



Information Disclosure

**Approaches for Understanding EDB and
GPB Cost Efficiency**

Technical Paper

11 November 2011

Introduction

1. Powerco welcomes the opportunity to comment on the Commerce Commission's Technical Paper for consultation *Information Disclosure: Approaches for Understanding EDB and GPB Cost Efficiency* (Consultation Paper), published on 7 October 2011.
2. This submission builds on the comments from Powerco at the Technical Reference Group workshop on 31 October and 1 November 2011. Powerco has also seen a copy of the Electricity Networks Association's (ENA) submission and supports its recommendations.
3. If the Commission wish to discuss any aspects of this submission please contact:

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General Commentary on the Commission's Approach

4. Powerco agrees with the Commission's general interpretation that some form of comparison of expenditure across operators and an examination of historic cost trends for individual companies may assist interested persons to assess whether the overarching Part 4 purpose statement is being met.
5. Our main **recommendations** are:
 - a) the Commission needs to develop a transparent long-term objective for information disclosure, followed by a robust cost benefit analysis of different options;
 - b) given the numerous challenges of benchmarking the emphasis should be on individual supplier improvements over time and a comparison of those improvements; and
 - c) a pragmatic roadmap should be put in place which recognizes that the Part 4 framework is new and aspects are still being established. In the first instance we should not attempt to be overly sophisticated, focusing instead on ensuring that disclosed information is sufficient to meet the Commission's statutory obligations.

Balancing "sufficient" and "cost-effective" criteria

6. At the briefing on 7 October 2011, the Commission stated that its two key criteria for determining its approach to information disclosure were:
 - **sufficiency**
 - The Commission is seeking to publish enough summary and analysis to meet the legislative purpose of information disclosure; and
 - **cost-effectiveness**
 - The Commission is aiming to ensure that any disclosure requirements (and subsequent analyses) are economically worthwhile and can be justified in cost / benefit terms.
7. In summary Powerco's view is that:
 - the Commission's preliminary approach seeks to produce more analysis than is required by the Act, going beyond the "sufficient" criteria; and
 - the expense associated with its preliminary approach has not been adequately considered and in our view would not meet the cost / benefit criteria.
8. The purpose to which data will be put is central to understanding and resolving the "sufficient" and "cost-effective" trade-off and determining data requirements. Section 53B(2) of the Act provides:

If a supplier of goods or services is subject to information disclosure regulation, the Commission—

(a) may monitor and analyse all information disclosed in accordance with the information disclosure requirements; and

(b) must, as soon as practicable after any information is publicly disclosed, publish a summary and analysis of that information for the purpose of promoting greater understanding of the performance of individual regulated suppliers, their relative performance, and the changes in performance over time.

9. The Commission considers that a comparison of expenditure across operators and an examination of cost trends will address part of the “relative performance” requirement of s53B(2)(b). The Commission is considering benchmarking comparisons of opex between companies at various different levels of detail, and assessing capex efficiency by unit cost comparisons and engineering based assessments.
10. Powerco’s main concern is that the Commission’s approach will adopt overly complicated and costly benchmarking methods that are used by regulators in other countries to set revenue and prices; where the requirements in terms of data quality, consistency and auditing are very high, as the outputs have a large impact on suppliers’ revenues.
11. In the context of the New Zealand regime, the benchmarking techniques referenced in the Commission’s paper are more comparable to those we might expect the Commission to apply (or expect companies to apply) to support applications for a Customised Price-quality Path. It is important to make a distinction between the level (and type) of comparative assessment that may be needed to inform revenue setting and that which is required only for the purposes of “informing interested persons”, as is the case for Information Disclosure.
12. Information disclosure has a stated purpose as being a low cost and light-handed regulatory instrument. Parliament specifically designed the regime to be cost-effective given the small-scale of the New Zealand infrastructure sector and differences in the size / ownership of the businesses. The Commission has frequently acknowledged this.
13. The annual public disclosure of “raw data” by EDBs and GPBs provides the central means by which that purpose is promoted. Any summary and analysis undertaken by the Commission must be seen as no more than a particular presentation and contextualising of that information. It should not provide an opportunity for the Commission to present new information.
14. What will be helpful is if the Commission presents the information in a way that (1) does not distort the raw information and (2) allows interested persons to assess EDBs’ and GPBs’ underlying performance over a sufficient period of time to reflect genuine performance trends (rather than one-off results).
15. We also note that because the summary analyses must only use the raw data provided by the EDBs and GPBs, we question whether the Commission is

permitted to introduce information relating to the performance of businesses in other sectors of the economy or overseas EDBs or GPBs.¹

