powerco's SONS opex under Powerco's CPP
- Perform a 'senior management' staffing challenge.

WSP examined Strata's approach and found that it applied benchmarking inappropriately and could not be relied upon to inform an appropriate level of expenditure. We formed this view as follows:

**The Partial Performance Indicator (PPI) benchmarking was used inappropriately to identify the base level of expenditure applicable to Aurora.**

- The outcomes of the PPI benchmarking cannot be relied on and are inappropriate to be used directly in determining expenditure levels. The joint working paper by the Australian Competition & Consumer Commission and the Australian Energy Regulator on Benchmarking Opex and Capex in Energy Networks supports this view.<sup>3</sup>
- Strata's selection of 5 EDBs from the available 29 EDBs as a comparator group was inappropriate as the selection was based partially on network parameters that were not demonstrated to represent similarities between the EDBs relevant to the SONS and People Cost expenditure being benchmarked. WSP's assessment shows that only two EDBs should be considered as outliers and that 27 of the EDBs were available for inclusion in the comparator group. Strata's selection of 5 EDBs appears to have resulted in a restricted view of the available data that led Strata to an incorrect view of the relative efficiency of Aurora's forecast expenditure for SONS and People Cost.

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<sup>1</sup> Farrier Swier Consulting Pty Ltd, 2020, Verification Report Aurora Energy CPP Application

<sup>2</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure

<sup>3</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, chapter 2.6

- Strata’s use of a single normalisation factor in its PPI benchmarking did not appropriately account for differences within the comparator group. Use of multiple normalisation factors leads to different outcomes that Strata did not consider. Hence, Strata’s view should be considered to be based on an incomplete assessment.
- PPI benchmarking does not clearly address known expenditure programmes. These expenditures are likely to be observed as inefficiencies if their existence is not known about by the reviewer. Hence PPI benchmarking should be used as a process to identify areas for further investigation, as preferred by other Regulators<sup>4</sup>, rather than for calculating a reduction factor.

**The application of the benchmarking did not follow an appropriate methodology**

The recommended adjustments to non-network opex were based on an unreliable assessment that:

- ignored the inherent limitations in the accuracy of the PPI benchmarking to establish the average expenditures that should apply for Aurora
- applied an uplift factor on the average expenditures to represent the increased opex program under the CPP that was based on Powerco rather than on Aurora’s proposed program of work. Strata did not make appropriate adjustments to Powerco’s expenditures to account for the significant differences in operations and scale of the businesses and the approach failed to fully consider all of the aspects of Aurora’s CPP
- did not appropriately treat variable non-staff costs in the benchmarking model, likely resulting in an understatement of FTE numbers required
- used a ‘senior management’ staffing challenge to develop an alternative FTE forecast that was used as an input to the benchmarking model. This challenge was based on Strata’s opinion rather than being fact based and assumed more accuracy than was proven.

**Strata’s claim that their assessment was based on three approaches is incorrect**

- While Strata states that they have used three approaches to develop their forecasts (a senior management’ staffing challenge, benchmarking and comparing Aurora’s proposed opex with Powerco’s), they have actually used three inputs to the one benchmarking approach and hence have not provided an independent verification to their modelling as cited to be a strength of their calculation methodology.

**Conclusion**

WSP examined Strata’s approach and found that it applied benchmarking inappropriately and that neither the approach or outcome could be relied upon to inform an appropriate level of expenditure:

- The Partial Performance Indicator (PPI) benchmarking was used inappropriately to identify the base level of expenditure applicable to Aurora
- The application of the benchmarking did not follow an appropriate methodology
- Strata’s claim that their assessment was based on three approaches is incorrect.

In comparison, WSP notes that although the Verifier’s benchmarking could be refined, it is well considered in that:

- the benchmarking is used appropriately to identify areas for further analysis and not to calculate a reduction factor
- a larger group of EDBs were used which provides a better view of relative performance
- multiple normalisation factors were applied to better account for differences between the businesses
- uncertainty in the data was explicitly acknowledged and addressed.

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<sup>4</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, section 2.6

WSP concludes that the Strata benchmarking is inadequate and not fit for the purpose to inform the Commission's decision on the appropriate level of expenditures for SONS and People Costs.

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## VEGETATION MANAGEMENT COSTS

Strata's assessment of Vegetation Management costs concluded that Aurora's costs were high and used three approaches to determine the amount that should be reduced. The approach used is opaque and does not clearly show how the final value was derived from the assessments. WSP considers each of the inputs below.

### **Benchmarking was based on 'unit rates' calculated using inappropriate data and flawed assumptions**

Strata undertook benchmarking to assess the relative unit cost of vegetation management against a comparator group of 10 EDBs. However, WSP's assessment of the calculation methodology found that the data is not sufficiently robust to use for this type of analysis and the methodology fails to account for changes in the volume of work completed, instead assuming that all changes in cost are due to changes in the unit rate.

Since Aurora is currently undertaking an increased program of vegetation management, Strata assessed Aurora against three other EDBs from the comparator group who also identify increased levels of vegetation management in their Asset Management Plans (AMP). This assessment, however, is based on the same unit rate benchmarking data and therefore suffers from the same flaws and deficiencies. Hence, WSP finds that this comparison is not appropriate.

### **Comparison to a significantly dissimilar EDB**

Strata did a bottom up build of Aurora's costs based on data provided in MainPower's AMP. The AMP provided some high-level cost information for MainPower's vegetation management crews as well as the number of crews, which Strata adjusted to account for possible differences with Aurora. However, the adjustments made were based on Strata's opinion and not on evidence from Aurora. In WSP's view, the direct comparison may provide an indication of differences but should not be used as the sole basis for making a decision on the efficiency of Aurora's unit rates.

### **Conclusion**

The vegetation management benchmarking and direct comparison undertaken by Strata is not appropriate as it is based on a flawed methodology that assumes all changes in cost are caused by the unit rate and fails to consider changes in volumes that may exist.

WSP concludes that this is inappropriate to be used as the basis for calculating a reduction to Aurora's proposed vegetation management expenditure.

# 1 INTRODUCTION

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## 1.1 PURPOSE

The Commission has published its Draft Determination on Aurora Energy's CPP Application. They have proposed minor reductions to network expenditure and some significant reductions to non-network expenditure. Strata assisted the Commission by assessing the CPP Verification report<sup>5</sup>, commenting on the benchmarking undertaken by the Verifier and providing alternative benchmarking.<sup>6</sup>

The purpose of this report is to review the alternative benchmarking assessment undertaken by Strata.

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## 1.2 SCOPE

The scope of the review is to review and assess the benchmarking undertaken for non-network expenditure to identify, where possible, any deficiencies in the assessment and modelling by Strata or alternative assumptions that Strata have not considered.

We are not required to undertake further benchmarking or to develop an alternative expenditure forecast.

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<sup>5</sup> Farrier Swier Consulting Pty Ltd, 2020, Verification Report Aurora Energy CPP Application

<sup>6</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure

# 2 HOW BENCHMARKING HAS BEEN USED IN THE CPP ASSESSMENT

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## 2.1 BACKGROUND

The benchmarking undertaken by the Verifier and Strata is the type known as Partial Performance Indicator (PPI). PPI benchmarking breaks down overall expenditure into subcategories and normalises one or more parameters to adjust for factors that are expected to drive differences in the level of expenditure so that performance becomes comparable between the businesses in the comparator group. Normalisation factors are typically limited to a few key parameters, so as not to make the assessment of the comparative information overly complex.

PPI benchmarking is different to econometric models which may be based on the same data but attempt to adjust for all external factors. Such models are complex and are based on data inputs that are highly consistent. As such, PPI benchmarking is indicative only and typically used to support a finding or as a starting point to find differences in apparent performance for further investigation and discussion<sup>7</sup>.

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## 2.2 REQUIREMENTS FOR ACCURATE PPI BENCHMARKING

The accuracy of PPI benchmarking is dependent on:

- using appropriate information metrics and data that is collected on a consistent basis
- selecting an appropriate comparator group
- ensuring or adjusting for operational differences.

Each of these items is discussed below.

