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Principal Adviser  
Commerce Commission  
P O Box 2351  
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For the Attention of: Simon Todd

31 October 2016

Dear Simon

## Report on Powerco BAU variance check and AMP evidence assessment

1. I am pleased to provide this report setting out Strata Energy Consulting Limited's (Strata) BAU variance check and AMP evidence assessment of Powerco Limited's (Powerco) 2016 update of its 2015 Asset Management Plan (AMP) expenditure forecast.

### Background and approach

2. Strata Energy Consulting has been retained by the Commerce Commission to assist in developing the Commerce Commission's framework and approach for re-setting regulated gas pipelines businesses' (GPBs) default price and quality paths (DPP) for the period effective 1 October 2017.
3. In accordance with the Commerce Commission's consultation paper - policy for setting price paths and quality standards for gas pipeline services from 1 October 2017<sup>1</sup>, Strata has built an assessment framework and completed a business as usual (BAU) assessment and asset management plan (AMP) assessment of Powerco's operating and capital expenditure performance (actual and forecast).

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<sup>1</sup> Commerce Commission (August 2016); *Default price-quality paths for gas pipeline services from 1 October 2017. Policy for setting price paths and quality standards.*  
<http://www.comcom.govt.nz/dmsdocument/14656>

4. Strata has conducted its initial independent assessment against the following expenditure objective:

capital and operating expenditure should reflect the efficient costs that a prudent non-exempt business would require to meet demand in a regulatory period and over the longer term and comply with applicable regulatory obligations.
5. Through the application of the BAU variance check and AMP evidence assessment we have identified expenditure components that should be subjected to supplier evidence assessment. We recommend that our guidance on the additional information that we consider is necessary to support these expenditure components is forwarded to Powerco to give them the opportunity to provide the additional supporting information for the Commission to consider under the supplier evidence assessment step.
6. The expenditure components passed for supplier evidence assessment have been identified from our review in which we:
  - 1) agreed with the Commission the applicable base years and materiality boundaries;
  - 2) compared Powerco's expenditure data to the BAU materiality boundaries, taking into account the contextual metrics; and
  - 3) assessed Powerco's AMP to ascertain whether items outside BAU variance margins are reasonably explained and justified.
7. For expenditure components that have been identified as requiring supplier evidence assessment, we have provided guidance on the additional documented information that we consider would be needed to support the identified expenditure components.

### Variance margin settings for opex and capex

8. For operating expenditure (opex), the base year was set to the straight line average the three years 2013/14/15.
9. A boundary margin of +/-5% was used for the five-year period 2018-2022. BAU opex for gas pipeline businesses is expected to be reasonably consistent and the setting used was considered to provide for some year to year variation in opex. It approximates to the average of the step and trend model, should this be applied. The 5-year period is chosen to coincide with the next regulatory period, to take effect 1 October 2017.
10. For capital expenditure (capex), the base year was set to the straight line average the three years 2013/14/15.
11. A boundary margin of +/-10% was used for capex because capex for gas pipeline businesses is expected to have some year to year variation. The 20% range was considered to provide a reasonable allowance for variation outside of which an AMP explanation would be required.

## Summary of the results of applying BAU variance check and AMP evidence assessment

### a) Summary on opex

12. BAU variance check identified that Powerco's opex forecast at an aggregate level is higher than the variance margin for the forecast period. We applied the materiality assessment at an ID category level and found that all ID category variances were within 5% of total forecast opex.

13.

	Forecast (\$000)	Amount above 3-year average base year (\$000)	% of total opex
<b>Opex materiality assessment</b>			
Service interruptions, incidents and emergencies	\$2,062	\$163	0.2%
Routine and corrective maintenance and inspection	\$10,284	-\$900	-1.1%
Asset replacement and renewal	\$15,031	\$3,163	3.9%
Total non Network opex	\$54,139	\$3,398	4.2%
<b>Total</b>		<b>\$5,824</b>	<b>7.1%</b>
		<b>Average forecast difference</b>	<b>3.8%</b>
<b>Non-network opex</b>			
System Operations and Network Support	\$20,756	\$1,459.45	1.8%
Business Support	\$33,383	\$1,938.32	2.4%
<b>Total</b>		<b>\$3,398</b>	<b>4.2%</b>

14. Powerco's opex forecast can therefore be considered to meet BAU criteria.

### b) Summary on capex

15. At a total capex level, the forecast period between 2018 and 2022 falls outside the variance margins for capex. From a total capex perspective, the capex cannot be considered to be BAU against the base year.
16. At the ID category level, it was seen that system growth, asset replacement and renewal and total reliability, safety and environment are the main contributors to the higher capex. Reductions in forecast consumer connections capex reduces the impact of the increases on total capex.

