



**Submission to Commerce Commission on
Electricity Default Price Quality Path
Discussion Paper**

17 July 2009

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INTRODUCTION

1. Vector welcomes the opportunity to provide this submission to the Commerce Commission on the *Reset of Default Price-Quality Path for Electricity Distribution Businesses Discussion Paper* ("Discussion Paper").

2. We stress that the views expressed in this submission are preliminary and we reserve all rights in respect of raising matters in future that we may not have been able to identify now. In the four weeks available, we have not been able to give meaningful consideration to the inter-relationships between the default price path ("DPP"), input methodology and customised price path ("CPP") proposal workstreams and have narrowly focussed on the key issues raised in the Discussion Paper. There are also a number of elements of detail that we have not been able to consider in the timeframe allowed, and in a context where the Commission is simultaneously consulting on Input Methodologies under section 52V of the Act.

EXECUTIVE SUMMARY

Broad framework

3. In respect of the Commission's proposals for setting default price-quality paths and some of the pragmatic compromises the Commission has made for DPPs from 1 April 2010, Vector is broadly supportive of the high level framework. In particular, Vector supports:

- a. The deferral of the starting price adjustments until the input methodologies have been established;
- b. The Commission's recognition that clawbacks are generally undesirable, as they are unsettling to investor confidence, and should apply only in exceptional circumstances. Absent such a criterion, if EDBs were to consider that the 2010 to 2011 period would be subject to a rate-of-return type adjustment, then incentives to improve efficiency would be eliminated;
- c. The separate price and quality paths initially. In future an "S-factor" regime to encourage improvements in quality would be desirable – from 1 April 2011 if possible; and

- d. The improved philosophical stance on setting quality targets and assessing performance, which recognise statistical variation. We do disagree with the proposed implementation, however, and suggest some necessary adjustments to ensure a statistically robust approach that treats each EDB consistently.
4. In the remainder of this Executive Summary we set out the key areas that need to be addressed in meeting the section 52A Purpose Statement (“Purpose”), and the objectives of default price-quality regulation.

Starting price adjustments in 2011

5. The Commission has developed a framework whereby starting price adjustments would be based on a comparison of current profitability based on a partial building blocks methodology against WACC. The Commission also proposes to develop qualitative scenarios of future profitability to inform judgments about any starting price adjustments.

6. The Commission has proposed a framework that involves starting price adjustments moving lines businesses towards a WACC-based band. Those above the band will face a price reduction to deliver returns to the upper point of the band, while those below the band will face a price increase up to the lower point of the band.

7. Vector’s key points on starting price adjustments are:

- a. **There should be an explicit arrangement for sharing efficiency gains:** While it is consistent with the Purpose of the Act to move prices towards an appropriate WACC, the Commission’s proposal confuses the role of WACC percentiles and provides for a regime where efficiency improvements are being transferred to consumers immediately at the reset rather than provide for an explicit and consistent basis for sharing of such gains. In this submission we suggest an alternative approach that would better achieve the Purpose.
- b. **There should be strong emphasis on assessing the impact of the economic downturn on projected profitability:** In the current economic environment, scenario-based analysis of projected profitability takes on additional importance. Acknowledging the Commission’s proposal to delay making starting price adjustments until input methodologies have been determined, the Commission will need to

make informed judgements on how the economic downturn will impact on EDBs. This may be an area where workshops relatively early in the process may be useful in identifying key issues confronting lines businesses and provide a subsequent basis for the sector to provide information to the Commission to come to an informed judgement.

- c. **In this first regulatory period the Commission should adopt a presumptive stance in favour of smoothing starting price adjustments:** This will better provide for businesses to adjust their financial circumstances, if necessary, given the unsettled nature of input methodologies through the Part 4A regime and the short timeframe between setting input methodologies and starting price adjustments on 1 April 2011.

Rates of change

8. Vector's key points in relation to the Commission's proposals for rates of change are:

- a. **Vector has strong concerns regarding the specification of the input-output function proposed to measure changes in productivity.** The Commission's approach treats physical inputs (e.g., MVA-kms) as an output and proposes to compound this error by multiplying MVA-kms by transformer capacity. The use of these physical inputs as outputs would result in directionally perverse movements in productivity and should not be used in this manner.
- b. **Vector supports the use of the "B-factor" framework to set the rates of change in price-quality paths.** At this point in time, Vector does not express any views on the proposed *methodological* refinements to the TFP framework previously used.
- c. **The proposed sense check of Economic Insights' analysis is supported.** Making an assessment of the productivity potential of lines businesses will in the end require judgement that needs to recognise a number of contextual considerations relevant to Electricity Distribution Businesses ("EDBs"). It is important that the Commission recognise that the technical complexity set out in the Economic Insights papers does not equate to empirical precision. The ultimate test of any particular empirical approach is whether it generates sensible outcomes given the stable nature of the industry and the technology it uses. Vector endorses the Commission's recognition that it will need to examine

international productivity data as a sense check on the results of Economic Insights' analysis.

- d. **A cautious approach to setting X-factors is required:** In the present economic environment and in the context of an industry with significant sunk costs, the scope for productivity improvements becomes more limited. Vector urges the Commission to adopt a cautious approach to setting X-factors. The consequences of setting an X too low, would simply result in delayed sharing of efficiency gains with consumers until the next reset. Setting an X-factor that is too high, relative to EDBs' productivity potential, risks creating disincentives for investment and/or lead to a significant number of CPP proposals, which the Commission may not be in a position to progress, given the limit of four CPPs to be addressed in any one year.

Energy Efficiency and Demand-side Management

9. The Commission's position is that it will not incorporate into the DPPs any mechanism to encourage energy efficiency because this would be too complex in the timeframe remaining. The Commission reasons that "it may not be feasible to address such complexities and implement a sophisticated and robust mechanism as part of the Reset DPP."¹

10. Vector's views on energy efficiency improvements are:

- a. **Section 54Q of the Commerce Act imposed a mandatory statutory duty on the Commission and, in particular, it requires the Commission to not create disincentives for promoting energy efficiency.** As far as we are aware, it is universally accepted that price cap regulation provides a disincentive to improve energy efficiency. EDBs receive the majority of their revenues through volumetric charges, so any initiative to promote energy efficiency reduces revenues and therefore is a barrier to energy efficiency. This is the very reason why section 54Q was included in the new Part 4.
- b. **We disagree with the Commission's analysis that Information Disclosure or the availability of a costly and highly risky customised price path ("CPP") process are sufficient mechanisms for the Commission to achieve its statutory duty**

¹ Paragraph X12.

under section 54Q. Information Disclosure and CPPs will not be sufficient to create incentives for promoting energy efficiency that would outweigh the negative consequences of revenue cannibalisation through energy efficiency initiatives.

- c. **We propose two simple and workable approaches to removing the disincentive of price cap regulation to energy efficiency improvements.** We propose a mechanism that would allow EDBs to pass on additional costs of energy efficiency related investments, and a volume-based adjustment to price paths that would compensate EDBs for verifiable reductions in chargeable quantities arising from actions that assist customers to reduce their demand.

Quality of supply targets

11. The Commission's proposal for quality paths is an improvement on the previous threshold regime. In particular, the Commission has proposed a framework that seeks to distinguish deterioration in performance from random variation and extreme events.

12. Vector's key points in relation to quality paths are as follows:

- a. **Vector is supportive of the principle behind the Commission's proposed approaches to detect material deteriorations in performance.** It is desirable to make allowances for extreme events and statistical variation to avoid unnecessary breaches.
- b. **The proposed mechanisms are unlikely to meet the Commission's objective and are likely to treat different companies inconsistently.** In this submission we propose alternative mechanisms that have a more robust statistical basis.
- c. **Vector recognises that the Commission has a demanding timetable for implementing a DPP before December 2009, and therefore an S-factor scheme to reward improvements in quality may not be immediately practical.** However, given consumers' strong interest in reliability of supply, as demonstrated by value of lost load studies, it would be contrary to consumers' interests (and therefore contrary to the Purpose) to defer development of an S-factor scheme until 2015. This would deny consumers the benefits of higher levels of quality that could be incentivised through such a scheme.

Structure of this submission

13. In the remainder of this submission we follow the order of the Commission's Discussion Paper. As we note above, in the time available we have not been able to prepare submissions on all relevant matters of detail. Accordingly, we have focussed on the issues we perceive to be most important.

SECTION 2: FRAMEWORK

Chapter 2: Statutory Purpose and Regulatory Framework

14. Vector intends to provide a comprehensive response on the regulatory framework in our submission on the Input Methodologies paper, given the commonality of issues. However, to foreshadow Vector's views, we observe that the Commission has focussed narrowly on the outcomes of workable and effective competition in defining the outcomes that Part 4 is seeking to achieve. A broader welfare framework is required to define the "long term interests of consumers" and resolve the various tensions between the different limbs of section 52A. In this section we make only brief comments on the Commission's proposed regulatory principles.

