

Setting Transpower's individual price-quality path for 2015—2020

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Decisions and reasons on how Transpower's individual price-quality path will operate, and Transpower's expenditure allowances and grid output measures, for the 2015—2020 regulatory period

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Sue Begg

Dated at Wellington this 29th day of August 2014

Regulation Branch
Commerce Commission

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Executive Summary

- X1 We are in the process of setting the individual price-quality path for Transpower New Zealand Limited (Transpower) for the next regulatory period from 1 April 2015 to 31 March 2020 (referred to in this paper as RCP2). The path we are setting will be Transpower's second individual price-quality path.
- X2 This paper provides our decisions and supporting reasons for:
- X2.1 why we have used Transpower's existing individual price-quality path as a starting point and how we see the price-path evolving;
 - X2.2 the enhancements we have made to Transpower's existing individual price-quality path;
 - X2.3 how we will calculate Transpower's maximum revenues for each year of RCP2, and the effect of incentive mechanisms on Transpower's revenues;
 - X2.4 certain key inputs to the individual price-quality path, as required by the Commerce Act and the Capex IM; and
 - X2.5 Transpower's compliance reporting obligations, including the requirements to report on performance measure development and business improvement initiatives.
- X3 We have made decisions on the following key inputs:
- X3.1 the grid output measures and quality standards for RCP2;
 - X3.2 Transpower's opex and base capex allowances for each year of RCP2; and
 - X3.3 the incentive rates that will apply to Transpower's incentive mechanisms.
- X4 We will not finalise Transpower's individual price-quality path until 28 November 2014 as Transpower's weighted average cost of capital (WACC) is needed to calculate maximum revenues. We expect to determine the WACC rate for RCP2, by 31 October.

Transpower is subject to individual price-quality path regulation

- X5 We are required to set Transpower's individual price-quality path under Part 4 of the Commerce Act 1986.
- X6 Transpower's individual price-quality path determines the maximum revenues that it can recover from consumers for its electricity transmission services, as well as the quality standards it must meet, for each year of the regulatory period.
- X7 The price-quality path relates to the transmission services provided by Transpower and excludes system operator revenues. Certain rules and processes, referred to as input methodologies, apply to how we set the price-quality path and how Transpower complies with it.

Our decisions follow a detailed review and consultation process

- X8 On 2 December 2013, Transpower submitted a quality and expenditure proposal as required by the *Transpower Capital Expenditure Input Methodology 2012* (Capex IM) and an information gathering notice we issued. The proposal included Transpower's proposed operating expenditure (opex) and base capital expenditure (base capex) allowances, and grid output measures for RCP2.¹
- X9 Our decisions follow a detailed review of Transpower's proposal consistent with the Capex IM and a thorough consultation process. As part of this process we engaged independent experts, Strata Energy Consulting Limited and Partna Consulting Limited, to help inform our decisions in certain areas.²

We have set a clear direction for developing Transpower's individual price-quality path

- X10 We have provided for expenditure allowances where a business case has been justified and is likely to provide prudent and efficient outcomes based on the information Transpower has provided.
- X11 In some areas, this justification and supporting information was not necessarily evident in Transpower's proposal and has required follow up requests for information. The improved justification provided in Transpower's submission on our draft decisions and its responses to our requests for further information has given rise to substantial reinstatements of expenditure in our final decisions.
- X12 The quality standards and grid output measures we have set are largely the same as Transpower's proposed measures and targets—this includes a number of asset health measures that Transpower proposed in response to our concerns that we

¹ Transpower's proposal can be found on our website at <http://www.comcom.govt.nz/regulated-industries/electricity/electricity-transmission/transpower-individual-price-quality-regulation/transpowers-price-quality-path-from-2015-to-2020/>.

² Our consultation documents and expert reports are also available on our website.

expressed in our draft decision on the deliverability of proposed replacement and refurbishment work programme.

- X13 We have applied a suite of incentives that will encourage Transpower to make efficiencies and innovate. A number of these incentives apply for the first time, including measures that link grid outputs to revenues.
- X14 As a package, our decisions will allow Transpower to prudently manage its network and prioritise investment to achieve quality outcomes demanded by its customers. Our decisions also provide clear direction on our views for future development.
- X15 Over the course of RCP2 our role continues. We will assess compliance against the requirements that we have set for the price-quality path. We will monitor Transpower's performance and expenditure, and the delivery of its work programme through its information disclosures. We will also keep track of how Transpower is building towards its RCP3 proposal by monitoring its progress against the business improvement initiatives it undertakes.

How Transpower's maximum allowable revenue will be calculated

- X16 We have used Transpower's existing individual price-quality path as a starting point for determining the maximum revenues that it can recover from its consumers.
 - X16.1 Transpower's forecast maximum allowable revenue (MAR) will continue to be calculated using a building blocks approach with a 'MAR wash-up.'
 - X16.2 Pass-through and recoverable costs will be added to the forecast MAR to arrive at the forecast revenue that Transpower can recover from its consumers.
 - X16.3 The MAR wash-up will correct for any over- or under-recovery from consumers owing to, for example, the timing of capex commissioning differing from the forecast timing.
- X17 We have made enhancements to the individual price-quality path that was in place for the first regulatory period (RCP1) to better promote the purpose of Part 4 of the Commerce Act.³ Key changes from RCP1 to RCP2 are:
 - X17.1 incentive mechanisms will apply to the base capex and quality standards as provided for by the Capex IM;
 - X17.2 Transpower will be able to voluntarily under-recover from consumers if it wishes, without the under-recovery being 'washed-up' and recovered from consumers in a subsequent year;

³ Commerce Act 1986, s 52A.

- X17.3 economic value account (EV account) adjustments are able to be smoothed over more than one year to avoid price shocks;
- X17.4 mid-year cash-flow timing assumptions will be applied to forecast MAR and MAR wash-up building blocks to better account for the time-value of money; and
- X17.5 certain large reconductoring projects that would otherwise be quantified in the base capex allowance will be 'listed', with approval of the related base capex of a 'listed project' being given on an individual basis during RCP2 once certain criteria have been met.⁴

Grid output measures and quality standards for RCP2

- X18 With additional incentive mechanisms applying for the first time in RCP2, the incentives for Transpower to reduce costs will be more consistent over time and stronger overall.
- X19 Given the need to balance incentives to cut spending and incentives to maintain service quality, it is therefore appropriate that we also introduce stronger quality incentives at this time by linking grid output measures to revenue. Linking quality to revenue shares the benefits of improved transmission reliability between Transpower and consumers, just as the expenditure incentives shares cost variations.
- X20 We have set 23 revenue-linked grid output measures and three grid output measures that are not linked to revenue.

We have set 23 revenue-linked grid output measures

- X21 The 23 revenue-linked grid output measures are grouped as follows:
 - X21.1 Asset performance (AP) measures, for which there are two measures: AP1 and AP2.
 - X21.2 Grid performance (GP) measures, for which there are three measures: GP1 to GP3 that each have five categories that represent different points of service. There are a total of 15 GP measures.
 - X21.3 Asset health measures (AH), for which there are six measures for six fleets of assets: AHM1 to AHM6. Three of the measures have yearly targets and the other three have targets for the regulatory period. These measures have volumetric output targets.

⁴ Our current view is that the process requirements for the approval of base capex related to listed projects should be set out in the Capex IM rather than the individual price-quality path determination, as this is more consistent with s 54S of the Act. We will further consult on where the processes for approving base capex relating to listed projects should be determined.

- X22 The quality standards for RCP2 are the same as the targets for the revenue-linked grid output measures.
- X23 Each of the 23 revenue-linked measures has a target, cap, collar, and incentive rate. The cap and collar set the range of performance for which Transpower will be penalised or rewarded, with the cap being the upper bound for rewards. The incentive rate is the dollar amount of revenue loss or gain for each unit of deviation from the target.
- X23.1 For the asset performance and grid performance measures, \$10 million of revenue will be at risk each year through the grid output adjustment mechanism. This is roughly 1% of revenue.
- X23.2 For the asset health measures, \$14.3 million of revenue will be at risk over RCP2 (or approximately \$2.9 million each year). This is roughly 0.3% of revenue.
- X24 The revenue at risk for the asset health measures is linked to six asset fleets covering about 68% of the value of the replacement and refurbishment capex. The revenue at risk will back-out any benefits that Transpower may achieve through base capex adjustment for any under-delivery against the replacement and refurbishment programme and further incentivise delivery. We have set the asset health measures as we had concerns about Transpower's ability to deliver its work programme.
- X25 Table X1 summarises the 17 revenue-linked grid output measures and quality standards for asset performance and grid performance.
- X26 Table X2 summarises the six asset health grid output measures that are linked to revenue.

Table X1: Revenue-linked asset performance and grid performance measures

Grid output measure	Point of service category	Quality standard	Grid output target	Cap	Collar	Incentive rate (\$000 per unit from target)
Asset performance measures						
Availability of circuits (%)	AP1: HVDC	98.5	98.5	99.5	97.5	1,000
	AP2: HVAC	99.6	99.6	100	99.2	2,500
Grid performance measures						
GP1: Number of unplanned interruptions (each year)	High Priority	2	2	0	4	606
	Important	9	9	4	14	242
	Standard	26	26	21	31	133
	Generator	11	11	6	16	133
	N-security	56	56	38	74	10
GP2: Average duration of unplanned interruptions (in minutes each year)	High Priority	70	70	30	110	15
	Important	100	100	30	170	9
	Standard	65	65	0	130	5
	Generator	130	130	50	210	4
	N-security	80	80	45	115	3
GP3: Duration of the 90th percentile duration of unplanned interruptions (in minutes each year)	High Priority	120	120	80	160	15
	Important	240	240	170	310	9
	Standard	130	130	60	200	5
	Generator	350	350	260	440	4
	N-security	215	215	170	260	3

Table X2: Asset health grid output measures that are linked to revenue

Grid output measure	Disclosure year	Quality standard	Grid output target	Cap	Collar	Incentive rate (\$000 per unit from target)
AH1: Number of towers painted	2015/16	451	451	489	413	29.7
	2016/17	529	529	567	491	29.7
	2017/18	531	531	569	493	29.7
	2018/19	553	553	591	515	29.7
	2019/20	564	564	602	526	29.7
AH2: Number of grillages commissioned	2015/16	408	408	438	378	10.2
	2016/17	408	408	438	378	10.2
	2017/18	408	408	438	378	10.2
	2018/19	409	409	439	379	10.2
	2019/20	409	409	439	379	10.2
AH3: Number of insulators commissioned	2015/16	1,526	1,526	1,630	1,422	2.1
	2016/17	1,466	1,466	1,570	1,362	2.1
	2017/18	1,402	1,402	1,506	1,298	2.1
	2018/19	1,315	1,315	1,419	1,211	2.1
	2019/20	1,380	1,380	1,484	1,276	2.1
AH4: Number of outdoor circuit breakers commissioned	2015-20	155	155	166	144	51.8
AH5: Number of transformers commissioned	2015-20	26	26	28	24	1,370
AH6: Number of outdoor to indoor conversions commissioned	2015-20	16	16	17	15	2,710

Note: All 'commissioned' quantities refer to assets commissioned due to replacement capex.

We have set three grid output measures that are not linked to revenue

- X27 We have also set three additional grid output measures are not linked to revenue. These grid output measures have targets relating to the average remaining life (in years) of Transpower's transmission tower coating, transformers, and outdoor circuit breakers and have associated reporting requirements.
- X28 These measures form part of a pilot reporting on asset health measures to ensure the revenue-linked asset health measures are providing appropriate incentives and with a view to linking these measures to revenue for RCP3.
- X29 Table X3 sets out the asset health measures that are not linked to revenue.

Table X3: Asset health measures that are not linked to revenue

Grid output measure	Disclosure year	Grid output target	Cap	Collar
AH1RL: Change in average remaining life of tower coating of transmission tower fleet	2015/16	-0.696	-0.674	-0.718
	2016/17	-0.565	-0.543	-0.587
	2017/18	-0.678	-0.656	-0.700
	2018/19	-0.712	-0.690	-0.734
	2019/20	-0.697	-0.675	-0.719
AH4RL: Change in average remaining life of outdoor circuit breaker fleet	2015-20	-0.258	0.010	-0.526
AH5RL: Change in average remaining life of transformer fleet	2015-20	-0.194	-0.028	-0.359

Opex and base capex allowances

X30 We have set nominal opex and base capex allowances for each year of RCP2, as set out in Table X4. The base capex allowance does not include any amounts of base capex for 'listed projects.' Those amounts will be quantified during RCP2 as the base capex of these projects is approved.

Table X4: Opex and base capex allowances (nominal) for each year of RCP2

	2015/16	2016/17	2017/18	2018/19	2019/20	Total RCP2
Opex (\$m)	276.6	284.6	292.5	294.0	296.4	1,444.0
Base capex (\$m)	235.2	249.5	242.0	231.6	213.1	1,171.5

Note: The base capex allowances above are commissioned amounts and include Transpower's proposed 7.5% 'productivity' adjustment. Figures may not add exactly due to rounding.

We have evaluated Transpower's proposal in 2012/13 constant prices

X31 Transpower's expenditure proposal was submitted on a 2012/13 constant prices basis. We assessed Transpower's proposed expenditure on the same basis.

X32 We have not allowed Transpower the full amount of its proposed expenditure. This is because we found aspects of its proposal that we considered insufficiently justified.

X33 The adjustments we have made to Transpower's proposed expenditure in constant price terms are shown in Table X5.

Table X5: Total expenditure adjustments for RCP2 (2012/13 constant prices)

	Transpower's proposal (\$m)	Our adjustments (\$m)	Approved expenditure (\$m)
Opex	1309.3	-20	1,289.3
Base Capex	1188.7	-56.5	1,132.2

Note: Transpower's proposed opex allowance excludes any proposed allowance for demand response or Consumer Guarantees Act indemnity payments which Transpower proposed in submissions. Figures may not add exactly due to rounding.

Compliance reporting requirements

X34 To demonstrate compliance with the individual price-quality path, Transpower will be required to publish:

X34.1 a pricing compliance statement each December when setting its customer charges for the upcoming pricing year; and

X34.2 an annual compliance statement in October following each disclosure year.

X35 The annual compliance statement will include information necessary to make updates to forecast revenue for the upcoming pricing year eg, to give effect to incentive mechanism adjustments.

X36 We will make any necessary updates to the forecast revenues each November. This is broadly consistent with our approach in RCP1.

Business improvement and performance measure development initiatives

X37 We have identified areas that it would be helpful for Transpower to develop before submitting its next proposal in 2018 and have suggested a number of business improvement initiatives.

X38 These are a continuation of current initiatives undertaken by Transpower and have been informed by observations about the processes Transpower used to develop its work programme and expenditure allowances for RCP2.

X39 We have also identified performance measures that Transpower should develop for potentially linking to revenue in RCP3.

1. Introduction

- 1.1 Under Part 4 of the Commerce Act 1986 (the Act), we are responsible for determining an individual price-quality path for the electricity lines services supplied by Transpower.
- 1.2 We are in the process of setting an individual price-quality path to apply to Transpower New Zealand Limited (Transpower) for the next regulatory period from 1 April 2015 to 31 March 2020. This period is referred to in this paper as RCP2. The path we are setting will be Transpower's second individual price-quality path.
- 1.3 Transpower's individual price-quality path determines the maximum revenues that it can recover from consumers, as well as the quality standards it must meet, for each year of the regulatory period.
- 1.4 On 2 December 2013, we received Transpower's quality and expenditure proposal for RCP2. This proposal was required by the *Transpower Capital Expenditure Input Methodology Determination 2012* (Capex IM) and an information gathering notice we issued.⁵
- 1.5 The proposal includes Transpower's proposed operating expenditure (opex) and base capital expenditure (base capex) allowances, and grid output measures.⁶ These are important inputs to the individual price-quality path.
- 1.6 We will not finalise Transpower's individual price-quality path until 28 November 2014 as Transpower's weighted average cost of capital (WACC) is needed to calculate maximum revenues. We expect to determine the WACC rate for RCP2, by 31 October.

Purpose of this paper

- 1.7 This paper provides our decisions and supporting reasons concerning Transpower's individual price-quality path for:
 - 1.7.1 why we have used Transpower's existing individual price-quality path as a starting point and how we see the price-path evolving;
 - 1.7.2 the enhancements we have made to the operation of Transpower's existing individual price-quality path;

⁵ The information gathering notice is on our website: <http://www.comcom.govt.nz/dmsdocument/10182>

⁶ Transpower's proposal is on our website at www.comcom.govt.nz/regulated-industries/electricity/electricity-transmission/transpower-individual-price-quality-regulation/transpowers-price-quality-path-from-2015-to-2020/.

- 1.7.3 how we will calculate Transpower's maximum revenues for each year of RCP2, and the effect of incentive mechanisms on Transpower's revenues;
 - 1.7.4 certain key inputs to the individual price-quality path, as required by the Commerce Act and the Capex IM; and
 - 1.7.5 Transpower's compliance reporting obligations, including the requirements to report on performance measure development and business improvement initiatives.
- 1.8 We have made decisions on the following key inputs:
- 1.8.1 the grid output measures and quality standards for RCP2;
 - 1.8.2 Transpower's opex and base capex allowances for each year of RCP2; and
 - 1.8.3 the incentive rates that will apply to Transpower's incentive mechanisms.
- 1.9 The Capex IM requires most of these inputs to be set by 29 August 2014.

Key features of the Capex IM come into effect for RCP2

- 1.10 This is the first regulatory period where all rules and processes set out in the Capex IM will apply. This includes:
- 1.10.1 the base capex expenditure adjustment, which incentivises efficiency for base capex;
 - 1.10.2 the base capex policies and processes adjustment, which encourages Transpower to follow its process and policies;
 - 1.10.3 the grid output adjustment, which links grid output measures to revenue; and
 - 1.10.4 the major capex threshold increasing from \$5 million to \$20 million.
- 1.11 These new features increase Transpower's incentives for efficiency, and to further consider the trade-offs of expenditure decisions.
- 1.12 Amendments to the *Transpower Input Methodologies Determination 2010* (Transpower IMs) and the Capex IM have also been made.⁷ Where relevant, these input methodologies have been applied in reaching our decisions.

⁷ See Commerce Commission "Amendments to input methodologies for Transpower 2014" (28 August 2014).

How we have structured this paper

- 1.13 In Chapter 2 we estimate the likely effect of our decisions on Transpower's revenue and pricing. We also set out how the expenditure allowances we have set compare to the first regulatory period (RCP1).
- 1.14 Chapter 3 sets out enhancements to Transpower's individual price-quality path from RCP1. This covers how Transpower's allowed revenues for each year of RCP2 will be calculated, how building blocks will be used to calculate revenues, how this revenue will be 'washed-up' each year, and the effect that incentive mechanisms will have on revenue.
- 1.15 Chapter 3 should be read in conjunction with Attachment A which sets out why we have used the RCP1 individual price-quality path as a starting point and how we see the individual price-quality path evolving over time.
- 1.16 Chapter 4 sets out our decisions on the quality standards and grid output measures for RCP2. These cover both grid output measures that are revenue-linked and grid output measures that are not revenue-linked. These measures concern Transpower's service performance, the delivery of Transpower's work programme, and the health of Transpower's assets.
- 1.17 Chapter 5 explains our decisions on the opex and base capex allowances for each year of RCP2.
- 1.18 Chapter 6 then discusses our decisions on Transpower's compliance reporting obligations. This covers the compliance information Transpower is required to publicly disclose each year and requirements relating to the development of business improvement and performance measure development initiatives.
- 1.19 We have evaluated Transpower's base capex and grid output measures in accordance with the evaluation criteria outlined in the Capex IM. We have evaluated Transpower's opex proposal in a similar manner.
- 1.20 Attachment B explains the assessment and consultation approach we have followed. This includes the input methodologies we have adhered to when assessing Transpower's proposal and how we have worked with our independent consultants. We have reached our decisions after a thorough consultation process. A summary of our consultation process is set out in Attachment B.
- 1.21 Attachment J provides a summary of the decisions we are required to make under the Capex IM.
- 1.22 The remainder of the attachments to this paper provide detail additional to the chapters.

What this paper does not cover

- 1.23 The matters listed below are not covered in this paper.
- 1.23.1 Decisions on input methodology amendments. We have published our decisions on a number of input methodology amendments alongside this paper. See Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014) and the summary included in Attachment J.
 - 1.23.2 Approval of major capex – this is done on a project by project basis throughout the regulatory period.
 - 1.23.3 The dollar amount of revenue that Transpower will be allowed to recover from consumers for each year of RCP2. See below for the process to finalise the individual price-quality path.
 - 1.23.4 The WACC rate used in setting Transpower’s maximum revenues.
 - 1.23.5 The Transmission Pricing Methodology (TPM). This is governed by the Electricity Authority.

Our process to finalise the individual price-quality path

- 1.24 We will publish the final individual price-quality path determination, including the forecast maximum revenues, by 28 November 2014.
- 1.25 By 12 September, we intend to publish a final draft Transpower individual price-quality path determination for technical consultation on the legal drafting to ensure we have accurately given effect to our decisions.
- 1.26 At this time we also intend to issue Transpower with an information gathering notice that will require it to apply our decisions to calculate its forecast maximum revenues for RCP2. We will use this information to finalise Transpower’s individual price-quality path.
- 1.27 We are currently consulting on further input methodology amendments that relate to Transpower’s individual price-quality path. We have recently published draft decisions on amendments to:
- 1.27.1 the WACC input methodologies.⁸ We expect the WACC rate that will apply to Transpower’s individual price-quality path for RCP2 will be published by 31 October 2014; and

⁸ See Commerce Commission “Proposed amendment to the WACC percentile for electricity lines services and gas pipeline services” (22 July 2014).

- 1.27.2 the incremental rolling incentive scheme (IRIS) input methodologies.⁹ Any IRIS input methodology amendment will be implemented outside of the individual price-quality path determination. This is discussed further in Attachment B.
- 1.28 We will further consult on the process for the approval of base capex of ‘listed projects.’ Our earlier view on which we consulted was that the listed projects mechanism should form part of the individual price-quality path determination.¹⁰
- 1.29 We now consider that the process requirements should instead be set out in the Capex IM, as this is more consistent with section 54S of the Act. We expect the listed projects input methodology that will apply to Transpower’s individual price-quality path for RCP2 will be published by 31 October 2014.
- 1.30 Table 1.1 summarises the next steps in our process for finalising the individual price-quality path determination.

Table 1.1: Next steps in our process

Process step	Indicative date
Issue information gathering notice to Transpower to calculate its forecast maximum revenues	12 September 2014
Publish final draft Transpower individual price-quality path determination for technical consultation	12 September 2014
Submissions due on technical drafting of the individual price-quality path determination	26 September 2014
Publish cost of capital determination for Transpower’s individual price-quality path	31 October 2014
Publish amendment to Capex IM for listed projects mechanism	31 October 2014
Response to information gathering notice is due	14 November 2014
Publish final individual price-quality path determination	28 November 2014

⁹ See Commerce Commission “Proposed amendments to input methodologies: Incremental Rolling Incentive Scheme” (18 July 2014).

¹⁰ We consulted on this as part of our draft decision. For the mechanism we consulted on see Commerce Commission “Draft Transpower Individual Price-Quality Path Determination 30 May 2014” (30 May 2014), page 6, clause 12.

2. Projected impact of our decisions on revenues and pricing

Purpose of this chapter

- 2.1 This chapter sets out:
- 2.1.1 the projected impact of our decisions on the revenues Transpower will be allowed to earn over RCP2 compared with RCP1;
 - 2.1.2 how the expenditure allowances we have set compare to RCP1; and
 - 2.1.3 what may change during the period that would affect Transpower's revenues.

The projected impact of our decisions on revenues

- 2.2 Tables 2.1 and 2.2 set out estimates of Transpower's nominal forecast revenues for RCP2 based on our decisions, a number of assumptions, and two possible WACC rates.
- 2.3 Transpower's forecast revenue comprises forecast maximum allowable revenue (MAR), which we determine, plus pass-through and recoverable costs, which are costs outside of Transpower's control.
- 2.4 The revenue forecasts below include the revenue impact of approved and non-approved major projects and listed projects to be commissioned, as well as the base capex and opex allowances we have set.¹¹
- 2.5 We are currently consulting on an amendment to the cost of capital input methodology.¹² An amendment, if made, would reduce the percentile estimate used to calculate allowed revenues. Any amendment would be made by 31 October 2014.
- 2.6 In the revenue forecast below we have used two different percentile estimates for our forecast of the WACC rate.
- 2.7 Table 2.1 uses a vanilla WACC rate of 7.30%.¹³ This reflects our draft decision to amend the cost of capital input methodology to use the 67th percentile estimate of the WACC range.

¹¹ For an overview of the assumptions used, see Transpower's forecast of revenue at: https://www.transpower.co.nz/sites/default/files/uncontrolled_docs/RCP2%20revenue%20-%20revised%20forecast%20%28July%202014%29.pdf. See Attachment D for information on listed projects.

¹² See <http://www.comcom.govt.nz/regulated-industries/input-methodologies-2/further-work-on-wacc/>.

- 2.8 Table 2.2 uses a vanilla WACC rate of 7.55%. This is the 75th percentile estimate consistent with the current cost of capital input methodology.
- 2.9 For comparison, the WACC rate for RCP1 was 8.05%.

Table 2.1: Estimate of forecast revenues for RCP2 (7.30% WACC – 67th percentile)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total RCP2
Forecast revenue (\$m)	950	920	950	970	970	990	4800
Change from previous year	-	-3.2%	3.3%	2.1%	0%	2.1%	-

Note: For comparison, the shaded area shows last disclosure year of RCP1.

Table 2.2: Estimate of forecast revenues for RCP2 (7.55% WACC – 75th percentile)

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total RCP2
Forecast revenue (\$m)	950	930	970	990	990	1000	4880
Change from previous year	-	-2.1%	4.3%	2.1%	0%	1%	-

Note: For comparison, the shaded area shows last disclosure year of RCP1.

Transpower's revenue is predicted to increase by 4-5% by the end of RCP2

- 2.10 Tables 2.1 and 2.2 show that Transpower will have relatively modest increases in its revenue over RCP2. This is consistent with Transpower moving to more business as usual operations following the large capex projects of RCP1 eg, the North Island Grid Upgrade (NIGU) Project.
- 2.11 From the last year of RCP1 (2014/15) to the last year of RCP2 (2019/20), Transpower's revenue is predicted to increase by between 4-5%. This reflects an initial reduction in revenues in 2015/16 of 2-3% resulting from the likely reduction in the WACC rate.¹⁴
- 2.12 Following the initial decrease in revenue at the start of RCP2, revenue then increases by 7% over the rest of RCP2. As a comparison, Consumers Price Index (CPI) inflation can be expected to be greater than 10% over the period.

¹³ All WACC rates used in this chapter are expressed as 'vanilla' rates, as opposed to post-tax. A vanilla WACC does not incorporate the interest tax shield associated with debt financing costs. The WACC rates used in this chapter were estimated in July 2014. We will update Transpower's WACC rate before finalising the individual price-quality path determination on 28 November 2014.

¹⁴ The decrease in revenue in the 2015/16 year shows that the likely decrease in the WACC rate (regardless of the percentile estimate used) will have a material impact on Transpower's revenue.

How our decisions affect electricity prices

- 2.13 As Transpower comprises only a part of the electricity supply chain, changes to Transpower's revenue will not translate directly into corresponding changes in electricity prices for individual consumers.
- 2.14 The Electricity Authority estimates that transmission charges make up about 7.5% of a typical household electricity bill.¹⁵
- 2.15 Our decisions affect electricity prices in different ways.
- 2.15.1 The opex allowance that we approve directly affects prices paid by consumers in RCP2 for the transmission component of an electricity bill as this is immediately recovered by Transpower.
- 2.15.2 The recovery of the base capex allowance, however, is spread over a longer-term and has a less direct effect on prices. This is because the capex we approve will be added to Transpower's asset base with the return on these assets, as well as depreciation of the assets, being recovered from consumers over the asset's useful lives which are typically 30–40 years.

Changes in revenue, base capex, and opex allowances over RCP1 and RCP2

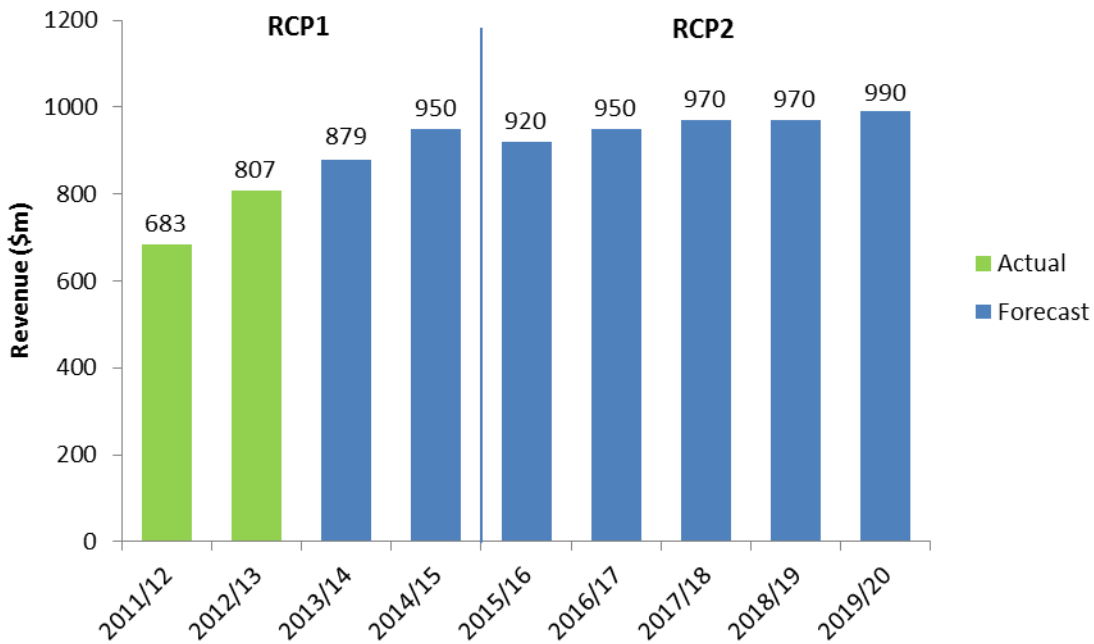
- 2.16 Below we set out how Transpower's revenue, base capex and opex are expected to change from RCP1 to RCP2 as a result of our decisions.

Revenue

- 2.17 As discussed above, Transpower's revenue is flattening off as it enters more business as usual operations following the large capex projects in RCP1. These saw Transpower's asset base increase from \$2.8 billion to \$4.6 billion with a consequent marked increase in its revenue allowance.
- 2.18 Transpower's revenues over RCP1 and RCP2 are shown in Figure 2.1 below.

¹⁵ See <http://www.ea.govt.nz/consumers/about-your-power-bill/>.

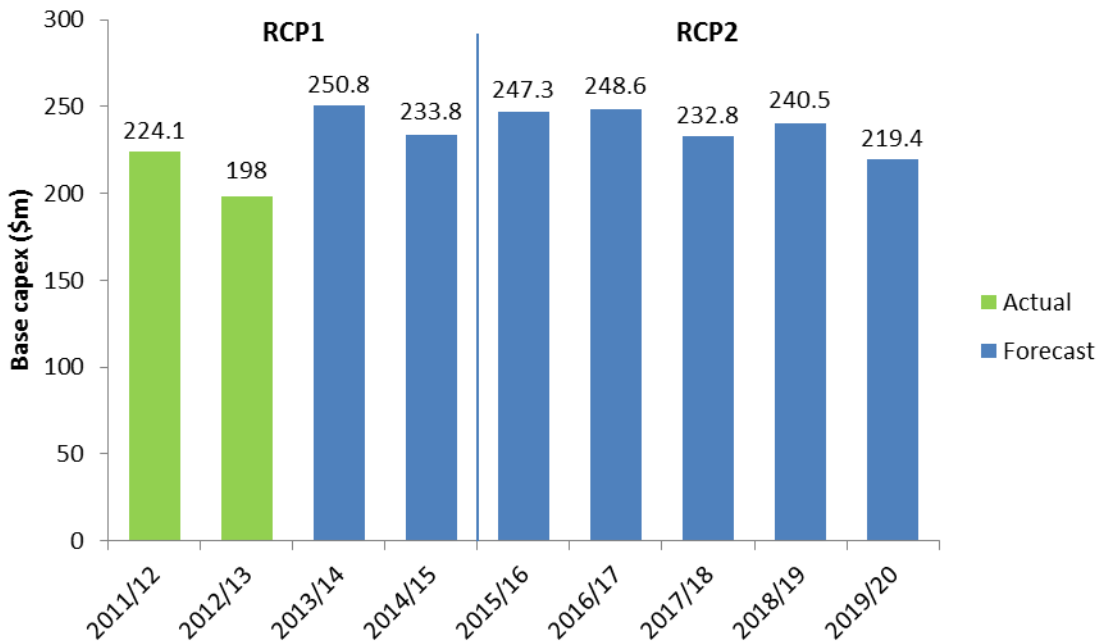
Figure 2.1: Transpower's revenue over RCP1 and RCP2 – 7.30% WACC (67th percentile)



Base capex

- 2.19 Figure 2.2 shows Transpower's base capex over RCP1 and RCP2 on a 2012/13 constant prices basis.
- 2.20 The threshold between major capex and base capex for enhancement and development expenditure is increasing to \$20 million in RCP2, from \$5 million in RCP1. As a result, certain projects between \$5-20 million, which would have been classified as major capex in RCP1, will be included in the base capex allowance for RCP2.
- 2.21 Note also that the base capex in Figure 2.2 does not include any allowance for certain listed projects for which base capex may be approved during RCP2. The indicative total for forecast commissioned base capex for listed projects is \$118 million over RCP2.
- 2.22 Taking these factors into account, RCP2 base capex is expected to be broadly in line with RCP1 base capex on average.