### 2.2.1 DATA REQUIREMENTS

The key data requirement is that, for any given input or output, the data collected must be measured on a consistent basis and be prepared according to the same definitions across all of the comparator businesses.<sup>8</sup> If data is not collected on a consistent basis, then comparisons or benchmarking carried out using the data needs to be carefully considered and assessed for any bias that may lead to apparent efficiencies or inefficiencies when they are caused by other factors.

The data used by the Verifier and Strata is taken from the Information Disclosure Requirements provided to the Commission by Aurora and other EDBs and the forecast expenditures from Aurora's CPP Application. In its report, the Verifier states:

*there are some anomalies in the New Zealand EDB benchmarking dataset that may undermine our benchmarking analysis, particularly how the EDBs have assigned data to each schedule, category and sub-category and leading to the potential for double count counting [sic].<sup>9</sup>*

Hence, benchmarking carried out using the available data needs to be carefully considered.

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<sup>7</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, page 35

<sup>8</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, chapter 2.2.2 and 2.2.3

<sup>9</sup> Farrier Swier Consulting Pty Ltd, 2020, Verification Report Aurora Energy CPP Application, P. 492

## 2.2.2 SELECTING AN APPROPRIATE COMPARATOR GROUP

The selection of an appropriate comparator group is essential for effective benchmarking. New Zealand has 29 EDBs, each with significantly different size, customer density, terrain and environmental conditions. All of these factors impact the efficient level of expenditure required for a business to remain sustainable and meet its regulatory obligations. In its report, the Verifier states:

*Aurora Energy's network characteristics (e.g. customer numbers, circuit length, and customer density) are typical of some larger New Zealand EDBs – however, the unique characteristics across many EDBs makes it hard to draw reliable conclusions from benchmarking against other New Zealand EDBs<sup>10</sup>*

Hence, the selection of an appropriate comparator group is problematic and benchmarking outcomes should be carefully considered.

PPI benchmarking normalises one or more parameters to adjust for factors that are expected to drive differences in the level of expenditure so that performance becomes directly comparable between the comparator group. In the benchmarking undertaken by the Verifier and Strata, non-network opex was normalised by one or more factors to identify the efficiency of a group of businesses relative to each other. The normalised factors were plotted on a chart and a trendline created to indicate where the relatively efficient level of expenditure is expected.

The benchmarking undertaken by the Verifier and Strata each used different comparator groups and normalisation parameters.

## 2.2.3 SIMILAR OPERATIONAL MODEL

The PPI method assumes that all businesses being compared are in a similar state of operations and does not account for the need for increased expenditure if there is a significant investment program being implemented, a change in operating model if analysing across time, or different operating models between businesses. Where there are departures, in particular different capitalisation policies or contracting arrangements, it can distort the apparent outcomes and may incorrectly be perceived as being more or less efficient.

Differences in these parameters can distort benchmarking outcomes and hence in PPI benchmarking, adjustments are often made to remove these distorting factors. In this case, neither the Verifier or Strata were able to identify or make any adjustments.

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<sup>10</sup> Farrier Swier Consulting Pty Ltd, 2020, Verification Report Aurora Energy CPP Application, P. 492

# 3 KEY DIFFERENCES IN THE BENCHMARKING OUTCOMES

This section sets out the key differences in the benchmarking undertaken by the Verifier and Strata. It then examines whether the benchmarking outcomes are logical.

## 3.1 KEY DIFFERENCES IN OUTCOMES

The Verifier's key findings from its benchmarking were that:

- Aurora Energy's average total expenditure, opex and capex over the 2013–2019 period are comparable to that of other large New Zealand EDBs – however, the increase over the last few years of that period and that proposed in the CPP proposal raise Aurora Energy's expenditure, on a per unit basis, above its peers in most cases and away from the trend line of all EDBs (although the Verifier notes that this comparison is subject to significant limitations).
- The asset replacement and renewal expenditure is shown to have been increasing over the 2013–2019 period when normalised by customer density and by 2019 was significantly higher than that of other large New Zealand EDBs.
- Applying a network growth trend to base opex does not appear appropriate for the reactive and corrective maintenance, SONS and People Costs programs. Aurora provided additional supporting information for the proposed step changes in the network maintenance, SONS, and people costs portfolios. This information supported the step changes for the most part – and so they considered them verified.
- The proposed vegetation management unit rate, which is based on historical costs, appears inefficient when Aurora's vegetation costs are compared to other EDBs. Of the total expenditure of \$21.2m, \$0.8m (3.8%) could not be verified and should be further reviewed.
- Aurora Energy's SAIDI and SAIFI performance is consistent with that of the larger New Zealand EDBs, but has increased (deteriorating performance) noticeably over the 2013–2019 period.<sup>11</sup>

We note that the increases in capex and opex are associated with the expanded capex program in the CPP period and that the benchmarking undertaken by the Verifier provides a value for RY19 (the last full year of capex and opex data available before the CPP application was submitted) and the average of the forecast capex and opex for the CPP period.

Strata assessed the Verifier's benchmarking and undertook its own benchmarking using historic and forecast data for 2013 to 2030. The key conclusions drawn by Strata on the Verifier's benchmarking approach are that:

- benchmarking only one year (RY19) does not enable meaningful assessment of Aurora's System Operations and Network Support (SONS) and People Costs
- RY19 is the only year where the costs are similar to the average of its peers (based on the opex/ICP and opex/km benchmarking).<sup>12</sup>

Strata's benchmarking found:

- Aurora's SONS opex over the CPP and review periods is high relative to Aurora's peers.

<sup>11</sup> Farrier Swier Consulting Pty Ltd, 2020, Verification Report Aurora Energy CPP Application, P. 81,P.492

<sup>12</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 138

- Historically, Aurora’s Non-network opex was below the average of the cohort of peers Strata compared Aurora against. However, Aurora’s proposed uplift in Non-network opex, driven primarily by SONS and People Costs opex puts Aurora significantly above the cohort average throughout the RY21–RY30 forecasting period.
- The fact that Aurora Non-network opex is still significantly above the cohort average in RY30 reinforces Strata’s conclusion. Aurora’s 2020 AMP points to Aurora being in a ‘steady state’ by RY30, certainly regarding capex. Therefore, Strata would expect to see Non-network opex (in real terms) lower in RY30 than over the CPP and review periods. However, this is not the case.<sup>13</sup>

The key difference in the benchmarking outcomes is the degree to which the non-network opex is different to the comparator groups. Strata claim their benchmarking and assessment supports that Aurora’s non-network opex is 60% higher than the average of its peers, excluding the increased opex costs proposed in the CPP associated with the increased capex program. It identified SONS and People Costs as the two areas driving the high expenditures.<sup>14</sup> In contrast, the Verifier benchmarking indicates that, on balance, Aurora’s non-network opex is consistent with its peers.

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## 3.2 HOW LOGICAL ARE THE BENCHMARKING OUTCOMES

In section 3.1, we contrasted the benchmarking undertaken by the Verifier and Strata and noted a significant difference in outcomes. Both used similar data but were based on different comparator groups and data normalisations. This appears to have led Strata to a different view on the apparent level of efficiency of the items benchmarked.

Given that differences in benchmarking outcomes – based on similar data inputs – have occurred, it is useful to expand one’s view point to see if the overall outcomes are consistent before looking for deficiencies in the assumptions made in the benchmarking that have led to the difference in views. One way to make this assessment is to look at the total opex, rather than the components that make up total opex.<sup>15</sup>

In May 2020, the Commission published the outcomes of its review on the appropriate level of expenditure for Aurora under the Default Price Path (DPP3). The DPP3 Final Determination represented the Commission’s best view of the appropriate level of expenditure for Aurora based on the Information Disclosures and historical expenditure. Subsequently, Aurora submitted its Customised Price Path application that included increased expenditures, primarily to reflect its expanded capex program but also to address a backlog of corrective maintenance, completion of vegetation first cut, and to build increased asset management capability. Figure 3.1 below is an extract from the Commission’s CPP draft determination and shows a comparison between Aurora’s opex proposal, the Commission’s draft decision allowance and the DPP3 final determination.