Regulatory principles

15. Vector agrees that the Commission has identified a number of relevant regulatory principles, including consistency, flexibility, cost-effectiveness and transparency. It would be helpful, however, for the Commission to provide some discussion of how the principles inter-relate.

16. For example, Vector agrees that the principle of flexibility is relevant as the markets in which infrastructure owners operate are dynamic and becoming more so. However, "flexibility" should be subservient to the principle of "regulatory commitment", which is critical to providing investor confidence. Vector submits that this principle should also be recognised as a key principle in its own right. Indeed, its very absence from the list of principles is of concern.

17. Regulatory commitment expresses the idea that regulators should not lightly depart from their previous decisions, if at all. Where departing from a previous decision is being considered, the Commission should seek to obtain the permission of affected parties to depart from that decision, and mitigate any adverse consequences for parties that have reasonably relied upon that decision.

18. "Robustness" is also an important regulatory principle. The regulatory approaches that apply should derive from accepted economic theories or, where relevant, have a reliable statistical basis. For example, we note that although the Commission has sought to apply a more statistical basis to setting quality standards (i.e., dealing with random variation), it is not immediately evident how the proposed approaches derive from relevant statistical standards or approaches.

19. Finally, Vector also submits that it would be useful to define an umbrella principle of “regulatory confidence and certainty”: the actions that a regulator takes over time should enhance the credibility of the regulatory regime, thereby promoting confidence to invest. Within this umbrella principle it is then possible to test how each action the Commission takes with regard to the exercise of flexibility, consistency, etc would contribute to perceptions that the regime will provide an environment conducive to attracting ongoing investment.

Chapter 3: Regulatory Provisions for Default Price Quality Paths

Form of Determination

20. Vector agrees that a single determination can apply to all relevant EDBs.

Commencement date

21. The Commission is obliged to publish a summary of the decision on 1 December 2009. For pricing purposes, Vector must be in a position to notify prices for 1 April 2010 before the end of December. Accordingly, it will be necessary, in order to demonstrate and assure compliance, that the summary of the decision contains sufficient information for EDBs to comply with the price cap. Alternatively, and preferably, the Commission would publish the full determination on the same day as the summary. Information on the form of the CPI-X constraint and relevant information on the quantities that will apply, the methods for determining pass-through costs and CPI calculations would assist EDBs in complying.

22. Ideally, the Commission should aim to provide as much information as possible on these matters in the September draft determinations paper, so that EDBs can at least begin preparatory work (e.g., obtain a set of audited quantities) to meet contractual requirements with retailers.

Compliance reporting

23. Vector agrees that the annual compliance date can remain the same as that under the threshold regime.

24. It remains necessary for EDBs to be able to demonstrate compliance using alternative means particularly as EDBs increasingly look to introduce tariff structures that take advantage of smart meters. Clause 5(5) of the Commerce Act (Electricity Thresholds) Notice 2004 provides for such alternatives under the current regime.

Chapter 4: Default Price Quality Paths for EDBs

Energy Efficiency – Summary of Commission’s Preliminary Views

25. The Commission considers that a DPP is intended to be a low-cost regulatory mechanism and therefore making assessments of EDBs’ investments aimed at promoting energy efficiency and demand-side management may not be cost-effective.

26. In addition, the Commission makes an assumption that accounting for energy efficiency investments is likely to be complex and it may be difficult to distinguish whether any volume reductions result from energy efficiency measures or reductions in growth.

27. The Commission considers that the requirement in section 54Q should be applied to the regime as a whole. It does not accept the submission from the ENA that section 54Q should apply as a test to every action that the Commission takes in regulating EDBs. The Commission suggests (at para. 129) that "section 54Q is a relevant consideration for applying Part 4 as a whole, and is only but one important factor for default/customised price quality regulation and information disclosure regulation. The Commission considers that the availability of a CPP and Information Disclosure regulation may be more effective avenues for promoting energy efficiency, demand-side management and reductions in energy losses.

Energy Efficiency - Vector’s response

28. Vector submits that the Commission's interpretation of section 54Q is incorrect. The Commission’s analysis suggests that it has a discretion whether to promote incentives (and avoid imposing disincentives) when applying Part 4. Such an approach is inconsistent with the clear wording of section 54Q, which imposes a statutory duty on the Commission to promote incentives for investment in energy efficiency by EDBs, and to avoid implementing approaches that discourage improvements in energy efficiency. This latter limb of the duty is equally important to the first limb, and places a requirement on the Commission to ensure that default price-quality regulation will not discourage EDBs’ efforts to improve energy efficiency.

29. We acknowledge the Commission's position that energy efficiency will not be relevant to all of its decisions. But energy efficiency is clearly relevant to setting default price-quality paths.

30. It is very clear that price cap regulation creates a strong disincentive for EDBs to promote energy efficiency investments. Although EDBs are predominantly fixed cost businesses, the bulk of revenues are received through volumetric charges. Energy efficiency investments exist that, while potentially profitable for EDBs viewed as an isolated project, become NPV negative when the consequential negative impacts on revenues from energy volume reductions are taken into account. Moreover, because most energy efficiency investments create benefits for third parties (e.g., lower loss equipment) EDBs have limited incentives to invest.

31. These concerns are the very reason why section 54Q was included in the new Part 4. The Ministers of Commerce and Energy advised Cabinet that:

The way price/revenue paths are set has an important influence on incentives for electricity lines businesses to invest in energy efficiency and demand side management. Arguably, the way thresholds are currently set (based on price irrespective of volume) incentivises firms to encourage consumption (or at least not discourage consumption) because this improves their rates of return.

In order to avoid this effect, we recommend that the Commission be required to provide for incentives to improve energy efficiency/demand-side management and to reduce energy losses when administering the regime for electricity lines businesses.²

[Emphasis added]

32. The Commission's position that it is not required to promote incentives to invest in energy efficiency when setting the DPP, because it would result in costs or complexity, is therefore not sustainable.

33. Vector agrees that it may be difficult for the Commission to develop a mechanism that can encourage every kind of energy efficiency possibility, but in our view not including any specific mechanisms in the default price path arrangements would be contrary to the requirements of section 54Q and would mean the Commission is failing to comply with its statutory duty.

34. Vector also disagrees that the availability of a CPP is a reasonable alternative avenue to pursue such investments. CPP regulation is intended to cover exceptional circumstances, not an activity such as the promotion of energy efficiency investments that the Commission is required not to discourage. Moreover, it is clear that the CPP process is highly risky and expensive, with a significant opportunity cost in terms of management time and potential downside risks intentionally designed to disincentivise CPP proposals other than in exceptional circumstances. EDBs are unlikely to pursue an energy efficiency proposal through the CPP process, unless this is incidental to a broader investment

² Cabinet Paper "Review of Parts 4 and 4A of the Commerce Act, October 2007, at paras 75 and 76.

requirement. Vector also disagrees that Information Disclosure regulation could counter the disincentive for energy efficiency improvement.

35. In the following sub-sections we set out what we consider would be two simple, verifiable approaches to encouraging at least some energy efficiency initiatives.

Development of a volume-offset scheme

36. To ensure that EDBs remain neutral in their electricity distribution activities to any specific projects undertaken to reduce customers' demand, it is necessary to make a compensating adjustment to the price path based on customers' observed volume reductions. This could be readily achieved by using an average of each customer's usage over, say, three years prior to the energy efficiency measures being implemented and calculating the percentage of total demand that has been reduced. The difference could be simply applied in establishing the volumes to be used in measuring compliance with the weighted average price cap. The intent would be to offset the reduction in revenues from lower volumes for customers whom the EDB has directly assisted with energy efficiency improvements, with an allowable increase in average prices.

37. In computing prices that are compliant with the price cap, the calculation of notional revenues would adjust quantities for each customer (i) where the EDB has undertaken verifiable action to reduce that customer's billable quantities by:

$$Q_{it-1} - ((Q_{it-2} - Q_{it-3} - Q_{it-4})/3)$$

Where:

Q_{it-1} is the first entire year of reduced volumes for customer i; and

$((Q_{it-2} - Q_{it-3} - Q_{it-4})/3)$ is customer i's average consumption over the three previous years.

38. This adjustment would be included in the notional revenue calculation and allow average prices to increase in proportion to the weighted decline in revenues from lower volumes. While, in concept, this proposal is similar to "D-factor" schemes that alter the price path (i.e., CPI-X+D), the adjustments are made to the weighted average volumes used to calculate notional revenues.

39. EDBs who wish to seek the adjustment would be required to keep a record of the ICPs where they have undertaken specific actions to assist customers to

reduce their electricity loads and demonstrate that the EDB has been directly involved in assisting with reductions (e.g., a contract with the customer) in order to establish eligibility for the adjustment.

40. We believe that this approach would be straight-forward, verifiable (by being based on lagged volumes) and comply with the requirements of section 54Q by partly removing the volume disincentive on EDBs to assist in reducing electricity volumes through energy efficiency investments. It would also remove the Commission from judging the merits of particular investments, as customers would be directly involved in the procurement decisions.