Figure 2.2: Base capex over RCP1 and RCP2 (2012/13 constant prices)

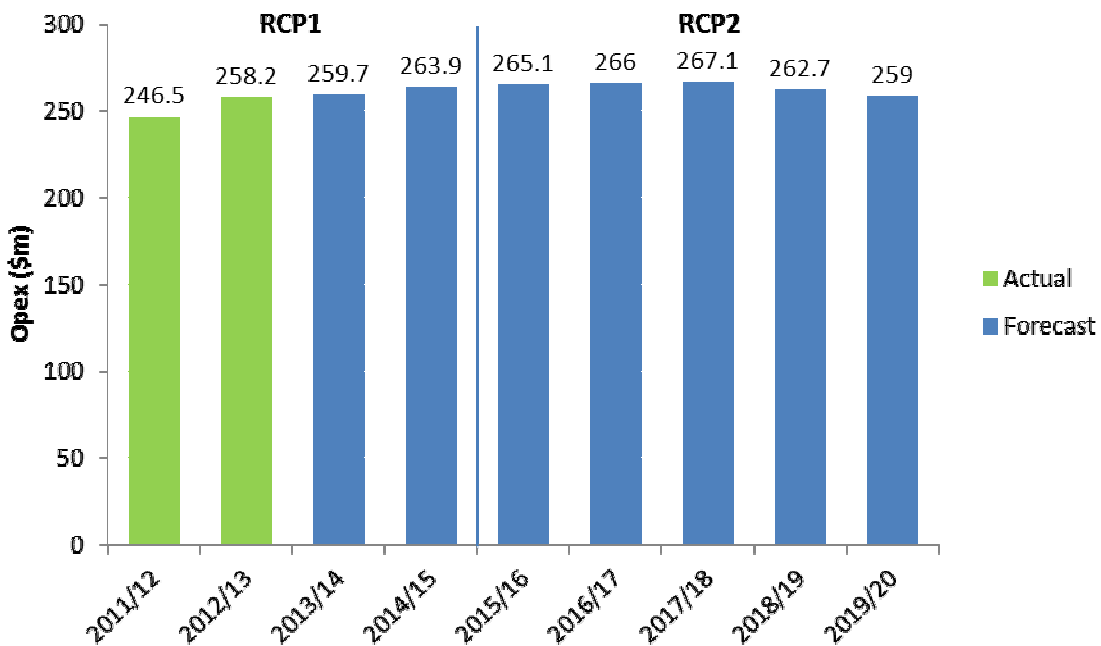


Opex

2.23 Figure 2.3 shows that Transpower’s opex is broadly similar between RCP1 and RCP2, on a 2012/13 constant prices basis.

2.24 The trends on the opex and base capex allowances show that the increases in revenue seen during RCP1 were as a result of Transpower’s large capex projects.

Figure 2.3: Opex over RCP1 and RCP2 (2012/13 constant prices)



What may change during the period?

- 2.25 The following may result in changes to Transpower's revenues during RCP2.
- 2.25.1 The forecast revenue figures we have used in this chapter include forecast commissioning of major capex projects and listed projects. Some of these projects are yet to be approved and are subject to continued needs testing. Changes to costs or timing of these projects will result in changes to Transpower's revenue.
 - 2.25.2 MAR wash-ups provide for the under- or over-recovery of revenue for each disclosure year. This under-or over-recovery results in the forecast MAR for the next available pricing year being updated. Under-or over- recovery of revenue may arise from, for example, the difference between actual and forecast asset commissioning timing.
 - 2.25.3 Transpower has a range of incentive mechanisms which encourage efficiency, innovation and improved performance. Any monetary benefits under these incentives mechanisms result in updates to the forecast MAR for the next available pricing year.
 - 2.25.4 Transpower's individual price-quality path may be reconsidered, for example, following a catastrophic event.
- 2.26 We set nominal allowances for each year of RCP2. The allowances we have set depend to a certain degree on the cost escalators which convert constant price expenditure to nominal expenditure. Most of the cost escalators are washed-up to account for the difference between the actual and forecast escalators. These wash-ups will have a revenue impact.

3. Enhancements to the individual price-quality path

Purpose of this chapter

- 3.1 This chapter outlines the enhancements we have made to the operation of Transpower's individual price-quality path for RCP2 from the individual price-quality path that applied for RCP1.¹⁶
- 3.2 It also discusses how these enhancements better promote the purpose of Part 4 of the Act.
- 3.3 This chapter also discusses specific features of Transpower's individual price-quality path for RCP2, including how we will set Transpower's forecast MAR, and the suite of incentive mechanisms that will apply. More detail on how the forecast MAR is calculated and the role of the forecast MAR wash-up is described in Attachment C.
- 3.4 This chapter does not set the forecast MAR values for RCP2. We intend to separately determine these by 28 November 2014.

We have made enhancements to the individual price-quality path

- 3.5 We see Transpower's individual price-quality path regulation evolving over time and have used the individual price-quality path that applied during RCP1 as our starting point. Please see Attachment A for additional details.
- 3.6 We have kept the bulk of the features of the individual price-quality path from RCP1 and have made enhancements to better promote the purpose of Part 4 of the Act.
- 3.7 Table 3.1 provides a summary of our individual price-quality path decisions.

¹⁶ *Commerce Act (Transpower Individual Price-Quality Path) Determination 2010* [2010], Decision No. 714.

Table 3.1: Summary of individual price-quality path decisions

Decision for RCP2	Change in approach from RCP1
<ul style="list-style-type: none"> ▪ RCP2 will be a 5-year period. 	<p>The standard 5-year period per the Commerce Act 1986 will apply. See Attachment C. RCP1 was four years long.</p>
<ul style="list-style-type: none"> ▪ Compliance with price-path is with the forecast MAR, to be set on a forward-looking (<i>ex ante</i>) basis. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ An unsmoothed building blocks approach will be applied to set the forecast MAR. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ We will apply all relevant input methodologies in the building blocks to set the forecast MAR and calculate the forecast MAR wash-up. 	<p>No change. Our decision takes into account amendments to input methodologies. See Attachment E.</p>
<ul style="list-style-type: none"> ▪ The values in the building blocks used to calculate the forecast MAR will be set by reference to relevant expenditure values and other values (eg, depreciation) for each disclosure year ending 30 June in RCP2. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ Transpower will apply revenues based on the forecast MAR, plus forecast pass-through costs and forecast recoverable costs in setting its prices for each pricing year ending 31 March in RCP2. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ Revenue wash-ups are to be made yearly (the MAR wash-up). 	<p>No change. See below for reasons.</p>
<ul style="list-style-type: none"> ▪ Forecast approved major capex may be treated as actual opex based on Generally Accepted Accounting Principles (GAAP) accounting during the regulatory period. 	<p>New feature. See below for reasons.</p>
<ul style="list-style-type: none"> ▪ Revenue-linked grid output measures will be applied in line with the Capex IM. 	<p>New feature. See Chapter 4 for reasons.</p>
<ul style="list-style-type: none"> ▪ The Economic value (EV) account is to be used to account for under/over-recovered revenues until the next available pricing year, with balances carried forward being adjusted at the WACC rate. 	<p>No change. See below for reasons.</p>
<ul style="list-style-type: none"> ▪ Gains and losses on capital expenditure commitments (ineffective currency and commodity hedges) for GAAP are to be recorded as EV account entries. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ Incentive adjustments are to be recorded as EV entries. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ Legacy 2011 EV account balances are to be cleared by the end of RCP2. 	<p>No change. See below for reasons.</p>
<ul style="list-style-type: none"> ▪ RCP1 EV account entries that have not already been dealt with in revenues and prices will be carried forward into RCP2. 	<p>No change. See Attachment C.</p>
<ul style="list-style-type: none"> ▪ The forecast MAR will be updated yearly for EV adjustments. 	<p>No change. See below for reasons.</p>
<ul style="list-style-type: none"> ▪ EV adjustments may be smoothed to avoid pricing shock effects. 	<p>New feature. See below for reasons.</p>

Decision for RCP2	Change in approach from RCP1
<ul style="list-style-type: none"> ▪ Transpower may voluntarily under-recover the forecast MAR from consumers. 	New feature. See below for reasons.
<ul style="list-style-type: none"> ▪ Intra-year cash-flow timing assumptions will be applied to the forecast MAR and MAR wash-up building blocks. 	New feature. See below for reasons.
<ul style="list-style-type: none"> ▪ The major capex incentive rate is 33%. 	No change. See below for reasons.
<ul style="list-style-type: none"> ▪ The base capex incentive rate is 33%. 	New feature. See below for reasons.
<ul style="list-style-type: none"> ▪ The approved opex allowance for the forecast MAR is set using the forecast CPI. 	No change. See Attachment C.
<ul style="list-style-type: none"> ▪ The approved opex allowance for the MAR wash-up will be adjusted for the disparity between the actual CPI and the forecast CPI. 	No change. See Attachment C.
<ul style="list-style-type: none"> ▪ The allowed controllable opex for the IRIS will be set equal to the opex allowance used in the MAR wash-up. 	New Feature. See Attachment C.
<ul style="list-style-type: none"> ▪ Any voluntary reduction in the allowable benefits under the IRIS will be treated as a reduction in recoverable costs. 	New feature. See below for reasons.
<ul style="list-style-type: none"> ▪ The forecast MAR may be updated during RCP2 to take account of approved listed projects. 	New Feature. See Attachment D.
<ul style="list-style-type: none"> ▪ Additional opex approved after a catastrophic event may be recovered in recoverable costs. 	New Feature. See Attachment F.
<ul style="list-style-type: none"> ▪ The price-quality path determination will define 'Other regulated income'. 	New Feature. See below for reasons.
<ul style="list-style-type: none"> ▪ Forecast pass-through costs and recoverable costs included in prices may be washed-up for accrual accounting adjustments. 	New Feature. See below for reasons.

Our enhancements to the price-quality path will better meet the purpose of Part 4

- 3.8 We have incorporated new features into the individual price-quality path for RCP2 to better meet the purpose of Part 4 of the Act.
- 3.9 We consider these features will give Transpower further incentive to innovate and invest, improve efficiency and will limit Transpower's ability to extract excessive prices.
- 3.10 Examples of how we consider the individual price-quality path in RCP2 will better meet the purpose of Part 4 of the Commerce Act are described in Table 3.2.

Table 3.2: How the purpose of Part 4 of the Commerce Act will be better met

Purpose of Part 4 of the Act	Example
Transpower will have a further incentive to innovate and invest, including in replacing assets.	Inclusion of a 'listed project' mechanism to allow identified reconductoring projects that are currently not justified for inclusion in the base capex allowance, to be approved during the regulatory period, and the forecast MAR adjusted commensurately. See Attachment D for further detail.
Transpower will have further incentives to improve efficiency and provide service at a quality that reflects consumer demands.	Inclusion of revenue-linked grid output measures as the quality standard under the individual price-quality path. See further detail in Chapter 4.
Transpower will share with consumers the benefits of efficiency gains, including through lower prices.	In RCP2 the full suite of incentive measures introduced in the Capex IM come into effect. These will have a revenue effect through the EV account.
Transpower will be limited in its ability to extract excessive profits.	In RCP2 we will apply intra-year cash-flow assumptions in the formulae for setting the building blocks that comprise the forecast MAR for each pricing year. This will better match the building blocks with costs.

Transpower will be incentivised to improve performance

- 3.11 By setting Transpower's maximum revenues in advance (the forecast MAR), the individual price-quality path provides Transpower with incentives to improve its performance. This is because Transpower may retain the benefits of outperformance of the assumptions underpinning the individual price-quality path.
- 3.12 For example, if Transpower can deliver specified grid output measures at a lower cost than the amount of the expenditure allowances, the resulting financial benefits are shared between Transpower and consumers through the incentive mechanisms.
- 3.13 We provide for specific incentive mechanisms, contained in the Capex IM and the Transpower IMs, for Transpower to improve its efficiency and deliver services at a quality that reflects consumer demands.

- 3.14 There are four groups of incentive mechanisms that will fully apply in RCP2. These mechanisms will ultimately impact on Transpower's forecast MAR in subsequent years, namely:¹⁷
- 3.14.1 incentives that apply to base capex;¹⁸
 - 3.14.2 incentives that apply to individual major capex projects;¹⁹
 - 3.14.3 the revenue-linked grid output measures;²⁰ and
 - 3.14.4 the IRIS that applies to opex.²¹
- 3.15 The incentives that will apply to Transpower for RCP2 are the implementation of a comprehensive package of revenue-linked incentive mechanisms covering grid outputs, capex and opex. In RCP1 the incentive mechanisms were in many cases still under development or were only partially implemented.
- 3.16 Outcomes will be tracked through reporting, information disclosure and summary and analysis during RCP2. The information, experience and analysis gained during RCP2 may in turn be used to improve the operation of the mechanisms, incentives, and the interplay between them in RCP3 consistent with the long-term interests of consumers.

¹⁷ The following papers describe in detail the elements of the incentive regulation framework under which we set the individual price-quality path and set the values for each Transpower incentive. See Commerce Commission "Individual Price-Quality Path (Transpower) Reasons Paper" (22 December 2010), Chapter 3, Section 3.9 and Chapter 4, Section 4.6; Commerce Commission "Input Methodologies (Transpower) Reasons Paper" (22 December 2010), Chapter 7, Section 7.5, 'Incremental Rolling Incentive Scheme under Part 4'; and Commerce Commission "Transpower Capital Expenditure Input Methodology Reasons Paper" (31 January 2012), Chapter 3 (base capex and grid outputs) and Chapter 4 (major capex).

¹⁸ The base capex expenditure adjustment and the policies and processes adjustment. Capex IM, Schedule B, clauses B1 and B2.

¹⁹ The major capex overspend adjustment, major capex project output adjustment, major capex efficiency adjustment, and major capex sunk costs adjustment.

²⁰ The grid outputs adjustment that will apply as a result of the setting of the revenue-linked grid output measures. We have also set asset health measures which incentivise the delivery of Transpower's work programme. See Chapter 4.

²¹ *Transpower Input Methodologies Determination* [2012] NZCC 17, Part 3, Subpart 6 and clause 3.1.3(1)(a). We refer to this determination as the 'Transpower IMs'. Note that under clause 3.1.3, the IRIS mechanism is currently asymmetric (ie, only reflect positive net balances from the IRIS mechanisms in recoverable costs). However, we have recently been consulting on making this incentive mechanism symmetrical for RCP2.

Our decisions relating to the operation of the incentive mechanisms

- 3.17 To give effect to the incentives set out in the input methodologies, we are required to make a some decisions to be included in the individual price-quality path determination:
- 3.17.1 The major capex incentive rate will continue at 33%.²² This is the rate that has applied since the Capex IM was determined;
 - 3.17.2 Consistent with the major capex incentive rate and the effective rate of sharing of rewards and penalties under the IRIS, the base capex incentive rate is set at 33%;²³ and
 - 3.17.3 The allowed controllable opex for the IRIS is set for the regulatory period at equal to the approved opex allowance used in the MAR wash-up calculation which is adjusted for the actual rate of CPI inflation.²⁴
- 3.18 Refer to the 2012 Capex IM reasons paper for why we consider 33% is an appropriate incentive rate for base and major capex.²⁵
- 3.19 Our decision to align the allowed controllable opex for the IRIS with the approved opex allowance used in the MAR wash-up calculations is further discussed in Attachment C. The IRIS input methodology specifies a carryover period of five years.²⁶ This length of retention is equivalent to an incentive rate of 35%.²⁷
- 3.20 We have also developed revenue-linked asset health measures with an incentive rate of 36%. This is a 10% ‘mark-up’ on the 33% base capex incentive rate. For additional details see Chapter 4.

²² Capex IM, clause 2.3.1(2) requires us to set the major capex incentive rate for a regulatory period.

²³ Ibid, clause 2.2.2(1)(b. requires us to set the base capex incentive rate for a regulatory period.

²⁴ The result of the calculations under the IRIS mechanism is applied to revenues and prices through Transpower’s recoverable costs and is not applied through the EV account or the forecast MAR.

²⁵ Commerce Commission “Transpower Capital Expenditure Input Methodology Reasons Paper” (31 January 2012), paragraph 3.6.9 and 4.6.6.

²⁶ Commerce Commission “Input Methodologies (Transpower) Reasons Paper” (22 December 2010), paragraph 7.5.5.

²⁷ Commerce Commission “Proposed amendments to input methodologies: Incremental Rolling Incentive Scheme” (18 July 2014), paragraph 58.2.

We will update the forecast MAR on a yearly basis

- 3.21 We will make updating amendments the individual price-quality path determination each year to update the forecast MAR.²⁸ These updates will account for:
- 3.21.1 differences in timing of capex from forecast, and
 - 3.21.2 the EV adjustments that arise from incentive mechanisms or the MAR wash-up.
- 3.22 See Attachment C for details on the forecast MAR calculation and Chapter 6 for detail on the update process.
- 3.23 While working with the individual price-quality path for RCP1 we have, along with Transpower, identified ways to improve workability and integration with the other regulatory instruments set since the individual price-quality path was first determined in 2010.²⁹
- 3.24 We have simplified the forecast MAR update by embedding compliance reporting requirements that affect the forecast MAR update calculations within the individual price-quality path determination. This approach limits the number of information notices we need to issue and that Transpower needs to respond to.
- 3.25 We also weighed up the pros and cons of adopting a more ‘automated’ approach to the forecast MAR updates for RCP2. In particular, we looked at the changes coming into effect in the individual price-quality path, especially the measures in the Capex IM coming into effect for the first time, as well as the input methodologies that would need to be amended to automate the process.
- 3.26 We have concluded that we will continue to determine the forecast MAR each year.
- 3.27 Notwithstanding that conclusion, our aim over time is to eventually ‘automate’ the forecast MAR updates as far as prudent. Under that process Transpower would mechanically make yearly updates based on defined conditions set out in the determination and include the associated calculations with its annual compliance reporting.
- 3.28 We expect that this would be a less complex procedure than the current yearly process and would potentially reduce the cost of compliance for the Commission and Transpower.

²⁸ See *Commerce Act (Transpower Individual Price-Quality Path) Determination 2010* [2010], Decision No. 714, clause 3.3(2).

²⁹ The Capex IM was set in January 2012 and the information disclosure determination was set in February 2014.

- 3.29 In our 7 year review of the input methodologies (expected to be conducted in 2016/17), we will have the opportunity to consider whether it would be beneficial to amend the input methodologies to allow us to automate the forecast MAR process.³⁰

The MAR wash-up will correct for any over- or under-recovery of revenue

- 3.30 Transpower's individual price-quality path for RCP2 will retain the MAR wash-up approach used in RCP1. The MAR wash-up corrects for any over-or under-recovery of revenues from consumers resulting from, for example, the value of commissioned assets varying from forecast.
- 3.31 Details of the MAR wash-up calculation are set out in Attachment C. The process for the MAR wash-up is set out in Chapter 6.

Wash-ups of pass-through costs and recoverable costs

- 3.32 To provide certainty to Transpower and its customers, we have explicitly included reference to the wash-up of pass-through and recoverable costs in the individual price-quality path determination. However, in practice there will be no change in approach.
- 3.33 Accrual accounting adjustments will account for differences between the forecast costs and the actual costs incurred, and for any disparity between the actual costs incurred and the actual revenues recovered from consumers for these costs.
- 3.34 Transpower's pass-through costs and recoverable costs are excluded from the MAR wash-up calculation. As a result, no entry is made in the EV account for any differences between the forecast and actual pass-through costs and recoverable costs used in setting the forecast revenues each pricing year.
- 3.35 No accounting approach was specified in either the input methodologies or RCP1 individual price-quality path determination for setting or washing up pass-through or recoverable costs that are used to set the forecast MAR or the MAR wash-up. We considered the GAAP accrual accounting treatment adopted by Transpower to be appropriate.

The EV account will be used to account for under- or over-recovered revenues until the next available relevant pricing year

- 3.36 The balances in the EV accounts will be applied as EV adjustments to the forecast MAR on a similar basis as for RCP1. The entries in the EV account at the start of RCP2 will include:
- 3.36.1 the legacy EV account balances brought forward from 2011 that have only been partially recovered or returned in revenue during RCP1 under an eight

³⁰ Commerce Act 1986, s 52Y(1).

- year spread, and which will be recovered from and returned to revenue in the forecast MAR over the five years of RCP2 (see below for reasons);
- 3.36.2 the result of the MAR wash-up calculation for the 2013-14 disclosure year, which will be recovered from or returned to revenue in the forecast MAR in the 2015-16 pricing year;
 - 3.36.3 the allowable hedging gains or losses for the 2013-14 disclosure year, which will be recovered from or returned to revenue in the forecast MAR in the 2015-16 pricing year; and
 - 3.36.4 the result of the major capex overspend adjustment, major capex project output adjustment or major capex sunk costs adjustment, if applicable, for the 2013-14 disclosure year, which will be recovered from or returned to revenue in the forecast MAR in the 2015-16 pricing year.
- 3.37 Due to the timing of the start of RCP2 and the time when the compliance calculations are carried out for the end of RCP1, the following further entries will be made in the EV account in respect of RCP1 after the commencement of RCP2:
- 3.37.1 the result of the MAR wash-up calculation for the 2014-15 disclosure year, which will be recovered from or returned to revenue in the update of the forecast MAR in the 2016-17 pricing year;
 - 3.37.2 the allowable hedging gains or losses for the 2014-15 disclosure year, which will be recovered from or returned to revenue in the update of the forecast MAR in the 2016-17 pricing year;
 - 3.37.3 the result of the major capex overspend adjustment, major capex project output adjustment or major capex sunk costs adjustment, if applicable, for the 2014-15 disclosure year, which will be recovered from or returned to revenue in the update of the forecast MAR in the 2016-17 pricing year;
 - 3.37.4 the result of the major capex efficiency adjustment, if applicable, for the 2014-15 disclosure year, which will be recovered from or returned to revenue in the update of the forecast MAR in the 2016-17 pricing year;
 - 3.37.5 any minor (base) capital expenditure overspend adjustment calculated for RCP1 at the end of the 2014-15 disclosure year, which will be recovered from or returned to revenue in the update of the forecast MAR in the 2016-17 pricing year; and
 - 3.37.6 the result of any major capex overspend adjustment or major capex output adjustment following the commissioning in RCP1 of the NIGU project, which will be determined once we make our decision on Transpower's request for an amendment to the major capex allowance and approved major capex project outputs. If an adjustment is made, this would likely be returned to revenue in the update of the forecast MAR in any remaining years in RCP2 following our decision regarding that project.

The 2011 'legacy' EV account entries will be cleared over RCP2

- 3.38 The amounts of the original 2011 'legacy' EV account balances remaining at the end of RCP1 will be spread as EV adjustments over the five disclosure years of RCP2. This will clear all of the historical 2011 EV account balances.³¹
- 3.39 The EV accounts at the start of RCP1 contained large balances. In our decision for that regulatory period we determined that those initial EV account balances should be spread over eight years of Transpower's revenues, including three years of the first regulatory period.³² Our decision for RCP2 is consistent with that decision.
- 3.40 We reviewed matters raised by Pacific Aluminium³³ and the Major Energy Users' Group (MEUG)^{34 35} and concluded that the issues raised do not present a sufficient argument to change our previous decision on how to address EV account legacy balances.³⁶
- 3.41 Potential changes to the TPM were raised by Pacific Aluminium as a reason to rapidly clear EV account balances to avoid any issues associated with reallocating balances between customers.³⁷
- 3.42 We are aware of the potential impact that a change to the TPM may have on how EV account balances are recovered from different groups of Transpower customers under the TPM. We have raised this issue with the Electricity Authority (the Authority), which regulates the TPM, and we intend to continue to monitor the matter. We understand the Authority will be including matters relating to the EV account in upcoming papers on the TPM. Interested parties can submit on the EV account issue in those papers.

³¹ See Transpower "Annual Regulatory Report for the 12 months to 30 June 2013" (17 October 2013), Appendix A.2 page 70, for the calculation of the figure used to zero the historical EV balances.

³² *Commerce Act (Transpower Individual Price-Quality Path) Determination 2010* (30 October 2013), clause 5.3(4)(a). The eight year spreading period comprises the 3 years of the Remainder Period of RCP1 (the 2012-13 through 2014-15 disclosure years of RCP1) and the next 5 disclosure years, on the assumption that RCP2 would be the standard length of an RCP of 5 disclosure years, as reflected in sections 53ZC(2)(a) and 53M(4) of the Commerce Act.

³³ Pacific Aluminium "Pacific Aluminium submission on individual price-quality path draft decision" (27 June 2014), page 4.

³⁴ MEUG "MEUG submission on individual price-quality path draft decision" (27 June 2014), page 3.

³⁵ MEUG "MEUG cross-submission on draft decision" (11 July 2014), page 2, paragraph 4 b).

³⁶ We consider that although some submitters may be considering the EV accounts are contractual debtors and creditor accounts, they are not

³⁷ Pacific Aluminium "Pacific Aluminium submission on individual price-quality path draft decision" (27 June 2014), page 5.

- 3.43 We also note that, under s 54V of the Commerce Act, the Authority will consult with us before it amends the TPM. We must then, if asked by the Authority, consider reopening the price-path in line with the specifications in the Act. We have discussed with the Authority matters relating to consultation and the process for any reopening of the price-path.
- 3.44 We consider that the processes outlined above will allow any issues with potential changes to the TPM affecting the clearing of EV account balances, and any other matters, to be effectively addressed when required.³⁸
- 3.45 We therefore agree with Transpower that:³⁹

The submissions on EV adjustments demonstrate diverging views amongst submitters. ... unless new evidence is provided, both EV balances should be cleared together during RCP2, as per the decision the Commission made at the outset of RCP1.

Large EV adjustments may be spread to avoid price shocks

- 3.46 We signalled in the Capex IM reasons paper that we would consider whether EV account entries should be spread over more than one year to avoid price shocks in exceptional circumstances.⁴⁰
- 3.47 These circumstances might include particularly large entries from MAR wash-ups or from the incentive mechanisms. For example, it might apply to large major capex overspend adjustments.
- 3.48 Consistent with our decision described in the Capex IM reasons paper, the individual price-quality path determination provides for Transpower to be able to request approval from the Commission to spread the resulting EV adjustment over more than one pricing year.
- 3.49 Depending on the circumstances at the time, we would not normally expect the spreading of the EV adjustment over multiple years to cross between regulatory periods.
- 3.50 Meridian Energy was in favour of allowing Transpower the option to request EV account spreading,⁴¹ while MEUG opposed any ability to spread EV account balances.⁴²

³⁸ For example, the funding of any investment required to give effect to a change in the TPM, such as funding of ICT systems, could also be addressed at this time.

³⁹ Transpower "Transpower cross-submission on draft decision" (11 July 2014), page 6.

⁴⁰ Commerce Commission, "Transpower Capital Expenditure Input Methodology, Reasons Paper", 31 January 2012, paragraph 2.3.8.

- 3.51 MEUG’s objections were related to the spreading of existing EV account balances over RCP2, as discussed above. In addition it considered that any customers who cease to be supplied with electricity will not receive their share, while any new customers will receive a windfall gain due to the application of smoothing.
- 3.52 We do not consider there are strong arguments that the spreading of EV account balances is inappropriate. In considering any specific request to spread EV account balances to avoid price shocks the Commission will consider what promotes the purpose of Part 4, and consult appropriately. We note that we have received no indication from any consumer that they are intending to cease taking electricity, or would be materially affected by EV account smoothing.

Transpower may voluntarily under-recover revenue

- 3.53 Transpower may make voluntary revenue reductions in RCP2 if it wishes to do so, as follows:
- 3.53.1 Any voluntary reduction in revenue (other than in respect of pass-through costs or recoverable costs) will be treated as a voluntary reduction in the forecast MAR; and
- 3.53.2 Any voluntary reduction in the allowable benefits under the IRIS in RCP2 will be treated as a reduction in recoverable costs.
- 3.54 Transpower has to date indicated two instances where it proposes to make voluntary revenue reductions in RCP2. These total \$49.1m across RCP2 (\$27.1m for the NIGU project voluntary reduction and \$22m for the RCP1 maintenance scope adjustment in the IRIS).⁴³
- 3.55 Given that such adjustments are *prima facie* beneficial to consumers, we see no reason to put in place a mandatory calculation mechanism for these voluntary adjustments.
- 3.56 However, in drafting the individual price-quality path determination, we have included requirements for Transpower to report the following in its annual compliance statement so we and other interested persons can understand whether the outputs proposed for RCP2 are affected or whether any consequent adjustment will be required to expenditure, outputs or revenues for RCP3 in due course.

⁴¹ Meridian Energy “Meridian submission on individual price-quality path draft decision” (27 June 2014), page 1.

⁴² MEUG “MEUG submission on individual price-quality path draft decision” (27 June 2014), page 3.

⁴³ Transpower “2015/16 to 2019/20 Transmission Revenue” (9 December 2013), p. 2.

- 3.57 Transpower will be required to provide a description and explanation of any voluntary revenue reduction made in calculating the ex-post economic gain or loss in the MAR wash-up calculation including:
- 3.57.1 a description and explanation of any voluntary reduction made in setting charges under the TPM (ie, a reduction in forecast revenue after calculating the forecast MAR and recoverable costs); and
 - 3.57.2 a description and explanation of any voluntary revenue reduction made by Transpower in calculating the recoverable costs recovered by Transpower from customers as part of its revenue.
- 3.58 For more detail on this voluntary revenue adjustment process, see Attachment C.

We have applied cash-flow timing assumptions in setting the forecast MAR

- 3.59 The building block calculations used in setting the forecast MAR and the MAR wash-up each year of RCP2 apply intra-year cash-flow timing assumptions. This will better account for the time-value of money within a disclosure year and is similar to the assumptions we have adopted in other regulated sectors.⁴⁴ In RCP1, the building block calculations and MAR wash-up used an end-of-year cash-flow timing assumption.
- 3.60 More accurate modelling of the building blocks in the price-path will reduce the likelihood that Transpower will under- or over-recover returns for the regulatory period after taking account of the time-value of money. This will result in a price-path that more accurately reflects the expenditure that would be seen in competitive markets as building blocks will be better matched to costs.
- 3.61 This change in timing assumptions recognises that Transpower will incur and receive cash-flows at various times during each disclosure year. Using the amended forecast cash-flow timing assumptions will more accurately reflect Transpower's forecast cash-flows.
- 3.62 The details on the timing assumptions that will apply to the building blocks for RCP2 are described in more detail in Attachment C.

⁴⁴ For background discussion on the cash flow timing assumptions adopted in the electricity distribution sector and in the gas distribution and transmission sectors for customised price-quality paths, see Commerce Commission, "Electricity and Gas Input Methodologies Determination Amendments (No.2) 2012, Reasons Paper", 15 November 2012.

Treating forecast major capex as actual opex during the regulatory period

- 3.63 Transpower has identified circumstances where the expenditure amounts we approve in a major capex allowance may ultimately be required under GAAP accounting to be accounted for as opex rather than capex as they become incurred during the project.
- 3.64 A key issue is the respective treatments of opex and capex under the incentives we have set for Transpower. The effective substitution arising from the GAAP accounting classification of expenditure that was originally forecast in the major capex allowance as capex, but then actually gets accounted for as opex under GAAP, could have the effect of incentivising Transpower to spend on projects in a way that does not encourage efficiency.⁴⁵
- 3.65 To maintain the incentive neutrality we have amended the input methodologies to allow any operating costs incurred as part of a major capex project to be included as recoverable costs.⁴⁶

The individual price-quality path may be adjusted for approved ‘listed project’ base capex

- 3.66 The individual price-quality path determination will include a mechanism that allows us to reconsider the forecast MAR during the course of RCP2 to take account of the impact of approved base capex of certain ‘listed projects.’
- 3.67 Our earlier policy view, on which we consulted, was that the process requirements for the application by Transpower and approval by the Commission of base capex relating to listed projects should form part of the individual price-quality path determination.⁴⁷
- 3.68 Our current view is that the process requirements should instead be reflected in the Capex IM, as this is more consistent with s 54S of the Act. We will therefore further consult on where the processes for approving base capex relating to listed projects should be determined.

⁴⁵ No equivalent mechanism is required between base capex and opex, as the respective expenditure incentives are symmetrical and the incentive rates are approximately aligned.

⁴⁶ Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014).

⁴⁷ Commerce Commission “Draft Transpower Individual Price-Quality Path Determination 30 May 2014” (30 May 2014), page 6, clause 12.

- 3.69 We previously consulted on a proposed input methodology amendment to the ‘Reconsideration of an individual price-quality path’ input methodology to give effect to the revenue impact of approved base capex of a listed project. That amendment will form part of the package of input methodology amendments for listed projects on which we will further consult.
- 3.70 Any adjustments to the approved base capex will feed into the yearly updates of the forecast MAR. This is similar to the price path reconsideration allowed in the input methodologies for newly-approved major capex projects.
- 3.71 Under the framework Transpower may submit an application for one or more of the listed projects to the Commission for approval. If we consider, after reviewing the application, that the conditions outlined in the individual price-quality path determination have been met, we will update the forecast MAR figures to provide for the revenue impact of the additional base capex allowance relating to the relevant listed project.
- 3.72 Refer to Attachment D for a detailed discussion on the listed project mechanism including how it will work.

We have added a definition of ‘other regulated income’

- 3.73 The same definition of ‘other regulated income’ in Transpower’s information disclosure determination will apply in the individual price-quality path determination.
- 3.74 In RCP1 there was no formal definition of other regulated income in the individual price-quality path determination. However, in practice Transpower has included income that is not related to electricity lines services in the MAR wash-up calculations.
- 3.75 The definition of ‘other regulated income’ was incorporated into Transpower’s information disclosure determination for the purposes of the return on investment calculation. This is to ensure that all forms of income are included in the MAR wash-up calculation where the underlying expenditure giving rise to the income has been allowed as an approved amount in the MAR building blocks.
- 3.76 Two examples of other forms of income are:
- 3.76.1 the proceeds of disposal of assets from the Regulatory Asset Base (RAB);
and
 - 3.76.2 the receipt of insurance proceeds, which in the case of recent catastrophic events in New Zealand have been shown to be very material.

- 3.77 For consistency, the same definition as for information disclosure will apply under the individual price-quality path determination. This definition would exclude:
- 3.77.1 income that has already been accounted for in the MAR wash-up in transmission prices;
 - 3.77.2 investment-related income;⁴⁸ and
 - 3.77.3 capital contributions received as a contribution toward the cost of an asset, which under GAAP are offset against the RAB rather than being recognised as income.
- 3.78 Given the potential difficulty in forecasting other regulated income, we have not required it to be forecast in the forecast MAR calculation. It is recognised in the MAR wash-up. This is consistent with the way Transpower has accounted for such income in RCP1.

⁴⁸ For example, insurance proceeds received by Transpower from its captive insurance subsidiary Risk Reinsurance Limited under the terms of an insurance policy held by Transpower would be classified as 'other regulated income' for these purposes and would be included in the MAR wash-up, but a dividend payment from that subsidiary would be 'investment-related income' and would be excluded from the MAR wash-up.

4. Our grid output measures and quality standards

Purpose of this chapter

- 4.1 This chapter sets out our decisions on the grid output measures and quality standards that will apply to Transpower for RCP2.⁴⁹
- 4.2 The chapter discusses:
 - 4.2.1 how we have determined grid output measures;
 - 4.2.2 the revenue-linked grid output measures and quality standards we have set;
 - 4.2.3 grid output measures we have set that are not linked to revenue;
 - 4.2.4 key changes from our draft decision;
 - 4.2.5 the relationship between quality standards and grid output measures;
 - 4.2.6 how Transpower's performance will be linked to revenue; and
 - 4.2.7 how we set the targets for grid output measures.
- 4.3 In setting the grid output measures we have followed certain rules and processes. These are discussed in Attachment B.
- 4.4 Additional analysis that supports our decisions on the grid output measures is set out in Attachment G. This includes discussion on how the evaluation criteria in the Capex IM have been met.⁵⁰
- 4.5 We will require Transpower to report on additional performance measures whose development in RCP2 we consider will benefit consumers. We discuss these performance measure development initiatives in Attachment I.