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<sup>13</sup> Ibid

<sup>14</sup> Strata, 2020, Aurora CPP – review of forecast expenditure, Table 5, p. 143

<sup>15</sup> Note that between the Verifier version and the final CPP Application Aurora added an Opex distributed energy resources solution (non-network solution) to replace the Upper Clutha capex project. Strata has adjusted for this difference in their analysis.

**Figure E1 Opex allowance comparisons, Aurora CPP, DPP and historical opex<sup>425</sup>**

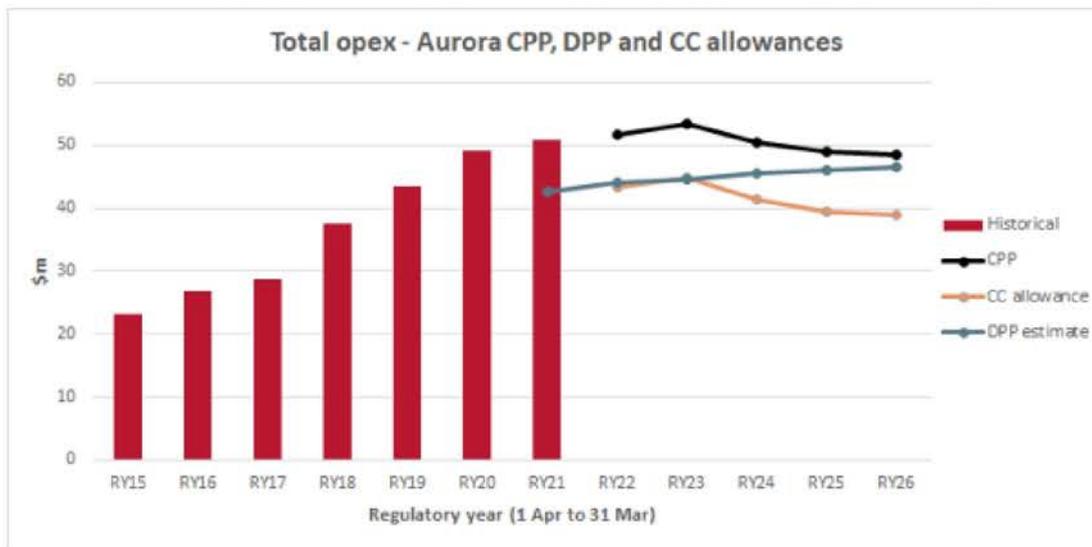


Figure 3.1 Opex allowance comparison of Aurora CPP, DPP<sup>16</sup>, Commission draft allowance and historical opex

The comparison in Figure 3.1 shows that Aurora’s CPP proposal is initially higher than the DPP3 allowance which primarily reflects the need to address a corrective maintenance backlog and completion of their vegetation first cut. The return to DPP3 levels of opex allowance later in the CPP period reflects the ongoing proposed capex works programme and the need to continue to develop asset management capability through new systems, processes and personnel. The chart also shows that Aurora has largely implemented increased levels of opex, above DPP3 levels, prior to the CPP period.

The Commission’s draft CPP decision shows the opex starting at the level of the DPP3 allowance and then reducing below it by the end of the CPP period.

The Commission made its DPP3 determination in accordance with the requirements of Part 4 of the Commerce Act 1986, which sets out the requirements for the Default and Customised Price Paths. Clause 52P describes the requirements of the Default Price Paths, and in particular, Clause 52P(3)(d) requires that determinations must be consistent with Part 4 of the Act.

Clause 52A details the purpose of Part 4. It requires that:

- “...this Part... promotes the long-term benefit of consumers...”
- regulated services “have incentives to improve efficiency and provide services at a quality that reflects consumer demands...”, and
- regulated services “are limited in their ability to extract excessive profits.”.

The Commission has already determined that Aurora’s proposed “underlying” opex meets these requirements, but by its nature the DPP3 allowance could not fully consider the proposed increased capex program and associated opex which had not been fully implemented in the DPP2 period. The reasons for the increased capex and opex are already set out in the Aurora CPP application. The application shows that Aurora is allowing for an uplift in opex which then reduces to a similar level as the DPP3 allowance by the end of the CPP Period.

<sup>16</sup> The DPP3 allowance for RY26 is a linear extrapolation base on the RY21 to RY25 period.

On the contrary, the outcome of the Strata benchmarking and assessment is that the CPP draft decision on opex is approximately 20% below the DPP3 level by the end of the CPP period. This is a counter intuitive outcome and indicates that the application and/or the approach to benchmarking undertaken by Strata requires further investigation.

# 4 SONS AND PEOPLE COST BENCHMARKING

Strata identified that SONS and People Costs are the activities that are driving the expenditures within the non-network opex category relatively higher than the Strata comparator group. This section reviews the benchmarking undertaken by Strata on Aurora's CPP Application for the SONS and People Costs sub categories.

We show that the methodology adopted by Strata to determine the level of SONS and People Cost opex for Aurora is flawed and inappropriately applied. Together, the flawed methodology and inappropriate application mean that the outcomes reached by Strata are incorrect.

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## 4.1 ANALYSIS OF THE STRATA BENCHMARKING APPROACH

The requirements for accurate PPI benchmarking are set out in section 2.2. These are data requirements, selection of a suitable comparator group and adjustments for different business models. This section compares the Strata benchmarking approach against these requirements and discusses other relevant aspects.

### 4.1.1 DATA REQUIREMENTS

The key data requirement is that, for any given input or output, the data collected must be measured on a consistent basis and be prepared according to the same definitions across all of the comparator businesses.

WSP notes that non-financial and performance information reported by Australian electricity businesses<sup>17</sup> under their regulatory framework requires independent review and an accompanying document that describes how the definitions were applied or the data estimated. There is no requirement to audit or review the non-financial data (other than the network reliability data) in the Information Disclosures (IDs)<sup>18</sup>. Without this requirement, there is less certainty that the information has been reported on a consistent and accurate basis. Both the Verifier<sup>19</sup> and Aurora<sup>20</sup> have also raised this concern about data consistency and limitations with respect to benchmarking. WSP notes that this is particularly relevant at the subcategory levels of expenditure reporting where interpretation, role and system differences between businesses becomes material. This indicates that there is uncertainty that the data has been reported on a strictly consistent basis, and hence will result in uncertainty regarding the outputs of the benchmarking.

The accuracy required by the IDs decreases in the longer timeframes<sup>21</sup>, so future data is less accurate and less certain. This is apparent in the opex forecasts which appear to be linear extrapolations over time when applied to the benchmarking of Opex/ICP and Opex/km. Hence, the suitability for use in reliable benchmarking is reduced.

As stated in the ACCC/AER benchmarking review<sup>22</sup>, as data is disaggregated into subcategories, the impact of different data definitions and its basis of preparation is magnified and increases any distortion in the results. Strata has assessed the

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<sup>17</sup> Regulatory Information Notices that require annual reporting of non-financial and performance information comparable to the Information Disclosures.

<sup>18</sup> Electricity Distribution Information Disclosure Amendments Determination 2017, p.10

<sup>19</sup> Farrier Swier, Verification report Aurora Energy CPP Application, 8 June 2020, Appendix G.1

<sup>20</sup> In response to an information request RFI 240

<sup>21</sup> Information Disclosures, Attachment A, Clause 11.10 for network development and 12.3 for Renewal and Maintenance

<sup>22</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, chapter 2.2.2 and 2.2.3

non-network opex using subcategories of SONS and Business Support.<sup>23</sup> WSP considers that it would be prudent to undertake the benchmarking comparisons at a whole of category level for non-network opex to minimise any difference in definitions or team structures that may cause distortion at the subcategory level.

The uncertainty in the data was acknowledged by the Verifier through the inclusion of error bands that were based on the standard error calculated as part of the regression statistics. This view of the benchmarking clearly demonstrates the limitations with the data.

## 4.1.2 COMPARATOR GROUP

### 4.1.2.1 SELECTION OF COMPARATOR GROUP

The selection of an appropriate comparator group is essential for effective benchmarking. New Zealand has 29 EDBs, each with significantly different size, customer density, terrain and environmental conditions. All of these factors impact the efficient level of expenditure required for a business to remain sustainable and meet its regulatory obligations.