Capex materiality assessment	Forecast (\$000)	Amount above 3-year average base year	% of total Capex
Consumer connection	\$17,261	-\$4,124	-6.3%
System growth	\$7,822	\$4,052	6.2%
Asset replacement and renewal	\$13,230	\$6,325	9.6%
Asset relocations	\$111	-\$452	-0.7%
Total reliability, safety and environment	\$23,867	\$8,628	13.1%
Expenditure on Non-Network Assets	\$6,785	\$190	0.3%
<b>Total</b>		<b>\$14,620</b>	<b>22.3%</b>
		<b>Average forecast difference</b>	<b>11.6%</b>

17. Powerco was found to be over-forecasting capex for each of the three historical years for which actual expenditure was available. The average over forecast for the three years is 7.8% with the 2015 forecast being 0.4% above actual. There are a number of reasons for over-forecasting variations and AMP evidence assessment was applied to explain those that are relevant to Powerco's forecasting. The resolution of this issue is

needed to gain assurance that Powerco's 2018/22 forecasts do not contain a bias to over-forecasting.

18. Our AMP evidence assessment resolved questions concerning system growth capex and asset replacement and renewal capex. From of the questions we have addressed through AMP evidence, the following two remain unanswered and are recommended for supplier evidence assessment:
  1. The reasonableness of the step change in Reliability, Safety and Environment Planning capex. This assessment should include consideration of the business case for a small selection of projects in this category.
  2. Evidence that Powerco has improved its forecasting and that contingencies are not included in the AMP capex forecasts.

### Concluding comments

19. Through the use of the dashboard, the BAU variance check and AMP evidence assessment of the majority of Powerco's forecast opex and capex has been confirmed as suitable for consideration as BAU.
20. Only two capex questions are recommended to be addressed through supplier evidence assessment. We consider that these questions should be easily addressed by Powerco providing additional supporting information.
21. Thank you for the opportunity to undertake this assessment of Powerco's forecast expenditure. Please contact me if you require any additional information.

Regards



Bill Heaps  
Managing Director  
Strata Energy Consulting Limited

## Appendix 1: BAU and AMP evidence assessment findings

### a) Opex

22. For total opex, the expenditure for all forecast years is above the upper BAU boundary but within the materiality to total opex at the ID category level.
23. Accordingly, AMP evidence assessment was not required for opex.

### b) Capex

24. At a total capex level, the forecast period between 2018 and 2022 falls outside the variance margins for capex.
25. The ramp-up in capex between 2013 and 2015 is significant because of its rate of change and because the expenditure remains at the higher level for the remaining forecast years (2017 to 2025). The ramp up in total capex/ GJ conveyed between 2013 and 2017 is \$0.87/GJ which is a 109% increase. The major contributor is network capex which increases by 131.1% increase over the four years. Understanding the reasons for the historical ramp up in capex is critical to the assessment of the forecast.
26. The increases in key capex drivers over the 2013 to 2017 period appears not to support the increased capex. For example, during the period, new customer connections increased by 9% and gas conveyed increased by only 0.3%. Assessment of the granular metrics indicates that the major contributors to the increase in total capex is Reliability, Safety and Environment Planning, Asset Replacement and Renewal Planning and System Growth Planning.
27. Powerco is over forecasting capex each year. The average over forecast for the three years is 7.8% with the 2015 forecast being 0.4% above actual. The variation between forecast and actuals suggests the possibility that the contingencies are included in the forecasts. It is also possible that the capital programmes are not being delivered as intended or that opportunities for efficient deferral of expenditure are being taken.
28. The following items have been subjected to AMP evidence assessment.
  1. Reasons to support the increased capex between 2013 and 2015 year:
    - a. reasons for the increase in Reliability, Safety and Environment Planning between 2014 and 2017;
    - b. 1.2 reasons for the increase in System Growth capex between 2014 and 2017; and
    - c. 1.3 reasons for the material ramp up in R&R planning capex between 2013 and 2015 including the linkage between forecast asset replacement levels and R&R capex forecast levels.
  2. Reasons for the historical over-forecasting of capex.