⁴⁹ A grid output measure quantifies the benefits delivered by the grid. Clause 2.2.2(1)(c) of the Capex IM defines five types of grid output measures: grid performance; asset performance; asset capability; asset health and other.

⁵⁰ The Capex IM specifies that Transpower must propose a suite of grid output measures that includes asset performance measures and grid performance measures and may propose asset health measures. See Capex IM, clause 2.2.2(1)(c).

How we have determined grid output measures

- 4.6 Transpower proposed grid output measures in its 2 December proposal.
- 4.7 We have assessed the measures included in Transpower’s 2 December proposal with a view to set the measures so that consumers will be able to assess whether Transpower is providing the quality of service that they expect.⁵¹
- 4.8 Transpower also proposed asset health grid output measures in its submission on our draft decision. We have assessed these measures with a view to ensure Transpower is incentivised to deliver its replacement and refurbishment work programme.
- 4.9 In reaching our decision we have considered:
- 4.9.1 consumers’ expectations of Transpower’s performance;
 - 4.9.2 the alignment between consumer expectations and the proposed grid output measures and targets, caps and collars;
 - 4.9.3 the relationship between the incentives for cost efficiency and the incentives for quality;
 - 4.9.4 recommendations by our external consultant;
 - 4.9.5 the consistency of our decision with the Capex IM;
 - 4.9.6 the consistency of our quality standards with those set by the Electricity Authority;⁵² and
 - 4.9.7 submissions that we received during our consultation process.
- 4.10 We engaged Partna to review the grid output measures developed by Transpower and assess how those measures compare with practice in Australia and in the UK.⁵³ The Partna report is available on our website. Strata peer reviewed this work.

⁵¹ The purpose of Part 4 includes that regulated suppliers should “provide services at a quality that reflects consumer demands”; Commerce Act, clause 52(1)(b).

⁵² Section 54V of the Commerce Act requires that the quality standards we set should be based on and consistent with the quality standards for Transpower as set by the Electricity Authority. We discussed our proposed quality standards with the Electricity Authority and our view is that the two are consistent given the direction the Electricity Authority plans to take and the different roles of the two sets of quality standards. The Electricity Authority quality standards focus on the performance of the core grid while the ones we propose focus on the customer.

⁵³ Partna is also the secretariat for the ENA Quality of Supply and Incentives Working Group. The Commission is an observer on this group.

- 4.11 Partna’s advice also informed our decisions on the revenue-linked incentive rates, caps and collars for grid performance and asset performance measures.

We have set revenue-linked grid output measures and quality standards

- 4.12 With additional incentive mechanisms applying for the first time in RCP2, the incentives for Transpower to reduce costs will be more consistent over time and stronger overall. There is a balance between incentives to cut spending and incentives to maintain service quality.
- 4.13 Given the need to balance incentives to cut spending provided by the base capex expenditure adjustment and the IRIS, it is appropriate that we also introduce stronger quality incentives at this time by linking grid output measures to revenue. This is the first individual price-quality path where grid output measures will be linked to revenue. We will monitor the effectiveness of these incentives over the course of RCP2.
- 4.14 We have set 23 revenue-linked grid output measures. These are grouped as follows:⁵⁴
- 4.14.1 Asset performance (AP) measures, for which there are two measures: AP1 and AP2.
 - 4.14.2 Grid performance (GP) measures, for which there are three measures: GP1 to GP3 that each have five categories that represent different points of service. There are a total of 15 GP measures.⁵⁵
 - 4.14.3 Asset health (AH) measures, for which there are six measures for six fleets of assets: AH1 to AH6. Three of the measures have yearly targets and the other three have targets for the regulatory period.⁵⁶
- 4.15 The quality standards for RCP2 are the same as the targets for the revenue-linked grid output measures.⁵⁷

⁵⁴ In its proposal, Transpower refers to ‘grid output measures’ as ‘service performance measures’. In this paper we use ‘grid output measures’ as used in the Capex IM or just ‘measures.’

⁵⁵ Transpower proposed its asset performance and grid performance measures in section 10 of its proposal—Transpower “Expenditure Proposal for Regulatory Control Period 2” (2 December 2013).

⁵⁶ Transpower submitted a set of asset health grid output measures in response to our draft decision. Refer to Transpower “Response to IPP Draft Decision” (27 June 2014), pp. 39-46.

⁵⁷ The ‘target’ represents the baseline for the incentive scheme rather than a value that sets expectations for a level of performance.

- 4.16 Each of the 23 revenue-linked measures has a target, cap, collar, and incentive rate. The cap and collar set the range of performance for which Transpower will be penalised or rewarded with the cap being the upper bound for rewards. The incentive rate is the dollar amount of revenue loss or gain for each unit of deviation from the target.
- 4.16.1 For the asset performance and grid performance measures, \$10 million of revenue will be at risk each year through the grid output adjustment mechanism. This is roughly 1% of revenue.
- 4.16.2 For the asset health measures, \$14.3 million of revenue will be at risk over RCP2 (or approximately \$2.9 million each year). This is roughly 0.3% of revenue.
- 4.17 We have implemented asset health measures to incentivise Transpower to deliver its replacement and refurbishment programme.⁵⁸ Asset health measures are not linked to asset performance and grid performance measures or any other measure of the performance of the network.
- 4.18 The revenue at risk for the asset health measures is linked to six asset fleets covering about 68% of the value of the replacement and refurbishment capex. The revenue at risk will back-out any benefits that Transpower may achieve through base capex adjustment for any under-delivery of the associated six asset fleets against their replacement and refurbishment programme. Paragraphs 4.99 to 4.109 explain how this incentive scheme works.
- 4.19 Table 4.1 shows the quality standards and grid output targets for the asset performance and grid performance measures, along with the caps, collars and incentive rates.
- 4.20 Asset performance measure AP1 is the measure of energy availability of the high voltage direct current (HVDC) Pole 2 and Pole 3.
- 4.21 Asset performance measure AP2 is the average availability of a selected group of high voltage alternating current (HVAC) circuits.⁵⁹
- 4.22 The three grid performance measures (GP1-3) provide information on the number and duration of unplanned interruptions to supply.⁶⁰

⁵⁸ Refer to paragraphs 5.33 to 5.40 of our draft decision on delivery concerns. As a result of the asset health measures, we have re-instated the base capex allowance of \$40m (nominal). Refer to Chapter 5 for details.

⁵⁹ Transpower "Service Performance Measures", in Transpower *Expenditure Proposal for Regulatory Control Period 2* (2 December 2013), BR04, pp. 57-61.

4.23 For the purpose of the grid performance measures, Transpower has categorised its points of service as high priority, important, standard, generator and N-security. The five categories for the grid performance measures reflect the different needs and expectations of customers concerning their points of service.⁶¹

Table 4.1: Revenue-linked asset performance and grid performance measures

Grid output measure	Point of service category	Quality standard	Grid output target	Cap	Collar	Incentive rate (\$000 per unit from target)
Asset performance measures						
Availability of circuits (%)	AP1: HVDC	98.5	98.5	99.5	97.5	1,000
	AP2: HVAC	99.6	99.6	100	99.2	2,500
Grid performance measures						
GP1: Number of unplanned interruptions (each year)	High Priority	2	2	0	4	606
	Important	9	9	4	14	242
	Standard	26	26	21	31	133
	Generator	11	11	6	16	133
	N-security	56	56	38	74	10
GP2: Average duration of unplanned interruptions (each year in minutes)	High Priority	70	70	30	110	15
	Important	100	100	30	170	9
	Standard	65	65	0	130	5
	Generator	130	130	50	210	4
	N-security	80	80	45	115	3
GP3: Duration of the 90 th percentile duration of unplanned interruptions (each year in minutes)	High Priority	120	120	80	160	15
	Important	240	240	170	310	9
	Standard	130	130	60	200	5
	Generator	350	350	260	440	4
	N-security	215	215	170	260	3

⁶⁰ Transpower has also proposed long-term targets for the grid performance measures. Our view on the long-term targets is discussed in Attachment F.

⁶¹ Transpower "Expenditure Proposal for Regulatory Control Period 2" (2 December 2013), p. 123.

- 4.24 Table 4.2 shows the quality standards, grid output targets, caps, collars and incentive rates for the asset health measures that are linked to revenue.
- 4.25 The targets for these measures quantify the number of assets that will be replaced or refurbished (ie, volumetric targets) under the capex investment programme. We discuss our reasons for using ‘number of assets’ later in this chapter.

Table 4.2: Asset health grid output measures that are linked to revenue

Grid output measure	Disclosure year	Quality standard	Grid output target	Cap	Collar	Incentive rate (\$000 per unit from target)
AH1: Number of towers painted	2015/16	451	451	489	413	29.7
	2016/17	529	529	567	491	29.7
	2017/18	531	531	569	493	29.7
	2018/19	553	553	591	515	29.7
	2019/20	564	564	602	526	29.7
AH2: Number of grillages commissioned	2015/16	408	408	438	378	10.2
	2016/17	408	408	438	378	10.2
	2017/18	408	408	438	378	10.2
	2018/19	409	409	439	379	10.2
	2019/20	409	409	439	379	10.2
AH3: Number of insulators commissioned	2015/16	1,526	1,526	1,630	1,422	2.1
	2016/17	1,466	1,466	1,570	1,362	2.1
	2017/18	1,402	1,402	1,506	1,298	2.1
	2018/19	1,315	1,315	1,419	1,211	2.1
	2019/20	1,380	1,380	1,484	1,276	2.1
AH4: Number of outdoor circuit breakers commissioned	2015-20	155	155	166	144	51.8
AH5: Number of transformers commissioned	2015-20	26	26	28	24	1,370
AH6: Number of outdoor to indoor conversions commissioned	2015-20	16	16	17	15	2,710

Note: All ‘commissioned’ quantities refer to assets commissioned due to replacement or refurbishment capex.

We have set additional measures that are not linked to revenue

- 4.26 We have set three asset health measures that are not linked to revenue. These measures comprise part of pilot reporting requirements and have targets that measure change in average asset life (in years).
- 4.27 Table 4.3 shows the targets, caps and collars for these asset health measures. The targets for the three measures are all decreases in average remaining life ie, a zero target maintains average remaining life. Transpower's investment will slow this decrease.

Table 4.3 Asset health measures that are not linked to revenue

Grid output measure	Disclosure year	Grid output target	Cap	Collar
AH1RL: Change in average remaining life of tower coating of transmission tower fleet	2015/16	-0.696	-0.674	-0.718
	2016/17	-0.565	-0.543	-0.587
	2017/18	-0.678	-0.656	-0.700
	2018/19	-0.712	-0.690	-0.734
	2019/20	-0.697	-0.675	-0.719
AH4RL: Change in average remaining life of outdoor circuit breaker fleet	2015-20	-0.258	0.010	-0.526
AH5RL: Change in average remaining live of transformer fleet	2015-20	-0.194	-0.028	-0.359

- 4.28 Transpower will provide reporting of the change in average asset remaining life due to investments in RCP2 of the portfolios covered by the three measures above.
- 4.29 The pilot reporting will provide assurance that Transpower is achieving desirable outcomes in average remaining life, given that the revenue-linked grid output measures have volumetric targets.
- 4.30 We expect that as Transpower develops asset health models for other fleets, it will also provide pilot reports on asset health measures for those fleets before implementing them.
- 4.31 We consider that this will allow both Transpower and Commission to gain confidence with using asset health for base capex incentive schemes in the future.
- 4.32 In our view it is reasonable to expect that by RCP3 we will be able to implement an asset health incentive mechanism linked to revenue and based on average remaining life measures. We discuss this further in Attachment I.

Key changes from our draft decision

- 4.33 We have made the following key changes from our draft decision on grid output measures and quality standards.
- 4.33.1 We amended the target, cap and collar for N-security category of the GP1 measure.
 - 4.33.2 We have linked volumetric measures of asset health to revenue in line with the asset health based measures scheme proposed by Transpower in its Transpower draft reasons paper submission.⁶² We decided not to revenue-link the three remaining life asset health measures proposed by Transpower but have replaced these with volumetric measures. This is due to our concerns about how they may be appropriately implemented in RCP2.
 - 4.33.3 The remaining life asset health measures will now form part of a pilot reporting scheme, with a view to evaluating their suitability for implementation in RCP3.
 - 4.33.4 Rather than prescribe the metrics, we have agreed to allow Transpower flexibility to develop non-revenue-linked performance measures, referred to in our draft decisions as “other measures”.⁶³ These are now described as performance measure development initiatives to be developed during RCP2. We discuss our reasons in Attachment I of this paper.

The relationship between grid output measures and quality standards

- 4.34 The targets for all of Transpower’s revenue-linked grid outputs are the quality standards.
- 4.34.1 The targets for performance-based grid output quantify the level of service received by consumers.
 - 4.34.2 The targets for revenue-linked asset health grid outputs quantify the number of assets that will be replaced or refurbished under the capex investment.
- 4.35 Targets of measures that are not linked to revenue are not set as quality standards.
- 4.36 As part of the price-quality path, we are required to determine quality standards.⁶⁴ Through the Capex IM we established a mechanism to measure performance against

⁶² Transpower “Response to IPP Draft Decision” (27 June 2014), p.39.

⁶³ Transpower will have the flexibility to develop these measures but will be required to report on these measures annually. We discuss this in Attachment I.

⁶⁴ Commerce Act 1986, s 53M.

grid outputs and link this to revenue.⁶⁵ This provides incentives to balance cost/quality trade-offs, consistent with the provisions in s 53M(2) of the Commerce Act.

- 4.37 When we set the Capex IM we explained that quality standards for any given regulatory period will comprise, at a minimum, a subset of grid output measures for that period, for example performance-based measures that quantify the level of service received by consumers. We also explained that the quality standards may incorporate additional measures.

A subset of the grid output measures that are determined and apply to a given RCP [regulatory control period], will be, in part, the quality standards that apply to that RCP. This will fulfil the requirement of s 53M for the Commission to set quality standards. However, the determination that specifies the quality standards may set additional quality standards to those captured by the grid outputs.⁶⁶

- 4.38 The quality standards that we set are quantifiable measures, such as targets or bands. For RCP2, we have set targets for the revenue-linked grid output measures.

Implications of not meeting the quality standards

- 4.39 In exceptional circumstances where quality standards are not met, the Commission may seek pecuniary penalties under s 87 or criminal sanctions under s 87B of the Commerce Act for that underperformance.
- 4.40 We will not take any such enforcement action for performance below the quality standard but better than the collar that is set for the grid output measure. Any such enforcement action would be in addition to the grid output adjustment. Attachment B sets out further information on these matters.

⁶⁵ Commerce Commission “Transpower Capital Expenditure Input Methodology Reasons Paper” (31 January 2012), pp 38-45.

⁶⁶ Ibid, paragraph 3.4.4, p. 39.

How Transpower's performance is linked to revenue

4.41 For the grid output measures that are linked to revenue, Transpower will be rewarded for exceeding the targets and penalised if its performance is worse than the targets. In this section we discuss:

4.41.1 the revenue at risk;

4.41.2 the role of grid output adjustments;

4.41.3 the incentive rates, caps, collars for grid and asset performance measures; and

4.41.4 the incentive rates, caps, collars for asset health based measures.

\$10m of revenue will be at risk each year for the performance-based measures

4.42 For each year of the RCP2, \$10m of revenue will be at risk for the performance-based measures.⁶⁷ We consider this will provide Transpower with sufficient incentive to consider cost-quality trade-offs of its investment decisions. We estimate 1% of revenue equals approximately a 2% change in earnings before interest and tax.⁶⁸

4.43 Our decision is consistent with the amount of revenue at risk in similar mechanisms in overseas regulatory regimes of similar maturity.⁶⁹ We have adopted Transpower's proposed distribution of the revenue at risk across the different measures.⁷⁰

\$14.3 million of revenue will be at risk over the RCP for the asset health measures

4.44 Over the regulatory period, Transpower will have \$14.3 million of revenue at risk over all six portfolios covered by the asset health measures. This is an average of \$2.9 million per year.

⁶⁷ This means that Transpower may be penalised by up to \$10m a year if it fails to meet all collars that are set, or receive up to an additional \$10m in revenue if it performs up to all the caps. \$10m is approximately 1% of Transpower's estimated average annual revenue in RCP2.

⁶⁸ Based on Transpower's forecast revenue for 2014/15.

⁶⁹ The Australian Energy Regulator's recent decisions have linked 1% of transmission system operators' revenue with reliability targets. In some cases, an additional 2% of revenue was linked to market impact measures. See for example Australian Energy Regulator "Final decision: ElectraNet transmission determination, 2013-14 to 2017-18", April 2013, p. 45. Ofgem's decision for TPCR4 was that up to 1% of transmission system operator's revenue was at risk for outperformance against the reliability targets, and up to 1.5% was at risk for underperformance. Ofgem "TPCR4 Rollover: Final Proposals", 28 November 2011, p. 32.

⁷⁰ 80% of the revenue at risk is linked to grid performance measures and of this, most related to load customers with N-1 security. This reflects the most important aspect of service to customers and consumers, and the higher cost to these customers from loss of supply.

- 4.45 We consider this amount of revenue is sufficient to incentivise Transpower to deliver the required level of asset health and outputs.
- 4.46 The total revenue at risk is 36.3% of the reduction of the replacement and refurbishment base capex (\$40 million in nominal terms) we proposed in our draft decision but which has since been reinstated. The total revenue at risk is allocated to the six asset fleets according to relative forecast spend on each fleet.⁷¹

The grid output adjustment links Transpower’s revenue with its performance

- 4.47 The annual grid output adjustment is used to adjust Transpower’s revenue based on its achievement against the measures linked to revenue.⁷²
- 4.48 The grid output adjustment is intended to incentivise Transpower to provide services at a quality that better reflects consumer demand through balancing the cost-quality trade-offs provided by the incentive mechanism. The incentive scheme also reduces any incentives for Transpower to under invest in the delivery of grid outputs.

How the grid output adjustment works

- 4.49 The grid output measures linked to revenue comprise four components: target, cap, collar, and incentive rate.
- 4.49.1 The target level represents the baseline for the incentive scheme for the measures included in the adjustment.
- 4.49.2 A ‘cap’ and a ‘collar’ set the range of performance for which Transpower may be penalised or rewarded. The cap is the upper bound and the collar is the lower bound. The purpose of the cap and collar is to limit the amount of revenue that is at risk under the incentive scheme.
- 4.49.3 An incentive rate determines the financial impact (loss or gain) on Transpower of each unit (number, minute or percentage) of deviation from the target, up to the cap or collar.
- 4.50 Together, these components determine the extent that Transpower is likely to have revenue gains or losses as a result of the quality of service it provides in RCP2.
- 4.51 Below we provide some stylised examples of how the adjustment is calculated.

⁷¹ Further details are provided in our document “Draft decision on asset health output measures for Transpower’s individual price path (30 July 2014)”.

⁷² Capex IM, Schedule B, clause B3.

Example 1: Grid output adjustment for GP measures

For GP1 high priority points of service the target is 2 interruptions, the cap is 0 interruptions, the collar is 4 interruptions and the incentive rate is \$606,000 per interruption.

If actual performance is 1 interruption, then Transpower will be rewarded by $\$606,000 = (2 - 1) \times \$606,000$.

If actual performance is 4 interruptions, then Transpower will be penalised by $\$1,212,000 = (2 - 4) \times \$606,000$.

If actual performance is 6 interruptions, then Transpower will be penalised by $\$1,212,000$, since the penalty is capped at four interruptions.⁷³

Example 2: Grid output adjustment for AP1 measure

For AP1 the target is 98.5%, the cap is 99.5% and collar is 97.5% and incentive rate is \$1,000,000 per 1% variation.

If actual performance is 99.0%, then Transpower will be rewarded by $\$500,000 = (99.0\% - 98.5\%) \times \$1,000,000$.

Example 3: Grid output adjustment for AP2 measure

For AP2 the target is 99.6%, the cap is 100%, the collar is 99.2% and the incentive rate is \$2,500,000 per 1% variation.

If actual performance is 99.4%, then Transpower will be penalised by $\$500,000 = (99.6\% - 99.4\%) \times \$2,500,000$.

⁷³ There is, however, the possibility of Court penalties. See paragraph 4.30.

The incentive rates, caps and collars and are determined based on a number of factors

4.52 The incentive rate is based on the amount of revenue at risk, as well as the caps and collars.

The incentives rates for grid and asset performance measures

- 4.53 We have set the caps and collars based on historic performance, including information for 2013/14, and long-term targets.⁷⁴ Adding the revenue at risk solves for the incentive rate.
- 4.54 Table 4.4 below shows the estimated incentive per kWh for different categories of points of service.⁷⁵ In our calculation we used Transpower’s assumption that there is an average system-wide load of 4,500 MW allocated across the different customer types and that the average interruption is 30 minutes.⁷⁶
- 4.55 Linking revenue to quality shares the benefit of improved transmission reliability between Transpower and electricity consumers. The benefit of improved reliability can be measured by the valuation of lost load (VoLL), so improved reliability provides a benefit (after allowing for cost) up to the point beyond which a marginal improvement would cost more than the VoLL corresponding to such an improvement.⁷⁷
- 4.56 Table 4.4 allows a comparison to be drawn between the dollar amounts Transpower receives from different quality improvements and the Authority's estimate of average VoLL of \$50,031.
- 4.57 The relationship between the asset and grid performance measures and the value derived from improvements in these measures is not known precisely and differs from one measure to another. The revenue-link therefore cannot be calibrated to achieve exactly the alignment described above.

⁷⁴ In its proposal, Transpower set both long-term targets and RCP2 targets for the revenue-linked grid outputs measures. See Attachment G for detail.

⁷⁵ In response to our decision Vector submitted that we should consider using the Electricity Authority’s most recent national VoLLVoLL estimate of \$50,031/MWh. We have decided to not use this estimate of VoLLVoLL because it is provisional and the Electricity Authority’s key finding is that a single VoLLVoLL figure is an inappropriate measure of the value that New Zealand electricity consumers place on unserved energy [refer Electricity Authority “Investigation into the Value of lost load in New Zealand” (23 July 2013); p. 1.] Vector’s submission is available in: Vector “Setting Transpower’s individual price-quality path for 2015-2020” (27 June 2014), paragraphs 5 – 8.

⁷⁶ We consider that it may be more appropriate to use VoLLVoLL and unserved energy specific to each category of points of service, but realise that further work is needed to estimate suitable VoLLVoLL for each category of point of service. We note that there are a range of VoLL estimates.

⁷⁷ VoLLVoLL is described here in a conceptual sense. See later in this chapter for an explanation of our estimated implied value of VoLLVoLL

- 4.58 As our decision is to set more challenging targets for GP1 than those proposed by Transpower, the caps and collars for these measures also differ from those proposed by Transpower to ensure the revenue at risk remains at about 1% of MAR. The caps and collars are symmetrical.⁷⁸

Table 4.4: Comparison of incentive rates against estimated incentive per kWh not provided and revenue at risk

Grid output measure	Point of service category	Incentive rate (\$000 per unit from target)	Estimated incentive per kWh (\$000)	Revenue at risk (\$000)
Asset performance measure				
Availability (%)	AP1: HVDC	1,000	NA	1,000
	AP2: HVAC	2,500	NA	1,000
Grid performance measure				
GP1: Number of interruptions (per annum)	High Priority	606	28	1,212
	Important	242	17	1,212
	Standard	133	17	667
	Generator	133	-	667
	N-security	10	1	242
GP2: Average duration of interruptions (min)	High Priority	15	28	606
	Important	9	17	606
	Standard	5	17	333
	Generator	4	-	333
	N-security	3	1	121
GP3: P90 Longest durations (min)	High Priority	15	-	606
	Important	9	-	606
	Standard	5	-	333
	Generator	4	-	333
	N-security	3	-	121

Note: The implied valuation of loss load is only between cap and collar and is based on the incentive rate. HVAC and HVDC availability do not have an estimated incentive per kWh as these are not measures of interruptions to supply. We have not estimated the incentive rate for GP3. Generator points of service do not experience loss of load.

⁷⁸ Commerce Commission “Transpower Capital Expenditure Input Methodology Reasons Paper” (31 January 2012), paragraph 3.4.3, p. 38.

The incentive rates, caps and collars for asset health measures

- 4.59 The incentive rate for asset health measures is such that, on average, the revenue adjustment will equal a 10% uplift to the base capex incentive reward Transpower would receive for not replacing an asset. In other words, the penalty for not replacing or refurbishing an asset is approximately 36.3% of the average cost of an asset.
- 4.60 We consider that setting a symmetric incentive rate equal to the base capex incentive rate with a 10% mark-up is appropriate. For the portfolios covered by the asset health grid outputs measures, the 10% mark-up acts to:
- 4.60.1 back-out any reward gained under the base capex expenditure adjustment owing to reduced output (the 33% of reduced base capex); and
 - 4.60.2 incentivise Transpower to improve its levels of asset health and deliver outputs.
- 4.61 Below we provide some examples of how the asset health incentives and the base capex expenditure adjustment mechanisms will work:

Example 4: Grid output adjustment for AH1 measure

For AH1: Number of towers painted each year, the 2015/16 target is 451 towers, the cap is 489, the collar is 413 towers and the incentive rate is \$29,700 per tower.

Assume that Transpower delivered all base capex as per plan except that it painted 420 towers instead of the planned 451. Assume all base capex was delivered at its estimated cost and Transpower underspent by \$2,498,600 $[(451 - 420) * 80,600]$ where \$80,600 is the average price for painting a tower].

Then through the base capex expenditure adjustment mechanism, Transpower will be entitled to 33% of \$2,498,600 (\$832,800).

But via the asset health grid output measures, Transpower will be penalised by \$920,700 $[(451-420) \times \$29,700]$.

Overall Transpower will be penalised by \$87,900 = \$920,700 - \$832,800.

Example 5: Grid output adjustment for AH6 measure

For AH6: Number of outdoor to indoor conversion in RCP2, target is 16, the cap is 17, the collar is 15 conversions and the incentive rate is \$2,710,000 per conversion.

Assume that Transpower delivered all its based capex plus one extra conversion within the total base capex allowance.

Then through the asset health grid output measures, Transpower will be entitled to a reward of \$2,710,000.

Transpower will not receive any rewards or incur any penalties through the base capex expenditure adjustment mechanism.

Example 6: Grid output adjustment for AH5 measure

For AH5: Number of transformers replaced in RCP2, target is 26, the cap is 28, the collar is 24 replacements and the incentive rate is \$1,370,000 per conversion

Assume that Transpower delivered all its planed based capex but replaced one less transformer and spent all its base capex allowance.

Then through the asset health grid output measures, Transpower will be penalised by \$1,370,000.

Transpower will not receive any rewards or incur any penalties through the base capex expenditure adjustment mechanism.

Example 7: Under-delivery of assets not linked to asset health.

Assume that Transpower delivers the expenditure on the six asset fleets linked to asset health as planned but does not deliver some of other asset portfolios and underspends the capex allowance by \$40,000,000.

Then through the base capex expenditure adjustment mechanism, Transpower will be entitled to 33% of \$40,000,000 (= \$13,333,333).

Transpower will not receive any rewards or incur any penalties through the asset health grid output measures.

- 4.62 The revenue at risk, the incentive rate of 36.3%, and the average unit of cost of replacing or refurbishing an asset, are used to calculate the caps and collars. As an example, for insulators, the annual revenue at risk is \$216k and the average unit cost is \$5.7k. So the deviation between target and collar is $216/0.363/5.7 = 104$ units.⁷⁹

How the aggregate cap for revenue-linked asset health measures would work

- 4.63 We have also set an ‘aggregate cap’ for the revenue-linked asset health measures. The aggregate cap would apply to any net benefit accrued across all measures. This will ensure that there cannot be an overall monetary benefit under the asset health grid output measures for ‘over delivery’ across all measures.
- 4.64 That is, if the aggregate net monetary benefit, across RCP2, across all asset health measures is greater than zero, the aggregate cap will act to set that net monetary benefit to zero.
- 4.65 The aggregate cap is asymmetric, if there is an aggregate monetary penalty Transpower will be exposed to that financial penalty.
- 4.66 Given our decision is to set volumetric asset health targets the aggregate cap will offer a degree of protection to consumers against potential perverse incentives, such as inefficiently decreasing replacement and refurbishment expenditure in areas not covered by the incentive scheme or focusing resources on volumetric output which is low cost but may not improve average remaining life to the same extent as planned.
- 4.67 Transpower has agreed to give effect to the aggregate cap at the end of RCP2. This will be done through the wash-up mechanism.⁸⁰ We consider this approach the simplest and most transparent means of implementing the aggregate cap.⁸¹
- 4.68 MEUG’s asset health measures submission supported the aggregate cap but suggested we consider an asymmetric incentive rate for each measure, such that there is greater penalty for not achieving the target than reward for exceeding the target.⁸² In our view, the aggregate cap effectively creates an asymmetry similar to that suggested by MEUG while allowing for substitution between portfolios as new information arises.

⁷⁹ The method of calculating the revenue at risk is discussed on paragraph 4.46.

⁸⁰ This will be done through the mechanism that enables Transpower to under-recover revenue.

⁸¹ We could also implement the aggregate cap through use of the ‘g’ term of the base capex expenditure adjustment as per Schedule B of the Capex IM.

⁸² Major Electricity Users’ Group “Transpower asset health grid output measures submission” (11 July 2014), paragraph 4-6.

4.69 The following examples illustrate how the aggregate cap would operate:

Example 8: Aggregate cap when there is overall reward.

Assume that over RCP2, Transpower over delivers for tower painting, insulators replacements and outdoor to indoor conversions and under delivers for grillages, outdoor circuit breakers and transformer replacements, each fleet by one unit. Transpower spends all its base capex allowance.

Transpower will not receive any rewards or incur any penalties through the base capex expenditure adjustment mechanism.

Through the asset health mechanism Transpower will be entitled to a reward of \$2,731,800 for over delivery (29,700 + 2,100 + 2,700,000).

Through the asset health mechanism Transpower will be penalised by \$1,432,000 for under-delivery (10,200 + 51,800 + 1,370,000).

Overall Transpower will be entitled to a reward of \$1,299,800.

But due to the aggregate cap, Transpower will not take this reward.

Example 9: The aggregate cap does not apply when there is an overall penalty.

Assume that over RCP2, Transpower under delivers for tower painting, insulators replacements and outdoor to indoor conversions and over delivers for grillages, outdoor circuit breakers and transformer replacements, each fleet by one unit. Transpower spends all its base capex allowance.

The Transpower will not receive any rewards or incur any penalties through the base capex expenditure adjustment mechanism.

Through the asset health mechanism Transpower will be entitled to a reward of \$1,432,000 for over delivery (10,200 + 51,800 + 1,370,000).

Through the asset health mechanism Transpower will be penalised \$2,731,800 for under-delivery (29,700 + 2,100 + 2,700,000).

Overall Transpower will be penalised by \$1,299,800.

The targets for the grid output measures

4.70 In this section we discuss the targets we have set for the:

4.70.1 grid and asset performance grid output measures; and

4.70.2 asset health measures.

Our targets for grid performance measures reflect recent investments and Transpower's RCP2 priorities

4.71 We have decided to use the same target values as those proposed by Transpower for the AP1 and AP2 measures, ten GP2 and GP3 measures and two of the five GP1 measures.⁸³ We have made three of the GP1 targets more challenging than that proposed by Transpower.

4.72 In reaching our decision for RCP2 we reviewed Transpower's submission and also took into account Transpower's performance in 2013/14.⁸⁴ The 2013/14 performance is additional data that guided our decision, which is to:

4.72.1 retain the targets, caps and collars in our draft decision for the high priority and standard points of service; and

4.72.2 amend the target, caps and collars for N-security points of service.

4.73 In its submission on our draft decision, Transpower submitted that the revised targets in our draft decision were too severe and that its proposed targets for high priority, standard and N-security points of service should be re-instated. Transpower also submitted that its proposed targets are based on transitioning from historic performance towards its long-term targets over two regulatory control periods.⁸⁵

4.74 In reaching our decision, we considered current trends in Transpower's performance for the three measures. Historical evidence shows that Transpower's performance has been steadily improving and the 2013/14 data also supports this. A lot of this improvement could be due to the investments that Transpower has been undertaking. These include both base capex and major capex projects.

4.75 Concerning base capex projects, in 2011, Transpower stated:

⁸³ These are Transpower's amended targets that exclude automatic under-frequency load shedding (AUFLS) events. Our reasons for excluding the AUFLS from the target are discussed in paragraphs E21 to E30. Transpower provided the amended targets via Transpower "Q60 – Attachment – RLPM without AUFLS calculations – Q060-03" (28 March 2014).

⁸⁴ Transpower "Q079 Response to Commerce Commission's Additional Information request RCP2 submission" (2 July 2014).

⁸⁵ Transpower "Response to IPP Draft Decision" (27 June 2014); p. 47.

...the company is currently engaged in a number of major upgrade projects to facilitate new generation, improve reliability or provide additional capacity.⁸⁶

and further

Transpower is also investigating and implementing a range of smaller, but effective, reliability improvement strategies including addressing leaking SF6 circuit breakers, enabling/fitting auto-reclose facilities, identifying root causes of protection / SCADA failures, implementing its strategic spare power transformer policy, and deploying consistent contractor maintenance arrangements and competency standards.⁸⁷

4.76 When delivering its 2014 annual results, concerning the effect of major capex projects, Transpower stated:

It has been pleasing to complete the last of the major capital build projects – the North Auckland and Northland Project and Wairakei to Whakamaru Replacement Transmission Line Project. I am confident that the major grid enhancements carried out over the past few years have substantially improved the reliability and resilience of the grid, and will serve New Zealanders for generations to come.⁸⁸

4.77 By setting targets that are averages of the historical performance since 2006/07, Transpower has not allowed for the benefits of investments mentioned above and other major capex investments such as the Otahuhu Diversity project (completed in 2008) NIGU project (completed in 2012). These were significant investments that were proposed to improve the reliability of the grid.

4.78 If we accept the targets that Transpower proposed, we will effectively be rewarding Transpower for maintaining or perhaps performing worse than its current level of performance. Such an outcome is against the purpose of the performance incentive mechanism which is to incentivise Transpower to improve its current level of performance.⁸⁹

4.79 Transpower also submitted that the targets for the ‘standard’ and ‘N-security’ points of supply should not be changed because Transpower intends to ‘hold the historic level’ of performance.⁹⁰ In setting the targets for RCP2, we have taken this into account and discuss this further in Attachment G.

⁸⁶ Transpower “Expenditure Forecast and Quality Performance: 1 July 2012 to 30 June 2015” (February 2011); p. 23.