In its benchmarking, the Verifier included 12 EDBs in the comparison group. In contrast, Strata selected a group of five comparator EDBs on the basis of similar customer density and one or more of four other network length metrics (rural and urban overhead and underground circuit length). Strata did not indicate why network parameters were used to select the comparator group for non-network expenditure benchmarking. It appears to WSP that such selection should be based on an assessment of the appropriate drivers for the category of expenditure being benchmarked and in the absence of any known drivers, on all comparator businesses available.

The use of small comparator groups increases the importance of the similarity between the group selected as any differences can result in a large distortion of the outputs. This includes exogenous factors such as the network topology, terrain and accessibility, but such factors are difficult to assess and have been ignored by the benchmarking approaches of the Verifier and Strata. Aurora is part of a small group of NZ distributors with a non-contiguous network. Its need to service the Central Otago area with a sparse rural network, access constrained by the mountainous geography and climatic conditions drives the need for multiple office bases, two control rooms and multiple contractor bases, all which impact costs. Typically, a larger comparator group improves the comparison and helps demonstrate if there is a real relationship for a given benchmark or not. It also allows the identification of “clusters” within the benchmarked comparison group that might change with the item being benchmarked. Such a view is not possible if businesses are removed from the comparison group prematurely.

To assess the similarity of EDBs and select the group of comparators using a quantitative, non-subjective approach, WSP undertook a k-Means cluster analysis. The analysis groups the businesses into a specified number of clusters based on the calculated ‘distance’ to each other. The ‘distance’ represents the similarity between each of the parameters included in the test.

The cluster analysis shows Powerco and Vector to be in individual groups while the remainder of the EDBs were found to be broadly similar and could be considered a single cluster. This result appears reasonable as Powerco and Vector are significantly larger in scale, in both terms of number of ICPs and network size, than all other businesses.

As an example of the difference in benchmarking outcomes when different comparator groups are selected, WSP benchmarked non-network opex as a percentage of total capex plus total opex (totex) normalised by customer density based on the average of the CPP period. This metric was chosen as it is a similar benchmark used by the Verifier and Strata, but applied at an appropriate aggregate level to ensure consistency in data by addressing any differences in cost allocation between non-network categories. The normalisation (see next section) is an appropriate driver of differences in

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<sup>23</sup> Strata notes that SONS and People Costs appear to be driving higher non-network opex. As benchmarking data is not available for People Costs, Strata used Business Support to get an indication of how the trend in Aurora’s People Costs opex may compare with the trend in other distributors’ People Costs opex over time.

expenditures between businesses in the comparator group. The comparator groups used are those selected by the Verifier (12 EDBs) and Strata (5 EDBs). The results are shown in Figure 4.1 below.

The charts show that the smaller group of EDBs selected by Strata results in Aurora being above the average trend, while the comparison of Aurora against the larger group of EDBs as selected by the Verifier shows Aurora to be under the trendline and therefore relatively efficient in comparison. The two charts further demonstrate the importance of selecting the correct EDBs for the comparison.

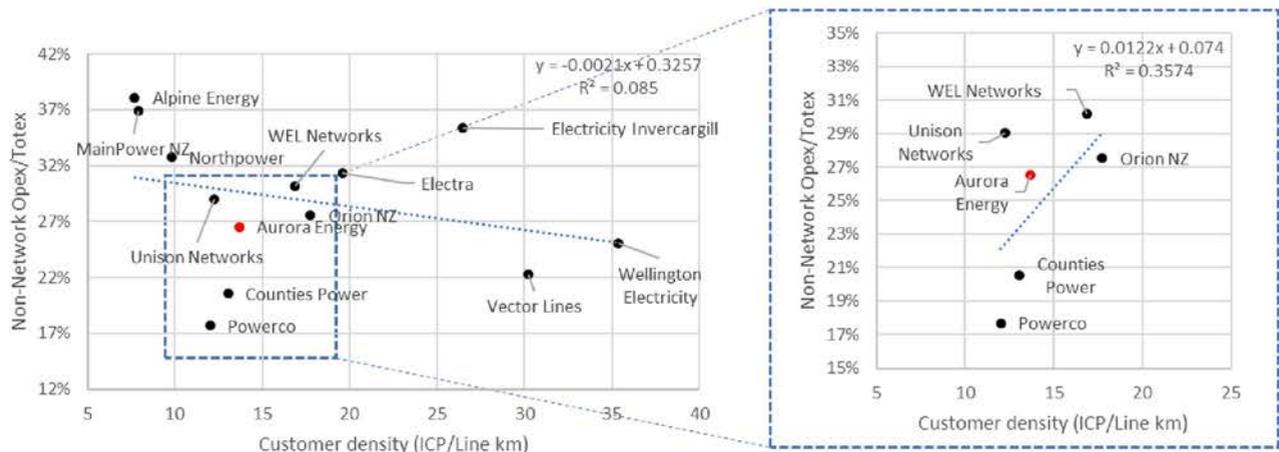


Figure 4.1 Non-network opex (CPP average) as a percentage of totex against customer density – showing the effect of selecting different comparator groups, Verifier on left, Strata on right

WSP considers Strata has not demonstrated that using a smaller comparator group is appropriate for use in benchmarking SONS or People Costs. Given that smaller comparator groups have the effect of restricting the comparison, WSP is of the view that the smaller comparator group selected by Strata is showing an unreliable outcome and that using a larger set of EDBs is a more appropriate approach.

The cluster analysis undertaken by WSP indicates that Powerco and Vector should be considered as outliers in any comparative analysis. The Verifier included Vector and Powerco, while Strata only included Powerco and not Vector. Figure 4.2 shows the effect of excluding Powerco and Vector from Figure 4.1, with Aurora now remaining better than the average of the Verifier’s comparator group and closer to the average of Strata’s comparator group.

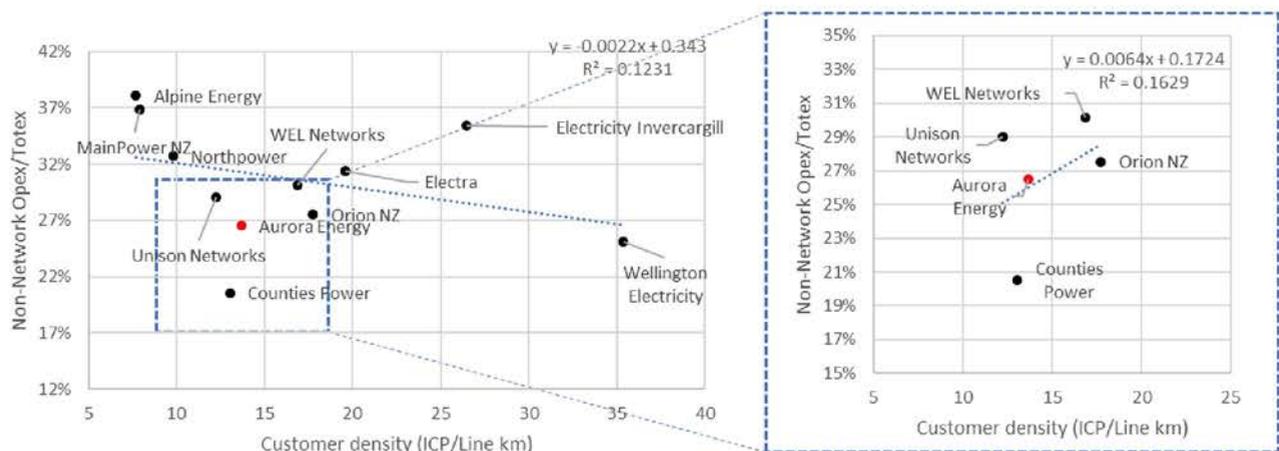


Figure 4.2 Non-network opex (CPP average) as a percentage of totex against customer density – showing the effect of removing outliers (Powerco)

We also note that applying two normalising factors (totex and customer density<sup>24</sup>) provides normalisation for a relationship with two parameters, and therefore enables for a larger comparator group to be used. This approach was applied by the Verifier whereas Strata generally applied a single normalisation factor. This is further discussed in the following section.