## Summary of AMP evidence assessment findings for capex

### 1. Reasons to support the increased capex between 2013 and 2015 - and the appropriateness of 2015 as the BAU base year.

#### a. Reliability, Safety and Environment Planning

29. The 2015 AMP (section 9.1) explains that:

*In line with Powerco's 2014 AMP update, capital expenditure was underspent in the first years but this is forecast to be spent later in the planning period. This shift was the result of several factors, primarily:*

- *The deferral of some projects to allow more robust analysis, and needs cases to be developed*
- *The change in the engineering and contracting model which coincided with the start of the DPP period*

30. Powerco state (2015 AMP section 9.8) that:

*We have incorporated expenditure to enable us to deliver targeted asset specific investment programmes focused on reliability, and improved public safety. Our recent focus in this area has resulted in progressive identification of valuable enhancement initiatives, and we have set overall future expenditure to reflect this trend.*

31. A key programme in Reliability, Safety and Environment Planning is for total quality of supply project costs. Projects related to quality of supply are set out in section 8 of the 2015 AMP. The project summaries in section 8 provide an adequate level of support for the forecast Reliability, Safety and Environment Planning expenditure. However, the reason for the step change in this category between 2013 and 2017 is not explained in the AMP.

32. The step change increase suggests that this is a new expenditure category introduced in 2013/14. However, it appears to be a category additional to the growth and replacement of capital projects. If this is the case, a summary of clear quantifiable benefits for the programme could be provided in section 8 or the 2015 AMP to provide support for this increased capex.

33. It is recommended that supplier evidence assessment is used to enquire into the reasonableness of the step change in Reliability, Safety and Environment Planning capex. This assessment should include consideration of the business case for a small selection of projects in this category.

#### b. Reasons for the increase in System Growth capex between 2014 and 2017.

34. The 2015 AMP (section 9.1) explains that:

*In the case of growth-related expenditure, we have undertaken a comprehensive analysis of current asset utilisation and simulated the effect of anticipated load growth on our networks to identify capacity and security-related issues that will require resolution during the planning period. Based on this analysis we have completed a regional assessment of the investments we believe will be required over the period.*

35. The 2015 AMP contains an adequate explanation of the forecasting method used for 2015 and beyond but does not explain the basis for the 2013 to 2014 actual system growth capex and why there is an apparent ramp up in 2015.
36. Powerco (2015 AMP section 9.7.2) explains that System Growth capex is driven by:
  - 1) growth in network load, which requires an increase in network capacity; and
  - 2) mains extension or network upgrade to connect new customers.
37. An increase in gas conveyed is not seen during the 2013/15 period but a stepped increase in customer connections, which is aligned with the change in system growth capex is seen. The change in customer connections into the 2016 and beyond period appears to be aligned with the forecasts of new connections.
38. It is considered that the AMP provides an adequate explanation for the System Growth forecast profile.

**c. Reasons for the material ramp up in R&R planning capex between 2013 and 2015.**

39. Section 7.2.3 of the 2015 AMP describes an additional annual expenditure of \$1m as due to:

*Some overseas operators have reduced the pressure in their pipelines to reduce the amount of gas released by leaks. We do not believe it is a viable solution and have decided to start a replacement programme. The initial phase will also collect additional data as we proactively replace those pipelines.*

*We have brought forward the replacement programme to RY15, initially planned from RY17. We forecast \$1m per year for at least 10 years, with annual checkpoints as we develop our annual works programme, to maintain cost efficiency and validation of performance improvement.*