41. At each reset this volumetric adjustment would cease, as starting price adjustments would be made to ensure that each EDB is able to earn a commercially appropriate return on its investments.

42. Finally, we note that at this point we have not had the opportunity to specifically test this approach in a worked example, and there may be some refinements required to the approach proposed above. Nevertheless, we believe that the proposal is consistent with the low-cost nature of DPPs and section 54Q and has the advantages of being simple and verifiable, and makes volumetric adjustments weighted appropriately by the prices pertaining to the relevant customers.

Cost pass-through

43. Not all energy efficiency investments result in reduced billable quantities. For example, where an EDB invests in such equipment as lower-loss transformers, the benefits accrue to retailers, who pay for a reduced level of distribution losses. There is not a private benefit to the EDB. In order to avoid disincentives to use more energy efficient equipment, EDBs need an opportunity to pass-through such costs to consumers. One way to achieve this would be to allow EDBs to pass-through the marginal difference in capital costs of a more energy efficient technology. We envisage a process whereby:

1. An EDB provides demonstration of the difference in costs between the vanilla technology and the more energy efficient technology. This could be through quotes from manufacturers.
2. To ensure that only efficient investments are made, some nominal energy value could be multiplied by the estimated savings from the energy efficiency to demonstrate the benefits.

3. Where the benefits exceed the costs the EDB is allowed to claim a cost pass-through of WACC+2% (2% for depreciation over 50 years) multiplied by the difference in equipment costs.

44. Again this would be a simple process and EDBs could elect whether they wish to pursue such pass-through costs in their pricing. It would aim to ensure that EDBs make efficient technology choices, whereas under simple price cap regulation a EDB faces no incentive to invest in more costly technologies as they do not benefit from the energy efficiency savings.

45. The proposed pass-through adjustment would cease at each reset as the assets would comprise part of the EDB's asset base and starting price adjustments would be made to ensure that each EDB earns a commercially appropriate return on its investment.

Concluding comment

46. Parliament has provided a strong statement in section 54Q that EDBs should be involved in promoting improvements in energy efficiency. Vector submits that the concept that energy efficiency schemes need be complex is overstated and, in any case, the complexity of the solution is irrelevant given the clear legislative direction of section 54Q. We have suggested two simple schemes that assist in avoiding the disincentives currently faced and, by being permissive, also address concerns raised by parties such as Orion about the need to take a cautious approach. In addition, because the adjustments would cease at each reset (in effect becoming subsumed into starting price adjustments) the risk of unintended consequences is constrained.

47. Overall Vector submits that these proposals are consistent with the mandatory requirements in section 54Q, whereas relying on CPP and Information Disclosure to overcome the disincentives of an unadjusted default price path are not.

SECTION THREE: PRELIMINARY VIEWS

Chapter 5: Default Price-Quality Path Reset

Profitability analysis, data requirements

48. In paragraphs 154 to 163, the Commission discusses the broad approach to profitability analysis, data requirements and the impact of the current economic climate. The Commission concludes:

- a. Profitability adjustments should be based on each supplier's profitability compared to WACC and not relative performance;
- b. It may be difficult to make assessments of projected profitability due to lack of data and information asymmetries;
- c. The current information disclosure requirements were not designed to support the DPP regime and therefore the Commission may need to use its information gathering powers to obtain necessary information from EDBs; and
- d. Further input is required on how the change in economic environment may be impacting on future profitability and productivity and this could be taken into account in assessing future profitability.

Vector's response

49. Vector agrees that the new regime does not permit the use of a relative profitability approach, and that starting price adjustments (within an appropriate efficiency-sharing framework) should be based on a comparison of current and projected returns with a suitably defined WACC.

50. Vector also agrees with the Commission's conclusion that the regime is intended to be low cost and full building-blocks approaches to assessing projected profitability is not permitted. In this context, Vector submits that the Commission should, in general, be seeking to make generic adjustments based on industry-wide profitability drivers. For example, in recent years under the present profit-measurement approach, returns have been driven by high rates of CPI inflation. If CPI indexation of the RAB is to continue, sector-wide returns will fall by at least 2-3% over the next few years as inflation forecasts have fallen significantly.

51. Similarly, building consents data shows uniform weakness across the economy in new developments, which provide a material source of income through capital contributions. Latest building consents data show that consents are down by 26% compared with May 2008 and 42% below May 2007. The slow-down in building activity will start to flow through to capital contributions as committed projects come to an end. Tight credit conditions for developers may also contribute to ongoing weakness in new customer connections.

52. A key challenge in the current economic climate is that markets are changing rapidly and unpredictably. EDBs are not immune to the effects of recession. Vector submits that the Commission take a conservative approach to assessing trends in projected profitability, as recent financial performance may not be reflective of performance during at least the next 2-3 years and potentially longer.

53. In regard to data requirements, Vector submits that the Commission engage initially with the ENA's Regulatory Working Group to define what information may be useful in addressing projected future profitability and then seek information from industry based on these discussions. We would also note that the effects of recession can be lagging for EDBs.

Section 5.3: Form of the DPP

Separate price-quality paths

54. Vector agrees that separate price and quality paths are pragmatic in the initial reset, but would support further work to develop a robust S-factor type approach to incentivise quality improvements. The ENA's submission of 8 May 2009 provides relevant information on the requirements to develop a sufficiently robust S-factor approach.

55. Vector continues to hold the view that an S-factor approach should be implemented as soon as possible and certainly in time for the 2015 reset.

Reconsideration of a DPP within a regulatory period

56. In paragraphs 60 to 68 of this submission, we set out our views on the content of pass-through cost arrangements. In particular, we argue that it is unreasonable for the Commission to deny EDBs the ability to pass-through the costs of complying with new regulations set by the Electricity Commission, for example. In the event that the Commission does not accept that EDBs should be entitled to automatically pass on the costs of new regulations, Vector submits that

there should be a DPP re-opener, which would focus narrowly on making price adjustments to enable EDBs to recover new regulatory costs (or savings, if regulations were to result in EDBs reducing their costs). The re-opener should not entitle the Commission to revisit any other matters, including starting price adjustments relating to profitability or rates of change.

57. The criteria for such a reopener would be that “where there is a new regulation, rule or law that has broad effect on EDBs, the Commission shall make price adjustments to allow costs or savings to be passed through to consumers”. This would avoid an unfortunate situation where EDBs would otherwise have to apply for a CPP to pass new costs through and would enhance the credibility and certainty of the Part 4 regime.

Section 5.4: Price Under a DPP

Pricing methodologies

58. Vector supports a principle-based approach to pricing methodologies, with Information Disclosure regulations used to monitor compliance. We do note, however, that there are significant compliance costs associated with complying with the approach used under the Gas Authorisation. In particular, the use of auditors to verify compliance with pricing principles is an unnecessary cost.

59. Accordingly, Vector agrees with the Commission’s preliminary view in the Input Methodologies Discussion Paper that applying pricing methodologies to DPPs would go against the low cost nature of this regulatory tool and may outweigh any potential efficiency gains. Vector will provide further views on pricing methodologies in our submission on input methodologies.

Pass-through costs

60. Vector supports at a minimum the pass-through of costs listed in paragraph 203. In particular, Commerce Commission levies should be treated as pass-through costs as these costs are outside the control of EDBs.

61. An issue that has not been considered by the Commission is the recent substantial increase in regulatory levies. The Commission’s levies for the 2009/2010 year for input methodologies are \$4.9 million and \$2.7 million for electricity regulation.

62. A significant element of the increased levies is the development work that is being incurred in establishing input methodologies and the new DPP arrangements.

Vector submits that these costs should be passed through to consumers as they are incurred in the promotion of consumers' long term interests. Given that the initial development costs are high, however, and not provided for under Part 4A regulation, Vector submits that these costs which pertain to future implementation of regulation should be capitalised and smoothed over the entire regulatory period, as part of a cost pass-through mechanism.

63. Aside from the inclusion of Commerce Act levies, the Commission continues to adopt the stance that other costs associated with complying with new regulations are not eligible to be treated as pass-through costs.

64. Vector submits that it is unreasonable to prevent EDBs from recovering the costs of complying with new externally mandated regulations. We disagree that if costs can be passed through that EDBs will face no incentives to incur costs efficiently. Under CPP regulation EDBs will no doubt have to demonstrate that their costs are efficient. Because it is unknown whether an EDB will at some point need to apply for a CPP, there will therefore be incentives to meet regulatory requirements in an efficient manner. More generally, if none of the costs of new regulatory impositions can be passed on, this effectively becomes an additional tax on EDBs.

65. The Commission proposes that only those costs that are 100% outside the control of EDBs should be permitted as a pass-through cost. Vector has previously submitted that costs associated with complying with new regulations imposed by the Electricity Commission or other regulators should also be permitted as a pass-through cost. The Commission's logic is that if some of the costs are controllable, then allowing them as a pass-through cost would mean that EDBs would not necessarily incur those costs efficiently.