The cost-effectiveness criteria

16. The cost to comply with the current electricity information disclosure regime is already considerable. The Consultation Paper proposes that a large amount of new material is reported by companies and it is likely that, in many cases, companies would be required to introduce new systems and processes to capture this new data afresh, at some cost. We are not aware that the Commission has attempted to quantify such costs.
17. If these incremental costs are multiplied across 29 electricity distribution businesses and four gas pipeline businesses, the impact could be substantial and should be factored into the Commission's cost / benefit assessment.

Incremental development is required

18. The Commission should not aim, at the outset, to strive for a perfect model that accommodates all issues. Any results will always be proxies for actual cost efficiency, and caution must be applied when interpreting the results. A model that aims to be a panacea of cost efficiency is likely to deliver (as yet not considered) perverse incentives for companies to act in a way that delivers better results for the model, rather than what is in the best interests of consumers or engineering best practice.
19. The Commission has stated that *"there are a number of possible techniques for assessing opex relative to other suppliers. There are generally relatively simple and will understood techniques that can take into account supplier characteristics such as scale, population density and topology, which impact on costs and when tend to be largely outside management control."*
20. We query whether the techniques are relatively simple and well understood. In practice the techniques cannot properly take into account supplier characteristics such as scale, population density and topology.
21. Each of the different techniques put forward by the Commission for assessing comparative efficiency has advantages and disadvantages. For example:
 - **Econometric analysis** (such as Corrected Ordinary Least Squares or Stochastic Frontier Analysis) requires the estimation of a production function, which describes the relationship between outputs and costs. The results will depend on the choice of cost drivers which are selected by the modeller. Econometric modelling may suffer from problems of model misspecifications and data limitations. For example, multi-collinearity arises if the explanatory

¹ The inclusion of "their relative performance" in s 53B(2) precludes using the performance of other sectors of the economy or overseas EDBs or GPBs.

variables are not independent (e.g. line length, customer numbers and throughput).

- The outcomes from **Data Envelope Analysis** may be sensitive to the choice of inputs and outputs. It is not straightforward to define inputs and outputs for energy network companies – for example, is line length an input or output? Also, physical measures of capital that are used in Data Envelope Analysis may not capture issues of asset age and design, which will affect costs and performance.
 - **Total Factor Productivity** is also dependent on the choice of inputs and outputs. It does also not readily correct for non-controllable differences in operational environments that may affect costs.
22. It is important for the Commission to recognise that while it may be straightforward to conduct comparative analysis, it is much less straightforward to obtain meaningful results. Naturally, companies will be concerned to understand their efficiency ranking compared to their peers, and extensive debate regarding model specification (and explanatory factors) is likely to result.
23. A significant risk for the Commission's comparative efficiency analysis is that it will generate interest in alternative model specifications, as companies seek to improve their relative rankings. It is important that the Commission does not inadvertently divert management time and resources to these technical (and ultimately unresolvable) modeling issues.
24. Before embarking down the path of complexity it would seem to be appropriate for the Commission to first consider whether or not higher level (and more simply applied) comparative productivity ratios will provide a sufficient level of insight to assess whether the Part 4 purposes are being met.