#### 4.1.2.2 NORMALISATION OF COMPARATOR GROUP

PPI benchmarking assumes a linear relationship between the parameters being assessed. This means that a change in the input, for example the number of ICPs, should directly result in a change to the output, for example the non-network opex. Generally, multiple normalisation parameters are applied to account for differences between the businesses as far as is practical. An example of using multiple parameters, when the comparator businesses are different in both network size and the density of customer connections, is to normalise for both using a graphical technique of displaying expenditure as a percentage of total expenditure on the y axis (thus accounting for network size) and customer density on the x axis.

Where there are more known parameters than can be applied to the benchmarking approach then selection of the appropriate parameters is also important, and outcomes need to be carefully considered against the potential impact of parameters that are not modelled.

In their draft report, Strata relied on a simple PPI benchmarking technique by applying a single normalising parameter then trending over time. This approach relies on the comparator group being highly consistent and does not account for any trade-offs or nonlinear relationships such as the economies of scale expected for larger businesses where there is a fixed and variable component to the costs. To address this, common practice is to also assess the data against a second metric along the x-axis to further normalise out differences between the businesses.

Strata presents benchmarking using multiple parameters in Figure 8<sup>25</sup> and Figure 10<sup>26</sup> of their report for direct comparison with the Verifiers benchmarking. In both these cases, the results demonstrated that Aurora was close to or below the trendline, indicating a level of efficiency that is comparable to the peer EDBs. The findings were supported by the Verifiers benchmarking that relied upon a larger group of comparator EDBs.

Strata did not clearly address the differences between the results of benchmarking through the two techniques; single parameter and multiple parameter PPI. Strata notes that the slope of the trend line is opposite (Strata report, Figure 8 compared to Figure 9). However, this is likely a result of applying a smaller group of comparator EDBs and not necessarily demonstrating that the group selected by Strata was a better fit or more similar compared to the group selected by the Verifier.

As a result of this review, WSP considers that as Strata has relied on the single parameter PPI benchmarking over the multiple parameter benchmarking it has resulted in calculating an apparent level of inefficiency that may not actually exist.

The findings of the multiple parameter benchmarking show Aurora to be at a comparable level of expenditure to the peer EDBs. This should be considered in the assessment to minimise the risk that Aurora's opex is reduced to below an efficient level due to differences in business structure, capitalisation policies and how information is reported under the Information Disclosures.

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<sup>24</sup> WSP notes the Commission's criticism of customer density as a normaliser, as used by both the Verifier and Strata. Our analysis using this metric is to demonstrate that the outcome of this benchmarking is highly subject to the group of EDBs used in the comparison and that the outcome of the charts is similar between RY19 expenditure and the average for the CPP period.

<sup>25</sup> SONS opex as a percentage of totex against customer density

<sup>26</sup> Business support opex as a percentage of totex against customer density

### 4.1.3 SELECTION OF BENCHMARKING PERIOD

The verifier used RY19 as the appropriate year for benchmarking, being the last full year of data available before the CPP application. Typically, this approach is preferred in a base, step, trend approach to determining the efficient opex levels, as the benchmarking mirrors the base year in the assessment.

Strata notes that RY19 is the only year in which Aurora's SONS and Business opex is similar to its peers.

WSP notes that the benchmarking it undertook to produce Figure 4.1<sup>27</sup>, shows that no significant difference in outcomes in the benchmarking are evident when using the average expenditure across the CPP period or RY19.

### 4.1.4 OPERATIONAL MODEL

The PPI method assumes that all businesses being compared are in a similar state of operations and does not account for the need for increased expenditure if there is a significant investment program being implemented, a change in operating model if analysing across time, or different operating models between businesses.

PwC<sup>28</sup> undertook an assessment of the comparator EDBs to assess the number of FTEs and the structure of the businesses that may give rise to different classifications of expenditure. Their analysis shows there is variation in internal structure, cost allocation and capitalisation policies, and contracting arrangements across the group of EDBs that lead to a material difference in the SONS and People Costs. Hence, the detailed bottom up review of the data by PwC demonstrates that it is unlikely to fully satisfy the requirement for consistent data definitions.

This review has found that there are significant differences within the structures of the EDBs that were not explicitly addressed by the benchmarking undertaken by Strata. Differences in structures can result in allocation of costs to different subcategories and differences in capitalisation policy can cause opex to be transferred to capex in different proportions between business, resulting in a material effect on the outcome of benchmarking.

This means that to minimise the distortions in expenditure levels due to differences in the classification of expenditures, non-network opex should best be considered in benchmarking in its entirety rather than broken into sub categories, and that the benchmarking should be used to identify areas for detailed review rather than for calculating a percentage reduction.

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## 4.2 STRATA'S CALCULATION OF THE ADJUSTMENT

As described in section 4.1.1, the data and assumptions behind the PPI benchmarking undertaken by Strata are not fully met and there are equally valid alternative assumptions that result in a contrasting view of Aurora's efficiency. Given this discrepancy, and the metrics that show Aurora's forecast to be at an efficient level, the benchmarking should be treated carefully. For instance, it should be used to identify where further analysis should be undertaken, rather than to identify the percentage of reduction required.

However, Strata appears to have used these benchmarking results as a key input to adjusting the non-network opex, as described in their report pages 139 to 148. The three-step assessment involved:

- A 'senior management' staffing challenge.
- Benchmark Aurora's SONS opex, People Costs opex and non-network opex against five EDBs
- Comparing Aurora's proposed SONS opex with Powerco's SONS opex under Powerco's CPP

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<sup>27</sup> WSP only recreated the benchmarking used by the Verifier and Strata based on CPP average data. WSP did not undertake a full benchmarking study

<sup>28</sup> PwC, An assessment of Strata Energy Consulting Opex Briefing Report 6, December 2020

These steps are discussed in the following sections and demonstrate further concerns with the methodology applied, conclusions drawn and specific recommendation made.

#### 4.2.1 USE OF THE BENCHMARKING

Strata has used the results of its benchmarking to establish the average expenditures of Aurora's peers on SONS and People Costs so as to determine average staffing levels in the SONS and People Costs categories and non-network opex. The approach described in Strata's document was to reduce the expenditure to the average of the cohort of businesses and then apply an uplift factor to represent the increased costs under the CPP application. The following key steps were taken by Strata:

- 1 Isolated the SONS and People opex costs – all other non-network opex categories were retained unchanged.
- 2 Directly applied the percentage difference (between the 2021-30 average of Aurora's benchmark outcomes to the average of the cohort of businesses) on an opex/ICP and opex/line km basis. The reductions were applied to SONS and Business Support costs (to address People Costs) individually and then to non-network opex as a whole to provide an upper and lower bound.
- 3 Applied an 'uplift factor' to the upper and lower bounds, calculated as the uplift received by Powerco in its CPP application (see next section).
- 4 Removed identifiable non-staff costs
- 5 Calculated the assumed FTE numbers based on an assessment of assumed staff costs
- 6 Adjusted the upper and lower bounds to reflect the outcome of the 'senior management' staffing challenge and took the average of the upper and lower bounds
- 7 Multiplied the FTE forecast by an average salary and added non-staff costs back into the forecast to calculate the proposed allowance.<sup>29</sup>

WSP considers that this methodology and its application are flawed:

- The approach of using benchmarking to set adjustments ignores the inherent limitations of PPI benchmarking. A paper on benchmarking energy networks by the ACCC and AER supports this view:<sup>30</sup>

*'... PPI has a number of limitations, particularly relating to data quality and accounting for differing network characteristics and operating environments. It is also difficult to obtain good price deflators (e.g., for labour and/or opex) when comparing utilities over time and across geographical locations. Due to these limitations, PPI-based benchmarking results are best viewed as providing a useful means of comparison and an indication of where certain expenditure may be above efficient levels, but should not be viewed in isolation as a definitive assessment on the efficiency of an energy network business'.*

- The uncertainty in the data available, the small size of the comparator group with the inclusion of Powerco (a clear outlier), and the use of a single normalisation parameter, mean that the view provided by Strata's PPI benchmarking is inaccurate and inappropriate to be used in forming a view about appropriate expenditure levels.
- While Strata states that they have used three approaches (a senior management' staffing challenge, benchmarking and comparing Aurora's proposed opex with Powerco's) to develop their forecasts, they have actually used these as three inputs into the one benchmarking approach and hence have not provided an independent check of their modelling as cited to be a strength of their methodology.<sup>31</sup>