⁸⁷ Transpower “Expenditure Forecast and Quality Performance: 1 July 2012 to 30 June 2015” (February 2011); p. 50.

⁸⁸ <https://www.transpower.co.nz/news/transpower-releases-2013-14-annual-results> as at 14 August 2014.

⁸⁹ Unless there is a cost-quality trade-off for reduced quality of service.

⁹⁰ Transpower “Response to IPP Draft Decision” (27 June 2014); p. 49.

- 4.80 This compares with Transpower’s proposal which used historical data from 2006/07. We consider that the more up to date information better reflects the benefits of recent investments by Transpower, and the earlier data is from a period where Transpower’s performance was worse than the present.
- 4.81 Transpower also submitted that the outage targets we have set are lower than Transpower’s long-term targets so we are signalling an increase in performance when an economic analysis shows that a lower level of performance is more appropriate. We disagree with Transpower. In our view, our RCP2 targets better reflect the current level of performance than Transpower’s proposed targets.
- 4.82 We consider that Transpower needs to transition to its long-term targets that involve lower quality. And in doing so it needs to offer an appropriate price trade-off to offset the lower quality.
- 4.83 In summary, we have made our decision based on our observation that the grid has become more reliable and by considering Transpower’s performance during 2013/14. We are satisfied that our decision is consistent with Transpower’s RCP2 priorities as set out in its proposal.
- 4.84 In Attachment H, we discuss Transpower concerns on and our reasons for determining the GP1 targets for RCP2 for the following points of service:
- 4.84.1 high priority;
 - 4.84.2 standard; and
 - 4.84.3 N-security.

The targets for the asset health measures are based on the expenditure plan

- 4.85 Table 4.2 shows the targets for the asset health models linked to revenue.
- 4.86 We have accepted the targets provided by Transpower since these reflect the replacement and refurbishment expenditure plan for RCP2 which we have reviewed.⁹¹
- We have set volumetric targets due to practical difficulties*
- 4.87 For all the asset health measures linked to revenue we have set volumetric (number of assets replaced or refurbished) targets.
- 4.88 Transpower had proposed volumetric measures for three asset fleets and ‘change in average remaining life’ as targets for the other three. Volumetric measures were for

⁹¹ Transpower provided us volumetric targets for all six asset fleets on 7 August 2014. Transpower “Volume based incentive numbers.xlsx”

‘outdoor to indoor conversions’, grillages and insulators. Change in average remaining life measures were for ‘tower painting’, transformers and outdoor circuit breakers.

4.89 Transpower proposed measures based on ‘change in average remaining life’ because, in its view, the asset health models for these three asset fleets were sufficiently well developed.⁹² On receipt of further information about the implementation of the models, we concluded that they were not developed to the extent necessary to apply a revenue-linked mechanism.

4.90 We consider that a measure based on ‘change in average remaining life’, using the current asset health models, is not auditable and replicable over time given the current state of the models.⁹³ Transpower also recognises this, stating:⁹⁴

During RCP2 we intend to:

- continue to obtain new information on asset condition;
- refine our understanding and modelling of how asset health changes over time; and
- test and refine our understanding of the optimal asset intervention strategies and plans.

This means the asset health information we use to run the business will almost certainly diverge from the frozen asset data and algorithms.

4.91 Transpower proposed to freeze the current model for the purposes of the incentive scheme. Our concerns are that such an approach may:

- 4.91.1 potentially lead to perverse incentives and results when a material divergence between the ‘frozen’ model and the data used by Transpower to run its business occurs;
- 4.91.2 be practically difficult to implement - Transpower has proposed adjusting the ‘m-term’ in the grid output adjustment’ calculation⁹⁵ or reopening the targets;
- 4.91.3 have a relatively high compliance cost - in assessing the need for an ‘m-term’ adjustment it would likely be time consuming and practically difficult to verify that the resultant plan is optimal; and

⁹² Transpower “Response to IPP Draft Decision” (27 June 2014); p. 41.

⁹³ Capex IM, Clause A5(c).

⁹⁴ Transpower “Response to Q095’ (6 August 2014); p. 1.

⁹⁵ Capex IM, Clause B3.

- 4.91.4 may require an undefined process for assessing the need for an 'm-term' adjustment, and the need for potentially significant additional information may provide unclear incentives around asset health.

5. Operating and capital expenditure allowances

Purpose of this chapter

- 5.1 This chapter sets out our decisions and supporting reasons on the base capex and opex allowances for each year of RCP2 and how we have assessed Transpower's proposal.
- 5.2 Transpower presents its forecast expenditure in its proposal on a 2012/13 constant price basis. We have evaluated the expenditure on the same basis. Values in this chapter are therefore expressed in 2012/13 constant price basis, unless otherwise stated.
- 5.3 We are required to set nominal allowances for each year of RCP2. This chapter therefore also sets out our decisions on the cost escalators used to convert 2012/13 constant price allowances into nominal allowances.
- 5.4 Attachment B provides more details on our approach used to evaluate Transpower's proposal.

Our decision on base capex and opex allowances

- 5.5 We have set nominal opex and base capex allowances for each year of RCP2. These are set out in Table 5.1.

Table 5.1: Opex and base capex allowances (nominal) for each year of RCP2

	2015/16	2016/17	2017/18	2018/19	2019/20	Total RCP2
Opex (\$m)	276.6	284.6	292.5	294.0	296.4	1,444.0
Base capex (\$m)	235.2	249.5	242.0	231.6	213.1	1,171.5

Note: The base capex allowances above are commissioned amounts and include Transpower's proposed 7.5% 'productivity' adjustment applied to grid replacement and refurbishment and ICT capex. Figures may not add exactly due to rounding.

- 5.6 The base capex allowance excludes any monetary amount for 'listed projects'. The base capex value for these projects, and their consequential impact on the forecast MAR, will be quantified as the related base capex is approved during RCP2.⁹⁶
- 5.7 We consider that these allowances achieve an expenditure outcome which represents the efficient costs of a prudent supplier.

⁹⁶ As described in Chapter 3 and Attachment D, Transpower's forecast MAR may be adjusted to incorporate Commission approved base capex associated with listed projects during RCP2.

- 5.8 In forming our view on these allowances, we have undertaken an extensive review of the material provided by Transpower. We have also taken advice from our expert, Strata Energy Consulting. We have consulted and carefully considered all submissions, including the views of Transpower.

We evaluated Transpower's proposal in 2012/13 constant prices

- 5.9 The adjustments we have made to Transpower's proposed expenditure over RCP2 in constant price terms are shown in Table 5.2.
- 5.10 We have not allowed Transpower the full amount of its proposed expenditure. This is because we found aspects of its proposal that were insufficiently justified.

Table 5.2: Total expenditure adjustments for RCP2 (2012/13 constant prices)

	Transpower's proposal (\$m)	Our adjustments (\$m)	Final decision (\$m)
Opex	1309.3	-20.0	1,289.3
Base Capex	1188.7	-56.5	1,132.2

Note: Transpower's proposed opex allowance excludes supplementary proposed allowances for demand response and Consumer Guarantees Act indemnity payments. Figures may not add exactly due to rounding.

Cost escalators have been used to derive nominal allowances

- 5.11 A conversion of the allowances from constant price terms was required to provide the final allowances in nominal expenditure. We discuss cost escalation factors in more detail in Attachment H.
- 5.12 Table 5.3 demonstrates the cost escalators we used to convert constant price expenditure allowances in Table 5.2 into the nominal expenditure allowances shown in Table 5.1.

Table 5.3: Conversions of the allowances into nominal terms

	Opex (\$m)	Base capex (\$m)
Adjusted expenditure	1,289.3	1132.2
CPI inflation	129.3	111.4
Real price effects	25.6	29.5
Nominal expenditure	1,444.1	1,273.0
Nominal commissioned	-	1,258.3
USD foreign exchange adjustment	- 0.1	- 3.5
7.5% 'productivity' adjustment	-	- 83.3
Approved Nominal allowance	1,444.0	1,171.5

Note: the base capex allowance is approved on a commissioned basis so the nominal expenditure has required assumptions on when certain base capex will be commissioned, ie, can provide electricity lines services. Figures may not add exactly due to rounding.

We have applied Transpower's 7.5% 'productivity' adjustment to the base capex allowance

- 5.13 As set out in Table 5.3, the conversion to a nominal base capex allowance includes a reduction of \$83.3 million owing to a 7.5% 'productivity' adjustment applied to grid and ICT capex. However, we have not applied it to enhancement and development capex.
- 5.14 Transpower applied a top-down 'productivity' adjustment of 7.5% to grid and ICT base capex in its proposal. Transpower indicated that this was a top-down adjustment that reflects gains in productivity and was applied at an aggregate level and not at a project level.
- 5.15 We have applied this adjustment on the basis that we consider it reflects savings from strategies and improvements in processes already implemented at the start of RCP2.
- 5.16 We have been informed by Strata in making this decision. Strata found no reason to increase or decrease the proposed 'productivity' adjustment.⁹⁷ Strata reached this view based on the information provided in Transpower's proposal and the additional information provided by Transpower.
- 5.17 The adjustment has not been applied to enhancement and development projects, as Strata conducted a project by project review that resulted in expenditure levels for individual projects. We have accepted Strata's recommendations that the expenditure for these projects is prudent and efficient without any further adjustment.

Key changes from our draft decision

- 5.18 Our final decision includes the reinstatement of \$76.9 million of base capex and \$51.8 million of opex from our draft decision.
- 5.19 We have reinstated \$34.2 million of replacement and refurbishment (R&R) base capex and have set asset health measures to incentivise Transpower to deliver its work programme. \$4.3 million of R&R secondary assets has also been reinstated.
- 5.20 Transpower also provided additional justification and evidence to support the need for an additional \$38.4 million of enhancement and development (E&D) base capex.
- 5.21 The reinstatement of \$9.4 million of investigations opex will assist the completion of business improvement and performance measure development initiatives.

⁹⁷ Strata report, paragraphs 249-256 and 441-442.

- 5.22 We have also reinstated \$19.7 million of insurance costs, \$24.6 million of for corporate opex, and \$6.5 million for demand response, and \$1 million for Consumer Guarantees Act indemnity payments insurance. We now consider this opex is justified.
- 5.23 Table 5.4 shows the changes from the draft decision along with our draft adjustments and draft decision.

Table 5.4: Changes from our draft decision

	Transpower's proposal (\$m)	Draft adjustments (\$m)	Draft decision (\$m)	Adjustments from draft (\$m)	Final decision (\$m)
Opex	1309.3	-71.8	1237.5	51.8	1,289.3
Base Capex	1188.7	-133.3	1055.3	76.9	1,132.2

Note: Figures may not add exactly due to rounding.

How we have assessed expenditure allowances

- 5.24 This section discusses how we have assessed Transpower's proposed expenditure allowances.

Our approach to determining base capex

- 5.25 Transpower is required to apply the Capex IM when preparing and submitting capex proposals.
- 5.26 The Capex IM sets out the rules and processes for approving Transpower's capex. It prescribes the processes that we and Transpower must follow, the information that Transpower must provide with its proposals, and the evaluation criteria and approach that we will use in approving (or rejecting) capex proposals.
- 5.27 The general premise of the Capex IM is that Transpower is the principal grid planner and is responsible for proposing, seeking approval, and justifying the capital expenditure it considers is necessary. Our role under the Capex IM is to provide independent scrutiny, and where appropriate:
- 5.27.1 approve projects and programmes of major capex;⁹⁸ and
 - 5.27.2 set a base capex allowance.

⁹⁸ The Capex IM sets out the process for Transpower seeking approval for major capex proposals. These proposals are made and determined during the course of a regulatory period, with any approved major capex expenditure then impacting Transpower's MAR under the individual price-quality path via period adjustments.

- 5.28 The assessment of forecast base capital expenditure is not a pure mechanistic process and necessarily involves the exercise of judgement. We applied the evaluation criteria for base capex specified in the Capex IM.⁹⁹ These criteria are intended to achieve an expenditure outcome which represents the efficient costs of a prudent supplier.
- 5.29 In practice, we consider that Good Electricity Industry Practice (GEIP) reflects the appropriate planning and performance standards for a prudent supplier. A useful definition of GEIP, in relation to electricity transmission services, is found in the Electricity Industry Participation Code.¹⁰⁰
- The exercise of that degree of skill, diligence, prudence, foresight and economic management, as determined by reference to good international practice, which would reasonably be expected from a skilled and experienced asset owner engaged in the management of a transmission network under conditions comparable to those applicable to the grid consistent with applicable law, safety and environmental protection. The determination is to take into account factors such as the relative size, duty, age and technology status of the relevant transmission network and applicable law.
- 5.30 We discuss how GEIP provides a useful reference as we evaluate Transpower's expenditure proposal in Attachment B.

Our approach to determining opex

- 5.31 Unlike base capex, there are no specified evaluation criteria for opex in either the Transpower IMs or Capex IM. However, we do not believe the criteria should be significantly different, particularly given the need for capex to be directed towards achieving cost-effective and efficient solutions, and the potential cost trade-offs between capex and opex that this implies.
- 5.32 Therefore, in evaluating Transpower's opex proposal we have had regard to the efficient costs of a prudent supplier and have been guided, where it is useful, by the Capex IM criteria and GEIP.

⁹⁹ Commerce Commission "Transpower Capital Expenditure Input Methodology Determination [2012]" NZCC 2, 31 January 2012, clause 6.6.1 and Schedule A.

¹⁰⁰ Electricity Authority "The Electricity Industry Participation Code [2010]", 3 October 2013

We sought the views of expert consultants

- 5.33 In reviewing the expenditure allowances proposed by Transpower, we sought the views of Strata Energy Consulting Limited (Strata) who have expertise in these matters.¹⁰¹
- 5.34 Our engagement process with Strata has been iterative and the views they provided were based on information and evidence that was the subject of consultation, or has been raised in submissions, or was provided by Transpower in response to a request from us.
- 5.35 We published Strata’s first report on 16 May 2014 alongside our draft decision, giving interested persons an opportunity to express views on Strata’s findings.
- 5.36 In response to submissions and cross-submissions on our draft decision, we sought further views from Strata as we worked to assess those responses, and determine the expenditure allowances within the timeframes prescribed by the Capex IM. Strata’s report on its review of points raised in submissions on our draft decision is available on our website.¹⁰²
- 5.37 While we placed substantial weight on Strata’s judgement, Strata’s views remain an input into our considerations only, and are not in and of themselves, our views.¹⁰³

How we have practically applied our evaluation approach

- 5.38 In applying our evaluation criteria, the focus of our assessment approach took into account the nature of the expenditure being assessed. For example:
- 5.38.1 *grid refurbishment and replacement expenditure*: we reviewed, among other things, Transpower’s fleet strategies, cyclical asset management frameworks and cost estimation processes—this approach is consistent with Transpower’s approach to preparing asset management plans and forecasts for volumetric-based grid expenditure;
- 5.38.2 *enhancement and development expenditure*: this expenditure was assessed project by project, as by nature it is largely based on growth in peak demand within and across regions; and
- 5.38.3 *departmental opex expenditure*: our approach included an examination of key strategy documents, eg, Transpower’s People Capability Strategy.

¹⁰¹ We also sought the views of another expert adviser, Partna Consulting Group Ltd, but their advice was focused on matters of quality rather than expenditure.

¹⁰² Strata “Review of points raised in submissions on the draft decision” (19 August 2014).

¹⁰³ Our decisions do not simply rely on the conclusions in Strata’s report, contrary to Transpower’s observations in Transpower, “Response to IPP draft decision” (27 June 2014), p. 7.

- 5.39 Notwithstanding the differing focus of our approach, in assessing the capex programmes we evaluated in particular:
 - 5.39.1 Transpower's risk-based approach to needs assessment;
 - 5.39.2 whether solutions are cost-effective and alternative solutions were considered;
 - 5.39.3 whether solutions were appropriately costed and procured efficiently;
 - 5.39.4 whether linkages with opex and other projects or programmes were taken into account;
 - 5.39.5 whether outputs are deliverable within RCP2; and
 - 5.39.6 whether in other respects solutions reflect good management practice (GEIP).
- 5.40 We have concluded that expenditure is prudent and efficient where Transpower has demonstrated that it meets these and our other evaluation criteria.
- 5.41 The reasons for our decisions on each area of expenditure comment on particular aspects of Transpower's proposal where matters of concern or emphasis were raised by our expert advisors, our own analysis, or through consultation with interested persons.
- 5.42 In the following sections we discuss:
 - 5.42.1 the reasons for our decision on the base capex allowance, and what expenditure we consider is prudent and efficient for RCP2; and
 - 5.42.2 the reasons for our decision on the opex allowance, and what expenditure we consider is prudent and efficient for RCP2.

We have set a base capex allowance of \$1.13 billion

5.43 The section sets out our final adjustments for the groupings of portfolios that were used to build up Transpower's proposed base capex allowance.¹⁰⁴ A summary of adjustments for each grouping is set out in Table 5.5.

Table 5.5: Adjustments to Transpower's proposed base capex (2012/13 constant prices)

Base capex category	Transpower proposal (\$m)	Adjustments (\$m)	Decision (\$m)
Grid R&R capex - transmission lines and AC stations	683.5	-	683.5
Grid R&R capex - secondary assets	115.7	-7.9	107.8
Grid R&R capex - HVDC	21.4	-	21.4
Grid E&D capex RCP2<\$20m	123.9	-28.8	95.1
ICT capex - IT finance	22.1	-15.0	7.1
ICT capex excluding IT finance	188.7	-4.8	183.9
Business support	33.4	-	33.4
Total base capex	1188.7	-56.5	1132.2

Note: Figures may not add exactly due to rounding.

5.44 The adjustments expressed for each grouping are not specific directions or requirements for Transpower. Rather, they are used to calculate the overall base capex allowance provided for under the Capex IM. The base capex allowance is a fungible pool and Transpower can reprioritise its work programme and corresponding expenditure as it sees fit.

We consider \$683.5 million for grid replacement and refurbishment capex for transmission lines and AC stations is appropriate

5.45 We consider that \$683.5 million is a prudent forecast for transmission lines and AC stations R&R capex over RCP2, based on Transpower's practical delivery constraints. This is the amount Transpower proposed.

5.46 Our decision is consistent with Strata's recommendations. We have also implemented an asset health incentive mechanism based on what Transpower proposed in response to our draft decision.¹⁰⁵

¹⁰⁴ When referring to portfolios we are referring to expenditure groupings such as power transformers, tower painting, indoor switchgear replacement etc.

- 5.47 In coming to our decision, we have reviewed the recommendations from Strata and the information provided by Transpower and are satisfied that there is sufficient justification of the need for the transmission lines and AC substations capex.
- 5.48 In forming its recommendations, Strata assessed the transmission lines and AC substations fleet strategies, project overview documents, and other information provided by Transpower against the Capex IM.
- 5.49 In addition to Strata's review of Transpower's processes across all transmission lines and AC substations portfolios, Strata also performed a detailed review of the three largest portfolios: tower painting, power transformers, and outdoor to indoor conversions. The total forecast expenditure for the three portfolios is just over 40% of the transmission lines and AC substations expenditure.
- 5.50 Subject to concerns about deliverability noted below, Strata's review of Transpower's asset management framework concluded that, if implemented as documented, the resulting expenditure forecasts are likely to meet our evaluation criteria.
- 5.51 Overall we are satisfied that Transpower proposal meets the requirements of the Capex IM. However there were a number of process issues noted during the review. These issues and suggested improvement are discussed in Attachment I.

How our concerns about deliverability have been addressed

- 5.52 In our draft decision we raised concerns about the timing proposed for some projects, as well as concerns about Transpower's capacity to deliver its proposed programme of works. We did not consider it appropriate that Transpower would be rewarded by the base capex expenditure adjustment for decreased output, rather than genuine efficiency gains.¹⁰⁶
- 5.53 Because of this, our draft decision was to reduce the allowance for this expenditure by \$34.2 million. This reflected the level of expenditure that we considered Transpower had demonstrated it could realistically achieve.
- 5.54 We stated that our proposed reduction could be less if Transpower proposed a suitable grid output measure scheme that linked asset health to revenue consistent with the Capex IM. This would help ensure that Transpower is rewarded for efficiencies that have a positive impact on asset health, not for a simple failure to deliver.

¹⁰⁵ See Chapter 4.

¹⁰⁶ The base capex expenditure adjustment is detailed in Schedule B1 of the *Transpower Capital Expenditure Input Methodology Determination [2012] NZCC 2*.

- 5.55 In response, Transpower proposed an asset health incentive mechanism that links proposed expenditure to outputs. As discussed in Chapter 4, we have not implemented the mechanisms exactly as proposed. However, we consider the mechanism that we have implemented, along with asset health pilot reporting, lessens the risk of consumers bearing costs from Transpower delivering decreased output, rather than genuine efficiency gains.

Concerns about estimation bias and roll-out of projects

- 5.56 In its submission on our draft reasons paper, Transpower raised what it considered to be inconsistencies between the draft decision and the Strata report concerning cost estimation and projects rolling over into RCP3.¹⁰⁷ Transpower expressed its potential concern that a perceived bias towards overestimation was a factor in our reductions, given “the only evidence of aggregate bias presented by Strata is towards underestimation of costs.”¹⁰⁸
- 5.57 Our reference to overestimation bias here is not to a bias in the estimated cost as appears to be assumed by Transpower from its reading of Strata’s unit cost analysis, but a bias to early intervention replacement on issues with assets because of pessimistic modelling and pessimistic engineering judgement. This was noted separately in the Strata report.¹⁰⁹
- 5.58 In its report, Strata commented on the expected project roll-outs for R&R transmission lines and AC stations capex projects of 5% per annum from RCP2 to RCP3. The roll-outs relate to the under-delivery of the proposed programme of works.

We consider \$107.8 million for grid replacement and refurbishment capex for secondary assets is appropriate

- 5.59 We consider that \$107.8 million is prudent and efficient for secondary assets over RCP2. This is a reduction of \$7.9 million from what Transpower originally proposed and is consistent with Strata’s recommendations.
- 5.60 In coming to our decision, we have reviewed the recommendations from Strata and the information provided by Transpower and we are satisfied that there is sufficient justification of the need for the secondary assets capex expenditure and the proposed solutions. In forming its recommendations, Strata assessed the secondary assets fleet strategies, project overview documents, and other information provided by Transpower, against the Capex IM.

¹⁰⁷ Transpower “Response to IPP Draft Decision” (27 June 2014), section 2.7.2

¹⁰⁸ Transpower “Response to IPP Draft Decision” (27 June 2014), paragraph section 2.7.2.

¹⁰⁹ Strata report, paragraph 438

- 5.61 Approximately 55% of the secondary assets expenditure is made up of protection replacements, battery and DC systems component replacements, and bus zone protection installations. The replacement projects tend to be replacement of assets at the end of their lives and the rationale is well documented in the fleet strategies. The bus zone protection upgrade component is a long-term safety and performance improvement initiative, which is supported by the fleet strategy.
- 5.62 The remaining expenditure is associated with implementing a substation management system (SMS). This project involves the replacement of existing remote terminal units (RTUs) at substations across New Zealand with SMS capable RTUs and installing an SMS system.

How our concerns with the SMS project have been addressed

- 5.63 In our draft decision we were not satisfied that there was sufficient justification for the SMS project. In particular, Strata raised concerns about the speed of the roll-out of the SMS project and the costs and benefits in the business case.
- 5.64 In its submission on our draft decision, Transpower noted that it had reassessed and updated the SMS business case, and that it believed a revised less aggressive SMS roll-out in RCP2 is acceptable.¹¹⁰ Transpower provided recalibrated business case documentation which provided quantification of costs relative to the expected benefits for the revised SMS project.
- 5.65 Transpower submitted that \$39.3 million should be allowed for the SMS project, a reduction of \$7.9 million from the \$47.2 million originally proposed by Transpower.
- 5.66 We agree with Transpower's updated SMS project cost and consider that recalibrated business case and implementation plan will mitigate the concerns highlighted in our draft decision around the implementation plan and quantification of costs relative to the expected benefits of the investment. Further detail of the proposed investment is contained in Strata's review of submissions.¹¹¹

We consider \$21.4 million for grid replacement and refurbishment capex for HVDC is appropriate

- 5.67 We consider that \$21.4 million is a prudent and efficient level of HVDC R&R expenditure for HVDC. This is the amount that Transpower proposed.
- 5.68 We reviewed the HVDC fleet strategy (FS14) and the HVDC project overview document (PD29) against the Capex IM in forming our decision. Based on the

¹¹⁰ Transpower "Response to IPP Draft Decision" (27 June 2014), paragraph section 3.1.2

¹¹¹ Strata "Review of points raised in submissions on the draft decision" (19 August 2014), p.31

information provided by Transpower, we are satisfied that there is sufficient justification of the need for the HVDC capex expenditure and proposed solutions.¹¹²

We consider \$95.1 million for grid enhancement and development capex is appropriate

5.69 We consider that \$95.1 million is prudent and efficient for E&D capex over RCP2. This is a reduction of \$28.8 million from what Transpower originally proposed. E&D base capex is set out in Table 5.6.

Table 5.6: Adjustments to enhancement and development base capex

Grid E&D Capex	Transpower's proposal (\$m)	Adjustments (\$m)	Adjusted totals (\$m)
PD30 Otahuhu-Wiri Transmission Capacity	18.5	-3.7	14.8
PD31 Relieve Generation Constraints	16.7	-10.6	6.1
PD32 Upper North Island Reactive Support	8.0	0.0	8.0
PD33 Bus Section Fault Reliability	13.9	-3.0	10.9
PD34 Wellington Supply Security	11.4	-11.4	0.0
PD35 Otahuhu and Penrose Interconnection Capacity	16.6	-5.7	10.9
PD36 Bunnythorpe Interconnection Capacity	8.8	0.0	8.8
PD37 North Taranaki Transmission Capacity	3.0	10.7	13.7
PD38 Timaru Interconnecting Transformers Capacity	2.5	0.0	2.5
PD39 Southland Reactive Power Support	6.0	0.0	6.0
PD40 High Impact Low Probability Event Mitigation	9.2	0.0	9.2
PD41 Hororata and Kimberley Voltage Quality	3.4	0.0	3.4
PD42 Islington Spare Transformer Switchgear	2.4	-2.4	0.0
PD43 Haywards Local Service Third Incomer	1.8	-1.8	0.0
PD44 E&D Other	1.7	-0.8	0.9
Total E&D	123.9	-28.8	95.1

¹¹² Transpower "Portfolio Overview Document 29 – HVDC", in Transpower Expenditure Proposal for Regulatory Control Period 2 (2 December 2013), PD29

5.70 Our decision is based on advice from Strata and our own analysis of Transpower's documentation. For the E&D capex we have allowed, we consider that Transpower demonstrated:

5.70.1 clearly established needs;

5.70.2 planning data and assumptions which support the case for the project;

5.70.3 a range of likely options;

5.70.4 credible rationale for eliminating options; and

5.70.5 that the preferred option is supported by a business case.

Transpower provided greater justification for these projects in response to our draft decision

5.71 Substantial information was provided by Transpower and other parties in submissions and cross-submissions on our draft decision. We have consequently reconsidered a number of E&D capex projects.

5.72 Our draft decision allowed \$56.7 million for E&D capex over RCP2. This was a reduction from Transpower's proposal of \$123.9 million on the basis that Transpower had not provided adequate justification for the projects. Strata's report also raised a number of issues concerning demand forecasting, needs identification, and options analysis issues¹¹³.

5.73 In response to our draft decision, Transpower retested the need dates for some of its projects and subsequently reduced its proposed E&D capex to \$99.4 million. Transpower provided a number of detailed project cost recalibrations in support of its revised figures.

5.74 We consider that the updated project overview documents supplied by Transpower as part of its submission are significantly improved compared with documents included with Transpower's proposal.

5.75 Together with responses provided to some additional information requests, the portfolio overview documents now provide an appropriate level of support for the proposed expenditure.

¹¹³ Strata report, section 6.3.5

We have reviewed Transpower's E&D expenditure on a project by project basis

- 5.76 In its submission on our draft decisions, Transpower commented that we had reviewed the individual projects on a project by project basis and that this approach does not recognise the uncertainties involved in E&D investment.¹¹⁴
- 5.77 Transpower stressed the importance of looking at the expenditure category at an overview level (i.e. top-down). We note Strata's advice that Transpower has provided no guidance as to how it has developed its own assessment of the top-down "right amount" or how this might be externally reviewed.¹¹⁵
- 5.78 Transpower submitted the E&D projects as single projects in its expenditure proposal and not as a group or pool of projects with probabilities attached to each project. On this basis each project has been reviewed on its merits so as to develop confidence in the total of the amount proposed as a best forecast of likely needed expenditure for RCP2.
- 5.79 In the following section we provide a brief description of the reasons for our decisions on the E&D projects.¹¹⁶
- 5.80 In particular, we discuss E&D projects where there have been changes since the draft decision or where Transpower disagreed with our draft decision.

PD30 Otahuhu-Wiri Transmission Capacity

- 5.81 We consider that \$14.8 million is a prudent and efficient level of expenditure for the Otahuhu-Wiri transmission capacity project (PD30) during RCP2. This is a reduction of \$3.7 million from what Transpower originally proposed. In its submission on our draft decision Transpower reduced the forecast expenditure from \$18.5 million to \$18 million.
- 5.82 In particular, we consider that the first Bombay 220/110 kV interconnecting transformer is justified based on the Bombay peak demand forecast provided in the 2014 annual planning report. This is consistent with Strata's recommendations.¹¹⁷
- 5.83 We do not consider that the expenditure of \$3.7 million to upgrade the Wiri Tee to Wiri substation line section has been substantiated.¹¹⁸

¹¹⁴ Transpower "Response to IPP Draft Decision" (27 June 2014), p.19.

¹¹⁵ Strata "Review of points raised in submissions on the draft decision" (19 August 2014), paragraph 38.

¹¹⁶ Please see Strata's review of submissions for additional information on E&D projects. Strata's advice has assisted us in making our decisions.

¹¹⁷ Strata "Review of points raised in submissions on the draft decision" (19 August 2014), section 3.4.1

¹¹⁸ Ibid, paragraph 57.

PD33 Bus Section Fault Reliability

- 5.84 We consider that \$10.9 million is a prudent and efficient level of expenditure for the bus section fault reliability project (PD33) over RCP2. This is a reduction of \$3 million from what Transpower originally proposed. In its submission on our draft decision, Transpower reduced the scope of work at Mt Roskill substation and consequently reduced the forecast expenditure from \$13.9 million to \$10.9 million
- 5.85 We are satisfied that there is need for the bus section security upgrade projects at Haywards, Bunnythorpe and Mt Roskill substations. This is consistent with Strata's recommendations.¹¹⁹
- 5.86 In our draft decision we considered that there was sufficient justification for upgrading security of the existing 110 kV bus at Haywards and 220 kV bus at Bunnythorpe, but did not consider that Transpower had adequately justified the project it had proposed for Mt Roskill.
- 5.87 In its submission on our draft decision, Transpower provided additional information on the Mt Roskill project. Transpower also reduced the project scope from three bus sections to two bus sections. This resulted in a decrease in the cost estimate for the Mt Roskill project.

PD37 North Taranaki Transmission Capacity

- 5.88 We consider that \$13.7 million is a prudent and efficient level of expenditure for the North Taranaki Transmission Capacity project (PD37) during RCP2. This is an increase of \$10.7 million from what Transpower originally proposed. In its submission on our draft decision, Transpower changed the timing of the New Plymouth transformer replacement and consequently increased the forecast expenditure in RCP2 from \$3 million to \$13.7 million.
- 5.89 We are satisfied that relocating the exiting 220/110 KV interconnection from New Plymouth substation to Stratford substation, and disestablishing the existing substation is the best overall solution from both a regional development and economic perspective. This is consistent with Strata's recommendations.¹²⁰
- 5.90 We have some reservations with some of the detail that was provided, such as the funding mechanism for resupplying Powerco at New Plymouth, and the apparent failure in the options analysis undertaken to date to consider the \$8 million of reconductoring planned for the NPL-SFD A line in 2015/16.¹²¹

¹¹⁹ Ibid, section 3.4.1

¹²⁰ Ibid, section 3.4.3.

¹²¹ Transpower "Portfolio Overview Document PD6 – TL Conductor", in *Transpower Expenditure Proposal for Regulatory Control Period 2* (2 December 2013), p. 6.

- 5.91 We expect that these issues will be addressed in the options analysis undertaken when the detailed investigations are undertaken.

PD39 Southland Reactive Power Support

- 5.92 We consider that \$6 million is a prudent and efficient level of expenditure for the Southland reactive power support project (PD39) during RCP2. We are satisfied that there is need for the project. This is consistent with Strata's recommendations.¹²²
- 5.93 In our draft decision, we rejected the expenditure for the Southland reactive support project as Transpower had not supplied sufficient information to support the need for the project either in its project overview document or in its 2013 annual planning report.
- 5.94 Transpower did not supply any additional information in its submission on our draft decision, however, in its response to our further information requests, Transpower provided information on the need for the reactive power in Southland. It also provided cost-benefit analysis for bringing forward the replacement of the existing capacitor banks at North Makarewa.
- 5.95 Reactive support was managed in the past through the arrangements in the Tiwai Point Connection Contract. Under that contract, Meridian was obliged to provide a certain amount of generation and reactive support from Manapouri. This contract ended at the start of 2013 and no new contractual arrangements have been agreed with Meridian or any other party since then to supply the reactive support. Upgrading the two existing capacitor banks at North Makarewa and adding a third new capacitor bank is needed to supply the reactive power previously supplied by Meridian.

PD41 Hororata and Kimberley Voltage Quality

- 5.96 We consider that \$3.4 million is a prudent and efficient level of expenditure for installing static voltage support at Hororata (PD41) during RCP2. We are satisfied that there is sufficient need for the project. This is consistent with Strata's recommendations.¹²³
- 5.97 The investment is now justified on the basis of a net market benefit test, which Transpower has provided in the updated PD41. The project benefits are assessed as being in the range \$4 – 6 million, against a project cost of the preferred solution of \$3.36 million. Transpower considers that it has conservatively stated the net benefits.