66. This approach, in effect, creates a situation where regulations promulgated by the Electricity Commission (or other Government agencies) become a tax on EDBs. The only way these new costs can be recovered by EDBs is through a CPP, which EDBs will perceive to be a costly and risky process. This is also an ineffective means of providing for pan-industry rules or regulations and will make EDBs less likely to support or promote rules or regulations that may be in the interests of the overall industry and benefit other parties, but where the costs would fall on EDBs.

67. An example of a cost that potentially is to be imposed on EDBs is the change made to Schedule 8 of the Benchmark Agreement between Transpower and designated Transmission customers (including EDBs), which requires EDBs in the Upper North Island and Upper South Island to provide unity power factor at each

point of interconnection with Transpower. This proposal would impose substantial new investment costs on EDBs. Vector estimates it would incur [] **CI** to meet the standard.

68. It would seem undesirable for all EDBs to have to seek CPPs to allow such costs to be passed on. In addition, there would be significant concern regarding more general downside risks of a CPP, including the possibility that efficiency gains are prematurely shared with consumers through the process of applying for a CPP to pass through the costs resulting from new, externally mandated regulations. Further, the intended objectives behind the default/customised price-quality path design would be undermined if all EDBs were driven to seek CPPs.

Price path quantities

69. Vector supports updating quantities each year using quantities from 12 months prior. However, there are additional costs that will be incurred in updating quantities annually, including additional audit costs.

70. We note that during the Gas Final Authorisation, the Commission's decision to define the materiality threshold as 1% was seen by Vector's auditors, as not being aligned with standard financial accounting practice. Vector submits that the Commission does not need to adopt a high standard in the audit of quantities because they are simply used as weights on both sides of the weighted average price cap and therefore any errors will have extremely small impacts. We suggest a more appropriate audit threshold should be 5%. This would be consistent with the cost-effectiveness principle.

Excluded services

71. The Commission proposes that services subject to workable and effective competition should be excluded from quantities in the price path and where loss and constraint rentals are passed on transparently and in full to consumers, these should be excluded from the calculation of notional revenues.

72. Vector agrees with the Commission's proposed exclusions. We submit, however, that the Commission should issue a guideline on what circumstances should be covered by the workable and effective competition standard, as there appear to be inconsistent practices across the industry relating to definitions of contestable situations. For example, we understand that where EDBs have competed to supply embedded networks based on competition over the right to install the network, some have deemed such situations competitive, whereas end-consumers have not had the opportunity to negotiate the distribution charges and can be subject to unconstrained prices.

73. Furthermore, under Information Disclosure regulations, those companies that are exempt from default/customised regulations should be required to disclose separate information on the extent and financial performance of their networks outside the exempt trust-zones.

Chapter 6: Starting Prices

Deferral of starting price adjustment

74. Vector continues to support the proposal to make starting price adjustments after the input methodologies have been established. This will enhance certainty and credibility of the new regime. It is difficult to anticipate what issues may arise in implementing price adjustments following establishment of input methodologies. On the face of it, Vector agrees that making starting price adjustments on 1 April 2011 would be challenging, but achievable. There may be some data constraints, depending on the input methodologies that will ultimately apply. However, taking a practical approach should enable the Commission to make reasonable adjustments, where necessary.

"Actual" or "allowable" prices

75. The Commission seeks input on whether starting prices should represent actual prices on 31 March 2010, or allowable prices calculated consistently with Part 4. Vector concurs that use of actual prices would be the simplest and most transparent approach.

Profitability analysis

76. The Commission raises a number of relevant issues to resetting starting prices in 2011 based on separate assessments of past and future profitability. The Commission's proposal indicates that it will rely on performance from recent information disclosures as well as take into account information about the impacts of the deterioration in economic conditions in scenario-based analysis.

77. Vector agrees that the Commission should undertake separate analyses of current and projected profitability. In the current macroeconomic environment scenario-based analysis of the impacts of a deterioration in the economic climate on financial performance is likely to be critical. In our view, there is high probability that recent financial performance, including in the year-ended 31 March 2009, which only captures the start of the downturn, will not be reflective of at least the next two to three years. In this section we discuss a two stage process for making starting price adjustments.

Assessing current profitability – sharing efficiency gains

78. In paragraphs 244 to 254 the Commission discusses possible approaches to making assessments of profitability. We observe that it is difficult to make

judgements on assessment approaches in the abstract, particularly when input methodologies have not been finalised. It is likely that the Commission will need to use trend-analysis, exceptions analysis (to correct for one-off events) and other tools to come to judgments on “current profitability”. What will be most critical is that there is transparency in the process, and EDBs and stakeholders will have the opportunity to comment on the Commission’s analysis and findings.

79. Once the Commission has established estimates of current profitability, it proposes a banding approach to making starting price adjustments under section 53P. The proposal is that the Commission will initially consider an adjustment based on recent financial performance compared to a WACC band, based on some methodology, which may include:

1. A confidence interval: eg., the lower bound might be the 50th percentile and the upper bound the 75th percentile;
2. A point estimate as a percentage around the WACC point estimate, which may be symmetric or asymmetric (e.g., 1.5% above or 0.5% below); or
3. Scenario adjustable (based on projected influences of future profitability).

80. The Commission proposes that those above the band will face a starting point adjustment that takes them back to the top of the band, whereas those below the band will face an adjustment that takes them to the bottom of the band. Those within the band will face no starting price adjustment.

81. Vector submits that this approach implicitly makes judgements about the characteristics of a WACC band, which are not consistent with meeting the objectives of Part 4. For example, there is an implicit assumption that EDBs would be willing to invest at a WACC at some low percentile (e.g., 50th percentile) or that “only” being brought back to a higher WACC percentile (e.g., 75th) provides rewards for improving efficiency. The correct view is expressed in paragraph 236 where the Commission states the WACC is the minimum rate of return necessary to attract debt and equity capital.

82. In the following paragraphs we provide an alternative framework, which specifically and separately addresses each relevant element of the Purpose Statement in a manner that:

- a. promotes investment;

- b. provides a consistent basis for improvements in efficiency over the entire regulatory period; and
- c. would provide much greater certainty to investors that efficiency improvements and the necessary returns on investment are not being confused to the disadvantage of investors.

83. The starting point for this discussion is what a point-estimate of WACC actually represents and how to treat differences from WACC.

84. As the Commission has recognised elsewhere, WACC is estimated with imprecision. While the capital asset pricing model ("CAPM") has some theoretical attractiveness, in the real world the simplifying assumptions are far from being met. In consequence, the Commission has typically taken an upper point in the WACC range, in recognition of the consequences of the asymmetric costs (dynamic inefficiency) of setting WACC below investor's required return on investment compared to the short-term benefits consumers may receive from lower prices. Vector continues to support that conceptual framework (albeit holds concerns with actual implementation).

85. Assuming for the sake of exposition that setting WACC at the 75th percentile is the right point in the range to select, it is then important to reflect on what may give rise to differences from that percentile and an approach consistent with the Purpose Statement to shift returns towards that estimate at each regulatory reset.

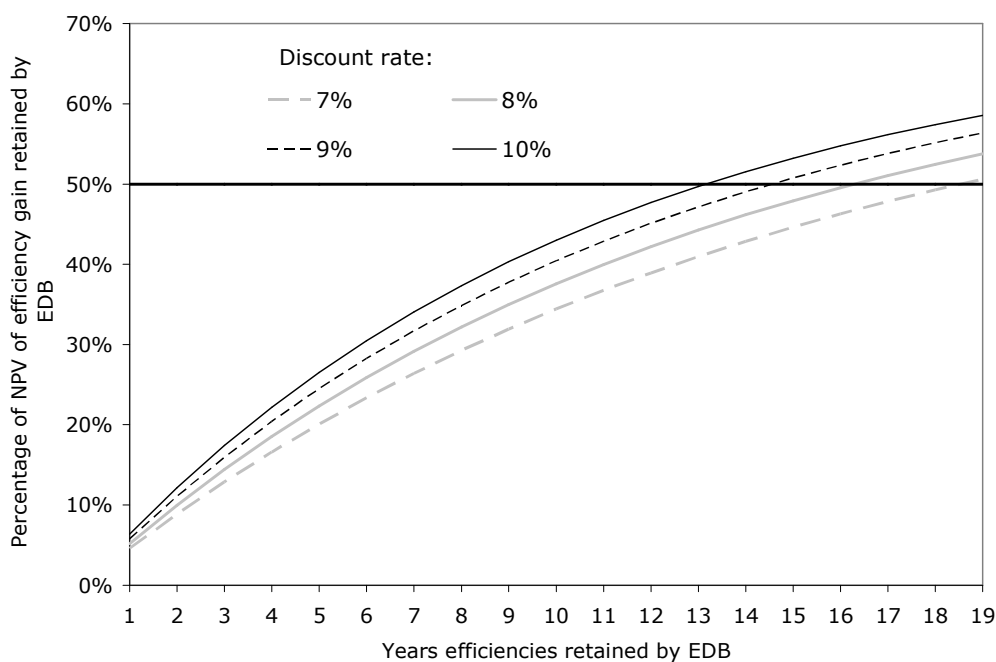
86. The Act requires the Commission to share efficiency gains with consumers. The nature of an X-factor based on productivity improvement is that EDBs are already required to pass all productivity improvements at the rate of the X-factor directly to consumers and do not benefit from those efficiency improvements. Only efficiency improvements above the X-factor are available to EDBs for a period, before being shared with consumers. It is the ability to retain efficiencies above the X-factor for a reasonable period that motivates EDBs to focus resources on identifying efficiency improvements.