Gas Distribution – specific considerations

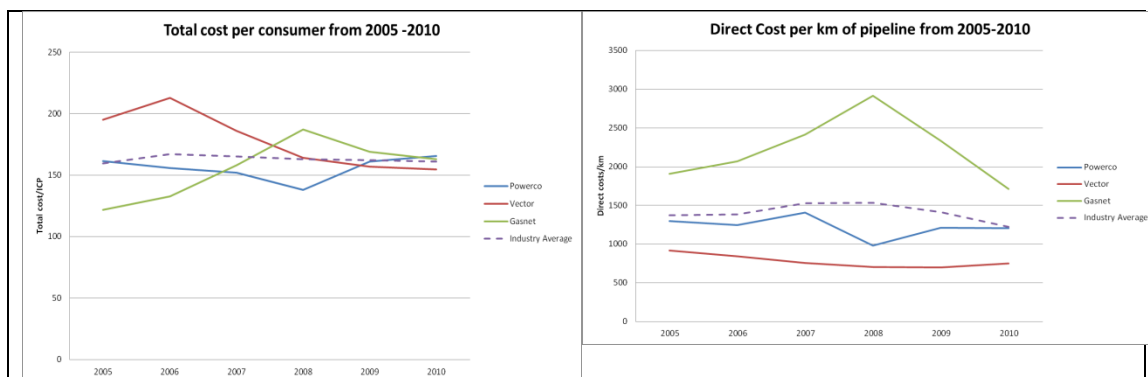
25. Powerco is not opposed to the principle of assessing relative operating expenditure efficiencies for gas distribution, but recommends that it is even more important, in the case of gas, to defer the development of more complex modeling until current data availability constraints are resolved and consistent and reliable information is available.
26. The gas distribution sector has relatively less robust data available compared to similar sized counterparts in the electricity sector, and certainly not sufficient at this stage to support sophisticated econometric modeling. Current data issues which have been previously cited by the Commission, include:
- differing definitions of key terms such direct and indirect costs;
 - disclosure of net book value rather than regulated asset base; and
 - no disclosure of asset management plans.
27. As the Commission has noted the fact that there are only three GDBs in the New Zealand gas sector compounds the difficulty of comparative assessment. The

Commission's preliminary suggestion is to apply international data to reinforce the available dataset. We suspect that normalizing datasets between companies operating across different jurisdictions will be problematic and we question whether the Commerce Act, in fact, permits the Commission to introduce comparators from outside the New Zealand sector.

28. There are also a number of unique pressures on gas distribution costs that are not present in the electricity distribution sector (evidenced by the similar total opex costs per ICP). These include:

- reticulated gas is a competitive fuel and Powerco competes with an unregulated firm, Nova Gas, for customers;
- the Gas Authorisation led to a detailed review of the efficiency of capex and opex of Powerco and Vector (Auckland network), and does not end until 1 July 2012; and
- the gas sector is small with only 260,000 customers compared to two million electricity customers. This exerts pressure to be as efficient as possible.

29. Powerco advocates for the Commission to centre information disclosure for gas on the use of simple partial productivity measures. For example, the graphs below show that total cost per ICP on all the three gas distribution networks has converged since 2005 and direct costs per km of system length also appears to be converging.



Process to develop an opex efficiency model

30. In this submission we have not commented in detail on the issues, benefits or suitability of the range of benchmarking measurement techniques – believing it premature to do so pending further consideration of the purpose, objectives and criteria for the exercise.

31. Notwithstanding this, if the Commission continues to follow its proposed approach, it is important to establish key principles which should underpin the development of any model(s). Powerco supports the principles recommended by the ENA:

- cost effectiveness;
- consistency;
- transparency; and

- flexibility.
32. A key concern, and one that the Commission acknowledges, is how the model must only relate to factors a business can control in the short to medium-term. The industry is not homogenous. There are wide-ranging differences in cost-affecting factors, such as topography, customer density, demand characteristics and age of equipment. Consequently, there is unlikely to be a well-defined industry production function, which means that inter-firm comparisons must be undertaken with care.
 33. In 2009 the Commission's analysis of Multi Factor Total Productivity did not achieve this. It only seemed to identify a range of operating characteristics that resulted in the highest level of technical productivity. The features, shared by all 'above average efficiency' EDBs, were:
 - *customer type*: very high load factors and high average consumption;
 - *density*: low connection density, no large towns, lower undergrounding; and
 - *type of network*: small with little or no sub-transmission.
 34. These are all factors EDBs have no control over and should consequently not impact the results of the analysis.
 35. If the Commission continues with its current approach, we caution that the task of identifying levels of productivity and inefficiency is inherently difficult – in any industry. Although advances have been made in benchmarking industry leading methods for estimating relative productivity and efficiency still have their limitations.
 36. In addition to methodological issues, data accuracy and availability will also limit the precision of estimates, so it is important to bear in mind that estimates of productivity and efficiency can only be made within the context of these limitations. It is important that technically rigorous methods are used, but it is equally important to look at results and ask the question – do the results make sense given what is known and reasonably knowable about the characteristics of the industry?
 37. Powerco welcomed being part of the Technical Reference Group and appreciates the opportunity to provide constructive technical input into the Commission's process.