40. The additional \$1m/year accounts for approximately half of the step change between 2013 and 2015.
41. An additional \$1.2m per year was allowed in the 2015 AMP for the undergrounding of vulnerable District Regulation Stations (DRS). This expenditure accounts for approximately 50% of the step change above 2013 levels.
42. The information provided in section 7 of the 2015 AMP is sufficient to support the step change in expenditure between 2013 and 2015 and provide confidence that the use of 2015 is reasonable for the base year.
43. The question on the linkage between forecast asset replacement levels and R&R capex forecast levels relates to our observation that the assets requiring replacement for pipe is 12.1km or 0.2% of the total pipe length; and for other assets, there are 23.6 replacements or 0.7% of total asset numbers. However, the forecast R&R capex for the 5-year period at \$13,230k, is 3.8% of RAB. This suggests that the assets to be replaced have a unit cost that is higher than what the average unit cost would be for R&R.
44. Powerco uses asset age as a *reasonable proxy for asset deterioration and resulting expected life for forecasting purposes. Except where specific performance issues or accelerated deterioration have been identified, it has been assumed that assets will generally reach the end of their expected lives. This assumption is considered*

*appropriate for forecasting work on large asset populations, given that actual works will be triggered by other factors, including asset condition and safety. (2015 AMP table 9.1).*

45. Section 7 of the 2015 AMP provides sufficient detail to confirm that Powerco is applying the approach described above for forecasting asset replacement. There is also sufficient detail to identify the programmes such as the pipe renewal and DRS undergrounding, that will be undertaken during 2017/22 are high cost components.
46. Given the information provided in section 7 of the 2015 AMP, we are satisfied that Powerco is forecasting expenditure based on the identified replacement needs of its assets.

## **2. Reasons for the historical over-forecasting of capex.**

47. The 2015 AMP and 2016 AMP updates do not provide any analysis of the differences between historical forecasts and actual outcomes. For individual expenditure categories, the AMP provides information on the deferral of some projects to future years. However, this information does not address questions regarding that accuracy of forecasting.
48. In the 2016 AMP, Powerco confirms that its under delivery on capex in 2015 was due to 2 projects being deferred to 2017. Powerco also provides the following information on its programme delivery.
  - *Improvements in the works delivery planning and execution process resulted in project delivery targets for 2015 being achieved.*
  - *Network capital expenditure in Regulatory Year (RY) 16 is lower than previously forecast because of the delayed commencement of two large projects due to resource availability.*
  - *Most of the deferred expenditure will occur in RY17 so the total capital expenditure across the planning period has not significantly changed. (2016 AMP section 1.3)*
49. Therefore, it is possible that delivery of projects has contributed to the underspend against forecasts seen in previous years.
50. Powerco claims that it has been improving forecasting.

*As our maturity increases, we are able to meet our asset objectives and service levels, while delivering a more predictable expenditure forecasts (2016 AMP section 1.3)*
51. Supplier evidence assessment is recommended to address the following remaining questions:
  1. Has the process through which the capex forecasts are developed improved sufficiently to remove over forecasting bias?
  2. Does the forecast include contingency sums.?

## Supplier evidence assessment worksheet – Powerco distribution

### Opex

Item requiring assessment	Resolution required	Guidance	Background information

### Capex

Item requiring assessment	Resolution required	Guidance	Background information
Reliability, Safety and Environment Planning capex.	The reasonableness of the step change in Reliability, Safety and Environment Planning capex.	This assessment should include consideration of the business case for a small selection of projects in this category.	<p>A key programme in Reliability, Safety and Environment Planning is for total quality of supply project costs. Projects related to quality of supply are set out in section 8 of the 2015 AMP. The project summaries in section 8 provide an adequate level of support for the forecast Reliability, Safety and Environment Planning expenditure. However, the reason for the step change in this category between 2013 and 2017 is not explained in the AMP.</p> <p>The step change increase suggests that this is a new expenditure category introduced in 2013/14. However, it appears to be an additional category that is additional to the growth and replacement capital projects. If this is the case, a summary of clear quantifiable benefits for the programme could be provided in section 8 or the 2015 AMP to provide support for this increased capex.</p>
Capex forecasting	That the expenditure forecast does not include over forecasting bias	Seek evidence that Powerco has improved its forecasting and that contingencies are not included in the AMP capex forecasts.	The 2015 AMP and 2016 AMP update do not provide any analysis of the differences between historical forecasts and actual outcomes. For individual expenditure categories, the AMP provides information on the deferral of some projects to future years. However, this information does not address questions regarding that accuracy of forecasting.