87. Vector's concern with the Commission's proposed approach is that it appears to conflate the establishment of a WACC point at some percentile above the mid-point (to deal with asymmetric risks of setting WACCs too low), with the notion that only bringing returns to a higher point in the WACC range is consistent with allowing EDBs to continue to benefit from efficiency improvements. Vector submits that these issues need to be kept separate.

88. The concept of “sharing” under section 52A(1)(c) is not a defined concept, but a reasonable starting point would be that EDBs and consumers should have an equal share in those efficiency gains. EDBs need to have enough incentive to pursue efficiency gains, which means that they need to benefit from them for sufficient time to justify the management time and investment in their pursuit.

89. Figure 1 illustrates for a \$1 improvement in efficiency in perpetuity, the percentage in NPV terms of the benefit that is retained by EDBs at different points of sharing and at various scenarios of discount rates.³ It demonstrates that in order to achieve an equal share of efficiency gains, a period in excess of 13 years is required:

Figure 1: Percentage of NPV of efficiency gains retained by EDBs



90. Many overseas regulators operate to a five year regulatory period. There does appear to be some evidence that in later years of the regulatory period, efficiency improvements have been held-over until the following period.⁴ Accordingly, regulators have recognised that it is important to provide some form of carry-over mechanism to ensure that there are consistent incentives over the

³ It is also relevant to note that to generate a \$1 improvement in profits from efficiency improvements, an EDB has to improve efficiency by \$1.43, given profits are taxed at 30%. Accordingly, EDBs are effectively immediately sharing efficiency improvements at the rate of 30%. Figure 1 reflects this immediate sharing, but even setting the tax-effect aside, it takes around seven years at a discount rate of 10% before an EDB obtains a 50% share of an ongoing efficiency improvement.

⁴ See Ehrhardt., D (2000) *Practical Experience with Price Cap Regulation*; Report for the New Zealand Treasury

entire regulatory period to improve efficiency. It is in consumers' long term interests for efficiency gains to be realised as quickly as possible, given consumers' wider interests in the efficient use of resources.⁵

91. This sharing/NPV analysis has important implications for how the Commission makes starting price adjustments. The Commission's current proposal is effectively for all efficiency gains to be given to consumers at the end of the regulatory period and therefore would not provide consistent incentives to promote efficiency across the entire regulatory period.

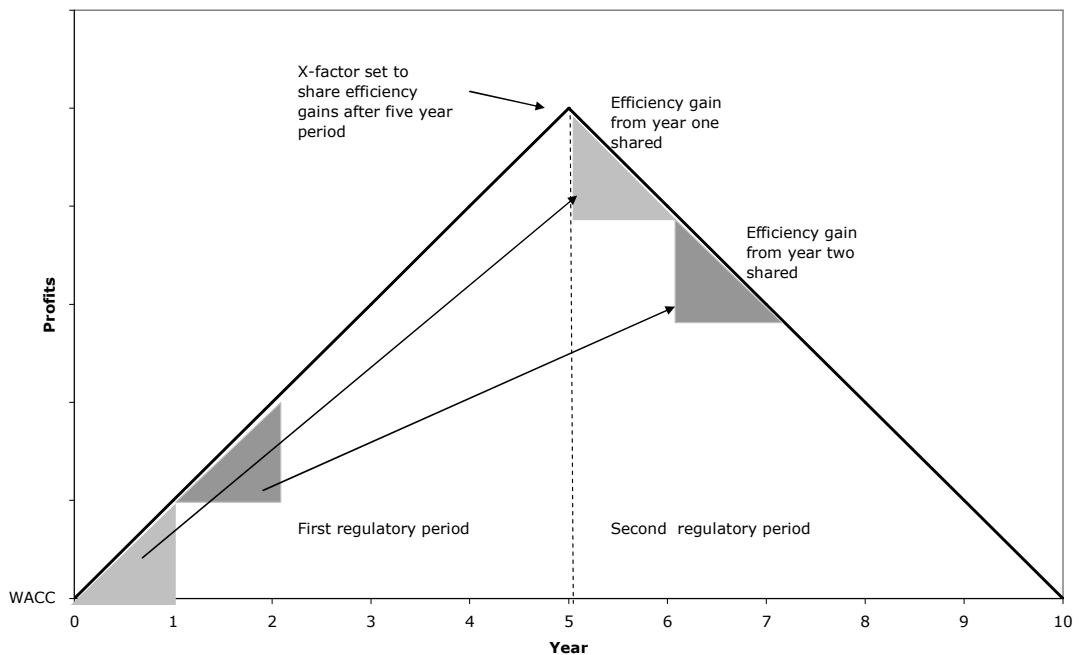
92. In the following bullet points we suggest an approach that is consistent with the Purpose of Part 4, by providing for consistent incentives to increase efficiency over the entire regulatory period before they are shared with consumers. For ease of exposition, in the following example, we illustrate the sharing concept using five years as the period that EDBs can retain efficiency gains before they are provided to consumers, however, this clearly provides only minimal benefits to the EDB as a percentage of the total present value of efficiency improvements, and some longer period should be provided. Vector's proposed approach is as follows:

- (a) Establish an estimate of WACC that is required to reasonably ensure efficient investment: e.g., the 75th percentile.
- (b) Assume EDBs, in general, can make relatively even improvements in efficiency over time;
- (c) Accordingly, at the end of a five year regulatory period profits in excess of the regulatory WACC should be assumed to represent:
 - i. Four years of an efficiency gain made in year one of the prior regulatory period;
 - ii. Three years of an efficiency gain made in year two of the prior regulatory period;
 - iii. ...and so on.
- (d) Ideally, to ensure that there are consistent incentives to improve efficiency over the period, an X-factor should be set to consistently share efficiency gains with consumers, so that:

⁵ In any event, if efficiency gains are deferred in the latter years of each regulatory period, this delays the point at which these efficiencies are made available to consumers for sharing until the subsequent regulatory period.

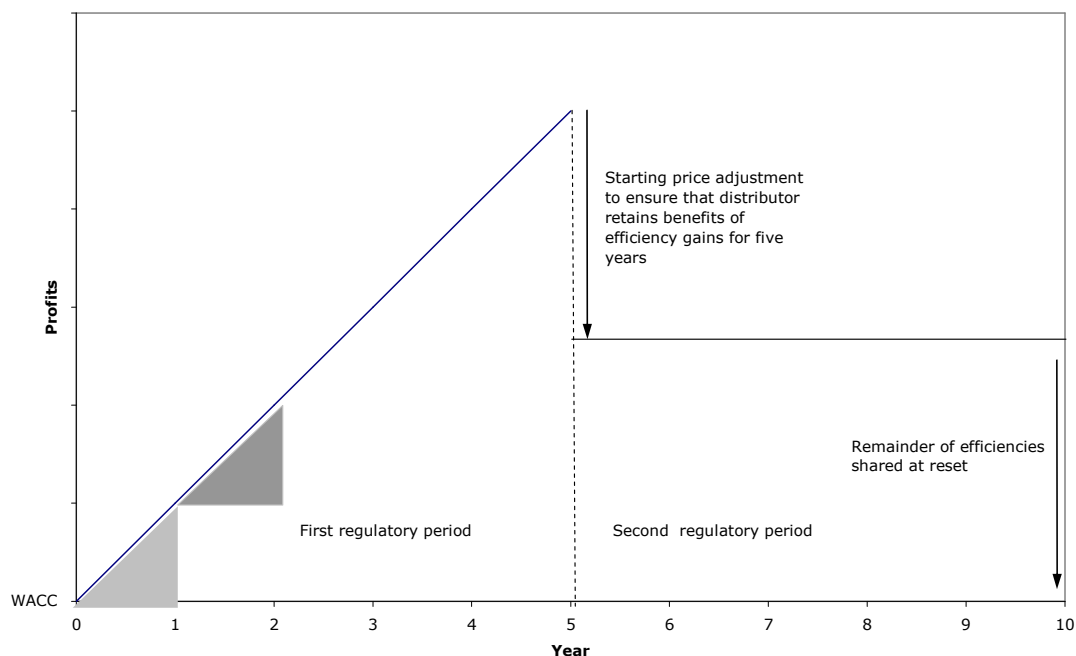
- i. In the first year of the new regulatory period the efficiency gains from the first year of the prior regulatory period are shared with consumers (assuming there is a five year sharing rule);
 - ii. In the second year of the new regulatory period, the efficiency gains from the second year of the prior regulatory period are shared with consumers;
 - iii. ... and so on.
- (e) In this ideal sense, this would give rise to the following pattern of efficiency-improvement / profits and subsequent sharing, which would ensure that EDBs can retain efficiency improvements for the five year period used in this example:

Figure 2: Profile of efficiency improvements and sharing over time (smooth X-factor)



- (f) The Commission is, however, constrained to an approach that (generally) requires starting price adjustments rather than smooth, company-specific X-factors (section 53P(5)). It is necessary, therefore, to design starting price adjustments to give an NPV-equivalent outcome that preserves the ability of EDBs to retain efficiency gains. The starting price adjustment would therefore deliver the following stylised return profile;

Figure 3: Profile of efficiency improvements and sharing over time (NPV-equivalent P_0 adjustments)



- (g) The calculation of the starting price adjustment will depend on the percentage of the efficiency gain that EDBs should receive the WACC that applies, and therefore the years that the EDB should benefit from the efficiency improvement. It is then a straight-forward calculation to derive a single percentage price adjustment that would provide the same NPV as a smooth X-factor-based sharing with consumers.
- (h) In year 11 (the first period of the subsequent regulatory period) a further sharing adjustment is made to share the remainder of the efficiency gain with consumers.