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<sup>29</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 143-144

<sup>30</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, chapter 2.6

<sup>31</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 145

- In step 2, when using all Non-Network Opex, a reduction factor of 60% was applied to reduce Aurora’s non-network opex to the average of the comparator group. This was applied to all Non-Network Opex costs, including non-staff costs which are stated by Strata’s methodology to be excluded from the reduction. The SONS and People Costs are used as balance items so that the full value of all Business Support sub categories, other than People Costs, are removed from the adjusted amount and therefore shown to be unchanged. The result is the SONS and People Cost are reduced by 54% and 77%, respectively, so that the recommended 60% of non-network opex can be achieved. Similarly, the benchmarking applied to Business Support costs also results in a reduction to People Costs of 80%. This level of reduction of People Costs appears to be nonsensical implying Strata’s methodology is not suitable for forecasting People Costs.
- In step 3, the use of Powerco to derive an uplift factor does not account for the significant differences in network size, topology and asset management maturity between the two networks. This is discussed further in section 4.2.2 below, which concludes that Aurora would need proportionately more opex than Powerco from their respective starting positions before their CPP applications, than Strata has proposed on a \$/ICP or \$/km basis.
- In step 4, Strata states that it could not identify all non-staff costs and could only remove those non-staff costs provided in Aurora’s CPP application as step changes.<sup>32</sup> Further, the non-staff costs identified in the Strata report<sup>33</sup> are different to those used in their model.

In their analysis, Strata assumed “...all the SONS and People Costs base year amounts are staffing costs.”. By applying Strata’s approach of dividing the SONS and People Costs by the average salary to determine FTE levels, WSP calculated that if all base year expenditure was staff cost, then Aurora’s base year FTE numbers would be 172 FTE within these categories<sup>34</sup>, whereas at the end of RY19 Aurora had 133 FTEs<sup>35</sup>. This demonstrates that there are very significant levels of non-staff costs that Strata has not appropriately accounted for.

- In step 5, Strata converts the dollar values calculated from their benchmarking into FTE numbers. However, Strata’s approach assumes no relationship between the number of staff and non-staff costs<sup>36</sup>. Varying the number of staff without considering the associated changes in non-staff costs will have the impact of overstating the reduction of the SONS and People Costs staff opex, and therefore the FTE numbers calculated. Strata acknowledges this shortcoming.
- In steps 2 to 5, Strata established an upper and lower number of FTEs in its forecast based on the ‘senior management’ staffing challenge (discussed further in section 4.2.3) and benchmarking of SONS/People Costs, respectively. Strata adopted the average of the upper and lower bound to set the recommended number of FTEs and expenditure. The wide range in the upper and lower bound FTE numbers of 18% at the start of the CPP period indicates that this is not a reliable method for forecasting the FTEs or expenditure.

Table 4.1 Comparison of SONS FTE numbers from benchmarking and the ‘senior management’ staffing challenge

ITEMS	SONS FTES
FTE lower bound (benchmarking)	119
FTE upper bound (‘senior management’ challenge)	132-140
Range in difference	11% to 18%

<sup>32</sup> Ibid p. 143

<sup>33</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 143

<sup>34</sup> We note that the 172 FTEs we have calculated by using Strata’s approach is likely to be understated in that it does not include that some (circa \$2m) of remuneration in the SONS and People Costs categories are capitalised each year.

<sup>35</sup> The 133 FTE was comprised of 84 FTE in SONS and 49 FTE in People.

<sup>36</sup> The Electricity Distribution Information Disclosure Determination 2012, p. 33, describes SONS to include items that are likely to vary with the number of staff such as operational technology (ie licencing for systems such as GIS) and operational vehicles.

WSP notes that the above points were identified from an initial review of the Strata report and do not pertain to identify all issues with the modelling, however, they are enough to demonstrate that the Strata methodology and its application have significant shortcomings.

WSP concludes that Strata's methodology of using the results of the PPI benchmarking and the 'senior management' staffing challenge to directly calculate a reduction in opex to be flawed. The wide range between the upper and lower bounds determined by the benchmarking and the 'senior management' staffing challenge strongly indicate that neither can be relied upon. Hence, WSP does not consider Strata's assessment to be sufficiently robust to inform the appropriate level of Aurora's non-network opex expenditure.

#### 4.2.2 DIRECT COMPARISON WITH POWERCO

After adjusting Aurora's SONS and People Cost expenditures to reflect the average of the comparator group, Strata applied an uplift factor to account for the uplift in expenditures proposed under Aurora's CPP application. A comparison was made with Powerco who also made a CPP application to account for a major expansion to its capex programme. The comparison was used to determine the recommended adjustment to Aurora's SONS and People Cost expenditures.

Strata states:

*Our understanding is that Powerco is the only other distributor in our cohort that is also undertaking a major capex programme. This highlights a key drawback of relying on totex for benchmarking at a point in time there will be variability of capex across distributors in any one year due to different capex/opex strategies, asset life cycle stages, capex conversion rates and the like. We believe totex is more appropriately used for benchmarking over a long period.*

While WSP agrees with this statement, we note that trending forward the benchmarking based on simple linear forecast to create the comparison does not provide any additional insight into the relative efficiencies of the EDBs. As stated in section 4.1.1, the accuracy required by the IDs decreases in the longer timeframes and the opex forecasts appear to be linear extrapolations rather than detailed forecasts.

Strata further states:

*We readily acknowledge there are shortcomings in this approach. First and foremost, the activities that Powerco is currently doing under its CPP differ from those Aurora proposes.*

In total, Strata acknowledges four shortcomings but it does not discuss or make any adjustments for these shortcomings, preferring to "scale" the expenditures in accordance with other factors. Strata states "*we believe these shortcomings are likely to balance each other out*". While this is a subjective view, this appears unlikely and WSP notes that the combination of the four shortcomings identified could be expected to drive significantly different expenditure uplifts than the net zero assumed by Strata:

- Shortcoming 1: the activities that Powerco is currently doing under its CPP differ from those Aurora proposes. Strata however for the purpose of their adjustment, deems that at a high level, Powerco's CPP and Aurora's proposed CPP are both about significant network investment and improving asset management capability and practices. Ignoring possible scaling factors associated with network size as discussed in shortcoming 2 below, if the change management activities of the businesses are different and Aurora as expected has a more significant change management programme, then their costs will be higher than Powerco's costs rather than similar as assumed by Strata.
- Shortcoming 2: to enable a comparison to be made, Strata used the percentage uplift in Powerco's SONS / Business support / Non-network opex, measured in terms of \$/ICP and \$/km of line length. In WSP's view, neither \$/ICP or \$/km of line length properly represent the drivers for the uplift. They provide no insights into the size of the activity proposed under either Powerco or Aurora's CPPs. For instance, the number of asset classes is similar in both businesses and the improvements in asset management systems is similar in scope. Neither of these are related to the number of ICP's or network line lengths. Hence the expenditure drivers are expected to be similar for both businesses rather than subject to a scaling factor.

- Shortcoming 3: the long-term average opex on which [Strata] are overlaying Powerco’s CPP uplift includes Powerco’s uplift. This means [Strata] are in effect counting Powerco’s CPP uplift twice. In WSP’s view, Powerco should not have been included in the comparison cohort (being an outlier) and this would result in the average in peers increasing, and hence reducing the gap to Aurora. However, this is expected to have a small impact on the accuracy of the comparison.
- Shortcoming 4: Aurora may need a larger percentage uplift than Powerco did, because Aurora is starting from a lower base than Powerco did in terms of asset management maturity. WSP agrees with this view, noting that both Aurora and Powerco have published their asset management maturity scores (as measured by the AMMAT assessment process for 2019) as 1.94 and 2.53 respectively.<sup>37</sup> It is clear that Aurora has significantly more work to do than Powerco and could be expected to have a larger uplift in expenditures to achieve the goals as set out in it’s CPP application.