Questions for submitters

Section 3: Assessment of operating expenditure

Q.1 How much insight would an assessment of operating expenditure based on NZ comparators alone provide, for EDBs and for GPBs?

Q.2 How insightful could international comparators be in assessing EDB and GPB expenditure?

Q.3 What companies, countries or datasets should be included in the analysis?

Powerco notes that the requirement to publish a summary and analysis to promote greater understanding of the relative performance of EDBs and GPBs is expressly limited to the relative performance of the EDBs and GPBs subject to the information disclosure regime. The term in s 53B(2) is “their relative performance”, and this refers only to the individual regulated suppliers subject to information disclosure. The provision does not permit the Commission to promote the understanding of the performance of EDBs and GPBs relative to businesses in other sectors of the economy or overseas EDBs or GPBs.

Q.4 How appropriate are sub-company comparisons of costs?

Q.5 How feasible and costly would it be to collect sub-company cost and characteristic data to enable sub-company comparisons?

Powerco does not support sub company comparisons, other than in the limited circumstances where geographically non contiguous networks may have underlying characteristics which are fundamentally different.

Q.6 What factors (outside management control) drive industry wide opex?

Q.7 To what extent does the current information disclosure data capture these factors?

Q.8 What cost drivers, if any, (outside management control) are unique to your EDB or GPB?

Q6: Factors	Impact on opex	Q7: Data available from disclosures?
Ease of access: Topography/ urban/CBD/ remote/ rural/ rugged/ rocky ground	Access to network required for inspections, defect corrections and vegetation management. Traffic management costs.	Terrain type in annual disclosures. More detail on multipliers in ODV disclosures and AMP.
Density (ICP/km)	Likely to have longer line, more faults, and more travelling expenses/ staff time to fix faults. More expense to inspect assets. Covering large area requires more depots	Yes, although only by region in the AMP and masks remote/ rural network.
Vegetation	Large cost trimming trees/ enforcing tree regulations. Higher probability of outages from tree hits.	No
Age of asset	Likely to be higher fault rate and increased inspection need.	Yes – in AMP and annual disclosures
Historical approach to building network	Impacts ease of working on network, eg ability to run generators to avoid interruptions	No

	to customers.	
Weather	Extreme weather events damage network.	Data on SAIDI caused by extreme events may be available in dataset EDBs send to Commission.
Probability of third party damage	Cost to fix damage. May impact insurance costs.	Data on SAIDI caused by TPD may be available in dataset EDBs send to Commission.
Difficulty of obtaining resource consents: conservation area, IWI relationships	Delayed capex can result in more opex. Companies have very little power to speed up resource consent hearings.	No

Q.10 What factors (other than changes in input prices) influence opex over time?

The table below provides a high level list of opex costs and the influences on the cost over time.

Opex cost	Factors
Scheduled inspections	Risk management policy of the EDB to minimise potential risks to the public, staff and the network.
Scheduled maintenance	Number of defects identified: Driven by level of inspections, reporting by public, size of network. Likelihood of defect being found: Driven by age of the network and type of asset installed.
Vegetation management	Driven by public/ forest managers approach to vegetation management.
Fault and emergency maintenance	Driven by number of callouts- impacted by weather, tree interference, third party damage and condition of network etc.
Overheads/ network operations	Driven by increase or decrease of activities listed above.