93. The advantage of following this approach is that it is straight-forward to apply: all that is required is a calculation of the revenue/price reduction required to equate returns with the regulatory WACC, and then multiplying this by a percentage to ensure that the EDB retains the benefits of efficiency gains achieved through the previous regulatory period. This is consistent with the intent of DPP regulation being low-cost.

94. Vector submits that this approach should be followed in the first reset under the Part 4 regime. Part 4A contained a similar efficiency sharing requirement under section 57E(c). So following this approach would ensure consistency between regimes, as the objective has not changed, and to preserve investors'

reasonable expectations that they would be able to benefit from recent efficiency improvements.

Assessing "projected profitability"

95. The preceding analysis focuses on making starting price adjustments consistent with "limiting the ability to extract excessive profits" and providing for an effective efficiency-sharing regime, that provides consistent incentives over the entire regulatory period.

96. Once this analysis has been completed, the Commission should then consider scenario-based analysis of factors impacting on the entire industry (e.g., impacts of recession) that might impact on projected profitability. In particular, the following issues will at least need to be considered:

- (a) Inflation forecasts are lower: This impacts on the capital gains component of ROI calculations. In recent years ROIs have been driven higher by CPI exceeding the Reserve Bank's upper inflation target of 3%. The recent NZIER *Quarterly Predictions* forecast that inflation will fall to 0.1% in the year ended 31 March 2010 and increase to only around 1% in the following year;
- (b) Residential and non-residential building consents are substantially lower than in recent years. There is a lagged effect of building consent activity on EDBs financial performance, as consented projects from one to two years ago come to completion. Development activity continues to be hampered by the decline in the non-bank finance sector. The impact of lower building activity is reflected in lower levels of capital contributions, which in recent boom times have contributed materially to reported returns.
- (c) The Government has committed substantial funds to subsidising energy efficiency improvements. There is strong evidence that these programmes are impacting on the market, with installers recruiting new employees and insulation manufacturers increasing production of products such as pink batts.
- (d) The Government is focussed on bringing forward infrastructure builds, which is continuing to place pressure on civil construction resources and costs which make up a significant proportion of electricity (and gas) investment costs.

(e) Regulatory costs are increasing as a result of the Part 4 reforms. In paragraphs 60 to 68 of this submission we suggest an approach to pass-through costs to deal with the significant increases in regulatory levies.

(f) Some 82,000 businesses have experienced a credit downgrade since January 2008, an unprecedented fall in downgrades. This indicates that there are increasing risks to EDBs of decreasing electricity volumes from a declining economy.⁶

97. There are likely to be other important drivers affecting EDBs future performance. Given the criticality of starting price adjustments to EDBs, Vector submits that the Commission should engage further with the industry in developing approaches to establishing starting price adjustments. It is unclear at present how the Commission comes to be informed about the performance of the sector, other than through backwards-looking information disclosures. Vector submits that there needs to be a forum where EDBs can communicate their specific issues with the Commission.

98. We suggest that the Commission hold a workshop with EDBs to identify the key issues confronting the sector and then design models to test how material each may be to future financial performance. Judgements will then be required on the likely magnitude of each impact to make adjustments to starting prices

99. Taken together these considerations would lead to the following 5-step process:

- (a) Establish an estimate of each EDB's "current profitability";
- (b) Compare this to the single estimate of the regulatory WACC;
- (c) If:
 - i. current profitability is in excess of WACC multiply the difference by X% (the estimate of the percentage reduction required to ensure EDBs obtain 50% of efficiency gains) and calculate the starting price adjustment to deliver this reduction;
 - ii. current profitability is less than WACC calculate the starting price adjustment to restore returns to WACC⁷;

⁶ See Dun and Bradstreet a credit reporting agency:
http://dnb.co.nz/Header/News/82000_New_Zealand_firms_downgraded/indexdl_4898.aspx

⁷ This effectively assumes that those earning less than WACC are not inefficient, but have made significant investments that have reduced their returns or in the past have elected to make less than WACC return.

- (d) Consider whether there are general conditions that will impact on projected profitability for the industry that would warrant additional adjustments to starting prices.
- (e) The Commission holds a workshop with the industry on the relevant factors to be taken into account and consults on the analysis used to make the assessments.

100. Vector submits that this approach would be much more in keeping with the Purpose of the Act and remains consistent with the DPP being a low cost mechanism:

- (a) EDBs are limited in their ability to earn excessive profits by making price adjustments towards the regulatory WACC estimate.
- (b) The regulatory WACC should be set to ensure there are incentives to invest and innovate, by recognising the asymmetric costs of setting a WACC too low.
- (c) EDBs have strong incentives to improve efficiency by setting initial price adjustments based on a percentage of "current profitability", such that EDBs can expect to obtain 50% of the benefits of efficiencies, regardless of when the efficiency gain is realised.
- (d) There is appropriate and separate treatment of WACC-setting and sharing of efficiency gains, in a manner that ensures investors have certainty that the selection of the WACC percentile is not being confused with efficiency sharing.
- (e) Future, industry-wide issues are taken into account.

101. Finally, we note that this proposal is based on preliminary thinking and analysis. It will need further refinement in determining actual parameters to apply to ensure that EDBs benefit from efficiencies for a minimum period. We submit, however, that the general framework outlined in this proposal is consistent with Purpose Statement, whereas the Commission's proposal does not meet the requirement that there are incentives to improve efficiency, particularly in the latter years of each regulatory period.

When are glide-paths appropriate?

102. The Commission provides a discussion of the potential requirement for use of glide-paths compared to starting price adjustments in paragraph 283.

103. One of the characteristics of the regulatory environment in New Zealand has been the unsettled nature of input methodologies. There is reasonable likelihood that a number of EDBs will have formed reasonable expectations on how the regime might develop, which may differ from final input methodologies. Accordingly, EDBs may require a period of time to adjust their financial positions to take account of the implications of the finalised input methodologies.

104. Vector submits that for this first regulatory period, where there are any material starting price adjustments (in excess of 5%), the Commission should adopt a presumptive stance in favour of smooth adjustments over the regulatory period through adjusting the X-factor. This can be achieved in an NPV neutral manner, and would be consistent with providing for certainty and confidence to investors.

105. In addition, as there would only be a period of five months between the setting of input methodologies and the announcement of the decision on starting prices for 1 April 2011, it would be impractical to provide a process that allows EDBs to demonstrate the financial impacts on their businesses. This further supports a presumptive stance that in the first regulatory period starting price adjustments should be smoothed according to section 53P(8).

Chapter 7: Rates of Change

Commission's proposals

The Commission has proposed that rates of change are to be based on a modified version of the B-factor used under the Part 4A regime. The Commission proposes:

- (a) To use international data as a check on the results of TFP analysis on New Zealand data;
- (b) To use an amended TFP formula;
- (c) To use indexed historic cost data as the basis for determining unit capital costs (although this is likely to have marginal impacts on accuracy);
- (d) To include transformer capacity as an output measure; and
- (e) To derive an input price differential from the TFP approach.