¹²² Strata "Review of points raised in submissions on the draft decision" (19 August 2014), section 3.4.4

¹²³ Ibid, section 3.4.5

PD42 Islington Spare Transformer Switchgear

- 5.98 We have not made any allowance for the Islington Spare Transformer project (PD42) in the base capex allowance.
- 5.99 Transpower has reduced the project scope from the installation of a spare transformer to the installation of a System Protection Scheme (SPS) at a much lower cost. However, this is still being installed to provide n-2 security which exceeds the grid reliability standards (GRS) requirements. We therefore do not consider that there is sufficient need for this project. This is consistent with Strata's recommendations.¹²⁴

PD43 Haywards Local Service Third Incomer

- 5.100 We have not made any allowance for the Haywards Local Service Third Incomer project (PD43) in the base capex allowance.
- 5.101 Transpower amended the project cost and benefits for the project in its response to our draft decision. We have reconsidered the project but there are concerns around the assumption used in the analysis and we still consider that Transpower has not identified sufficient need for this project. This is consistent with Strata's recommendations.¹²⁵

PD44 E&D Other

- 5.102 We consider that \$0.9 million is a prudent and efficient level of expenditure for E&D Other during RCP2.
- 5.103 Based on the information provided by Transpower, we are now satisfied that there is sufficient need for the project to include the replacement interconnecting transformers into the Christchurch reactive controller scheme. This is consistent with Strata's recommendations¹²⁶

We consider \$190.9 million for ICT capex is appropriate

- 5.104 We consider that \$190.9 million is a prudent and efficient level of expenditure for ICT capex over RCP2. This amount is a reduction of \$19.8 million from what Transpower proposed and is consistent with Strata's recommendations.
- 5.105 The expenditure balance between investing in maintaining capability and adding new capability is appropriate, and the link between strategic objectives and proposed expenditure is generally sound.

¹²⁴ Ibid, section 3.4.6

¹²⁵ Ibid, section 3.4.7

¹²⁶ Transpower "Response to IPP Draft Decision" (27 June 2014), section 4.1.15 and PD 47

- 5.106 Given that Transpower has not provided a tangible benefits assessment, it is not clear what the tangible benefits of its proposed expenditure are, particularly those arising from the \$52 million proposed to enhance capability.
- 5.107 The reduction comprises the removal of the new Transmission Pricing Methodology (TPM) system (\$15.1 million) and a further 2.5 % reduction on the remaining balance.
- 5.108 In our draft decision we concluded that the expenditure for the TPM system was uncertain in terms of both the scope and timing, and that the expenditure should be reduced to account for this.
- 5.109 There may be a requirement to replace the existing TPM system in RCP2 as a result of changes in the pricing methodology. These will likely be driven by the Electricity Authority. The Authority can request us to reopen the individual price-quality path, under section 54V of the Commerce Act, to allow for funding of a new TPM system if required.¹²⁷ For this reason we have not allowed for this expenditure in our final decision.
- 5.110 Transpower considered that our 2.5 % reduction on the remaining balance is not appropriate as it has already incorporated a 7.5% 'productivity' adjustment and that this adjustment is at a level that requires all proposed projects to be implemented at optimal efficiency.¹²⁸
- 5.111 However, after further analysis, it appears that due to late increases in some ICT category elements, the net adjustment to ICT capex is actually below 7.5%, and appears to be as low as 5%.¹²⁹ Therefore our final decision to apply a 2.5% reduction is in addition to correcting for the shortfall between Transpower's proposed 7.5% adjustment and the resultant adjustment after accounting for the late increases in some ICT category elements.¹³⁰
- 5.112 In our view the 2.5% adjustment continues to be appropriate. We agree with Strata's advice that the forecast expenditure has not taken into account all of the already implemented strategies, processes and other improvements that will deliver further savings to Transpower's ICT Capex expenditure forecast during RCP2.¹³¹

¹²⁷ Refer to the "The 2011 'legacy' EV account entries will be cleared over RCP2" section in chapter 3.

¹²⁸ Transpower "Response to IPP Draft Decision" (27 June 2014), section 4.1.1

¹²⁹ Strata "Review of points raised in submissions on the draft decision" (19 August 2014), paragraph 197.

¹³⁰ Our 2.5% adjustment is applied to constant price expenditure whereas Transpower's 7.5% adjustment is applied at an aggregate level to nominal expenditure.

¹³¹ Strata "Review of points raised in submissions on the draft decision" (19 August 2014), paragraph 197.

The base capex allowance provides for up to \$118 million in RCP2 for 'listed projects'

- 5.113 Transpower has indicated that a number of condition-based reconductoring projects will occur in RCP2.
- 5.114 As there is considerable uncertainty about the timing, scope, and the cost of these projects, Transpower excluded them from the expenditure proposal. These projects have an indicative total cost over RCP2 of \$118 million.
- 5.115 As discussed in Attachment D, we will allow for annual resets of the forecast MAR by way of approved base capex for specified listed projects. Listed projects will have a defined approval process.

We have set an opex allowance of \$1.29 billion

5.116 This section sets out our decision on Transpower's opex allowance for RCP2. To form our view on the overall level of opex, we have taken both a top-down and a bottom-up approach.

5.117 We reviewed Transpower's various categories of opex, and formed views on its proposed expenditure at each level. Having formed a view on the reasonableness of proposed expenditure for each category, we have aggregated this to provide the approved allowance.

5.118 We have not approved expenditure by category and have not capped any of the individual expenditure-types. Transpower has discretion to prioritise where it spends its overall allowance.

Overview of key opex decisions

5.119 We have set an opex allowance of \$1,289.3 million (in 2012/13 constant prices). This is a reduction of \$20 million from Transpower's proposed allowance of \$1309.3 million.

5.120 A breakdown of the approved \$1,289.3 million is shown in Table 5.7.

Table 5.7: Adjustments to Transpower's proposed opex (2012/13 constant prices)

Opex category	Transpower's proposal (\$m)	Adjustments (\$m)	Adjusted totals (\$m)
Grid Opex- Routine maintenance and maintenance projects	491.8	-	491.8
ICT business support projects	241.2	- 4.8	236.4
Corporate opex (excluding insurance and self-insurance) ¹	488.6	- 24.4	464.2
Consumer Guarantees Act indemnity payments	-	1.0	1.0
Demand response	-	8.0	8.0
Insurance	75.8	-	75.8
Self-insurance	12.1	-	12.1
Total	1,309.3	- 20	1,289.3

Note: Transpower's proposed opex allowance does not include the proposed allowance for demand response or Consumer Guarantees Act indemnity payments. Figures may not add exactly due to rounding.

5.121 The following sections provide details of our evaluation of the components of Transpower's opex listed below.

5.121.1 Grid opex- routine maintenance and maintenance projects.

5.121.2 ICT opex business support projects.

5.121.3 Corporate opex.

5.121.4 Consumer Guarantees Act indemnity payments.

5.121.5 Demand response.

5.121.6 Insurance.

5.121.7 Self-insurance.

5.122 We also discuss why we have not applied a 'productivity' adjustment to opex.

We consider \$491.8 million for grid opex - routine maintenance and maintenance projects is appropriate

5.123 We consider that the \$491.8m proposed by Transpower for routine maintenance and maintenance projects is a prudent and efficient forecast of expenditure. During RCP1 Transpower initiated a maintenance efficiency study of its grid opex, and has developed a model to help optimise maintenance work. This resulted in potential efficiency gains being identified. Transpower has taken these efficiency gains into account when preparing its expenditure forecasts.¹³²

5.124 Offsetting these efficiency reductions are increases in the cost of transmission line maintenance projects such as tower steel replacement. However, on balance we are satisfied that the overall level of \$491.8 million for grid opex, is efficient.

5.125 Based on our review, we consider it is evident that Transpower has made a significant investment in improving the efficiency of its grid opex.

5.126 We consider that the proposed routine maintenance forecast has been developed in accordance with Transpower's documented policy and asset fleet strategies and RCP2 Maintenance Forecast.

5.127 Our conclusions are also supported by Strata's analysis. Strata concluded that the proposed forecast reflects the efficient costs required to maintain the network in an appropriate condition.¹³³

¹³² Strata report, paragraph 539.

¹³³ Strata report, paragraph 550.

We consider \$236.4 million for ICT opex business support projects is appropriate

- 5.128 We consider that \$236.4 million is a prudent and efficient forecast level of expenditure for ICT opex business support projects. This is a reduction of \$4.8 million (2%) from Transpower’s proposed amount.
- 5.129 Transpower has provided little evidence to indicate that operational efficiencies are being aggressively pursued and there appears to be opportunities to materially reduce costs from already implemented improvements. We agree with Strata’s recommendation for a downward adjustment of 2% to be applied to ICT opex.
- 5.130 In its submission on our draft decision Transpower noted Strata’s observation that benchmarking with Australian transmission utilities would be of benefit. As part of its review of submissions on our draft decision, we asked Strata to benchmark Transpower against the Australian transmission network service providers (TNSPs)
- 5.131 Parsons Brinckerhoff (PB Power) had been engaged by Transpower to undertake an opex benchmarking analysis of Transpower against Australian TNSPs. This is contained in the PB Power report.¹³⁴
- 5.132 Strata have used the information contained in the PB Power report, and other publicly available information, to undertake the requested benchmarking. Strata’s conclusion from the analysis was that despite incorporating savings in its forward RCP2 opex forecast, from its RCP1 ICT initiatives, Transpower does not appear to be efficient in this area compared to even its most relevant peers.
- 5.133 We note that such benchmarking with a relatively small number of comparative providers needs to be treated with caution. We consider, however, that the study provides some corroborative support for our conclusion that Transpower’s forecast costs, representing an increase of 7% over RCP1, are too high.

We consider \$464.2 million for corporate opex is appropriate

- 5.134 We consider \$464.2 million for corporate opex, excluding insurance costs, is prudent and efficient. This is a reduction of \$24.4 million from Transpower’s proposed amount.
- 5.135 We have separated corporate opex into three categories:
- 5.135.1 departmental;
 - 5.135.2 ancillary services; and
 - 5.135.3 investigations.

¹³⁴ Parsons Brinckerhoff “Operating Expenditure Benchmarking – Final Report”, in Transpower Expenditure Proposal for Regulatory Control Period 2 (2 December 2013).

5.136 The \$24.4 million reduction is made up from adjustments in departmental costs, and investigations.

5.137 Our adjustments to Transpower's proposed corporate opex amount are set out in Table 5.8. These are discussed separately below.

Table 5.8: Adjustments to Transpower's proposed corporate opex

Opex category	Transpower's proposal (\$m)	Adjustments (\$m)	Final decision (\$m)
Accommodation costs	39.1	-3.3	35.8
Consulting	41.8	-8	33.8
Consulting other (less pass-through & other insurance)	18.7	0	18.7
Misc. departmental costs	31	0	31
Total other departmental costs	130.6	-11.3	119.3
Salaries	360.6	0	360.6
Redundancy allowance	14.6	-11.6	3
Other personnel costs	53	0	53
Transfer to Capex projects	-94.3	0	-94.3
Transfer to investigations expenditure	-33.4	0	-33.4
Admin and general credit	-4.4	0	-4.4
Vacancy adjustment	-9.1	0	-9.1
Total personnel costs	287	-11.6	275.4
Total Departmental costs (other departmental plus personnel costs)	417.6	-22.9	394.7
Ancillary services	16.5	0	16.5
Investigations-Asset investigations	17	0	17
Investigations - innovation	10.5	0	10.5
Investigations - business improvements	20.5	0	20.5
Investigations - ICT	6.5	-1.5	5
Investigations	54.5	- 1.5	53
Total corporate opex (excl. insurance and self-insurance)	488.6	-24.4	464.2

Note: Figures may not add exactly due to rounding.

- 5.138 In our draft decision, we described a 10% reduction to the \$488.6 million of corporate opex costs proposed by Transpower. This reduction included specific expenditure category reductions such as investigations (\$10.9 million), and accommodation costs (\$6 million).
- 5.139 Transpower submitted that the 10% adjustment, referred to by Strata as a ‘productivity adjustment,’ was a general adjustment to extract benefits from business improvements proposed to be undertaken in RCP2, and that this constitutes a forward-looking productivity assumption of the type we consider should not apply.¹³⁵ A similar concern was expressed by Vector, which commented that our decision “appears to share efficiency gains with consumers before those efficiency gains can or have been identified by Transpower.”¹³⁶
- 5.140 Some confusion seems to have arisen from Strata’s use of the term ‘productivity adjustment.’ This is the term Transpower used to describe its own 7.5% adjustment on its proposed expenditure to take into account, in our view, savings from strategies and improvements in processes already implemented at the time its expenditure proposal was made.
- 5.141 The ‘productivity’ adjustments, that resulted in reductions to RCP2 forecast expenditure in our draft decision, were based on our view of the potential reductions in future expenditure resulting from already identified and implemented strategies, processes and other improvements.
- 5.142 Strata has clarified its description of these adjustments in its response to draft decision submissions.¹³⁷

Departmental costs

- 5.143 We have allowed \$394.7 million for departmental costs. This is a reduction of \$22.9 million from Transpower’s proposal.
- 5.144 The reduction of \$22.9 million is, in the main part, the result of reductions to Transpower’s proposed allowance for redundancy payments, and consultants. Smaller adjustments have been made to the allowances for accommodation costs and expected vacancy rates. These adjustments are discussed separately below.

¹³⁵ Transpower “Response to IPP Draft Decision” (27 June 2014), p.30.

¹³⁶ Vector “Setting Transpower’s individual price-quality path for 2015-2020” (27 June 2014), p.1.

¹³⁷ Strata “Review of points raised in submissions on the draft decision” (19 August 2014), paragraphs 257-258.

Redundancy payments

- 5.145 We have included \$3 million for redundancy payments across RCP2. This is a reduction of \$11.6 million from what Transpower proposed.
- 5.146 We are satisfied that \$3 million is a justifiable level of payments. Transpower is forecasting 591 full-time equivalent (FTE) staff in 2014/15 and is projecting an average number of staff of 586 during RCP2. This represents a steady, stable number of staff throughout RCP2.
- 5.147 As Transpower's forecast includes a net reduction of five FTEs over RCP2, we do not consider Transpower will achieve a number of redundancies that would justify \$14.6 million, per Transpower's proposal.¹³⁸ There is no evidence in Transpower's proposal that suggests Transpower is expecting \$14.6 million of redundancies, nor that it has a documented strategy to manage or explain such a large programme of redundancies.¹³⁹

External consultants

- 5.148 We consider that \$52.5 million is a justifiable level of expenditure for external consultants. This is a reduction of \$8 million (20% of the consultancy and contractor component of departmental opex) from what Transpower proposed.
- 5.149 Transpower has a number of initiatives in place that we consider should reduce Transpower's expenditure on external consultants. In its proposal Transpower advised that it will place a greater reliance on in-house resources to undertake future change initiatives in RCP2. In addition Transpower has developed and adopted a strategy to reduce the pressure on subject matter experts in the preparation for RCP3. We consider this will reduce the need for temporary backfilling.¹⁴⁰

Accommodation costs

- 5.150 We have allowed \$35.8 million for accommodation costs. We have reduced Transpower's proposal by \$3.3 million for increases in rental costs that have not been sufficiently justified.
- 5.151 In its proposal Transpower had an additional \$2 million each year for the last three years of RCP2 (totalling \$6 million) for additional accommodation costs. These costs would be the result of Transpower relocating staff from three separate buildings to a new location in Wellington.

¹³⁸ See Strata "Review of points raised in submissions on the draft decision" (19 August 2014), paragraphs 243-246. Strata notes that at \$75k on average this represents approximately 200 people being made redundant over RCP2.

¹³⁹ Transpower, *People Capability Strategy 2013-2020*, 1 October 2013.

¹⁴⁰ TP main proposal section 9.3.1

- 5.152 If Transpower's head office was seismically strengthened and refurbished, we consider that Transpower would likely incur additional rental costs. We consider that this would only be approximately \$0.9 million each year during the last three years of RCP2 (if it were to remain in the current (three) locations). This equates to \$2.7 million over RCP2. Transpower's proposed increase of \$6.0 million, less \$2.7m, results in the reduction of \$3.3 million.
- 5.153 The net increase in rental at a new location should be significantly less than the amount that Transpower has forecast. One of the significant benefits of relocating all three offices into a single building with a larger floor plan is a more efficient use of space. This should result in a reduction in the total floor area required compared to the existing floor area. Transpower does not appear to have taken these benefits into account when seeking costs for RCP2.

Personnel vacancies

- 5.154 Our decision is to accept Transpower's proposed vacancy rate of 3.4%. This equates to a total reduction in departmental costs of \$9.1 million. This reduction has already been taken into account in Transpower's proposed allowance for departmental costs.
- 5.155 Our decision is consistent with Strata's advice.¹⁴¹ Strata advised that it would be reasonable to assume an average vacancy rate between 3 – 5%.

Ancillary services

- 5.156 Our decision is to allow the full amount of \$16.5 million that Transpower proposed for ancillary services.
- 5.157 This category includes costs for black starts, over-frequency reserves, and instantaneous reserves.
- 5.158 We consider this proposed level of expenditure to be reasonable. We are satisfied that Transpower's proposal in this regard is prudent and efficient. This is supported by Strata's advice that Transpower's forecasting methodology appears reasonable, although Strata notes that this assumes that the system operator is adopting a prudent approach to procuring ancillary services.¹⁴²

¹⁴¹ Strata report, paragraph 592, and Strata "Review of points raised in submissions on the draft decision" (19 August 2014), paragraph 241.

¹⁴² Strata report, paragraph 592

Black start and over-frequency arming

- 5.159 Transpower requested we should amend the Transpower IMs to treat black start and over-frequency arming costs as recoverable costs. We indicated to Transpower that we would consult on changes to the input methodologies and the individual price-quality path to test whether it would be appropriate to reclassify black start and other ancillary services as recoverable costs.
- 5.160 There are several issues that require further consideration, and as such, we have decided to defer this decision until we undertake the required 7-yearly input methodology review. We do not currently consider that these costs are consistent with the classification recoverable costs but have provided for black starts and over-frequency arming in the ancillary services allowance, This is consistent with the current input methodologies.

Investigations

- 5.161 Our decision is to allow \$53 million for investigations. This is a reduction of \$1.5 million from Transpower's proposed level of opex.
- 5.162 The reduction by \$1.5 million reflects ICT investigations expenditure that we consider remains insufficiently justified. Specifically, this reduction is to investigations for the TPM project and investigations on other ICT capex where capex reductions have been made.
- 5.163 In our draft decision, we proposed to reduce the allowance for investigations capex by 20%. We considered that there was uncertainty over the levels of investigations expenditure proposed by Transpower because it was based on historical expenditure which had been highly volatile. In addition we had proposed significant reductions in the E&D capex and reductions in the R&R transmission lines and AC station capex. The result of this reduction would be a corresponding reduction in the level of investigations required.
- 5.164 Our final decision includes increases in the base capex allowance from the draft decision. We have also suggested a number of business improvement and performance measure development initiatives to be undertaken in RCP2. A number of innovations and efficiency improvements are also expected in RCP2. Likewise, we anticipate increased rigour for all investigations for the listed projects.
- 5.165 Reducing investigations expenditure significantly would be inconsistent with our decisions regarding these initiatives.

We have allowed \$1 million for Consumer Guarantees Act indemnity payments

- 5.166 We have made an allowance of \$1 million to allow Transpower to purchase insurance to cover Consumer Guarantees Act indemnity costs. This equates to \$0.2 million for each year of RCP2. We consider this to be a prudent and efficient level of expenditure for RCP2. Our decision is not to treat Consumer Guarantees Act costs as recoverable costs.

- 5.167 The Consumer Guarantees Act now requires that Transpower indemnify retailers for payments that retailers make to their customers to remedy breaches of an ‘acceptable quality guarantee.’ The indemnity applies if the event giving rise to the breach arose on Transpower’s network.¹⁴³
- 5.168 In our Issues paper we sought views on the materiality of Transpower's exposure to the new indemnity obligations arising under the Consumer Guarantees Act. We also sought views on how Transpower's exposure should be treated. We received submissions from Transpower and MEUG and cross-submissions from Transpower, Powerco and Genesis on this matter.
- 5.169 In its submission MEUG commented that in a workably competitive market environment no business could immunise itself from some risk of exposure to Consumer Guarantees Act indemnity obligations. This exposure creates an incentive on businesses to actively manage this risk. MEUG also argued that the onus to forecast any costs should be on Transpower.¹⁴⁴ This position was supported by Genesis.¹⁴⁵
- 5.170 Conversely, both Transpower and Powerco argued that the risk is hard to quantify and that the cost of any claims should be a pass-through or recoverable cost.¹⁴⁶
- 5.171 We do not agree that these costs should be treated as recoverable costs. This would have the effect of immunising Transpower from any need to manage the risk. This would clearly undermine the intent of policy makers who expressly subjected suppliers of electricity lines services to the Consumer Guarantees Act.
- 5.172 Transpower proposed however, that if it were subjected to these costs, it should be provided a self-insurance allowance. As proposed by Transpower in its submission on our draft decision, we have allowed \$0.2 million each year as an allowance to manage the risk through Transpower’s own captive insurer Risk Reinsurance Limited (RRL). We consider this to be a prudent and efficient way to manage Transpower’s exposure.

¹⁴³ The indemnity applies to the Transpower’s grid management and system operator functions.

¹⁴⁴ Major Electricity Users’ Group “Transpower RCP2 submission”, 3 March 2014, response to questions 37 and 38.

¹⁴⁵ Genesis Energy “Issues paper for setting Transpower’s individual price-quality path from 2015-2020” (11 March 2014).

¹⁴⁶ Powerco “RE: Cross submission on the Issues Paper on Transpower’s individual price-quality path and proposal for the next regulatory control period” (10 March 2014).

We consider \$8 million for demand response expenditure is appropriate

- 5.173 We consider that \$8 million of opex for demand response (DR) over RCP2 is appropriate and has been sufficiently justified by Transpower. This justification includes Transpower’s commitments to work with the Authority on a DR protocol.
- 5.174 Transpower proposed DR expenditure in RCP2 of approximately \$10 million. This proposal was provided in Transpower’s cross-submission on our Issues paper. This proposed expenditure was not included in its RCP2 expenditure proposal.¹⁴⁷
- 5.175 We requested additional information from Transpower on the detail of the proposed DR expenditure to assist us in reaching our decision. We also consulted with the Authority on Transpower’s proposal. The Authority expressed concerns about the potential effect of the DR programme on the electricity market, and proposed a series of mitigations for Transpower, should DR funding be granted.¹⁴⁸
- 5.176 Our draft decision was that only \$1.5 million was sufficiently justified for DR expenditure, being the demand response management system (DRMS) operating and development costs.¹⁴⁹
- 5.177 Transpower met with the Authority to discuss how the Authority’s concerns could be addressed. Transpower then submitted further developed intentions for the DR programme as part of its submission on our draft decision.¹⁵⁰ Transpower has committed to several actions, including undertaking actions that would address the Authority’s concerns.
- 5.178 The Authority has subsequently expressed its support for the DR programme as a means of deferring transmission investment. The Authority’s support, however, is dependent upon the implementation of a DR protocol and integration planning at the start of RCP2.¹⁵¹

¹⁴⁷ Transpower “Transpower submission on Transpower RCP2 process and issues paper” (3 March 2014) page 18.

¹⁴⁸ Letter from the Electricity Authority to the Commerce Commission of the 14th April 2014 titled “Transpower’s Demand Response Programme.”

¹⁴⁹ Draft decision paragraph 5.80

¹⁵⁰ Transpower “Development of demand response as a transmission alternative – RCP2 Proposal” (27 June 2014).

¹⁵¹ Letter from the Electricity Authority to the Commerce Commission of the 28th July 2014 titled “Transpower’s Demand Response Programme.”

- 5.179 EnerNOC also supported the funding of the DR programme, provided the Authority's concerns had been met.¹⁵² Additional matters raised by EnerNOC, like the transfer of the DRMS platform to the system operator control, were addressed in Transpower's DR proposal.
- 5.180 Transpower agreed that staff costs of \$2.3 million were already included in its RCP2 proposal.¹⁵³ This double up of costs has been removed. This reduces the amount of DR funding sought from \$10.3 million to \$8 million (\$1.5 million for DRMS operating and development costs and \$6.5 million for DR programme costs).
- 5.181 The DR programme costs are to develop the DR market and will be paid to participants for responding to a 'call.' Depending on the arrangements made, participants may receive an availability payment (retainer) to guarantee that their response will be delivered when called upon.
- 5.182 Our draft decision also stated that only operating and development costs should be included in the opex allowance.¹⁵⁴ Due to the lack of information provided, we had considered the \$6.5 million of DR programme costs were not operating or development costs. Based on this assessment, we turned those costs down.
- 5.183 Transpower's DR paper has provided additional information on the intended use of DR. The DR paper clarified that the DR programme costs are not direct funding to defer any transmission investment, and are intended to develop and grow DR capability.¹⁵⁵ On this basis we are satisfied that the DR programme costs of \$6.5 million should be included, along with the \$1.5 million signalled in the draft decision.
- 5.184 We, along with the Authority, expect Transpower to act in good faith regarding the development of DR. This applies in the application of DR in electricity market, and as a developing area in its business operations. We encourage Transpower to continue to work with the Authority and other stakeholders to develop a programme for the development, consultation and finalisation of a DR protocol as set out by the Authority.¹⁵⁶

¹⁵² EnerNOC "Submission on individual price-quality path" (27 June 2014).

¹⁵³ Transpower "Development of demand response as a transmission alternative – RCP2 Proposal" (27 June 2014) Section 2, page 3.

¹⁵⁴ Draft decision, paragraph 5.88

¹⁵⁵ Transpower "Development of demand response as a transmission alternative – RCP2 Proposal" (27 June 2014) Section 4.1, page 7.

¹⁵⁶ Letter from the Electricity Authority to the Commerce Commission of the 28th July 2014 titled "Transpower's Demand Response Programme."

5.185 We also expect Transpower to propose business improvements initiatives that will monitor and report to stakeholders on Transpower’s progress and compliance with the DR protocol (including commitments Transpower has made), DR activities and demonstration that consumers are obtaining benefits from the investment in DR. We encourage ongoing, two way, engagement with stakeholders and consumers.

We consider \$75.8 million for insurance is appropriate

5.186 We are satisfied that \$75.8 million, as proposed by Transpower, is a prudent and efficient level of expenditure for insurance. This was the amount estimated by Transpower’s external insurance advisors.¹⁵⁷

5.187 The 10% reduction we applied to insurance in our draft decision was intended to be applied to departmental costs excluding insurance but was actually applied at an aggregate level to departmental costs including insurance.

5.188 We have reinstated the 10% reduction applied to insurance as we are satisfied that Transpower has sufficiently justified its insurance costs.

5.189 Transpower operates its own captive insurer, Risk Reinsurance Limited (RRL), with whom this insurance is placed. We are satisfied, from the information that Transpower has supplied, that RRL is subject to the same or similar prudential tests as provided for in the Insurance (Prudential Supervision) Act 2010. RRL is a wholly-owned subsidiary of Transpower New Zealand Limited that is incorporated under the laws of the Cayman Islands, Monetary Authority Law (MAL).

We consider \$12.1 million for self-insurance is appropriate

5.190 We are satisfied that \$12.1 million is a prudent and efficient level of expenditure for self-insurance over RCP2. This was the amount estimated by Transpower’s external insurance advisors.¹⁵⁸

5.191 Our draft decision was to disallow the \$12.1 million. This was because we did not consider that Transpower’s proposal met the requirements of a self-insurance scheme.¹⁵⁹ Transpower stated in its original proposal that the self-insurance would not be placed with RRL but would instead be retained as a Transpower risk.

¹⁵⁷ Marsh “RCP2 Premium Forecasts and Commentary on Policy”, in Transpower Expenditure Proposal for Regulatory Control Period 2 (2 December 2013), CR03, p. 21.

¹⁵⁸ Marsh “RCP2 Self-Insurance Quantification Report”, in Transpower Expenditure Proposal for Regulatory Control Period 2 (2 December 2013), CR04, p. 1.

¹⁵⁹ A common definition of self-insurance is a risk management method in which a calculated amount of money is set aside to compensate for the potential future loss.

- 5.192 In the documentation provided by Transpower as part of its proposal, there was no information about how this self-insurance would be set aside and the funds managed. We had no assurance, therefore, that the self-insurance was subject to the same or similar prudential tests as provided for in the Insurance (Prudential Supervision) Act 2010.
- 5.193 Based on the information originally provided we considered that it would not be appropriate to provide an allowance for self-insurance.
- 5.194 In Transpower’s response to our draft decision, Transpower proposed placing the self-insurance with RRL. We are satisfied with this outcome, and as a result the \$12.1 million of self-insurance is now included in Transpower’s opex allowance.

We have not applied a ‘productivity’ adjustment to opex

- 5.195 Unlike capex, Transpower did not propose a top-down ‘productivity’ adjustment for opex. Through our consultation process, we sought views about whether it would be necessary to make a similar productivity adjustment for opex to ensure the approved allowance was prudent and efficient.¹⁶⁰
- 5.196 MEUG submitted that businesses in workably competitive markets expect their competitors to, in the future, achieve productivity gains in both capex and opex.¹⁶¹ MEUG argued that to survive, each business must constantly strive to achieve productivity gains.
- 5.197 We have not applied a ‘productivity’ adjustment to opex. We agree with the points made by MEUG but consider that the price-quality path, including the IRIS mechanism, provides incentives for Transpower to continue to innovate and achieve the future efficiency gains that MEUG described. Those incentives should encourage Transpower to outperform the assumptions used to set its price-path to achieve higher-than-normal returns.

¹⁶⁰ Commerce Commission “Invitation to have your say on Transpower’s individual price-quality path and proposal for the next regulatory control period – Issues paper” (10 February 2014), page 30, question 7

¹⁶¹ Transpower “Response to IPP Issues Paper”, 3 March 2014; and Major Electricity Users’ Group “Transpower RCP2 submission,” 3 March 2014.

6. Reporting compliance with the price-quality path

Purpose of this chapter

- 6.1 The chapter sets out how Transpower will report its compliance with the individual price-quality path. This includes reporting compliance with the price-path and the quality standards.
- 6.2 We also briefly discuss the reporting requirements for the performance measure development and business improvement initiatives that Transpower has agreed to undertake.

How Transpower will report compliance with its price-quality path

- 6.3 Transpower's compliance reporting requirements are set out in Part 5 of the individual price-quality path determination. Transpower will be required to publish:
 - 6.3.1 a pricing compliance statement within 5 days of announcing its forecast prices for the next pricing year, which is usually late November-early December;
 - 6.3.2 an annual compliance statement in late October each year; and
 - 6.3.3 a one-off business improvement and performance measure development initiative plan by 31 July 2015.
- 6.4 Transpower will be required to state in the pricing compliance statement whether it complied with the price-path ie, that its charges for the upcoming pricing year will not exceed the forecast MAR.
- 6.5 In the annual compliance statement, Transpower will:
 - 6.5.1 state whether it complied with the price-path ie, that its actual transmission revenue was less than the forecast MAR, and any reasons for non-compliance—this is a different compliance test to what is required by the pricing compliance statement as it addresses changes that may have occurred during the year;
 - 6.5.2 in relation to the quality standards, provide information on its actual grid outputs and the reasons for any performance that is below the collars or above the caps that we set for the revenue-linked grid output measures;
 - 6.5.3 provide information necessary to make updates to forecast MAR for the upcoming pricing year eg, to show EV account entries arising from the MAR wash-up and the incentive mechanisms (eg, the grid output adjustment);
 - 6.5.4 provide information on the asset health grid output measures that are not linked to revenue; and
 - 6.5.5 provide progress updates on its business improvement initiatives.

Compliance reporting provides useful information to interested persons

- 6.6 Compliance reporting enables interested persons, including the Commission, to determine whether Transpower has complied with its individual price-quality path eg, determining whether the revenue Transpower forecasts to recover from its customers is no more than the forecast MAR.¹⁶²
- 6.7 Some compliance reporting information is also necessary for the operation of the individual price-quality path during the regulatory period eg, the MAR wash-up process inputs into updates to forecast MAR.
- 6.8 We may seek information to monitor compliance under s 53N of the Commerce Act 1986. This includes written statements and supporting information to determine whether the price-quality path has been complied with, and assurance information. We may also request information under s 53C(2), including:
- 6.8.1 financial statements (including projected financial statements) (s 53C(2)(a));
 - 6.8.2 financial and non-financial performance measures (s 53C(2)(f));
 - 6.8.3 plans and forecasts, including plans and forecasts about prices and revenues (s 53C(2)(g)); and
 - 6.8.4 quality performance measures and statistics (s 53C(2)(i)).

We have sought to minimise compliance costs

- 6.9 In reaching our decision on Transpower's compliance requirements, we have considered what information we require to test Transpower's compliance with the individual price-quality path and have been mindful of the costs and benefits of providing this information.
- 6.10 Table 6.1 lists the different types of reporting requirements that we consider are necessary to test compliance with or administer the individual price-quality path. It also sets out what information is needed for each of these types of reporting requirements, and where the obligations for providing the information exist.

¹⁶² Excluding pass-through and recoverable costs.

Table 6.1: Information required for the individual price-quality path

Type of reporting requirement	Information needed and source
Information to test compliance with the price-path	<ul style="list-style-type: none"> • Revenue for coming year (pricing compliance statement) • Actual revenue for the previous year (annual compliance statement)
Information to update forecast revenue	<ul style="list-style-type: none"> • MAR wash-up information, including actual revenue and actual capex (annual compliance statement and information disclosure) • Incentive mechanism revenue adjustment calculations (information disclosure) • EV account information (annual compliance statement) • Pass-through and recoverable costs including IRIS (annual compliance statement)
Information to test compliance with the quality standards and revenue-linked grid output measures	<ul style="list-style-type: none"> • Performance against quality standards (information disclosure) • Reasons for variations from caps and collars (annual compliance statement)
Information on asset health grid output measures that are not linked to revenue – pilot reporting scheme	<ul style="list-style-type: none"> • Information on performance and progress updates on asset health modelling developments including reasons for divergences between the frozen and the live models
Information on performance measure development and business improvement initiatives	<ul style="list-style-type: none"> • Plan for advancing initiatives (standalone disclosure under individual price-quality path determination) • Updates on progress on business improvement initiatives (annual compliance statement)

- 6.11 As identified in Table 6.1, some information that is necessary to test compliance with or administer the individual price-quality path has been included in the information disclosure requirements. Where this is the case we have not included these requirements again in the compliance reporting requirements for the individual price-quality path. For example the information disclosure requirements include:
- 6.11.1 the calculations of revenue adjustments from incentive mechanisms, such as the major capex overspend adjustment—the results of these calculations are then entered into the EV account and will result in an update of Transpower’s forecast MAR,¹⁶³ and
 - 6.11.2 Transpower’s actual opex for the disclosure year—this is a key input into the IRIS calculation contained in the annual compliance statement.
- 6.12 We have also sought to minimise audit and certification costs associated with the reporting requirements. We have done this by limiting the amount of information Transpower must report and, where appropriate, reducing the number of disclosures that Transpower has to make.
- 6.13 Compliance costs should also be reduced as a result of embedding requirements in the draft determination that we have previously sought through information gathering notices.

The pricing compliance statement

- 6.14 The pricing compliance statement will be published each year by Transpower within 5 days of announcing its forecast prices for the next pricing year. Transpower usually announces its customer prices in late November-early December.
- 6.15 The pricing compliance statement will demonstrate that Transpower has complied with the individual price-quality path determination in setting its prices for the upcoming pricing year.¹⁶⁴
- 6.16 The pricing compliance statement must include a summary of forecast revenue for the next pricing year. The summary of revenue required under information disclosure would satisfy this requirement.¹⁶⁵ The information disclosure

¹⁶³ *Transpower Capital Expenditure Input Methodology Determination* [2012] NZCC 2, Schedule B4.