Further, Strata has not considered that:

- Powerco is significantly larger than Aurora and could be expected to achieve economies of scale that Aurora cannot, that is, the assumption that a linear relationship exists between Powerco and Aurora has not been proven.
- Differences in business operations and conditions may drive different expenditure requirements. In particular, issues that may affect the complexity of managing network assets such as geography/terrain, a non-contiguous network and weather (snow).

WSP concludes that Strata’s assumption that the shortcomings would balance out is unlikely to be accurate and that using unadjusted Powerco expenditures as a starting point for determining SONS and People Costs opex for Aurora is not appropriate. Further, Strata does not appear to have fully considered all of the aspects of Aurora’s CPP with respect to the level of asset management maturity and the difference in business operating structures when making its comparison to Powerco.

In WSP’s view, the evidence suggests that Aurora would need proportionately more opex than Powerco from their respective starting positions before their CPP applications, than Strata has proposed on a \$/ICP or \$/km basis to achieve the desired efficient long term expenditure levels.

#### 4.2.3 SENIOR MANAGEMENT STAFFING CHALLENGE

A ‘senior management’ staffing challenge was undertaken by Strata to provide a counterpoint to the benchmarking. They took a top-down approach to develop an upper and lower bound for FTEs in each of the business units within Aurora’s SON and People Costs functions in both of year 1 and year 3 of the CPP period.

However, this assessment is based on significant assumptions as demonstrated by the following:

- Strata drew only on their own collective management experience in the electricity sector in undertaking the challenge.
- Strata acknowledges that they are making assumptions based on less information than Aurora, stating “*There is an information asymmetry between Strata and Aurora’s ELT and Board, meaning we [Strata] are not as informed.*”<sup>38</sup> They did not include Aurora in the challenge. As such, the challenge outcomes are not based on fact.
- No evidence has been provided to show that actual workloads were considered in the estimated number of roles following the challenge session.

<sup>37</sup> Aurora Asset Management Plan April 2020 – March 2030 p.349 and Powerco Electricity Asset Management Plan 2019 p.87

<sup>38</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 140

- Key goals, such as achieving certification to ISO550001 by 2023 have been altered, meaning that the estimated number of roles is partially based on reduced workloads without consideration of the impact to the business of altering the goals.

Strata stated that they used this assessment as a point of comparison to demonstrate that their benchmarking produced a reasonable outcome. However, Strata has substituted the upper bound calculated by benchmarking with the upper bound of the ‘senior management’ staffing challenge – a direct input to the forecast estimate, demonstrating that the upper limit is based on Strata’s opinion and not on benchmarking.

Given that there are acknowledged deficiencies in the basis of Strata’s assessment, WSP does not consider that the ‘senior management’ staffing challenge has been applied in an appropriate manner as it is not fact based and assumes more accuracy than is proven. There is no evidence provided to demonstrate that the output of the senior management staffing challenge from Strata provides a more accurate assessment of the requisite number of FTEs to efficiently manage the business than Aurora’s own management’s forecast. On the contrary, Strata acknowledges they have less information.

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## 4.3 CONCLUSION

WSP has assessed the benchmarking undertaken by Strata that underpins their assessment of the appropriate level of SONS expenditure and People Cost expenditure. We found that:

- The outcomes of the PPI benchmarking cannot be relied on and are inappropriate to be used directly in determining expenditure levels. The joint working paper by the Australian Competition & Consumer Commission and the Australian Energy Regulator on Benchmarking Opex and Capex in Energy Networks supports this view.<sup>39</sup>
- Strata’s selection of 5 EDBs as a comparator group was inappropriate as the selection was based partially on network parameters that were not demonstrated to represent similarities between the EDBs relevant to the SONS and People Cost expenditure being benchmarked. The selection appears to have resulted in a restricted view of the available data that led Strata to an incorrect view of the relative efficiency of Aurora’s forecast expenditure for SONS and People Cost.
- Strata’s use of a single normalisation factor did not appropriately account for differences within the comparator group. Use of multiple factors leads to different outcomes that Strata did not consider. Hence, Strata’s view should be considered to be based on an incomplete assessment.
- PPI benchmarking does not clearly address known expenditure programmes. They are likely to be observed as inefficiencies if their existence is not known about by the reviewer. Strata appears to have correctly removed the non-network Upper Clutha solution from the opex assessment.

Additionally, WSP examined the role of benchmarking in Strata’s assessment of the efficient level of opex for non-network opex and found:

- Strata’s assessment is counter intuitive to the level of opex required under steady state operations as found by the Commission in its DDP3 determination. Strata was proposing a level of opex significantly below the DPP3 determination by the end of the CPP period.
- While Strata states that they have used three approaches (a senior management’ staffing challenge, benchmarking and comparing Aurora’s proposed opex with Powerco’s) to develop their forecasts, they have actually used these as three inputs into the one benchmarking approach and hence have not provided an independent check of their modelling as cited to be a strength of their methodology.
- The recommended adjustments to non-network opex were based on an unreliable assessment that:

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<sup>39</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, chapter 2.6

- ignored the inherent limitations in the accuracy of the PPI benchmarking to establish the average expenditures that should apply for Aurora
- applied the PPI benchmarking to calculate a reduction factor rather than as a process to identify areas for further investigation as preferred by other Regulators<sup>40</sup>
- applied an uplift factor on the average expenditures to represent the increased opex program under the CPP that:
  - was based on Powerco rather than Aurora’s proposed program of work
  - did not make appropriate adjustments to Powerco’s expenditures to account for the significant differences in operations and scale of the businesses
- used a ‘senior management’ staffing challenge to adjust the outcomes of the benchmarking based on Strata’s opinion that was not fact based and assumed more accuracy than was proven.

In comparison, WSP notes that although the Verifier’s benchmarking could be refined, it is well considered in that:

- the benchmarking is used appropriately to identify areas for further analysis and not to calculate a reduction factor
- a larger group of EDBs were used which provides a better view of relative performance
- multiple normalisation factors were applied to better account for differences between the businesses
- uncertainty in the data was explicitly acknowledged and addressed.

WSP concludes that the inherent inaccuracies in the PPI benchmarking (given the limitations in data accuracy and the inability to fully normalise for differences in EDBs) make it inappropriate for determining the quantum of any adjustments in relative efficiency. We are of the view that the Strata benchmarking is inadequate and not fit for purpose to inform the Commission’s decision on the appropriate level of expenditures for SONS and People Costs.

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<sup>40</sup> ACCC/AER, Working paper No. 6, Benchmarking Opex and Capex in Energy Networks, May 2012, section 2.6

# 5 VEGETATION MANAGEMENT BENCHMARKING

Strata identified that Vegetation Management is one of the activities that is driving the apparent higher expenditures within the network opex category. This section reviews the benchmarking undertaken by Strata on Aurora's CPP Application for the Vegetation Management sub-category.

Strata assessed and benchmarked Aurora's vegetation management costs using three benchmarking approaches. WSP reviewed the approaches and the assumptions and data relied upon. The following sections describe our findings.

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## 5.1 BACKGROUND

Costs for vegetation management cover the felling, removal or trimming of vegetation (including root management). The costs cover pre- and post-trim inspections, liaison with tree owners, traffic management and operational support such as mobile generation. The requirements for vegetation management are set out in the Electricity (Hazards from Trees) Regulations 2003.

The regulations provide for specific requirements that can cause significant differences in the cost of vegetation management across different EDB network areas. The key causes are:

- Regulation 11 states that the first cut must be at the cost of the EDB, but the second and subsequent cuts are at the cost of the tree owner, subject to correct notification requirements. The ability to identify whether a tree has been cut previously is dependent on the data available. Hence, depending on the level of maturity of data systems, progress through the network and number of new trees, the volume of work required to be undertaken within a given length of network will vary.
- Regulation 11(3) allows for the EDB to cut or trim a tree at the tree owners expense if specific conditions are met. However, EDBs have stated that it can be difficult to get the tree owners to pay and the process of arbitration can be more expensive than the initial cost of the works.
- Regulation 15 states that a tree owner can declare 'no interest' in a tree and therefore the EDB must cover the cost of the tree management. The number of consumers who declare 'no interest' is likely to vary in urban and rural locations and by inference across different networks.

Other organisations, in particular city councils, are significant tree owners and also generally have vegetation management plans. The extent of these plans varies across New Zealand and hence, the impact of council vegetation management plans and practices will impact the amount of vegetation that needs to be managed by the different EDBs.