Q.11 To what extent should quality be taken into account when assessing cost efficiency?

It is not possible to assess asset related costs without assessing asset performance. This is consistent with the 52A Purpose Statement. This is well demonstrated in EDB AMPs.

Q.12 What level of opex should be assessed? Should the current sub-categories of EDB and GPB opex (e.g. general management, administration and overheads) be separately assessed, should further disaggregated cost data beyond these categories be collected and assessed, or should the analysis focus on total opex only?

Q.13 What components of opex should be separately benchmarked?

It is difficult to comment without understanding the Commission's objective and the options being considered. We note that the current cost categorisation has not been adequately tested, and should be before any further changes are made. No further disaggregation should be implemented until this has been achieved. We do not support further disaggregation at this stage.

Q.14 How much insight would external comparisons of common functions provide?

Q.15 What functions should be benchmarked and how easily available is cost data at a function-level?

Q.16 What industries and operators should be included when benchmarking these functions?

Q.17 Should nature-of-work comparisons be further considered in assessing EDB and GPB opex efficiency? If so, what sectors should be included in the analysis?

In paragraph 3.25, the Commission comments that a more disaggregated analysis of specific operating expenditure categories would enable drivers of individual costs to be identified, and thus better explain differences in costs across suppliers. The Commission also suggests that:

- Costs of individual business functions may be compared with regulated utilities and operators in other industries who share a set of common functions. This may include sectors not subject to regulation.
- Nature-of-work comparisons may also be used to construct a virtual Total Factor Productivity measure. For example, if construction-related activities accounted for 30 percent of a supplier's operating expenditure, then the TFP estimate for the construction industry would receive a weight of 30 percent.

Of concern to Powerco is that:

- apparent 'efficiencies' in functional costs may reflect differences in organisational structure, cost allocations and cost category definitions;
- re-aggregating the most efficient costs for each function is likely to result in a total operating expenditure that is implausibly low;
- the inclusion of data from non-regulated companies is prohibited by the Commerce Act for information disclosure; and
- developing a benchmark TFP through 'nature of work' comparisons is unlikely to provide useful insights into the comparative performance of the NZ businesses.

Section 4: Assessment of capital expenditure

Q.18 To what extent should assessments of historical capex based on direct comparisons be considered as part of summary and analysis?

In paragraph 4.1 the Commission states that it considers that direct comparisons between suppliers are only of limited usefulness in assessing capital expenditure. Powerco supports this position given the company-specific and cyclical nature of capex. Capital expenditure by lines companies is large, long-term and fixed cost. It would not be expected to observe significant cost efficiency gains in short spaces of time. This is different to opex, where management have a more, although still limited, short-term ability to influence operating costs.

In capex, efficiency improvements could be driven by high network utilisation. For example a network facing capacity constraints may appear to be more productive than a network with more capacity. Also networks have very different asset age profiles and forecast renewal expenditure.

In addition, asset life-cycles are lengthy and over their respective life cycles, utilisation of these assets is a function of many factors. Whereas improvement of fixed asset utilisation can be evidence of productivity improvement, the need for investment in such assets is not necessarily driven by productivity-related considerations. It is not necessarily the case, for example, that investment efficiency can be improved by pro-actively improving asset utilisation. In fact, depending on the specification of the production function, we might even expect to observe slow upward trends in productivity as network utilisation increases, followed by sharp drops in asset utilisation depending on the lumpiness of future capital investments to meet future load growth and reliability targets.

Q.19 What are the material assets and activities that should be included in a capex assessment?
 Q.20 What are the drivers of activity on these assets?
 Q.21 How can capex effectiveness be measured?

Section 4.4 of Powerco’s 2011 AMP provides detailed information on how Powerco incorporates economic efficiency into asset management. The main measures assessed are:

- asset efficiency;
- asset utilisation;
- cost performance.

More detail on these measures and Powerco’s targets is in the three tables below.