¹⁶⁴ The pricing year is the year ending 31 March. Transpower also has a disclosure year which is the year ending 30 June. Transpower sets its customers’ prices based on the pricing year but all other aspects of performance (eg, expenditure allowances and quality standards) relate to a disclosure year. To align the two year end dates, revenue received during the pricing year is deemed to have been earned in the disclosure year beginning three months after the start of the pricing year. For additional details see Commerce Commission “Individual Price-Quality Path (Transpower): Reasons Paper” (22 December 2010) pp. 20-21.

¹⁶⁵ See *Transpower Information Disclosure Determination* [2014] NZCC 5, clause 9 and schedule F6.

determination requires the disclosure of a summary of revenue for the next pricing year by the last working day of December.

- 6.17 Transpower submitted that it did not consider the pricing compliance statement was necessary given ‘the controls and assurance around our revenue wash-up and re-forecasting processes.’¹⁶⁶
- 6.18 However, we consider that gaining assurance that Transpower’s revenue does not exceed the forecast MAR (excluding forecast pass-through and recoverable costs) is an important test of compliance for Transpower’s individual price-quality path. The pricing compliance statement serves the purpose of ensuring that Transpower’s forecast revenue does not exceed the forecast MAR when Transpower is setting its customer charges for the coming pricing year.
- 6.19 Transpower also submitted that the requirement may ‘muddy’ the boundaries between the Commission’s and the Electricity Authority’s jurisdictional responsibilities.
- 6.20 We do not consider that the requirement creates any confusion between the Commission’s role to set an individual price-quality path and the Electricity Authority’s role to regulate how the revenue requirement is allocated to Transpower’s customers. The Electricity Authority has no role in determining the quantum of the revenue requirement.
- 6.21 Therefore, we consider it appropriate to request assurance that Transpower’s total revenue will not exceed the forecast MAR for the pricing year.
- 6.22 The first pricing compliance statement for RCP2, which is for the pricing year beginning 1 April 2015, will be due in December 2014. We will issue a separate statutory notice seeking the first statement under s 53N of the Commerce Act.

¹⁶⁶ Transpower “Submission on proposed IPP and compliance reporting” (11 July 2014), p. 3.

The annual compliance statement

6.23 As set out in Table 6.1, the annual compliance statement will incorporate different types of reporting requirements:

6.23.1 to test compliance with the price-path—discussed in Chapter 3 and Attachment C;

6.23.2 to update forecast revenue— discussed in Chapter 3 and Attachment C;

6.23.3 to test compliance with the quality standards and revenue-linked grid output measures— discussed in Chapter 4; and

6.23.4 to provide updates on business improvement and performance measure development initiatives—discussed in Attachment I.

6.24 In this section we address:

6.24.1 the timing of the annual compliance statement;

6.24.2 the process for updating the forecast MAR;

6.24.3 the compliance test for quality standards; and

6.24.4 the reporting requirements for the performance-based grid output measures.

The annual compliance statement will be published in late October

6.25 The annual compliance statement will be published by the Friday of the third complete week in October each year. The annual compliance statement will comprise part of Transpower’s annual regulatory report. The annual regulatory report also includes information disclosure reporting and other information we may request by way of information gathering notices.

6.26 We will assess Transpower’s calculation of the update to the forecast MAR, complete any required consultation, and make updating amendments the individual price-quality path by the second Wednesday of November. This is broadly consistent with our approach in RCP1.

6.27 In order to be able to keep to these tight timeframes, Transpower will continue to provide draft (unaudited) numbers in late September.

6.28 In our draft decision, we proposed to bring the date of disclosure forward to the last working day of September to be able to determine the updated forecast MAR by late October.

- 6.29 The intention in bringing the dates forward was:
- 6.29.1 To make the process more formal by not relying on Transpower providing draft numbers to the Commission before the disclosure date.
 - 6.29.2 To provide Transpower with sufficient time to calculate charges under the TPM and to notify its customers of charges for the next pricing year in late November/early December.
 - 6.29.3 To provide additional time to complete our compliance assessment, and any necessary consultation, due to the increasing number of compliance points, for example with the incentives in the Capex IM being implemented for the first time.
- 6.30 Transpower submitted that our draft decision did not provide it with enough time to “perform the necessary calculations (including internal quality assurance) and complete required assurance and corporate governance processes.”¹⁶⁷ It proposed the dates that constitute our final decision.
- 6.31 Transpower also committed to providing draft calculations before the October disclosure date, as has been the process during RCP1. While this approach does not formalise the process as initially desired, it does provide us with enough time to be able to make updating amendments the individual price-quality path determination by mid-November.
- 6.32 This process is very similar to that in place for RCP1 which has generally worked well with Transpower providing preliminary numbers early. The due date for amendments to the individual price-quality path of the 2nd Wednesday of November is a change from RCP1. It is currently the last working day of November.
- 6.33 However, the last two compliance assessments and amendments to the individual price-quality path determination have been completed by the end of October so we are confident we can meet this timeframe.

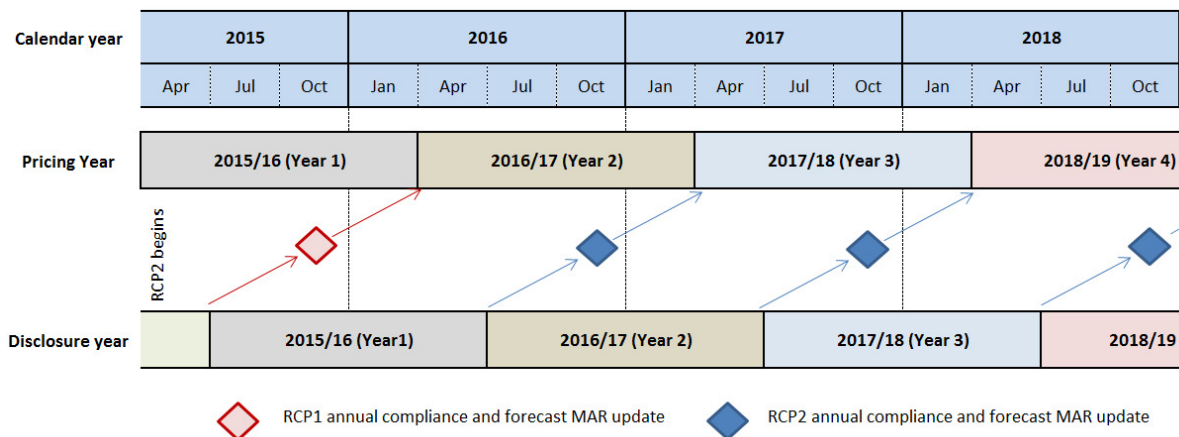
The process of updating the forecast MAR

- 6.34 As outlined in Chapter 3 and Attachment C, Transpower’s forecast MAR will be updated in years 2-5 (pricing years 2016/17 to 2019/20) of RCP2 to account for:
- 6.34.1 EV adjustments arising from the MAR wash-up and incentive mechanisms; and
 - 6.34.2 New approved major capex and ‘listed’ base capex projects.

¹⁶⁷ Transpower “Submission on proposed IPP and compliance reporting” (11 July 2014), p. 2.

- 6.35 As mentioned above, the information concerning updates to the forecast MAR will be included in the annual regulatory report. We will review this information, including the calculation of the EV adjustments, and update the forecast MAR for the relevant future pricing years.
- 6.36 The EV adjustments from a given disclosure year will result in an update to the forecast MAR of the pricing year two years ahead. The EV account is adjusted for the time-value of money as it is rolled-forward at the WACC rate. The approval of new major capex or listed base capex will affect the forecast MAR of the pricing years from when it is forecast to be commissioned.
- 6.37 For example, the EV adjustments arising from the 2015/16 disclosure year (Year 1) will result in an update to the forecast MAR for the 2017/18 pricing year (Year 3). Major capex or the base capex of listed projects approved before compliance is assessed for the 2015/16 year (Year 1) would affect the forecast MAR for the 2017/18, 2018/19, and 2019/20 pricing years (Years 3, 4 and 5), assuming it is forecast to be commissioned (or partly commissioned) before the end of the 2017/18 year.
- 6.38 An EV adjustment may however result in an update to the forecast MAR of more than one year if it is spread to reduce the impact it may have on prices. The draft determination provides for Transpower to request approval to spread EV adjustments.
- 6.39 The forecast MAR for 2016/17 pricing year (Year 2) will be updated following the publication of the annual regulatory report for the 2014/15 year (the last year of RCP1). The first annual regulatory report for RCP2 will be in October 2016 after the 2015/16 disclosure year.
- 6.40 Figure 6.1 sets out a timeline of the forecast MAR reset process for the first three pricing years of RCP2. It shows updates to the forecast MAR resulting from EV adjustments (eg, the MAR wash-up and incentive mechanisms) that only affect one future pricing year.

Figure 6.1: Timeline of forecast MAR updates for EV adjustments



The compliance test for quality standards

- 6.41 As set out in Chapter 4, the quality standards for RCP2 are the grid output targets for each of the 23 revenue-linked grid output measures.
- 6.42 The revenue-linking means that each of the 23 measures has a cap and collar. The cap and collar set the range of performance for which Transpower will be penalised or rewarded through the grid output adjustment, where the cap limits Transpower's financial reward for performance that is better than the target and the collar limits Transpower's financial exposure for performance that does not meet the target.¹⁶⁸
- 6.43 We also comment that:
- 6.43.1 in exceptional circumstances where quality standards are not met, the Commission may seek pecuniary penalties under s 87 or criminal sanctions under s 87B of the Commerce Act for that underperformance—any enforcement action would be in addition to the grid output adjustment; and
- 6.43.2 we will not take any such enforcement action for performance worse than the quality standard but better than the collar that is set for the grid output measure.
- 6.44 The compliance test for quality standards would not require Transpower to state whether it has met the levels of the quality standards ie, indicate whether it had met or failed to meet the grid output targets.
- 6.45 Instead Transpower will state in its annual compliance statement whether it has disclosed its grid output adjustment calculations as set out in the information disclosure requirements. The grid output adjustment determines the revenue adjustment to be entered into the EV account and this will then result in an update to forecast MAR. This information will be also used to consider further action if performance is below the collar.
- 6.46 Where Transpower's performance is worse than the collar or better than the cap, we require that the annual compliance statement includes an explanation of the reasons underpinning this performance. In these instances we are interested in understanding reasons for the variation from the quality standards, rather than just the incremental variations from the collar or cap. The collar and cap were chosen as the threshold for requiring an explanation of variation as we would expect to see variability that reflects business as usual activities between these points.

¹⁶⁸ Note that for the asset health grid output measures, an aggregate cap will operate ensuring that Transpower earns no net benefit across the measures. We intend to exercise our discretion in the final year of RCP2 to implement this cap.

- 6.48 Information on any performance that does not meet the collar will be used to assess whether the Commission considers any enforcement action is warranted. We seek information on performance that is better than the cap as this is first time we are applying revenue-linking to these grid output measures and we want to assess the long-term suitability of the measures and the targets, caps, collars and incentive rates that we set.

The reporting requirements for asset health measures not linked to revenue

- 6.49 As discussed in Chapter 4, we have set three asset health grid output measures that are not linked to revenue. These form part of a pilot asset health reporting scheme.
- 6.50 Part 5 of the individual price-quality path determination will require Transpower to report on:
- 6.50.1 The average remaining life at the beginning and the end of the disclosure year for the portfolios covered by the three pilot asset health measures as per the 'frozen' models, ie, the models submitted on 27 June 2014.
 - 6.50.2 The difference in the average remaining life of the portfolios covered by the three pilot asset health measures from the previous disclosure year, as per the frozen model.
 - 6.50.3 The difference in the average remaining life of the portfolios covered by the three pilot asset health measures from the previous disclosure year, as per the 'live' model used by Transpower to make asset management decisions.
- 6.51 Transpower will also be required to provide progress updates on developments it has made in regard to its asset health modelling. This includes the reasons for divergences between the frozen and the live models. Please see Attachment I for more detail.

Reporting progress on business and performance measure initiatives

- 6.52 In Attachment I we suggest a number of business improvement and performance measure development initiatives for Transpower to undertake.
- 6.53 Transpower has committed to undertaking business improvement initiatives aimed at "seeking further improvements in asset management, increasing our operation efficiency, and embedding our Service Performance Measures and targets."¹⁶⁹
- 6.54 By July 2015, Transpower will be required to disclose its plan for initiatives it intends to develop during RCP2. This may include any of the initiatives we have suggested, but must include an asset health modelling plan.

¹⁶⁹ Transpower "Response to IPP Draft Decision" (27 June 2014), p. 35.

- 6.55 The plan is expected to include key milestones and deliverables, and how Transpower plans to monitor progress. We also expect that the development of these initiatives would give rise to increased governance around asset management decisions.
- 6.56 Subsequent annual compliance statements would then provide updates on the progress that Transpower has made on its business improvement initiatives.

Compliance information must be director certified and audited

- 6.57 We will require the pricing compliance statement and the annual compliance statement to be director certified and published. The annual compliance statement will also be required to be accompanied by an independent assurance report.
- 6.58 Interested persons, including the Commission, need assurance that disclosed information has been prepared in line with the determination and the input methodologies, to have confidence in their assessments of whether the individual price-quality is promoting the purpose of Part 4 of the Commerce Act.
- 6.59 In setting the assurance requirements we have sought to balance the need for assurance and the costs incurred in providing that assurance. We have also sought to make the audit and certification requirements for the individual price-quality path consistent with the information disclosure certifications. For example, we will no longer prescribe the form of audit report.

Attachment A: The individual price-quality path evolves over time

Purpose of this attachment

- A1 This attachment provides context for how we have approached setting Transpower's individual price-quality path for RCP2, and the decisions that we have reached in this paper. It discusses:
- A1.1 our expectations that individual price-quality path regulation will evolve;
 - A1.2 what it means to set a second price-quality path for Transpower;
 - A1.3 our role in setting and administering an improving price-quality path; and
 - A1.4 our challenge in setting appropriate quality measures and expenditure allowances at any given time.

Price-quality regulation will evolve over multiple regulatory periods

- A2 We see effective individual price-quality regulation as being a dynamic process over multiple regulatory periods, while being mindful of the importance of providing regulatory predictability. The regulation will change as we better understand the effect of the incentives we have set, and to respond to changing external conditions. We expect to continue to develop a suite of mechanisms that are of long-term benefit to consumers.
- A3 The individual price-quality path for RCP2 is intended to improve on what was in place for RCP1. The changes between RCP1 and RCP2 also indicate how quickly we see the regulation evolving for subsequent regulatory periods.
- A4 The pace and direction of the development track we are setting considers the practical constraints that Transpower faces. The track also takes into account the need to give the various regulatory instruments time to bed down and mature so their effectiveness can be understood, before making further changes.
- A5 The pace and direction are also informed by observing, comparing and contrasting the development of like instruments in other jurisdictions, particularly in the UK and Australia.

Setting a second price-quality path for Transpower

A6 The individual price-quality path that we are setting will be the second for Transpower. The path is for the duration of RCP2, and will apply to the electricity lines services that Transpower supplies.¹⁷⁰

A7 In the sections below we discuss:

A7.1 how some characteristics of the price-quality path are already fixed, given the input methodologies that apply; and

A7.2 how we have used the RCP1 price-quality path as our starting point.

Some characteristics of the price-quality path are already fixed

A8 The primary purpose of the individual price-quality path is to promote the long-term interests of consumers, consistent with the purpose of Part 4 of the Commerce Act 1986. We are guided by certain input methodologies in how to set a price-quality path for Transpower that promotes this purpose. These input methodologies are discussed in Attachment B.

A9 The purpose and provisions of Part 4 along with the input methodologies gives rise to the characteristics for Transpower's price-quality path as set out below.

A9.1 We set the maximum revenues that limit what Transpower can recover from its consumers. These maximum revenues are based on Transpower's forecast costs for the next regulatory period. Revenue is calculated using a 'building blocks' approach that applies the input methodologies that we have set (ie, for valuing Transpower's RAB, commissioned assets, tax and cost allocation).

A9.2 We do not set the prices that Transpower can charge individual customers, as these are calculated using a methodology for setting transmission prices which is governed by the Electricity Authority.

A9.3 The quality standards and grid output measures that we set should reflect the service that Transpower's customers demand and value. This is so that Transpower invests appropriately in its network and consumers do not receive a lower quality service than possible given the level of expenditure accommodated by the price-path.

¹⁷⁰ The individual price-quality path provisions in the Commerce Act of s 53ZC apply to Transpower by way of an Order in Council under s 52N. Electricity lines services include both transmission services and system operator services. However, Transpower's system operator services are not covered by our individual price-quality path. This is because we consider the existence of a separate arm's-length contract between Transpower and the Electricity Authority for these services results in outcomes consistent with those that would be observed in a workably competitive market.

- A9.4 Expenditure allowances, an important determinant for calculating maximum revenues, should reflect efficient investment. This provides for investment to occur at the appropriate time, and results in service being provided at an appropriate quality.
- A9.5 We set the price-quality path before the regulatory period starts so that Transpower can expect to earn a normal return on its investment in the grid. We do this also so Transpower has incentives to continue to make efficient investments in its network.
- A9.6 We provide financial incentives for Transpower to spend less than the forecast costs, which will result in above normal returns in the short-term. Any efficiency gains made during a regulatory period eventually benefit consumers as they are shared.

We have used the price-quality path for RCP1 as our starting point

- A10 Our starting point in setting the price-quality path for RCP2 is the approach used for RCP1.
- A11 We have, however, developed features during RCP1 that are yet to be applied; also some of the provisions for RCP1 were transitional.¹⁷¹
- A12 Transpower's individual price-quality path for RCP2 is consistent with the input methodologies that apply and aims to be integrated with information reporting requirements that were developed during RCP1 and that now apply to Transpower. A significant new feature for RCP2, for example, is the full application of the Capex IM¹⁷² to:
- A12.1 implement revenue-linked quality measures;¹⁷³ and
- A12.2 set the base capex allowance.¹⁷⁴
- A13 We have made enhancements for RCP2 that we consider are incremental, gradual and well-signalled. They are a sufficiently challenging step to what we expect would be a further-enhanced individual price-quality path for RCP3. This measured incremental approach has been taken to reduce uncertainty and promote predictability for stakeholders (consumers, Transpower or other interested persons).

¹⁷¹ We first set a price-quality path for Transpower in 2010 which covers the period 1 April 2011 to 31 March 2015. Prior to that Transpower was subject to an administrative settlement.

¹⁷² Capex IM, clause 1.1.3 ('Commencement') and clause 1.1.4 ('Transitional provisions'). The Capex IM took effect from the date of publication in the Gazette for major capex projects, including those commenced before and from the start of RCP2 for base capex and grid output measures.

¹⁷³ See Chapter 4.

¹⁷⁴ See Chapter 5.

- A14 Particular areas that we have focused our attention on developing for RCP2 are:
- A14.1 quality, and how the individual price-quality path best reflects what consumers want; and
 - A14.2 incentives, and the processes to put in place to reward (or penalise) Transpower for improved efficiency, energy efficiency, use of demand side management in place of capex, and robust forecasting of opex and capex.
- A15 The next reset of the price-quality path will present further opportunities for refinement. This will be for the regulatory period starting from 1 April 2020 – RCP3. For example, the setting of the price-quality path for RCP3 will be the first time when implementation of any changes stemming from the required 7-year review of the input methodologies is possible.¹⁷⁵
- A16 In Attachment I, we discuss suggested business improvement and performance development initiatives for Transpower to carry out in RCP2 to maintain the pace and direction for RCP3.

Our role in setting and administering an improving individual price-quality path over time

- A17 Over time we expect that the way we carry out our role in regulating Transpower's individual price-quality path will also evolve. We will continue to get a better understanding of:
- A17.1 Transpower's performance and how the design of the individual price-quality path is contributing to, or hindering, this; and
 - A17.2 the costs, benefits, risks or uncertainties for Transpower and consumers of the rules that we have set, including how much intervention is necessary.
- A18 Our interventions during a regulatory period may be less necessary once we get that better understanding of Transpower's performance, and of whether the individual price-quality path is delivering against the Part 4 purpose.¹⁷⁶
- A19 Our examination of Transpower's proposed expenditure may move further towards a high level (top-down) approach where we place greater emphasis on how Transpower applies its governance over that expenditure. We can then monitor the prudence and efficiency of Transpower's expenditure.

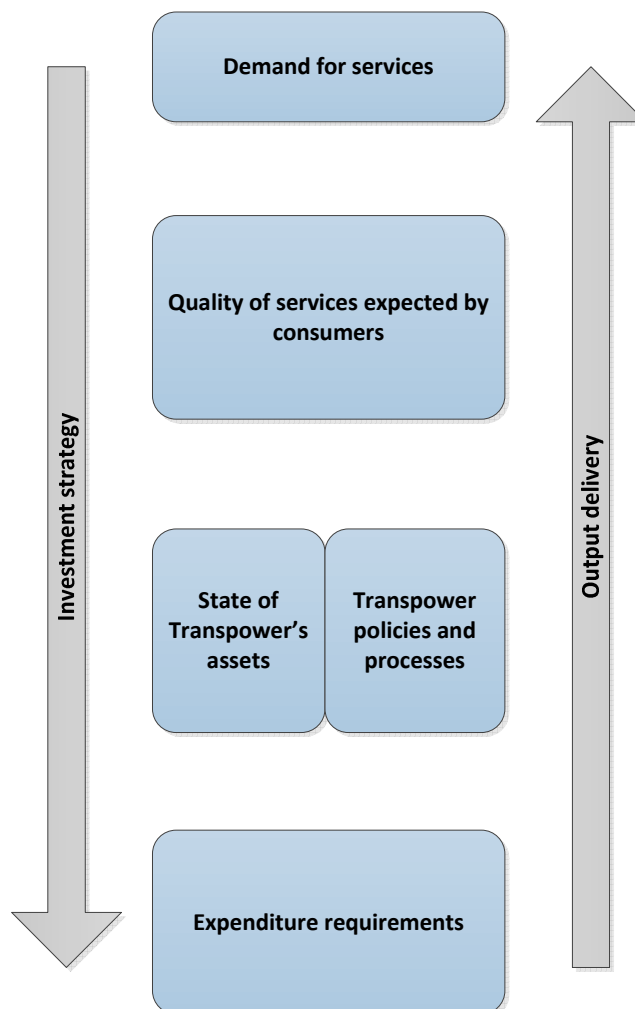
¹⁷⁵ Commerce Act 1986, s 52Y(1).

¹⁷⁶ For example, interventions in RCP1 included yearly determinations for updates to forecast maximum allowable revenue.

Our challenge to set appropriate quality measures and allowances

- A20 In setting appropriate quality measures and the ‘right level’ of expenditure for where we are on the development track for the price-quality path, we are mindful of various factors. These factors include the relationship between the demand for services, quality of services that reflects consumers’ demands, how this affects Transpower’s decision-making on its assets, the investment in the grid, Transpower’s management of its operations, and the revenue Transpower requires to meet these expectations.
- A21 One challenge is to understand current consumer value preferences and then convert that understanding into the most cost-efficient means of satisfying those requirements. This requires some level of judgement to achieve the desired connection. That relationship is described at a high level in Figure A.1.

Figure A1: Relationship between demand, consumer preferences and expenditure



- A22 Transpower’s proposal demonstrates its understanding of the demand for its services and its understanding of consumer preferences on price and quality. That information is combined with the forecast state of its grid assets and its policies and processes to give an investment strategy.

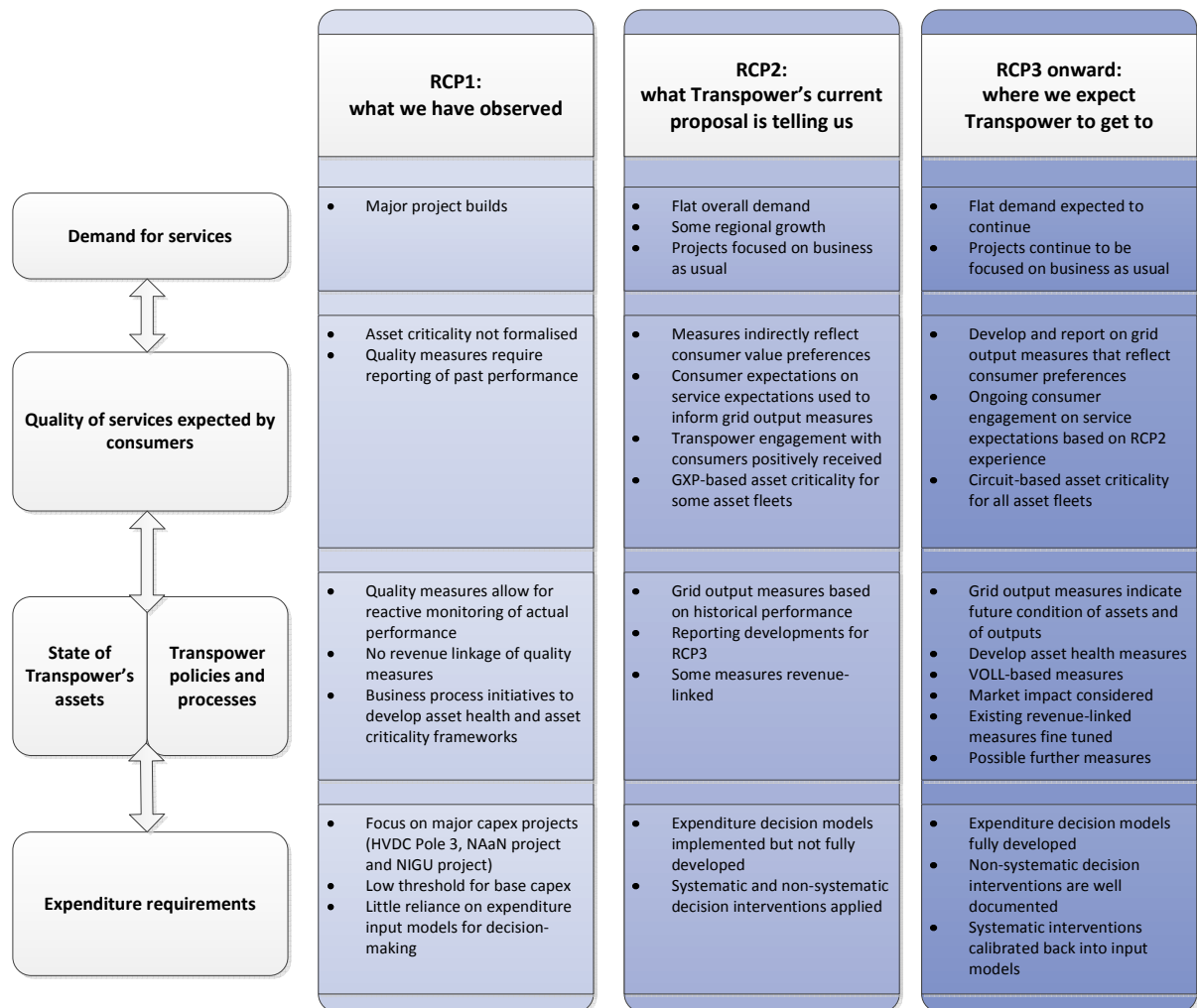
A23 That strategy, captured in Transpower’s integrated transmission plan, is costed to give us the proposed opex and capex requirements.

Understanding of consumer preferences and required expenditure will improve over time

A24 We discuss below how we expect Transpower’s proposals to evolve from period to period as it better understands consumer preferences. This evolution is characterised across three plus regulatory periods since the start of the individual price-quality path, described in Figure A.2, where:

- A24.1 ‘RCP1’ looks back at what we have observed;
- A24.2 ‘RCP2’ considers what Transpower’s current proposal tells us; and
- A24.3 ‘RCP3 onward’ sets out where we expect Transpower to get to by the time it is required to submit its proposal for RCP3.

Figure A2: Progression in development of Transpower’s proposals



- A25 By setting out our expectations now, we are giving predictable signals to Transpower and other interested persons of the direction for the future development of quality and expenditure proposals. We understand that we broadly agree with Transpower on this.
- A26 Some features of this progression are:
- A26.1 flattening of demand and less focus on delivering major capex projects;
 - A26.2 greater sophistication in addressing consumer preferences and value, and a finer granularity in the measurement of them;
 - A26.3 implementation of measures that forecast the future condition of assets and of outputs rather than relying on measures based on reactive monitoring of historical performance;¹⁷⁷ and
 - A26.4 full development of expenditure decision models with well documented interventions and systematic feedback loops.
- A27 Steps in that progression are:
- A27.1 RCP1 is characterised by the use of quality measures that demonstrate actual performance, with only limited measures for asset management and operations that demonstrate the results of business improvement initiatives.
 - A27.2 RCP1 has only limited incentives linked to revenue. These incentives are supported by non-revenue-linked targets and the reporting of information that we consider useful in developing future measures. The limited revenue-linked incentives were initially reflected solely in the individual price-quality path determination for RCP1. They have since been supplemented for RCP2 by the capex incentive measures and output incentive measures in Schedule B of the Capex IM.
 - A27.3 For RCP2, Transpower's quality measures indirectly reflect customer preferences and the development of measures for asset management and operations for RCP3. In this respect, the revenue-link for RCP2 can be seen as transitional.

¹⁷⁷ Reactive monitoring can be characterised as providing data on undesirable events such as system failures or asset failures. They are a final check on the effectiveness of an asset management system and are limited in circumstances such as monitoring high impact low probability (HILP) events, long lead time events, or indirect effects such as customer satisfaction. In contrast, proactive monitoring aims to provide best indications of warning signs of potential problems before they occur or become significant. For example, a measure of current and future asset health and criticality, which can be used to better inform the amount and timing of future replacement capex before replacement becomes a critical issue.

- A28 Speculating on the detail of the RCP3 individual price-quality path would not be productive. However, we do expect that incentive mechanisms for RCP3 will be progressively developed over RCP2 and that it will include measures for:
- A28.1 quality, that are at a more granular level and directly reflect customer value preferences; and
 - A28.2 asset health and criticality, that reflect targeted delivery of specific customer outputs.
- A29 In Attachment I, we comment on a number of areas that we expect to see Transpower advance before RCP3 to improve its investment decisions and delivery, given our observations while evaluating Transpower's RCP2 proposal.
- A30 To monitor Transpower's development improvements in those areas for RCP3, we have set a requirement for Transpower to provide pilot reporting on three asset health grid output measures and to report on the development of other performance measures.
- A31 We have also set a requirement for Transpower to identify, by 1 July 2015, those business process improvements it will undertake in RCP2, including those already in progress. Transpower will be required to report yearly in RCP2 on progress in the pilot measures, the development of the performance measures, and the progress on developing against any business improvements it plans to make.
- A32 To ensure we get timely information on Transpower's progress toward any resulting grid output measures we might be asked to consider in evaluating its RCP3 proposal, the first report must be produced at the same time as the mid-point integrated transmission plan in 2016.¹⁷⁸ This timing is scheduled so that we and interested persons can give Transpower useful feedback that it can incorporate in their plans before it must submit its RCP3 proposal.

¹⁷⁸ Commerce Commission "Information Disclosure Requirements for Transpower, Reasons Paper" (28 February 2014), paragraph 3.48.

Attachment B: Our assessment and consultation processes

Purpose of this attachment

- B1 This attachment sets out:
- B1.1 what we are required to do under the Commerce Act 1986;
 - B1.2 the methodologies we followed to make our decisions; and
 - B1.3 how we have evaluated Transpower's forecasts against the methodologies.

What we are required to do under the Commerce Act 1986

- B2 Part 4 of the Commerce Act provides for the regulation of the price and quality of goods or services in markets where there is little or no competition and little or no likelihood of a substantial increase in competition.¹⁷⁹
- B3 Transpower is subject to individual price-quality path regulation under Part 4.¹⁸⁰
- B4 We are in the process of setting an individual price-quality path for Transpower, for the period commencing on 1 April 2015. As required by the Commerce Act, it will set out:¹⁸¹
- B4.1 the maximum revenue which Transpower can charge, based on an unsmoothed building blocks approach;
 - B4.2 the quality standards that will apply, based on the revenue-linked grid output measures we have determined under the Capex IM¹⁸²; and
 - B4.3 the regulatory period, in this case five years.

¹⁷⁹ Commerce Act 1986, s 52.

¹⁸⁰ The individual price-quality path provisions of s 53ZC apply to Transpower by way of an Order in Council under s 52N of the Commerce Act. The Order in Council came into force on 1 October 2010 and expires 20 years later, on 30 September 2030.

¹⁸¹ Section 53M of the Commerce Act sets out the necessary components of a price-quality path.

¹⁸² Capex IM, clause 2.2.1.

B5 We have broad discretion to determine the individual price-quality path under section 53ZC:

53ZC Price-quality path for individual businesses

- (1) If individual price-quality regulation applies to goods or services supplied by a supplier, the Commission may set the price-quality path for that supplier using any process, and in any way, it thinks fit, but must use the input methodologies that apply to the supply of those goods or services.
- (2) The following provisions of subpart 6 apply (with all necessary modifications) where individual price-quality regulation is imposed:
 - (a) sections 53M and 53N:
 - (b) section 53ZB.

B6 In exercising this discretion, we are bound to:

B6.1 apply the relevant input methodologies:

B6.1.1 Transpower IMs; and

B6.1.2 Capex IM;

B6.2 make decisions that promote the purpose of Part 4 of the Commerce Act.¹⁸³

B7 The purpose of Part 4 is set out in s 52A of the Commerce Act. In essence, in the absence of workable competition, Part 4 seeks to promote outcomes consistent with outcomes in workably competitive markets, by providing suppliers with certain incentives (eg, incentives to innovate, invest, and improve efficiency), while limiting excessive profits.¹⁸⁴

¹⁸³ Individual price-quality regulation does not have its own express purpose statement under the Commerce Act, unlike other forms of Part 4 regulation.

¹⁸⁴ In our previous determination processes we have developed our understanding of the Part 4 purpose in some detail. See for example Commerce Commission, *Input Methodologies (Electricity Distribution and Gas Pipeline Services) Reasons Paper*, 22 December 2010. We note that MEUG has suggested that a measure of the success of the individual price-quality path should be whether it results in forecast unit transmission costs decreasing (Major Electricity Users Group, "Transpower individual price-quality path submission" (27 June 2014). In our view this suggested single measure does not accurately reflect the multiple objectives contained within section 52A(1)(a)-(d).

We have applied input methodologies when making our decisions.