The different amount of overhead lines in urban and rural areas also results in a difference in the unit cost of vegetation management. In urban areas, there is generally a much higher cost for traffic management which drives up the costs. The relative percentage of urban overhead line is therefore an important factor in comparison of the unit rates.

The ID's require reporting of non-financial information, including the length of vegetation affected overhead line length. However, the definition is broad and 15 out of the 29 EDBs report the entire length of their overhead network. This indicates that there are different interpretations of the definition requirements and means that the data is not useful for benchmarking purposes.

The IDs also require EDBs to report the annual expenditure on vegetation management. This data is audited and should be consistent between EDBs but is only reported as a single figure.

These factors demonstrate that there are variables related to the cost of vegetation management that are independent of the length of network or length of vegetation affected network. This increases the difficulty in making comparisons between EDBs using benchmarking.

## 5.2 STRATA'S APPROACH TO BENCHMARKING

In their report, Strata did some simple benchmarking and comparisons. There were three assessments made using two approaches as described below.

### 5.2.1 UNIT RATE COMPARISON

The first approach used by Strata was a simple comparison of unit rates based on a selected group of EDBs. The method was to divide the reported (or forecast) vegetation maintenance expenditure by the total overhead line length.

WSP considers this to be an inappropriate method for comparison. The primary reason for this conclusion is that the metric shows changes in the volume of work as changes in unit rate. There is no information available from each EDB to demonstrate that either the volume of work or unit rate of works has remained constant during the assessment period.

Since the actual length of lines managed is not known, the total line length has been used for the denominator. No evidence has been provided to demonstrate this is a suitable proxy. For example, Aurora has 4,407 km of overhead line on its network but only completed vegetation management activities on 47 km in 2017 and 57 km in 2018.

Since the denominator in the calculation is static, if the volume of work increases then this analysis would show it as an increase in unit rate even if the unit rate had remained the same. This is shown in Table 5.1, where the benchmark outcome is shown to double as a result of increased volumes of work while the unit rate in both scenarios remains the same.

This is the case with Aurora which is conducting a program to clear the backlog of first cut vegetation issues. The program is forecast to be completed in 2022, which shows up in Strata's analysis as a reduction in unit rate.

Table 5.1 Indicative example to illustrate impact of volume on benchmarking outcomes

SCENARIO	LINE LENGTH	VEG. MANAGEMENT LENGTH	ACTUAL UNIT RATE	BENCHMARK OUTCOME
Scenario A	4,000 km	50 km	100,000	1,250
Scenario B	4,000 km	100 km	100,000	2,500

Additional concerns that WSP has with the analysis are:

- Strata acknowledges that the benchmarking is imperfect and does not account for multiple factors
- the selection of the comparator EDBs was based on a similarity in line length in any one or more categories of total, urban, rural, remote and/or rugged line length. The outcome was a comparison of EDBs with significantly different network topologies.
- the selection of the 10 comparator EDBs and methodology applied does not allow for the additional cost of vegetation management in urban environments. The selected group only contained three EDBs with similar urban line length.
- notwithstanding our concerns with this methodology, in Table 6 of Strata's report they present four EDBs with similar outcomes to Aurora based on Strata's analysis. This means 17% of all EDBs have similar outcomes which appears to be too large a group to be considered outliers and is more likely to be driven by other factors. Notably, each of these EDBs have a high percentage of urban network supporting that urban environments are a contributing factor to higher vegetation management costs.
- external factors that drive a difference between EDBs such as the regulations and council vegetation management were not accounted for in the comparison. In particular, the additional cost of the 'first cut' and the percentage of trees for which owners have declared 'no interest'.

- a study completed by KPMG referred to in Strata’s report<sup>41</sup> that showed Aurora performing at a similar level to average of all EDBs and more efficiently than the average of the south island EDBs. The basis of this study is not known.

Strata did not include consideration of how these items would affect the unit rates calculated and the impact on the proposed level of expenditure in their conclusions.

### 5.2.2 DIRECT COMPARISON

Strata made a direct comparison between Aurora and MainPower by attempting to develop a bottom up build of Aurora’s vegetation management costs based on data available from MainPower’s Asset Management Plan and applying adjustments.

The key elements of the changes made were to adjust MainPower’s proposed expenditure to reflect increased crew sizes for Aurora and additional crews and then to applying an allowance for increase human resourcing costs and margin for Delta.

There are two key assumptions underpinning this analysis. Firstly, Strata has assumed that MainPower’s cost in RY20 reflected two fully manned fulltime arborist crews.

Secondly, is assumes that the network areas of Aurora and MainPower are substantially similar such that any differences would not significantly drive differences in cost. However, this is not that case, in particular:

- MainPower only has 51 km of Urban lines compared to 1,637 km for Aurora. Urban areas require increased traffic management and therefore increased cost.
- Aurora covers a larger area than MainPower and the geographic topology is more mountainous. This increases travel times and can make access more difficult, therefore impacting cost.

In addition, Strata noted that this was ‘...a ballpark estimate...’ and that ‘...this analysis is simplistic and must be caveated...’. They go on to acknowledge they do not have sufficient detail of the size and composition of the vegetation crews for either business so are basing their assessment on assumptions. This uncertainty of their assessment is further evidenced through their use of ranges in their inputs and output.

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## 5.3 PROPOSED OPEX REDUCTION IS NOT APPROPRIATE

Strata concluded that Aurora’s costs were high and used three approaches determine the amount that should be reduced. The approach used is opaque and it is not clear how the final value was derived from the three inputs. WSP considers each of the inputs below.

### 5.3.1 INPUT 1

The first input was based on the benchmarking and the percentage above the average expenditure. However, based on WSPs assessment of the calculation methodology, we find that the data is not sufficiently robust to use for this type of analysis as the value is also impacted by the volume of work completed, not just the unit rate.

### 5.3.2 INPUT 2

Strata assessed Aurora against three other EDBs from the comparator group who note in their Asset Management Plans the intention to increase their levels of vegetation management. However, the assessment is based on the same benchmarking data and hence suffers from the same flaws and deficiencies. Hence, WSP finds that this comparison is not appropriate.

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<sup>41</sup> Strata Energy Consulting, 2020, Aurora CPP – review of forecast expenditure, p. 87a

### 5.3.3 INPUT 3

Strata attempted to do a bottom up build based on data provided in MainPower's Asset Management Plan that provides some high-level cost information for their vegetation management crews as well as the number of crews. However, Strata's analysis was based on assumptions and is stated to be an uncertain assessment. In addition, the two networks are significantly different with respect to attributes that impact the cost of vegetation management that were not considered in Strata's assessment.

Direct comparison with a single EDB may provide an indication of differences, but in WSP's opinion should not be used as the sole basis for making a decision on efficiency of unit rates and relied upon for determining the size of a reduction to opex.

### 5.3.4 CALCULATING THE REDUCTION

In Strata's report it is not clear how the proposed 25% reduction was calculated, nor was it shown in their supporting models. WSP was not able to recreate the value using the information available. We also note that it is unusual that all three comparisons provide a range to describe how far Aurora's expenditure is above their peers but there is no range in the proposed reduction percentage. Based on our analysis in section 5.2.1 we do not consider that the inputs to calculating the proposed reduction are valid and therefore, the proposed reduction of 25% is not considered appropriate.

In their draft decision, the Commission proposed an allowance of \$16.1m for vegetation management. Applying Strata's recommendation for a 25% reduction to the unit rate would result in a proposed allowance of \$16.6m. It appears that the difference between the Commission's allowance and Strata's recommendation may be due to treatment of efficiency factors originally proposed by Aurora but we are unable to confirm this is the cause. However, inclusion of the efficiency factors after reducing the unit rate may be double counting the potential efficiency benefits.

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## 5.4 CONCLUSION

The vegetation management benchmarking and direct comparison undertaken by Strata is not appropriate because it is based on a flawed methodology that assumes all changes in cost are caused by the unit rate. WSP concludes that this is inappropriate to be used as the basis for calculating a reduction to Aurora's proposed vegetation management expenditure.

## 6 LIMITATIONS

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