Vector's response

106. Vector supports the use of the "B-factor" framework to set the rates of change in price-quality paths. At this point in time, Vector does not express any views on the proposed *methodological* refinements to the TFP approach previously used. We do however, comment on the specification of the input/output function. The ultimate test of any particular empirical approach is whether it generates sensible outcomes. It is clear that all aspects of productivity measurement are unsettled, including the methodological approach, parametric specification of the input-output function and data quality/interpretation, so caution must be applied.⁸

107. The nature of the service provided by lines business is inherently stable, in terms of the technology that applies to delivering distribution services. If anything, because network use is a derived demand resulting from consumers' choices of appliances and equipment, productivity improvements are increasingly hard to come by. From a supply-side perspective, the industry has already reaped many of the benefits of improved communications technologies and network automation, but from a demand-side perspective, consumers have growing (and

⁸ The experience of productivity measurement to date, where the 2004 results of the MTFP analysis changed dramatically in 2008, when there was a "technical refinement" has illustrated significant methodological, data and specification difficulties.

sometimes unrealistic) expectations of the services they receive, including reliability of the service, increasingly peaky demands, and in future years increasing substitutes to electricity. Intuitively, we expect that the trend rate of productivity growth for lines businesses will tend to be low and given the long-lived nature of the capital equipment, to be below the economy-wide average. In addition, given the sunk nature of networks in coming years we expect capacity-utilisation measures, which are a key component of productivity growth, to deteriorate given the decline in economic conditions.⁹

108. Making an assessment of the productivity potential of lines businesses will therefore ultimately require judgement that needs to balance these contextual considerations. It will be important that the Commission recognise that technical complexity does not equate to empirical precision. Vector endorses the Commission's recognition that it will need to examine international productivity data as a sense check on the results of Economic Insights analysis.

109. We do, however, wish to protest the process that the Commission has undertaken in procuring extensive academic-style research on such an important issue, and the presentation of the results. Vector understands that the ENA has commissioned a critique of the new analysis from Economic Insights from Pacific Economics Group, and we look forward to seeing the results of this review. However, within the timeframe available for submissions we are unable to establish informed or considered judgements on the merits or otherwise of the analysis or proposals. Overall, we are concerned that we may be subject to methodologies resulting from pioneering and highly theoretical research, and the process provides little appropriate ability to comment meaningfully on the analysis.

Input-output specifications for productivity measurement

110. A critical element of the measurement of TFP is the selection of the input-output specification. This is challenging in a network industry, however, we believe that the proposed specification incorrectly treats inputs as outputs. The proposed inclusion of transformer capacity as an output variable compounds this problem. We propose a simple test which illustrates the weaknesses of the proposed specification.

⁹ We do recognise that at some point in the future, EDBs are likely to experience a productivity revolution as technological advances in appliances catch up to the capabilities of smart meters. This should enable EDBs to improve capacity-utilisation, by being able to signal dynamically constraints on networks. This revolution, however, is more likely to be in the five to ten year bracket, rather than affecting EDBs in this regulatory period and may well raise new industry challenges.

111. The Commission proposes a refinement of the TFP measurement by multiplying the MVA-km output measure by transformer capacity to, in its view, better reflect the service delivered by EDBs. The Commission contends that an increase in transformer capacity relative to the growth in inputs represents a productivity increase. This is counter-intuitive: such an increase would reflect a *decline* in industry productivity: it now takes proportionately more transformer capacity to meet consumers' demands per MVA-km.

112. In Vector's view, the Commission and Economic Insights have mis-conceptualised the nature of the sector's production function. The industry exists to serve customers (i.e., ICPs), their peak demand requirements (kVA), at their chosen locations (distance). Productivity improvements arise where EDBs can improve capacity utilisation (more kWh delivered for an existing level of capacity). This can be achieved through effective price signalling to encourage consumers to flatten their load profiles and, where possible, improving network design to reduce the length of the (meshed) network to serve customers. The problem with the Commission's previous output/input specification and the proposed refined version, is that it does not capture this capacity utilisation concept in the design.

113. Incorrectly, the proposal includes MVA-km (a factor of production) to measure the output of the sector. A more correct specification of the output of the network would be a measure such as peak demand and kilometres of network (more ideally it would measure some aggregate of customers' distances from GXPs, but this would be impractical to measure) and compare this to the MVA-kms and transformer capacity to serve customers' demands at their locations.

114. A means of testing the appropriateness of the specification of the input-output function is to design possible specifications and test each element individually by asking the question: "what would happen to productivity if I double the variable?". If each variable test generates a sensible movement in productivity, then it should be considered a suitable candidate for inclusion in the productivity measure.

115. Under the Commission's proposed refinement, as we understand it, a doubling of transformer capacity would lead to an increase in the "output of the network" by $2 \times \text{MVA-km} \times \alpha$, where α is the share of the output in the output specification. Inputs would increase by $2 \times \beta$, where β is the share (i.e., less than 1) of transformer capacity in the input function. Hence, an overall doubling of transformer capacity would lead to an alleged productivity improvement. Notably, this input-output specification would not measure any correlation between the increase in transformer capacity and change in consumers' peak demand requirements, so consumers may not have changed their demands at all, yet

productivity would have increased! On this test, inclusion of transformer capacity in the output specification fails to generate a sensible directional movement in productivity.

116. Compare this with a specification that included peak demand as an output variable and transformer capacity as an input variable. Under this scenario, doubling transformer capacity would lead to an increase of $\beta \times 2$ in the input function. The extent to which consumers increase their peak demand relative to the increase in transformer capacity would indicate whether a productivity improvement has been achieved. Intuitively, this input/output specification would provide a superior measure of productive capacity of the network.

117. This thought experiment clearly demonstrates that the proposed refinement of treating transformer capacity as an output would be inappropriate and erroneously suggest that EDBs could improve their productivity by increasing transformer capacity regardless of customers' needs for such additional capacity.

118. Vector submits that the Commission needs to put further work into designing an appropriate input-output specification that avoids treating physical capital inputs as output variables. We suggest that the Commission design a number of possible specifications and consult with the industry on their viability.

User cost of capital

119. In the time available, Vector is unable to provide meaningful comment on the analysis that leads to the (weak) conclusion that indexed historic cost measures should be used in computing TFP estimates.

120. In relation, however, to some of the points made in the Discussion Paper, we note the following:

- (a) Given the methodological, parametric and data quality issues / uncertainties relating to TFP measurement, the conclusion that IHC approaches are methodologically better, is likely to be relatively unimportant in the estimation of long-run productivity trends;
- (b) The conclusion that the 2004 ODVs provide accurate information for deriving asset specific input cost shares (para 338) is unsubstantiated. EDBs held a number of concerns with the accuracy of the ODVs and it has been recognised that the ODVs were developed for comparative purposes, rather than for controls.

121. Accordingly, it would seem that the requirements for TFP analysis are not material to the choice of asset valuation approach for broader regulatory purposes and vice versa.

Input price differentials

122. In the time allowed for submissions we have not yet been able to assess the claims made in respect of the use of the TFP approach for deriving input price inflation trends. Again we would caution that it is important for the Commission to adopt a cautious stance in interpreting the results of previously unused models. Sense checking against EDBs actual experiences should be undertaken.

123. In regard to input price inflation trends facing the sector, we observe that Vector continues to face significant input price inflation above the CPI. There remain significant pressures on infrastructure development, particularly in an environment where fiscal stimulus is coming through infrastructure projects.

124. Vector submits that the Commission should work with the industry to develop a tool to measure key elements of input price inflation for use in future resets.

Section 7.4 Assessment of the price path

125. In this section we provide brief responses to select issues raised in the discussion of how the price path would be set and compliance assessed.

Pass-through of transmission costs

126. Vector supports the continued treatment of transmission charges as a pass-through cost as they are outside of the control of EDBs. Prices are determined by the Electricity Commission and the quantities with which they apply are ultimately determined by relative changes in end-consumer behaviour and Transpower's costs, which will include significant new capital costs in coming years.

127. In regard to the anomaly identified in respect of transmission cost pass-through (paragraphs 375-378), Vector submits that ideally any solution should attempt to be kept relatively simple. It is not clear to us that attempting to unbundle distribution and transmission charges would be straight-forward. We have not carried out any research into possible solutions, but potentially the proposal to update quantities on a one year lagged basis may assist in mitigating the extent of the anomaly.

Use of lagged CPI

128. Vector supports the use of a CPI measure that avoids the potential for technical breaches. The use of a lagged variable does create some risk if inflation becomes more volatile which may be more likely in the current economic environment. Vector submits that consideration should be given to use of a CPI forecast (e.g., RBNZ forecasts), with assessments made against that forecast. In order to ensure that prices reflect actual CPI movements over time, the subsequent CPI adjustment would correct for the difference between actual and forecast.

129. We believe that this approach would meet the Commission's objective of providing certainty by removing a source of technical breach, but enable EDBs to make price adjustments that pertain more closely to current economic conditions compared with the lagged CPI adjustment proposed.

Chapter 8: Quality Standards

Independent quality path

130. Vector supports use of a separate quality path initially. It would be desirable, however, to provide a regime that allows for linking price to quality, through the S-factor approach as soon as possible. Vector submits that this would be consistent with providing for greater certainty, since EDBs would be able to make explicit price-quality tradeoffs (based on consumer feedback) rather than be subject to an uncertain penalty-based regime. We recognise that before such a regime is implemented it will be important to ensure that data is robust and statistically valid approaches exist to establishing material changes in performance.

131. Vector believes that the Commission does not need to wait until the beginning of the next regulatory period to introduce an S-factor scheme. Vector considers that it is possible to adjust the price-quality path during the regulatory period to implement an s-factor scheme. As provided by section 52T(1)(c)(ii), input methodologies must identify the circumstances under which price-quality paths may be reconsidered within a regulatory period. The Commission is therefore capable of determining that a price-quality path can be revised in order to implement an S-factor incentive scheme.