- B8 Consistent with our approach to setting Transpower’s individual price-quality path for RCP1, we applied the input methodologies set out in Part 3 of the Transpower IMs in determining key inputs to the calculation of maximum revenue under the individual price-quality path for RCP2.¹⁸⁵
- B9 A description of how those input methodologies apply when calculating Transpower’s forecast MAR is set out in Attachment C.
- B10 We applied the Capex IM when setting Transpower’s base capex allowance for RCP2 – see Chapter 4.¹⁸⁶ This forecast of base capex during the regulatory period feeds into Transpower’s forecast RAB calculation, which is then used to calculate the return on and of capital components of Transpower’s forecast MAR for RCP2.¹⁸⁷
- B11 We also applied the Capex IM when setting quality standards (which are based on Capex IM grid output measures) and incentives for Transpower in the individual price-quality path determination.

We have set Transpower’s base capex allowance consistent with the evaluation criteria in the Capex IM.

- B12 The general criteria that we must follow require us to evaluate:¹⁸⁸
- B12.1 whether the proposal is consistent with all applicable input methodologies;¹⁸⁹
 - B12.2 the extent that the proposal will promote the purpose of Part 4 of the Commerce Act;¹⁹⁰ and

¹⁸⁵ The specification of price, cost allocation, asset valuation, treatment of taxation, cost of capital, incremental rolling incentive scheme, and reconsideration of an individual price-quality path in case of a catastrophic event, a change event or an error.

¹⁸⁶ Capex IM, clause 2.2.2(1). Note that the Capex IM was not in place at the time Transpower’s individual price-quality path was set for RCP1.

¹⁸⁷ The Capex IM also sets out the process for Transpower seeking approval for major capex proposals. These proposals are made and determined during the course of a regulatory period, with any approved major capex expenditure then impacting Transpower’s maximum allowable revenue under the individual price-quality path via periodic adjustments. Transpower may seek the Commission’s approval to transfer a project that was originally accounted for in the base capex allowance to become a major capex project, eg if forecast scope or cost variations means it exceeds the base capex project threshold of \$20 million. The components of the base capex expenditure adjustment calculation allow any such transfer to be reflected by removing any portion of the base capex allowance to which the base capex incentive rate applies. Major capital expenditure cannot be transferred to base capital expenditure.

¹⁸⁸ Capex IM, Part 6.

¹⁸⁹ Ibid, clause 6.1.1(2)(a).

- B12.3 whether the data, analysis and assumptions in the proposal are fit for the purpose of the Commission exercising its powers under Part 4 of the Commerce Act.¹⁹¹
- B13 Further specific evaluation criteria include:¹⁹²
- B13.1 general factors we must have regard to when evaluating the proposal, such as reasonableness of key assumptions, overall deliverability of the proposed base capex during the current regulatory period, and the extent that grid output targets were met in the previous regulatory period;
- B13.2 a non-exhaustive list of criteria we may use when evaluating each identified programme set out in the base capex proposal, such as reviewing Transpower's process to determine the identified programme's reasonableness and cost-effectiveness; and
- B13.3 a list of evaluation techniques we may employ, such as process benchmarking and process and functional modelling.
- B14 The specific evaluation criteria are not exhaustive. The weighting of different criteria is at our discretion.
- B15 While Transpower is required to submit a base capex proposal,¹⁹³ the final decision on Transpower's base capex allowance ultimately rests with the Commission; we are not required to agree with Transpower about any aspect of the allowance.

We have set a number of grid output measures under the Capex IM:

- B16 The Capex IM defines a grid output measure as:
- a measure that quantifies the output or benefit (where 'benefit' may include reduction in risk) delivered by the grid or investment in the grid
- B17 The Capex IM provides for two types of grid output measures: revenue-linked and non-revenue-linked.
- B17.1 Revenue-linked grid output measures: these underpin the quality standards for Transpower under section 53M of the Commerce Act.¹⁹⁴

¹⁹⁰ Capex IM, clause 6.1.1(2)(b).

¹⁹¹ Ibid, clause 6.1.1(2)(c).

¹⁹² Ibid, Schedule A.

¹⁹³ Ibid, clause 2.2.1(3) and Part 7.

¹⁹⁴ While we are able to set other non-Capex IM quality standards for the individual price-quality path, we have elected not to for RCP2.

- B17.2 Non-revenue-linked grid output measures: these are not linked to quality standards. However, we require reporting against them to better understand Transpower's performance.
- B18 In setting the grid output measures, we are primarily seeking to provide Transpower with incentives to provide services at a quality that reflects consumer demands, in line with the Part 4 purpose. We also apply the criteria in Schedule A of the Capex IM, including for example:
- B18.1 the extent to which a measure is a recognised measure of either or both of:
 - B18.1.1 risk in the supply of electricity transmission services; and
 - B18.1.2 performance of the supply of electricity transmission services;
 - B18.2 the relationship between the grid output measure and expenditure by Transpower.
- B19 For the revenue-linked grid output measures, Transpower will be rewarded for outperforming the performance targets, while being penalised for underperforming, as a quality incentive under section 53M(2) of the Act. We have determined:¹⁹⁵
- B19.1 Grid output targets;
 - B19.2 Caps – to limit the amount of positive revenue adjustment;
 - B19.3 Collars – to limit the amount of negative revenue adjustment; and
 - B19.4 Grid output incentive rates—the amount of money at risk for each unit of output between the cap and the collar.
- B20 The quality standards we set are based on and consistent with the quality standards for Transpower as set by the Electricity Authority.¹⁹⁶
- B21 We are also able to seek pecuniary penalties from or criminal sanctions against Transpower where Transpower breaches the quality standards under sections 87 and 87B of the Commerce Act (statutory penalties).
- B22 We consider that any statutory penalties are different to section 53M quality incentives, and that we are not barred from seeking a statutory penalty by section 87(5) simply because a negative revenue adjustment has already occurred under the revenue-linked grid output measure.

¹⁹⁵ Capex IM, clause 2.2.2(1)(d).

¹⁹⁶ Commerce Act, section 54V.

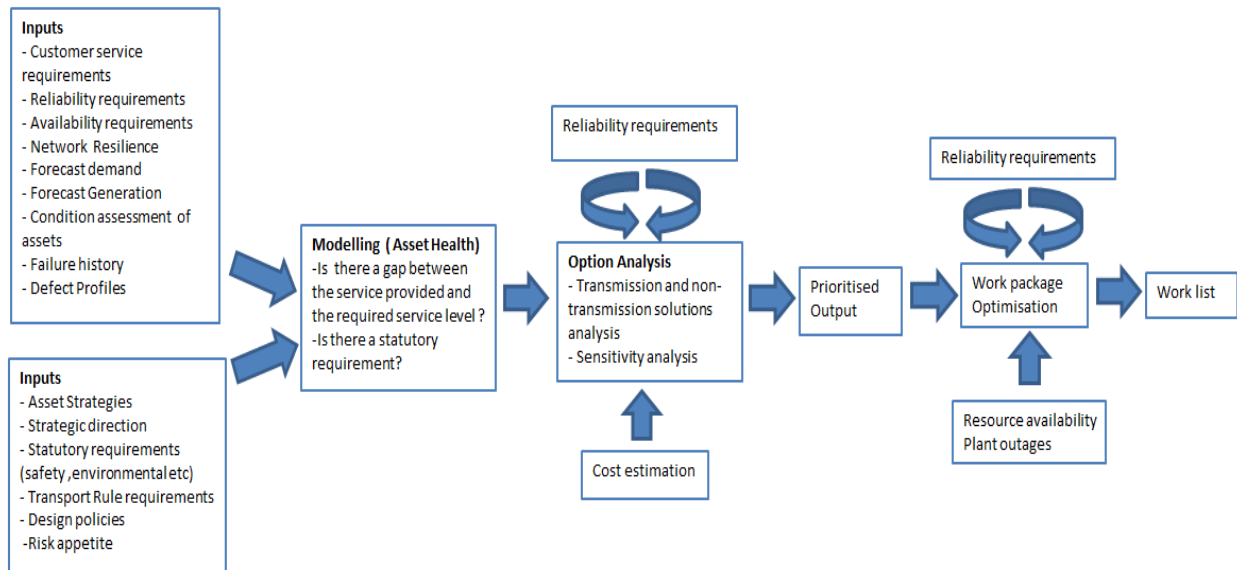
Opex does not have an input methodology

- B23 Unlike base capex, there is no input methodology that sets out rules about how we should determine or evaluate forecast opex for RCP2. However, we do not believe the criteria to be applied should be significantly different to the criteria that apply to base capex, particularly given the need for capex expenditure to be directed towards achieving cost-effective and efficient solutions, and the potential cost trade-offs between capex and opex that this implies.
- B24 Therefore, in evaluating Transpower's opex proposal we have had regard to the efficient costs of a prudent supplier and have been guided, where it has been useful, by the Capex IM criteria and Good Electricity Industry Practice (GEIP).

How we have evaluated Transpower's proposal against the methodologies

- B25 While base capex, grid output measures and incentives are determined as separate items under the Capex IM, in practice they combine with opex as an integrated quality and expenditure proposal for Transpower. For example:
- B25.1 decisions on one aspect of the path (eg, quality) have a direct impact on the other decisions we make (eg, base capex); and
- B25.2 some opex and capex decisions are, to some extent, substitutable.
- B26 We have therefore not made any of these decisions in isolation.
- B27 Further, the assessment of forecast expenditure and proposed quality standards is not a mechanistic process. The process necessarily involves the exercise of judgement. In assessing Transpower's proposal, we have focused particularly on the asset management framework under which Transpower both developed its proposal and relied on the input assumptions.
- B28 Achieving the required levels of service, at least-cost, over the full life of the network assets requires expenditure to be planned and implemented through business processes that are based on sound grid strategies, asset management principles and methodologies. Figure B1 represents such an approach as a flowchart through which output forecasts and key performance measures are produced from a range of input assumptions and policy parameters.

Figure B1: Asset management approach



- B29 In evaluating the proposal against the evaluation criteria we assessed the quality of the framework used and the extent that Transpower applied its framework in practice. GEIP provides a useful reference for the sound grid strategies, asset management principles and methodologies that a prudent transmission operator could be expected to have in place.¹⁹⁷
- B30 We consider this approach is appropriate, as the extent to which Transpower's expenditure forecasts are prudent and efficient will depend upon the quality of its asset management framework and the appropriateness of the input assumptions.
- B31 We did not do detailed reviews of each project and programme. An assessment of Transpower's proposal can be achieved through an assessment of a representative sample of projects and programmes.
- B32 However, the extent to which the underlying strategies, policies and assumptions were robust and consistent with the Capex IM evaluation criteria determined the extent to which we performed detailed reviews of project/programme expenditure and made our own judgements about what level of expenditure is appropriate.

¹⁹⁷ A useful definition of GEIP, in relation to electricity transmission services, is found in the Electricity Authority's "The Electricity Industry Participation Code [2010]", 3 October 2013: "The exercise of that degree of skill, diligence, prudence, foresight and economic management, as determined by reference to good international practice, which would reasonably be expected from a skilled and experienced asset owner engaged in the management of a transmission network under conditions comparable to those applicable to the grid consistent with applicable law, safety and environmental protection. The determination is to take into account factors such as the relative size, duty, age and technology status of the relevant transmission network and applicable law."

- B33 As an example of how this works, in its proposal Transpower stated that it considers that its expenditure forecasts are prudent. In reaching this conclusion Transpower stated that it has relied on the application of a top-down review and challenge of its expenditure forecasts.
- B34 We consider that a top-down challenge to forecasts produced on a bottom-up basis is very important and if done rigorously provides some assurance that expenditure forecasts are reasonable and prudent. Where we saw evidence that Transpower had applied these challenges with appropriate rigour, this reduced the extent and depth of direct testing that we performed to conclude that the forecast expenditure is appropriate.
- B35 Our consideration of efficiency took into account the information available at the time Transpower developed its proposal. We also considered information available after the proposal where it was relevant to submissions or our information requests. We expect Transpower to mitigate risks that lead to cost inefficiencies to the extent they are foreseeable and controllable. For risks that are not within Transpower's control, it should seek to minimise costs through planning and implementing a reasonable mitigation strategy. However, we also recognise that some of these risks may not be foreseeable at the time of approval.
- B36 We did not assess opex and base capex in isolation. Capex should be directed towards achieving cost-effective and efficient solutions, which implies some level of potential cost trade-off between capex and opex.

Independent experts have assisted with our evaluation of Transpower's proposal

- B37 We engaged Strata Energy Consulting Limited (Strata) and Partna Consulting Group Limited (Partna) to assist with our evaluation of Transpower's proposal.
- B38 Strata and Partna have produced reports that have informed our decisions and are referred to throughout this paper. We published two reports alongside our draft decision:
- B38.1 Strata Energy Consulting Limited and Energy Market Consulting Associates "Technical Advisor Report on the Transpower New Zealand Ltd IPP Proposal for RCP2: Report to The Commerce Commission" (12 May 2014)—referred to as the 'Strata report'.
- B38.2 Partna Consulting Group Limited "Review of Transpower's Proposed Quality Measures: How they compare with international practice in Australia and the UK" (11 April 2014)—referred to as the 'Partna report'.
- B39 We have published a third report alongside this paper:
- B39.1 Strata Energy Consulting Limited and Energy Market Consulting Associates "Transpower New Zealand Limited IPP Proposal for RCP2: Review of points raised in submissions on the Draft Decision for the Commerce Commission" (19 August 2014).

Our process so far

- B40 Following on from our process paper,¹⁹⁸ on 2 December 2013, Transpower submitted an expenditure proposal as required by:
- B40.1 the Capex IM; and
 - B40.2 an information gathering notice we issued (in accordance with s 53ZD of the Commerce Act).
- B41 We subsequently published Transpower’s expenditure proposal on our website.
- B42 We published an Issues paper¹⁹⁹ on 10 February 2014 and subsequently received submissions and cross-submissions from interested persons.²⁰⁰
- B43 On 16 May 2014 we published our draft decisions, reports from Strata and Partna and other supporting documentation, relating to:
- B43.1 the expenditure and grid output matters we are required to determine prior to RCP2 under the Capex IM; and
 - B43.2 the operation of Transpower’s individual price-quality path for RCP2.
- B44 On 30 May 2014, we published a draft determination which gave effect to our draft decisions on Transpower’s individual price-quality path, along with a companion paper which set out the proposed compliance reporting requirements within it.
- B45 Submissions on our draft decisions were due on 27 June, and cross-submissions on 11 July. Submissions on our draft determination, and the proposed compliance reporting requirements associated with Transpower’s individual price-quality path were due on 11 July.
- B46 After considering Transpower’s request for an asset health grid output measure (contained within its 27 June submission), on 3 July we revised our draft decisions to accommodate asset health grid output measures. Submissions on this aspect of our draft decisions were due on 11 July, and cross-submissions due on 18 July.

¹⁹⁸ Commerce Commission “Our process for setting Transpower’s expenditure allowances, quality standards and individual price-quality path for 2015 to 2020”, 15 November 2013

¹⁹⁹ Commerce Commission “Invitation to have your say on Transpower’s individual price-quality path and proposal for the next regulatory control period: Issues paper” (10 February 2014).

²⁰⁰ For submissions received from our Issues paper, please see our website at www.comcom.govt.nz/regulated-industries/electricity/electricity-transmission/transpower-individual-price-quality-regulation/transpowers-price-quality-path-from-2015-to-2020/.

- B47 On many occasions we requested provision of further information by Transpower for the purpose of deciding the expenditure and grid output measures prior to RCP2 under the Capex IM. A full list of the information we requested from Transpower is on our website.
- B48 All submissions, published documents, and papers can be found on our website.²⁰¹

What remains outstanding?

- B49 We are required to set Transpower's individual price-quality path for the next regulatory period by 30 November 2014. Accordingly we have now:
- B49.1 determined the matters that we are required to under clause 2.2.2 and 2.3.1 of the Capex IM for RCP2 (which are important determinants of Transpower's individual price-quality path); and
 - B49.2 made final decisions about other dimensions of Transpower's individual price-quality path for RCP2.
- B50 The key dimension of Transpower's individual price-quality path for RCP2 that remains outstanding is the calculation of maximum revenues.
- B51 Transpower's forecast MAR is calculated using a building blocks approach ie, constructed through an aggregation of individual components of Transpower's forecast costs (such as the return of and on capital, opex and tax). As indicated previously, our process of calculating Transpower's forecast MAR involves:
- B51.1 issuing a statutory notice requiring Transpower to apply the inputs and calculation methods we have now determined, together with relevant IMs, to forecast their MAR for each year of RCP2; and
 - B51.2 considering Transpower's response to our statutory notice and determining the maximum revenues so that we can complete the setting of Transpower's individual price-quality path for the next regulatory period.

Amendments to input methodologies

- B52 A number of Transpower-specific input methodology amendments came into effect on 28 August 2014, and have been applied in our decisions.
- B53 We also note that we are currently consulting on amendments to two aspects of the input methodologies that we are required to apply when setting Transpower's individual price-quality path for the next regulatory period. The amendments relate to the:

²⁰¹ Ibid.

B53.1 incremental rolling incentive scheme;²⁰² and

B53.2 WACC percentile.²⁰³

The IRIS input methodology amendments

- B54 The IRIS is implemented through the recoverable cost provisions. Given that the maximum allowable revenues (ie, the forecast MAR) that Transpower may recover must be specified in the individual price-quality path determination as a total revenue cap net of recoverable costs (and net of pass-through costs),²⁰⁴ the mechanics of the IRIS sit outside this.
- B55 Our draft decision on the individual price-quality path simply specified the extent to which Transpower's opex is controllable, and should be subject to the IRIS, and required Transpower to provide a summary of this.²⁰⁵
- B56 We therefore consider that because the recoverable cost amount arising from the IRIS calculation sits outside of the 'price-path', any substantive amendments to the way that the incremental rolling incentive scheme mechanism acts on that opex (eg, symmetrical or asymmetrical) can be implemented outside our process of calculating Transpower's forecast MAR.
- B57 However, the draft amendments to the Transpower IMs provisions anticipate deleting the defined terms of "allowed controllable opex" and "actual controllable opex",²⁰⁶ which may impact on how the interface with the IRIS mechanism is reflected in the individual price-quality path determination.
- B58 Accordingly, we will further consider whether any more technical changes to any related aspects of the individual price-quality path are required prior to making the final individual price-quality path determination in November 2014.

The WACC input methodology amendments

- B59 The amendments we have signalled in our draft decision on the WACC percentile are of a different nature though. The WACC is a component which is fed into the calculation of forecast MAR that we must determine for each year of RCP2.

²⁰² Commerce Commission, "Proposed amendments to input methodologies: incremental rolling incentive scheme", 18 July 2014.

²⁰³ Commerce Commission, "Proposed amendment to the WACC percentile for electricity lines services and gas pipeline services", 22 July 2014.

²⁰⁴ Transpower IM, cl 3.1.1.

²⁰⁵ In line with the expectations set out in Commerce Commission, "Input methodologies (Transpower) reasons paper", 22 December 2010 at 7.5.7 to 7.5.8.

²⁰⁶ Commerce Commission, "Draft Incremental Rolling Incentive Scheme Input Methodology Amendments 2014", 18 July 2014 at p 43.

B60 We currently anticipate making final decisions on the WACC amendments by 31 October 2014. We consider that these final decisions should be reflected in the individual price-quality path, given that the statutory timeframes for determining the individual price-quality path allow for this. We note any change will feed back into the determination of the forecast MAR.

Further consultation to be undertaken on 'listed projects' processes

B61 We will further consult on the process for the approval of base capex of listed projects. Our earlier view on which we consulted was that the listed projects mechanism should form part of the individual price-quality path determination.²⁰⁷

B62 We now consider that the process requirements should instead be set out in the Capex IM, as this is more consistent with s 54S of the Act. We will consult on this matter. We expect the listed projects input methodology that will apply to Transpower's individual price-quality path for RCP2 will be published by 31 October 2014.

Our process to finalise the individual price-quality path

B63 We intend to publish a final draft individual price-quality path determination (that reflects our final decisions to date) on 12 September 2014, and allow for consultation on the technical drafting of the determination.

B64 We anticipate written submissions will be sought by 26 September 2014 to ensure that the drafting of the final draft individual price-quality path determination properly gives effect to the intended approaches outlined in this paper. Submissions on the technical drafting can then be considered and incorporated into the final determination in November 2014.

B65 At the same time that we publish a final draft individual price-quality path determination (12 September 2014), we intend to issue a statutory notice requiring Transpower to apply the inputs and calculation methods we have now determined, together with relevant input methodologies, to calculate its forecast MAR for each year of RCP2.

B66 We intend to require an audited response to that notice by 14 November 2014 (after the date of anticipated final decisions on the WACC amendments) so that we can finalise Transpower's individual price-quality path for RCP2 by 30 November 2014.

²⁰⁷ We consulted on this as part of our draft decision. For the mechanism we consulted on see Commerce Commission "Draft Transpower Individual Price-Quality Path Determination 30 May 2014" (30 May 2014), page 6, clause 12.

We may also need to amend the information disclosure determination

B67 We may also need to amend the information disclosure determination that applies to Transpower to ensure consistency that and the individual price-quality path. A process for undertaking any amendments of this nature will be developed in due course.

Attachment C: Forecast MAR and MAR wash-up calculations

Purpose of this attachment

- C1 This attachment provides details supporting our decisions on how Transpower’s forecast MAR will be calculated and how any over- or under-recovery of revenue by Transpower in RCP2 will be washed-up each year in the MAR wash-up calculations.
- C2 It also discusses the basis on which we have set the base capex allowance.

We have discretion when setting the individual price-quality path

- C3 The form of calculation of the price-path is not specified in Transpower’s input methodologies. The ‘specification of price’ input methodology sets ‘price’ as a total revenue cap net of pass-through costs and recoverable costs. It does not set out how that cap is to be calculated.²⁰⁸
- C4 This is in contrast to the form of calculation for customised price-quality paths for electricity distribution businesses and gas pipeline businesses, where the form of calculation of the price-path is specified in the respective input methodologies.²⁰⁹
- C5 The form of calculation of the price-path for Transpower must therefore be set out in the individual price-quality path determination, which determines the price-path in the form of the forecast MAR that Transpower can receive and the way in which forecast MAR is to be calculated (or updated, if necessary).
- C6 The background on the decisions and reasons for the original setting of the calculation fundamentals of the RCP1 individual price-quality path can be found in our 2010 Reasons Paper.²¹⁰

Key features of the price-path

- C7 Below we set out key features of Transpower’s individual price-quality path.

²⁰⁸ Transpower IMs, clause 3.1.1.

²⁰⁹ See for example the calculation of a customised price path for electricity distribution services; *Electricity Distribution Services Input Methodologies Determination 2012* [2012] NZCC 26 (28 September 2012), clauses 5.3.2 to 5.3.4.

²¹⁰ Commerce Commission “Individual Price-Quality Path (Transpower) Reasons Paper” (22 December 2010).

The regulatory period for RCP2 will be five years

- C8 The regulatory period for RCP will be five years, comprising the period 1 April 2015 to 31 March 2020. Although this differs from the four years of RCP1, five years is the standard length of each regulatory period as set out in the Commerce Act.²¹¹
- C9 We have not identified any reasons why the default period of five years should not apply for RCP2. The shorter-term of RCP1 reflected its transitional nature, comprising the Transition Year and the Remainder Period (three years).

Unsmoothed building blocks are used to set maximum revenues

- C10 Transpower's forecast MAR in the individual price-quality path for RCP2 will be determined using an unsmoothed building blocks approach.²¹² The forecast MAR for each year of RCP2 will be set on a forward-looking (*ex ante*) basis using forecast values for each building block.²¹³ This is consistent with the approach adopted for RCP1.
- C11 This building blocks approach closely follows the method used to measure Transpower's return on investment for information disclosure.²¹⁴

Transpower has a pricing year and a disclosure year

- C12 Transpower's disclosure year for the individual price-quality path and information disclosure ends on 30 June. This aligns with its corporate balance date.
- C13 All forecast values used in the forecast MAR building blocks are calculated by reference to a disclosure year. The forecast MAR is then applied to calculate Transpower's revenues and prices for the 'relevant pricing year', which is the year ending on 31 March immediately before the end of the disclosure year.
- C14 For example, the forecast MAR calculated for the disclosure year running from 1 July 2015 to 30 June 2016 (2016 disclosure year) will be used to set Transpower's revenues and the prices it charges its customers for the pricing year that runs from 1 April 2015 to 31 March 2016 (2016 pricing year).

²¹¹ *Commerce Act 1986*, section 53M(4) and (5). The Act prescribes that the regulatory period is to be five years unless the Commission determines a shorter period.

²¹² Commerce Commission "Individual Price-Quality Path (Transpower) Reasons Paper" (22 December 2010), Sections 3.4 to 3.7.

²¹³ Transpower will be required to apply the forecast MAR for each disclosure year to the equivalent pricing year ending 31 March when it sets its transmission pricing each year under the Transmission Pricing Methodology (TPM). The Electricity Authority is currently consulting on the form of the TPM and it is possible that the way the price path compliance in the individual price-quality path determination is described may need to be amended at some later stage.

²¹⁴ Commerce Commission "Information Disclosure Requirements for Transpower Reasons Paper" (28 February 2014), Attachment D.

- C15 This alignment with the disclosure year for calculations and reporting was used in RCP1²¹⁵ and is intended to:
- C15.1 keep to a minimum the reconciling adjustments with Transpower’s GAAP reporting (in the case of the disclosure year); and
 - C15.2 align revenues and prices with the period when many of Transpower’s customers (eg, the electricity distribution businesses) calculate their prices, which is the April to March pricing year.

Building blocks will be used to calculate the forecast MAR

- C16 We have concluded that an unsmoothed building blocks approach should be applied in RCP2.
- C17 The forecast MAR for RCP1 was set based on the sum of the forecast building block values for each year. The resulting price-path over the four years of that regulatory period was not smoothed. This differs from the default price-quality path that applies to non-exempt electricity distribution businesses, where a smoothed price-path is calculated.
- C18 We consulted publicly on whether the building blocks approach should again be adopted in setting the forecast MAR for RCP2 and asked for comment on whether a ‘smoothed’ price-path similar to the default price-quality path applying to regulated electricity distribution businesses should instead be adopted.²¹⁶
- C19 Our experience in applying the individual price-quality path over RCP1 has been that a smoothing of the price-path is not justified in Transpower’s case. The MAR wash-up values to date have not been material to the yearly revenue totals. Therefore, there have been no price predictability issues for consumers.

Pass-through costs and recoverable costs are included in Transpower’s forecast revenue

- C20 Pass-through costs and recoverable costs are not forecast MAR building blocks and consequently do not form part of the maximum allowable revenues for the purposes of Transpower’s individual price-quality path.
- C21 Forecast pass-through costs and recoverable costs will be added to the forecast MAR to arrive at Transpower’s forecast revenue that is used in setting its prices each year. The forecast revenue is converted to prices for services through the TPM, which is regulated by the Electricity Authority.

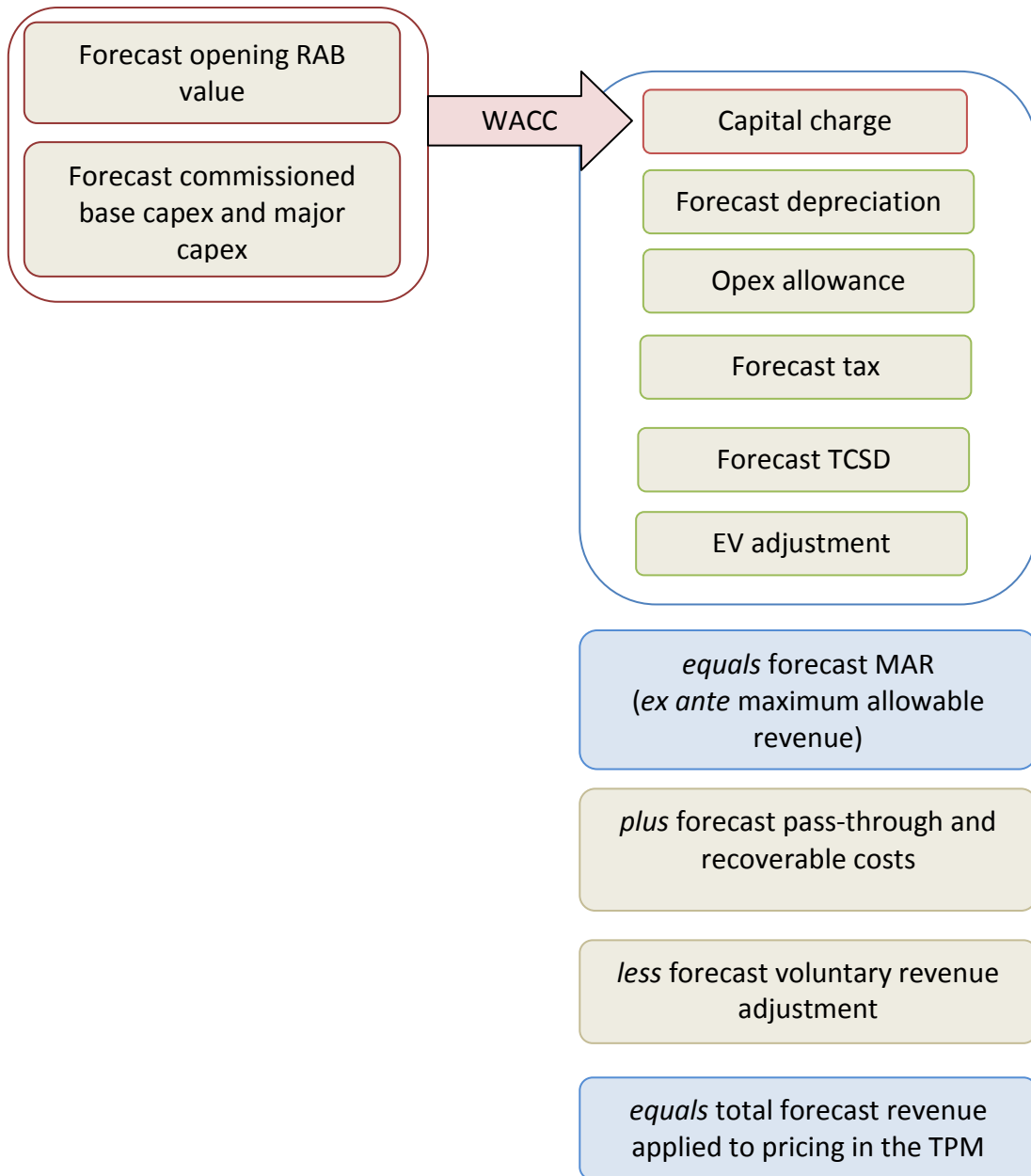
²¹⁵ Commerce Commission “Individual Price-Quality Path (Transpower) Reasons Paper” (December 2010), paragraph 3.4.1.

²¹⁶ Commerce Commission “Invitation to have your say on Transpower’s individual price-quality path and proposal for the next regulatory control period – Issues paper” (10 February 2014), paragraph 3.17.

Forecast MAR building blocks calculation

- C22 The building blocks of the forecast MAR calculation are:
- C22.1 a forecast of Transpower's RAB, including a forecast of the opening RAB value and forecast commissioned assets (ie, forecast commissioned major capex and base capex);
 - C22.2 a forecast capital charge - which is the forecast return on Transpower's forecast RAB at the WACC rate;
 - C22.3 a forecast of the depreciation of Transpower's forecast RAB;
 - C22.4 the forecast opex allowance (see below for more details on how we will set and apply the opex allowance building block);
 - C22.5 a forecast allowance for income tax based on Transpower's transmission revenues;
 - C22.6 an allowance for Transpower's term credit spread differential (essentially an adjustment to the capital charge building block);
 - C22.7 the EV adjustments covering revenue adjustments for previous MAR wash-up calculations (discussed below); and
 - C22.8 the EV adjustments covering revenue adjustments resulting from the incentive mechanisms in the input methodologies (discussed below).
- C23 Figure C1 illustrates how the forecast MAR and Transpower's total forecast revenue is calculated based on the building blocks. Each of these components is discussed further below.

Figure C1: Forecast MAR building blocks



Input methodologies apply in setting the values of the building blocks in the forecast MAR calculation

- C24 The input methodologies that are in place when the individual price-quality path is determined for RCP2 will apply for the entirety of RCP2. Any amendments to the input methodologies during the regulatory period will not generally flow through to the setting of price, revenue caps or grid output measures during the period.²¹⁷
- C25 Each building block is calculated by applying the relevant input methodologies. The input methodologies that will apply in setting the forecast MAR for each pricing year in RCP2 are:
- C25.1 specification of price,²¹⁸ which specifies that the price-path is set by a revenue cap and that allows pass-through and recoverable costs to be recovered in revenues in addition to the forecast MAR;
 - C25.2 capital expenditure,²¹⁹ which primarily sets out the rules for approval of major capex and base capex;
 - C25.3 cost allocation,²²⁰ which is the rule for how costs that span both regulated and non-regulated activities are to be attributed between them when calculating the building blocks;
 - C25.4 asset valuation,²²¹ which outlines how the RAB roll forward is to be calculated, taking into account the amount of commissioned asset and depreciation in the year;
 - C25.5 treatment of taxation,²²² which sets out the rules for calculating the taxation allowance building block;
 - C25.6 cost of capital,²²³ which sets out the process for calculating the WACC used in the capital charge building block; and

²¹⁷ *Commerce Act 1986*, sections 53ZC(2)(b) and 53ZB(1). Although the Capex IM was determined after the individual price-quality path was set for RCP1, there was an allowed timing exception under the Act that allowed it to take effect in some respects during the regulatory period.

²¹⁸ Transpower IMs, Part 3, Subpart 1.

²¹⁹ Capex IM.

²²⁰ Transpower IMs, Part 3, Subpart 2.

²²¹ *Ibid*, Part 3, Subpart 3.

²²² Transpower IMs, Part 3, Subpart 4

²²³ *Ibid*, Part 3, Subpart 5

- C25.7 reconsideration of an individual price-quality path,²²⁴ which allows for the annual updates of the forecast MAR.
- C26 Where the value of a building block is not determined by an input methodology, we seek to calculate the building block using a methodology that results in outcomes that are to the long-term benefit of consumers.
- C27 In addition to the input methodologies that apply to the forecast MAR building blocks, the IRIS input methodology is applied when calculating recoverable cost included in the forecast revenue.²²⁵

The opening RAB value, commissioned assets and WACC rate determine the capital charge building block

- C28 The capital charge is the return on capital assets. Transpower's capital charge for the forecast MAR depends on the RAB value at the start of the disclosure year and the value of assets forecast to be commissioned during the disclosure year. This value is multiplied by the WACC rate to arrive at the forecast capital charge.
- C29 Forecast commissioned assets comprise base capex (including approved base capex of listed projects) and major capex projects forecast to be commissioned during the year.
- C30 It is appropriate that Transpower only earns a return on assets once they are commissioned and providing electricity lines services to customers. Consequently, commissioned assets will be forecast monthly.²²⁶
- C31 There is a change from RCP1 in the way that strategic land will be treated for entry into the RAB in RCP2. The cost of land which is base capex will enter the RAB at the time of acquisition, rather than at the time the land becomes part of a commissioned base capex project.²²⁷
- C32 The WACC rate used to calculate the capital charge is not part of the individual price-quality path decision for RCP2. The process for setting the WACC is specified in the Transpower IMs and the WACC rate for RCP2 will be determined separately.²²⁸
- C33 In March 2014 we issued a notice of intention to do further work on the cost of capital input methodologies for electricity distribution businesses, gas pipeline

²²⁴ Transpower IMs, Part 3, Subpart 7.