Table 4.8: Asset Efficiency Performance Targets

Asset Management Driver: Economic Efficiency			
KPI Description	Unit	2011	2012
Asset Efficiency (RAB/ICP)	\$/ICP	4,000	4,000
Asset Efficiency (RAB/kWh)	\$/MWh	0.30	0.30
Capital Efficiency	%	60	60

Notes:

1. *Asset efficiency (ODRC/MWh) is the ratio of network optimised depreciated replacement cost over input network MWh.*
2. *Asset Efficiency (RC/MWh) is the ratio of network replacement cost over input network MWh.*
3. *Capital Efficiency is the annual change in ODRC over the network Capital Expenditure as a percentage. It excludes the reduction due to depreciation and any gain due to asset revaluation during the period considered. Different project types have different asset efficiency levels. For example, pole replacements or reconductoring projects can have a capital efficiency of around 40%. The Capital Efficiency factors presented in Section 7.4 are the inverse of the Capital Efficiency ratios presented here.*

Table 4.9: Asset Utilisation Performance Targets

Asset Management Driver: Economic Efficiency & Long-Term Value	
KPI Description	Target
Zone Substation Transformer in F3, F4 or F5 area at planning horizon	50 - 60%
Zone Substation Transformer in F1 of F2 area at planning horizon [2]	40 - 50%
Distribution Transformer by supply MD (urban area)	35%
Distribution Transformer by supply MD (rural area)	23%
Distribution Transformer by disaggregated feeder MD	38%
Distribution Feeder	50 - 65%
Load Factor	65%

Notes:

1. Zone Substation Transformer utilisation is the substation maximum demand over total substation ONAN rating.
2. Industrial and commercial load curves tend to be flatter than their residential or rural equivalents.
3. Distribution transformer utilisation is calculated for both aggregated and disaggregated demand.
4. Aggregated: Network kW MD over distribution transformer capacity.
5. Disaggregated: Sum of disaggregated feeder MDs over distribution transformer capacity.
6. Distribution Feeder utilisation is the disaggregated feeder maximum demand over the winter 6pm capacity of the smallest section of distribution feeder.

Table 4.10: Expenditure Performance Targets

Asset Management Driver: Economic Efficiency, Risk Management & Long-Term Value					
KPI Description	FY2011 B	FY2012 F	FY2013 F	FY2014 F	FY2015 F
Direct Cost per km of line (\$/km)	1,145	1,266	1,303	1,313	1,334
Direct Cost per Asset Base (RC) (%)	Benchmark on information disclosures				
Maintenance Expenditure per Asset Base (RC) (%)	Benchmark on information disclosures				
Capital Expenditure per Asset Base (%)	Benchmark on information disclosures				
Renewal Expenditure per Depreciation (%)	Benchmark on information disclosures				
Growth Expenditure per Change in Transformer Capacity (\$/kVA)	Benchmark on information disclosures				

Notes:

1. The Direct Cost targets include network maintenance costs, network operating and network management costs. They exclude utility rates.
2. Direct costs expressed in nominal \$ values. Refer to Section 9.

Q.22 How suitable is the proposed approach for assessing capex?

Powerco raised a number of concerns at the workshop about how the Commission's proposed approach would apply. Of particular concern, is the Commission's intention to review capex forecasts. This matter should be addressed in the relevant input methodology.

Although the Consultation Paper sets out a high level approach for assessing capex efficiency, it includes little detail on what the outputs will be and how the Commission will present these outputs and what conclusions it intends to draw from them.

If the Commission wishes to consider asset categories then we submit it should also use the same categories as those contained in the CPP input methodology. However we do not believe that information at a level of project or programme (as required for a CPP proposal) is required for the purpose of information disclosure.

Section 5: Assessment of total expenditure

Q.23 To what extent do suppliers consider the opex-capex trade-off could distort an assessment of expenditure that is based on separate reviews of opex and capex?

Q.24 Which components of expenditure have significant opex-capex trade-offs?

Q.25 How should the cost analysis take into account any opex-capex trade-offs?

Opex and capex can not be considered in isolation. Powerco's AMP describes the opex-capex trade-off and how this impacts expenditure. For example, renewals capex and maintenance are directly linked, and the system growth expenditure can have indirect implications for renewals and maintenance, where assets may be replaced or upgraded before end of life.