132. Until such time as an S-factor scheme is introduced and research has been conducted into consumer willingness to pay for an improved service, Vector agrees that “no material deterioration” is an appropriate basis for the quality standard for EDBs. Breaches would therefore occur only when there is a material deterioration.

133. In the remainder of this section we comment on the Commission’s proposed framework and suggest a number of changes that would better achieve the Commission’s objective of identifying those EDBs whose quality has declined materially.

Robust statistical framework is required

134. The Commission has established a framework whereby it wishes to detect whether there has been “material deteriorations in performance”. A number of refinements to the threshold approach have been proposed, which seek to minimise the potential for technical breaches. In statistical terms this is avoiding the probability of Type II errors – or false positives.

135. A feature of the Commission’s proposal is that the mechanisms that seek to minimise false positives are developed without a clear statistical framework. The

ENA is submitting a review of the Commission's proposed approach by Statistical Research Associates which attempts to provide a more robust statistical foundation for a quality path regime.

Quality measures to be used

136. Vector agrees that the information disclosure regime is the most appropriate regulatory mechanism for including a consumer communication requirement.

137. Vector agrees that SAIDI and SAIFI measures should be used to assess EDBs' reliability performance.

Target period

138. Vector agrees with the suggestion that the period of 1 April 2005 to 31 March 2009 be used to set the historical performance levels against which performance will be assessed. It is appropriate to update the period to include the most recent years' performance data as this will most closely reflect current performance and, broadly speaking, the asset base¹⁰ used to provide that level of performance.

Methodology for assessing performance

139. Vector supports an approach that normalises quality performance data to remove faults caused by extreme events, which are by definition outside of an EDB's control. Vector considers that extreme event days should be either excluded from data used to assess performance or removed and replaced with average values.

140. Vector does not support continued use of the methodology where extreme event days continue to be replaced with boundary values, as there is no statistical justification for such an approach. The impact of following such an approach is to discriminate against businesses which have experienced comparatively few extreme weather events during the target-setting period (2005 to 2009) and provides an easier target for those that have experienced comparatively more frequent extreme weather events during the 2005 to 2009 period than expected. We note the Commission's statement that "[t]he Commission notes that the IEEE 2.5 Beta Method was successfully used to identify extreme events in assessing

¹⁰ We use the term broadly speaking because the ODV values optimise out a number of assets that are used to provide the quality of service currently experienced by consumers. There is an arguable case that the Commission should allow for lower levels of performance, consistent with a lower asset base if the 2004 ODVs continue to be used as the underpinning asset base.

breaches of the thresholds occurring in the years ending 31 March 2003 to 2008". No explanation is provided as to how "success" has been measured. The appropriate test would be how many businesses breached the thresholds but no action was taken, compared to how many businesses would not have breached under the unadjusted IEEE approach.

141. As we understand it, part of the Commission's reasoning for continuing with the IEEE 2.5 beta approach is out of a concern that if extreme days result in no SAIDI/SAIFI impact then EDBs will face little incentive to efficiently restore supplies in an extreme event. This concern is misplaced. EDBs face strong incentives to restore supply quickly following an extreme event as strong public and media pressure creates a reputational motivation to perform efficiently. Furthermore, replacing the extreme day SAIDI/SAIFI with boundary values does not create an incentive to restore supplies more quickly, since all minutes or interruptions above the boundary value are irrelevant once the boundary value has been exceeded. Furthermore, in storm situations, SAIDI/SAIFI calculations are undertaken after the event.

Mechanisms to reduce technical breaches

142. Vector agrees with the Commission's intention to minimise the risk of technical breaches. To that end, we welcome the discussion of dead-bands, moving averages and multi-year assessment schemes.

143. Vector considers that a dead-band should be set around the target and performance within the band should be considered to have met the target. Given the normal variability in quality performance, this is a statistically reliable means of reducing the risk of technical breaches.

144. The Commission raises a number of possible approaches in paragraph 425 for establishing a dead-band. Vector submits that a statistically robust approach to setting a dead-band would be by standard deviation. A fixed percentage or absolute value does not have any reliable statistical basis and would not be consistent with the principle of consistency, as firms with relatively more variable SAIDI/SAIFI performance would be disadvantaged.

145. Vector considers that a standard deviation using only 5 previous years of data could produce unusual results given the small number of data points. Vector recommends using a standard deviation of the previous 10 years' average performance for both SAIDI and SAIFI.

146. It was not clear to Vector from reading the consultation paper whether the Commission was proposing moving averages and multi-year assessments in addition to dead-bands or as alternatives to dead-bands. Vector submits that multi-year assessments in combination with dead-bands can assist in mitigating the probability of false positives. In selecting a particular number of standard deviations, the Commission will effectively be making a judgement on the number of false positives. For example, selecting one standard deviation for the dead-band would be consistent with accepting a 16% probability of false breaches (assuming normality).

147. This probability of false positives could be reduced through either increasing the percentile in the distribution or adopting multi-year assessment criteria. So for example, the probability of false positives could be reduced to 2.6% by adopting a criteria that a breach occurs where actual performance exceeds one standard deviation of the average performance two years running (i.e., 0.16×0.16). The advantage of this multi-year approach is that it reduces the probability of false positives significantly, without increasing the dead-band in any given year.

148. Vector does not currently advocate any particular approach. Further statistical analysis is required to develop a robust approach that ensures consistent treatment of EDBs. The ENA is providing a report from Statistical Research Associates that will provide further analysis of these issues.

SAIFI and SAIDI breaches do not always coincide

149. Vector has identified a possible anomaly with the function of the Beta method regarding SAIFI. Under the current application of the IEEE 2.5 Beta method, during major event days, the actual SAIDI value is replaced with a boundary value. The rules require that the day's actual SAIFI value is also replaced with a boundary value. However, the identification of major event days is based on SAIDI rather than SAIFI and there are major event days where the SAIDI boundary is breached but the SAIFI boundary is not. A strict reading of the rules would suggest that on these days the actual SAIFI value should be replaced with the (higher) SAIFI boundary value. Such a practice is clearly not sensible. Where the boundary value is higher than the actual value the rules should not require that the actual SAIFI value be replaced with the boundary value.

150. It appears that the rules were devised on the basis of an incorrect assumption that both SAIFI and SAIDI thresholds will always be breached together on major event days. There are major event days where SAIDI breaches the threshold but SAIFI does not. In the previous 10 regulation years, there have

been no instances where SAIFI has breached independently of SAIDI. Therefore Vector recommends that any new methodology does not require SAIFI actual values to be replaced unless the SAIFI value has breached, irrespective of the SAIDI value.

151. As we note above, the Commission's application of the IEEE 2.5 beta approach is statistically unsound and leads to a confused measure of reliability performance. This issue may be resolved if the IEEE methodology was applied with extreme days replaced by the average values or those days were excluded altogether.

Concluding comments on proposed approach to quality

152. Overall, Vector submits that the Commission should set quality thresholds based on a sound statistical foundation. While the Commission's proposals represent an improvement on the thresholds regime, where the probability of false positives was approximately 50% (depending on the incidence of extreme events in the target-setting period), the suggested approach provides an unclear statistical basis for avoiding false positives (breaches).

153. The proposed approach is likely to lead to inconsistency of treatment of different EDBs and an unreliable basis for detecting material deterioration in quality performance, as the statistical properties of the proposals are unclear.

154. Vector recommends that the Commission adopt an approach that:

- (a) Adopts the IEEE approach without the 2.5 beta variation;
- (b) Ensures that the approaches used to set targets and assess performance are statistically robust and clearly target a particular probability of tolerance for false breaches;
- (c) Sets dead-bands using individual standard deviations to set the bands, combined with multi-year assessments to minimise the potential for false positives;
- (d) Establishes a tolerance for false positives based on providing EDBs with certainty that they will not be unduly exposed to the costs associated with defending against false breaches.

155. In relation to the bullet point (d) above, Vector submits that a tolerance of 5% would be a reasonable approach. In effect, as all EDBs are likely to seek to

comply with the quality path given the uncertain consequences of being in contravention of the law, so there should only be a low probability of being exposed to false breaches.

Concluding comments

156. It is apparent from the Commission's Discussion paper that there remains significant work to be undertaken on developing the framework and detail of DPPs consistent with meeting the objectives of Part 4. We believe that this submission has raised a number of approaches that would better assist in meeting those objectives.

157. We note that the Commission has provided little scope for further engagement with EDBs through the remainder of this process. It appears that further consultation will, like the present consultation, be through a "big bang" consultation exercise, where the Commission simultaneously consults on all elements of the framework and detailed implementation. In our view, this does not provide a framework for achieving the best possible outcomes and creates high risk of unintended consequences. We would value opportunities to present further detail on the specific proposals set out in this response or assist the Commission in other ways.