²²⁵ Ibid, Part 3, Subpart 6.

²²⁶ The individual price-quality path for RCP1 assumed a mid-year timing of commissioned assets. We reason that a monthly timing assumption will result in a more accurate forecast capital charge.

²²⁷ Commerce Commission "Amendments to input methodologies for Transpower 2014" (28 August 2014).

²²⁸ Transpower IMs, Part 3, Subpart 5.

businesses, Transpower, and specified airport services. The aim was to address the High Court's comments regarding our use of the 75th percentile WACC estimate when setting regulated price-quality paths. The Court in its 2013 judgement questioned whether empirical evidence and theoretical results justify our use of the 75th percentile.

- C34 Using the 75th percentile, as we did in the first regulatory period for Transpower, makes a material difference to the WACC and the maximum allowed revenues for suppliers, such as Transpower, that are subject to price-quality path regulation.
- C35 Our draft decision released for public consultation on 22 July 2014 is that the 67th percentile WACC is appropriate for price-quality regulation.²²⁹
- C36 Our final decision on the forecast capital charge and forecast MAR is expected to be made by 28 November 2014. A final decision on the WACC percentile is scheduled for release not later than 31 October 2014.²³⁰

Forecast depreciation allowance building block

- C37 The depreciation allowance for the forecast MAR is a function of the forecast value of the RAB and of the lives of the assets comprising the RAB.
- C38 There are three changes from RCP1 in the way the forecast depreciation will be calculated under the input methodologies for RCP2.²³¹
- C38.1 Transpower may recover depreciation on any newly commissioned assets in any year of RCP2 from the date of commissioning of the assets (ie, a partial year of depreciation in the first year of the commissioned asset);
- C38.2 The RAB value of assets commissioned in RCP1 is adjusted as at 1 July 2015 as if they had received a depreciation allowance in the year of commissioning of each asset, with the balancing adjustment amount being treated as a single pseudo asset that may be depreciated by Transpower over an asset life of 31 years; and
- C38.3 There is no longer a requirement when an asset comes to the end of its life in RCP2 to spread the depreciation over the 5 years of the regulatory period (ie, depreciation will now run to the final year of the life of the assets and cease at that point).

²²⁹ Commerce Commission "Proposed amendment to the WACC percentile for electricity lines services and gas pipeline services" (22 July 2014).

²³⁰ Commerce Commission "Proposed amendment to the WACC determination for electricity lines services, including Transpower" (4 August 2014), Table 1.1, page 4.

²³¹ See Commerce Commission ""Amendments to input methodologies for Transpower 2014" (28 August 2014).

Setting the opex allowance building block

- C39 We set an overall opex allowance for the forecast MAR for each year of the regulatory period. Opex is the operating costs incurred in the daily operation of the grid and excludes amounts defined in the input methodologies as pass-through costs or recoverable costs.²³²
- C40 The opex allowance used in calculating the forecast MAR is the forecast total controllable opex for each disclosure year of RCP2. This allowance has been set using the forecast CPI.
- C41 Any disparity between the forecast CPI and the actual CPI will later result in an adjustment each year to the opex allowance for the MAR wash-up (see below).

Taxation allowance building block

- C42 The taxation allowance is primarily determined by the corporate tax rate, the forecast MAR and the expenditure building blocks. The corporate tax rate is currently 28%.²³³

The term credit spread differential building block

- C43 The term credit spread differential (TCSD) is used to adjust funding cash-flows of regulated suppliers which have issued longer-term debt than that assumed when calculating the WACC rate. Transpower makes a relatively minor adjustment to the forecast MAR.²³⁴
- C44 Please note that the regulatory profit/(loss) before tax, for the purpose of the tax calculation in the forecast MAR and MAR wash-up calculations, is specified as excluding the deduction for TCSD. This avoids the double-deduction that would occur if using the regulatory profit/(loss) before tax as defined in Transpower's information disclosure determination.

The EV account is used to transfer revenue adjustments from year to year and update the forecast MAR

- C45 As discussed in detail in Chapter 3, the EV account is the mechanism used to transfer positive or negative revenue adjustment balances from one year to the next. For example, if Transpower over-recovers revenues from consumers in one year, that

²³² Commerce Commission, "Transpower Input Methodologies Determination [2012]" NZCC 17, 29 June 2012, clauses 3.1.2 and 3.1.3. Although Transpower proposes its opex allowance by categories and for each year of the regulatory period, Transpower has the ability to transfer its operating expenditure between classifications and years.

²³³ Transpower IMs, Part 3, Subpart 4; and *Income Tax Act 2007* (as at 1 April 2014), Schedule 1, Part A, paragraph 2.

²³⁴ Transpower IMs, clause 3.5.10.

amount enters the EV account, resulting in the forecast MAR for the next available pricing year being reduced.

- C46 Balances in the EV account brought forward from RCP1 to RCP2 will be applied in setting or updating the RCP2 forecast MAR, as applicable.²³⁵
- C47 The EV account will therefore include entries relating to:
- C47.1 the result of each yearly MAR wash-up;
 - C47.2 the results of the yearly incentive adjustment calculations; and
 - C47.3 the gains and losses on capital expenditure commitments (ie, foreign currency expenditure commitments and associated designated hedges, and commodity hedge instruments).
- C48 Any balance in the EV account will then be applied as an 'EV adjustment' to adjust the forecast MAR for Transpower's pricing in the next available pricing year. This will allow Transpower to recover revenue from consumers or return revenue to consumers to clear the relevant entries from the EV account.
- C49 Any balances in the EV account that are carried forward from one year to a later year will be adjusted at the WACC rate.

Voluntary reductions to the forecast revenue applied to the Transmission Pricing Methodology

- C50 Where Transpower chooses to make an *ex ante* voluntary reduction in the forecast revenues applied to the TPM for a pricing year (other than through a reduction in recoverable costs), this will result in an adjustment to revenues after the calculation of the forecast MAR.
- C51 This will adjust the amount charged to customers via the TPM for the pricing year. The adjustment to the calculated forecast MAR is reflected as a line item in the Schedule D: Forecast MAR building blocks calculation in the Transpower individual price-quality path determination.

²³⁵ The MAR wash-up and incentive adjustment entries to the EV account for the 2014-15 year of RCP1 will not be calculated until October 2015 (ie, after the commencement of RCP2), so they will not be factored into the forecast MAR that we set in October 2014. Those later entries will be taken into account in the first update of the forecast MAR and will be recovered or returned in Transpower's 2016-17 updated forecast MAR.

Intra-period cash-flow timing assumptions will result in more accurate forecasts

- C52 As discussed in Chapter 3, we have applied intra-year cash-flow timing assumptions in the forecast MAR calculations that more accurately reflect the timing of Transpower's forecast cash-flows than those used in RCP1.
- C53 The cash-flow timing assumptions for each forecast cash-flow are outlined in Table C1.

Table C1: Cash-flow timing assumptions

Cash-flow	Timing assumption
Revenue	Slightly later than mid-year on average, reflecting the fact that revenue is earned on standard contract terms (ie, 20th of the month following supply), and includes an adjustment back by 15 days to reflect the revenue effect of the difference in timing between the March pricing year and the June disclosure year used for forecast MAR and MAR wash-up building block calculations.
Commissioned assets	Monthly based on forecast commissioning dates.
Opex	Mid-year on average.
Tax	Mid-year on average.
Pass-through costs and recoverable costs	Mid-year on average.
Term credit spread differential	Mid-year on average.

- C54 We have updated our draft decision to account for the revenue effect of the difference in year-end timing between Transpower's pricing years and disclosure years. Our draft decision proposed timing factors that were based on a gross 90 day shift in revenues between a pricing year (March basis) and a disclosure year (June basis). However, for our final decision we agreed instead with Transpower's submission that the adjustment should be based on the effect of the incremental revenue recovered by Transpower in the 90 day period.

- C55 We have tested and adopted the methodology proposed by Transpower in its submission:²³⁶
- C55.1 Transpower calculated a revenue timing adjustment factor of 16 days in place of the 90 day adjustment we had proposed in our draft decision. We have determined a value of 15 days based on an average annual revenue growth rate for RCP2 using an estimate of the WACC for RCP2; and
- C55.2 Our testing of the result of the calculations showed that the adjustment showed that the resulting 'days' adjustment is not sensitive to either the revenue growth rate assumption or the WACC rate assumption.

Over- or under-recoveries of revenue will be washed-up each year

- C56 We have retained the MAR wash-up approach from RCP1.²³⁷ Following the end of each disclosure year ending 30 June, Transpower will be required to carry out a revenue wash-up calculation. The wash-up involves replacing the forecast values in the building blocks used to calculate the forecast MAR with:
- C56.1 the actual values for that year for the RAB, depreciation, and tax; and
- C56.2 for the opex allowance, an updated version of the original opex allowance adjusted only for the actual CPI in place of the forecast CPI. This treatment of the opex allowance is the same as for RCP1.²³⁸
- C57 This calculation results in the actual MAR. The wash-up process is referred to as the MAR wash-up.
- C58 The MAR wash-up is designed to ensure that, over time, Transpower's actual financial performance reflects the impact of Transpower's incentives. Any resulting revenue difference between the actual MAR and the actual net transmission revenues received (ie, revenues net of pass-through costs and recoverable costs) is recorded as an entry in the EV account.
- C59 Any balance in the EV account is then applied in the next available pricing year as an 'EV adjustment' to adjust the forecast MAR for Transpower's pricing in that later pricing year. We refer to this as the forecast MAR update.

²³⁶ Transpower "A cash-flow adjusted revenue calculation for Transpower" in Transpower draft reasons paper submission (27 June 2014).

²³⁷ Commerce Commission "Individual Price-Quality Path (Transpower) Reasons Paper" (December 2010), Chapter 3, section 3.9.

²³⁸ *Commerce Act (Transpower Individual Price-Quality Path) Determination 2010* [2010], Decision No. 714, Schedule E.

Wash-ups of pass-through costs and recoverable costs

- C60 Transpower's pass-through costs and recoverable costs are excluded from the MAR wash-up. As a result, no entry is made in the EV account for any differences between the forecast pass-through costs and recoverable costs used in setting the forecast revenues each pricing year.
- C61 As discussed in Chapter 3, Transpower may make accrual accounting adjustments for differences between the forecast costs and the actual costs incurred on these expenditure items, and for any disparity between the actual costs incurred and the actual revenues recovered from consumers for these costs.
- C62 We will then update the forecast revenue for the next pricing year to account for this adjustment.

Voluntary adjustments to the MAR wash-up

- C63 Where Transpower chooses to make an ex-post voluntary reduction in revenues for a disclosure year (other than through a reduction in recoverable costs), this will result in an adjustment to the MAR wash-up calculation.
- C64 This will have the effect of adjusting the amount recorded in the EV account and have a flow on effect of reducing the forecast MAR in a later year. This voluntary reduction is reflected as a line item in Schedule E: Wash-up building blocks calculation of Transpower's individual price-quality path determination.

Adjustments to recoverable costs

- C65 Transpower is projecting to underspend its RCP1 opex allowance due to scope changes to RCP1 opex projects that have arisen in RCP1. It has indicated that it wishes to voluntarily forgo some of the IRIS benefits that will accrue to it in RCP2 recoverable costs as a result of this RCP1 underspend of opex.²³⁹
- C66 As the reduction in revenues proposed for RCP2 by Transpower for underspent RCP1 opex is voluntary, we do not consider it appropriate or necessary to implement any mandatory mechanism in the individual price-quality path determination to give effect to the adjustment.
- C67 Any voluntary reduction made by Transpower in respect of prior underspent opex itself would be recognised as a reduction in the revenue applied to the TPM or in the MAR wash-up (see above). Any adjustment to the IRIS benefits as a result of prior underspent opex would be an adjustment to recoverable costs.

²³⁹ Transpower IMs, clauses 3.6.2(2) and 3.1.3(1)(a).

Alignment of the opex allowance for the MAR wash-up with the IRIS

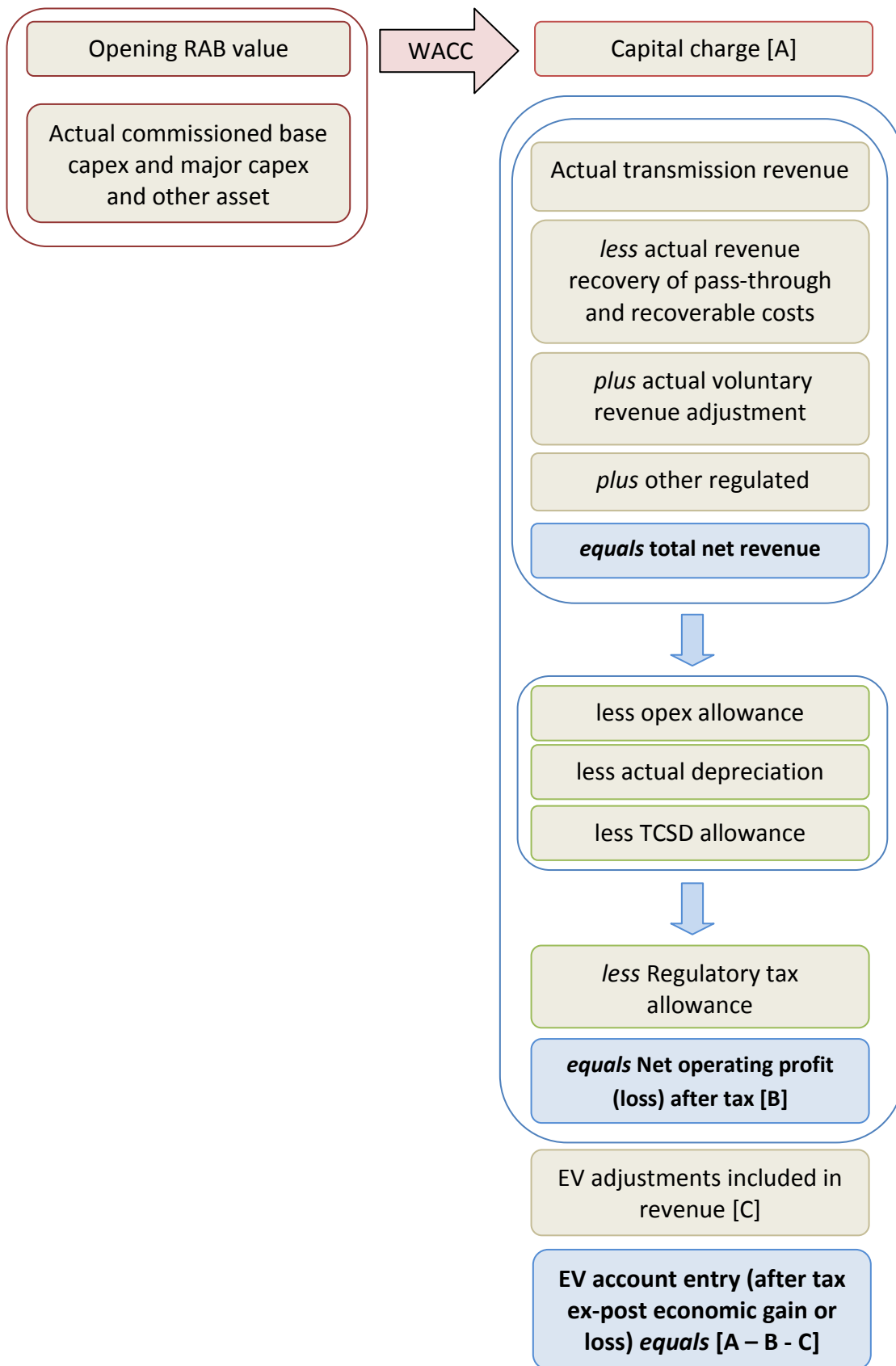
C68 In order to calculate recoverable costs under the IRIS input methodology, we need to set an amount of 'forecast opex' for each disclosure year of RCP2.²⁴⁰ Our decision is that the allowance for this purpose is the 'washed-up' opex allowance as used in the MAR wash-up calculation. That is, the opex allowance we set, adjusted for CPI inflation.

MAR wash-up process

C69 The MAR wash-up process is described in Figure C2.

²⁴⁰ See Attachment B, paragraphs B54-58.

Figure C2: MAR wash-up building blocks



When the individual price-quality path may be reconsidered during RCP2

C70 The input methodologies provide only limited opportunities for the price-quality path to be reopened during the course of a regulatory period.²⁴¹

Revenue impact of major capex approved by the Commission

C71 The input methodologies allow the reconsideration of the price-path as a result of approval by the Commission of major capex that was not already approved at the start of the regulatory period. This particularly applied for RCP1 due to the significant major capex then in train or about to be initiated during RCP1.

C72 The revenue impact of any approved major capex is given effect through the updates of forecast MARs during the regulatory period. In RCP1 these updates were made yearly.²⁴²

C73 We will retain the yearly forecast MAR update mechanism in the individual price-quality path for RCP2. While its effect may be less material for major capex approvals due to the levelling off of major capex amounts, such a mechanism would be justified and necessary for the 'listed projects' framework described below.

Change in net costs as a result of a catastrophic event

C74 The input methodologies allow the reconsideration of the individual price-quality path as a result of a catastrophic event that materially impacts the price-path or the quality path. The reasons for allowing reconsideration of the individual price-quality path and the threshold for allowing such consideration during the regulatory period are set out in our 2010 input methodologies reasons paper.²⁴³

C75 See Attachment F for our discussion on how the price-quality path would change if there was a catastrophic event.

²⁴¹ Transpower IMs, Part 3, Subpart 7.

²⁴² Commerce Commission, "Individual Price-Quality Path (Transpower) Reasons Paper", (December 2010), Chapter 3, part 3.8.

²⁴³ Commerce Commission "Input Methodologies (Transpower) Reasons Paper", (December 2010), Chapter 7, part 7.4.

Revenue impact of ‘listed projects’ base capex approved by the Commission

- C76 The base capex allowance has been set for each disclosure year of RCP2 as a fixed dollar amount. However, the input methodologies will include a mechanism that will allow us to reconsider the forecast MAR during the course of RCP2 to take account of the impact of approved base capex of certain ‘listed projects.’
- C77 Any such approvals of base capex for listed projects will feed into the yearly updates of the forecast MAR. This is similar to the updates allowed in the input methodologies for newly-approved major capex projects.
- C78 See Attachment D for additional detail on the listed projects mechanism.

The base capex allowance is set on a ‘commissioned’ amount

- C79 The base capex allowance has been set for RCP2 on a ‘commissioned’ basis, which is consistent with the basis used for capitalising assets to the RAB in the Transpower IMs and is used for the capex incentives in the Capex IM.
- C80 Transpower submitted that we should approve an amount of base capex directly, rather than approving an amount for forecast commissioned expenditure and that we should amend the Capex IM accordingly.²⁴⁴
- C81 We do not consider a change in approach is appropriate. Please see our reasons paper on Transpower input methodology amendments for further information.²⁴⁵

²⁴⁴ Transpower “Response to IPP Draft Decision” (27 June 2014), p.60, section 7.1.4.

²⁴⁵ Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014).

Attachment D: Listed project mechanism

Purpose of this attachment

- D1 This attachment sets out how the listed project mechanism for RCP2 will work. This mechanism may be used for Transpower to apply for, and us to approve, base capex for inclusion in the price path during RCP2 to take into account the additional expenditure on certain ‘listed projects.’
- D2 Any approvals of base capex for listed projects will feed into the yearly updates of the forecast MAR. This is similar to the updates allowed in the input methodologies for newly-approved major capex projects.
- D3 This attachment discusses the criteria Transpower will need to meet for the expenditure relating to these listed projects to be approved by us.

Individual price-quality path may be adjusted for approved base capex of ‘listed projects’

- D4 Our policy view is that there will be a mechanism for considering and approving base capex for inclusion during the course of RCP2 in respect of certain ‘listed projects.’ These projects relate to reconductoring.
- D5 Our earlier policy view, on which we consulted, was that the process requirements for the application by Transpower and approval by the Commission of base capex relating to listed projects should form part of the individual price-quality path.²⁴⁶
- D6 We have reconsidered that view. Our current view is that those process requirements should instead be set out in the Capex IM, as this is more consistent with s 54S of the Act. We will therefore further consult on where the processes for approving base capex relating to listed projects should be determined.
- D7 We also previously consulted on a proposed input methodology amendment to the ‘Reconsideration of an individual price-quality path’ input methodology to give effect to the revenue impact of approved base capex of a listed project. That amendment will form part of the package of input methodology amendments for listed projects on which we will further consult.

²⁴⁶ Commerce Commission “Draft Transpower Individual Price-Quality Path Determination 30 May 2014” (30 May 2014), page 6, clause 12.

- D8 Under the approval mechanism Transpower will be required to submit an application for one or more of the listed projects to the Commission for approval of their associated base capex. If, after reviewing the application, we consider the criteria for inclusion have been met, we will update the forecast MAR figures to provide for the revenue impact of the approved base capex for the relevant listed project.
- D9 The listed projects, and indicative costs, are outlined in Table D1.

Table D1: Listed projects and indicative costs

Line for reconductoring (and section)	Indicative cost in RCP2 (\$m)	Indicative total project cost (\$m)
BPE-WIL A (WIL-JFD section)	49	49
OTB-HAY A (Churton Park section 45A-68)	28	28
CPK-WIL B (complete line)	26	26
BRK-SFD B (complete line)	11	65
BPE-WIL A (BPE-JFD section)	4	107
Total indicative costs	118	275

Note: Details of the reconductoring projects can be found in Transpower "Fleet Strategy 3 – Transmission Lines Conductors and Insulators," in Transpower "Expenditure Proposal for Regulatory Period 2" (2 December 2013) section 4.1.2.

- D10 Any adjustments for base capex will feed into the yearly updates of the forecast MAR. This is similar to the price path reconsideration allowed in the input methodologies for newly-approved major capex projects.
- D11 Where asset enhancement is more than merely incidental as an outcome of the project, Transpower must instead submit a major capex proposal in line with the relevant provisions of the Capex IM.²⁴⁷

The timing, scope, and costs for listed projects are uncertain

- D12 Transpower predicted that a number of condition-based reconductoring projects will start in RCP2. The projects relate to a number of reconductoring requirements that we consider might justifiably need to be carried out in RCP2. As there is considerable uncertainty about the timing, scope and the cost of these projects, Transpower excluded them from the expenditure proposal.

²⁴⁷ See respective paragraphs (b) of the definitions of 'asset refurbishment' and 'asset replacement' in Capex IM, clause 1.1.5(2). These effectively exclude a project from the definition of 'base capex' and includes it in 'major capex' if the project improves the original service potential (for asset refurbishment) or materially improves the original service potential (for asset replacement).

- D13 We therefore consider it appropriate to exclude these projects from the base capex allowance.²⁴⁸ If the expenditure is included in setting the base capex allowance, the risk is that the uncertainties about amount and timing may result in the base capex incentive mechanisms ultimately producing revenue adjustments that are not in the best long-term interest of consumers.
- D14 For example, Transpower may incur a revenue penalty for not being able to forecast the costs of a reconductoring project accurately, even if the amount spent is efficient.

Criteria to be met for listed project base to be approved

- D15 The expenditure proposed by Transpower for each of these listed projects would be considered by the Commission during the course of the regulatory period if specified trigger conditions and approval conditions are met. Additions to the approved base capex may then flow through to the forecast MAR through the yearly price path reconsideration process.
- D16 The listed project framework will require Transpower to submit an application to the Commission to approve the base capex to accommodate expenditure associated with a listed project. Transpower would submit an application to the Commission for approval for each project.
- D17 We will then review the application. If we find the conditions have been met, we will reconsider the individual price-quality path to provide for the revenue impact of the additional base capex for the relevant listed project. The following conditions must be met before approval for the expenditure is given:
- D17.1 Transpower has undertaken a cost-benefit analysis commensurate to the project size and complexity. This is a requirement for any base capex project costing more than \$20 million;²⁴⁹
- D17.2 The cost-benefit analysis must reflect the efficient costs that a prudent supplier subject to individual price-quality path regulation would require to meet or manage the expected demand for electricity transmission services at appropriate service standards during RCP2 and over the longer term, and comply with applicable regulatory obligations associated with those services;²⁵⁰

²⁴⁸ Details of the specific projects as provided to us by Transpower are set out in Chapter 5.

²⁴⁹ Capex IM, clause 3.2.1. Transpower must undertake a cost-benefit analysis consistent with determining 'expected net electricity market benefit' (see also Schedule D of the Capex IM) and consult with interested persons.

²⁵⁰ The 'expenditure objective' is that the objective of operating and capital expenditure is to reflect the efficient costs that a prudent supplier subject to individual price-quality path regulation would require

- D17.3 The cost-benefit analysis must include consideration of alternatives to the project and for the project, where applicable;
- D17.4 Transpower must consult with interested persons. Consultation with interested persons should be of a scope commensurate with the project's nature, complexity, impact and significance;²⁵¹
- D17.5 Transpower must demonstrate current and future need with reference to demand and generation scenarios;²⁵²
- D17.6 Transpower must demonstrate that its Board of Directors has considered and approved the business case for the listed project at least at the Transpower BC3 approval gate level;
- D17.7 The BC3 approval by the Board must include a fully completed Transpower 'quality assurance checklist';
- D17.8 Transpower must certify the request for approval, in a form equivalent to that required for major capex proposals;²⁵³ and
- D17.9 Where asset enhancement is more than merely incidental as an outcome of the project, Transpower must instead submit a major capex proposal in line with the relevant provisions of the Capex IM.
- D18 To provide expenditure forecasts that have dealt with current scope, cost and timing uncertainty, Transpower must meet pre-conditions before making an application. These conditions are:
- D18.1 Undertake a cost-benefit analysis and consultation in line with clause 3.2.1(a) and (b) of the Capex IM—where a cost-benefit analysis consistent with determining expected net electricity market benefit is one that applies an expenditure objective such that the proposed capex reflects the efficient costs that a prudent supplier of electricity transmission services would require to:
- D18.1.1 meet or manage the expected demand for electricity transmission services, at appropriate service standards, during the regulatory period and over the longer term; and

to: i) meet or manage the expected demand for electricity transmission services, at appropriate service standards, during the next regulatory control period and over the longer term; and ii) comply with applicable regulatory obligations associated with those services.

²⁵¹ Capex IM, clause 8.1.2.

²⁵² As defined in Capex IM, clause D4(1).

²⁵³ See Capex IM, clause 9.2.1.

- D18.1.2 comply with applicable regulatory obligations associated with those services;
- D18.2 Assess the current and future need for the applicable proposed assets by reference to the demand and generation scenarios in clause D4(1) of Schedule D of the Capex IM;
- D18.3 Consider alternative options for carrying out the listed project, including non-replacement and demolition, enhancement or development of alternative assets, and non-transmission solutions; The Board of Directors considers and approves (subject to Commission approval of an additional base capex amount) the business case for the listed project at least at Transpower's BC03 gate level, in circumstances where the business case includes Transpower's fully completed quality assurance checklist; and
- D18.4 Certify that:
 - D18.4.1 the information underpinning the application was derived from and accurately represents, in all material respects, the operations of Transpower; and
 - D18.4.2 the listed project to which the application relates was approved in line with the applicable requirements of Transpower's approval processes of directors and management.
- D19 Our general approach for determining pools of expenditure (such as the base capex allowance) is to require certification at director level. However, the significance of the cost of each listed project (and the project-based nature of the framework envisaged to deal with these costs) led us to a view that certification requirements similar to those for major capex proposals are more appropriate.
- D20 After receiving an application, we will consider and evaluate it in line with the consultation requirements and evaluation criteria in the Capex IM that apply to base capex. We will then decide whether to approve an amount of base capex for inclusion in the price path, and what that amount might be.
- D21 Revenue impacts of approved base capex associated with listed projects would then flow through to the forecast MAR update each year.

Transpower proposal to include the TPM as a further listed project

- D22 In response to our draft decision not to include \$15.1 million of proposed expenditure in the base capex allowance for an update of the Transmission Pricing Methodology (TPM), Transpower submitted that the list of base capex listed projects should be extended to include the capex cost of a future TPM replacement project.²⁵⁴
- D23 Meridian questioned how Transpower would fund its TPM project if an amount is not included in the base capex allowance.²⁵⁵ The implication being that some form of allowance would be required or Transpower would need to reprioritise its other ICT capex.
- D24 The key issue with the TPM is that the Electricity Authority (Authority) is currently consulting on possible amendments to the TPM that might take effect in RCP2 and Transpower may (but it is currently uncertain) be engaged by the EA to update the TPM software and processes.
- D25 We have identified that s 54V provides the EA with a process whereby it may request us in the course of RCP2 to consider any such cost that might be imposed on Transpower. It provides us with the ability to reopen the price-quality path if we later approve the expenditure for inclusion in the base capex allowance during RCP2.
- D26 Because the results of the Authority's consultation are not yet known, it is not practical at this stage to set out the detail of how any proposed TPM project costs might be evaluated or approved for recovery under the Transpower price-quality path.
- D27 However, the Authority is aware of the steps we have set out for the reconductoring listed projects with regard to an appropriate business case and certification by Transpower before it could be considered by us for approval. We expect that an equivalent level of rigour would be applied if Transpower was to be engaged by the Authority to undertake a large TPM project.

²⁵⁴ Transpower "Response to IPP Draft Decision" (27 June 2014), p.II (Executive Summary).

²⁵⁵ Meridian "Setting Transpower's Individual Price-Quality Path for 2015-2020" (27 June 2014).

Attachment E: Summary of changes to input methodologies

Purpose of this attachment

- E1 This attachment summarises changes to input methodologies to ensure that the fundamental rules and processes they contain are consistent with our decisions on Transpower’s individual price-quality path for RCP2.
- E2 These input methodology amendments were separately determined following the processes in s 52 V of the Act, which included an opportunity for interested persons to submit their views on our draft methodologies. Our reasons for the amendments are separately described in our Transpower input methodologies amendment reasons paper.²⁵⁶
- E3 The following summaries of the amendments are included in this price-quality path reasons paper for completeness only.
- E4 We note that there were instances where requested amendments to the input methodologies were concluded not to be required. These are discussed in other parts of this paper²⁵⁷ and the reasons for our decisions are set out in our Transpower input methodologies amendment reasons paper.

Determinations affected by the amendments

- E5 Amendments have been made to the following input methodology determinations:
- E5.1 Transpower Input Methodologies Determination [2012] NZCC 17 (Transpower IMs); and
 - E5.2 Transpower Capital Expenditure Input Methodology Determination [2012] NZCC 2 (Capex IM).

²⁵⁶ Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014).

²⁵⁷ Transpower requested us to consider amending the basis on which the base capex expenditure adjustment was calculated from a ‘commissioned’ basis of project recognition to an ‘expenditure’ basis. This would only apply to the calculation of the base capex expenditure incentive for RCP2 and not to the initial calculation or updates of the forecast MAR in that regulatory period. They would remain on a ‘commissioned’ basis of recognition and calculation. This is further discussed in Attachment C. Transpower also requested us to reclassify ancillary costs (black start and over-frequency arming) as recoverable costs. This is further discussed in Chapter 5.

Overview of amendments

- E6 The amended input methodologies that will apply to our decisions on Transpower's individual price-quality path for RCP2 relate to:
- E6.1 'Reconsideration of an individual price-quality path' (Transpower IMs, Part 3, Subpart 7), amended to allow any reconsideration of the price-path for a catastrophic event to update the new revenue-linked grid output measures that will apply from RCP2;
 - E6.2 'Specification of price' (Transpower IMs, Part 3, Subpart 1), amended to provide for Transpower to recover the prudent additional net opex costs it incurs in the period between the time of a catastrophic event and a reconsidered individual price-quality path taking effect;
 - E6.3 'Specification of price' (Transpower IMs, Part 3, Subpart 1), amended to provide for Transpower to recover its opex incurred in respect of approved major capex projects as recoverable costs;
 - E6.4 'Capital expenditure' (Capex IM), amended the definition of 'forecast CPI' to reflect changes to the Reserve Bank of New Zealand's (Reserve Bank's) Policy Targets Agreement (PTA) which is used, among other things, in setting the base capex allowance for RCP2; and
 - E6.5 'General Provisions' (Transpower IMs, Part 1), amended the definition of 'related party' to avoid an overreach of the application of that term in the individual price-quality path and information disclosure.
- E7 In addition to the above amendments (discussed further below), the following further amendments have been made to the input methodologies that apply to Transpower's individual price-quality path in RCP2:
- E7.1 'Asset valuation' (Transpower IMs, Part 2, Subpart 2), amended to remove the requirement to spread depreciation for 'end of life' assets over the regulatory period;
 - E7.2 'Asset valuation' (Transpower IMs, Part 2, Subpart 2), amended to allow regulatory depreciation in the year of commissioning of a new asset, and the creation of a depreciable 'RCP1 pseudo asset' at 1 July 2015 for the depreciation that would have applied if this new rule had applied in RCP1; and
 - E7.3 'General provisions' (Transpower IMs, Part 1), amended definition of 'commissioned' to confirm that land purchases that are base capex are commissioned when acquired.

Aligning reconsideration of the price-quality path with the new quality standards

- E8 We have made amendments to align the price-path reconsideration provisions in the Transpower IMs with the updated terminology used in the Capex IM.

- E9 The Transpower IMs previously referred to quality targets by reference to a specific clause in the RCP1 individual price-quality path determination. With the implementation of the revenue-linked grid output measures for RCP2, the reference to quality targets would no longer apply for the individual price-quality path determination.
- E10 References to ‘quality targets’ in the individual price-quality path reconsideration provisions in the Transpower IMs have been supplemented with references to revenue-linked grid output measures that the Capex IM requires to apply from RCP2. During RCP2 we will therefore be able to update the grid output measures contained in the individual price-quality path following reconsideration for a catastrophic event, change event, or error.

Base capex allowance for ‘listed’ contingent expenditure

- E11 We propose amendments to the price-path reconsideration input methodology so that the price-quality path may be updated for the revenue impact of the approved base capex of ‘listed projects’ as part of the yearly forecast MAR update process. Any adjustments to the base capex allowance in RCP2 for approved listed projects will feed into the annual updates of the forecast MAR, similar to the price-path reconsideration allowed in the input methodologies for newly-approved major capex projects.
- E12 Please see Attachment D

Additional net opex incurred as a result of a catastrophic event

- E13 We have made amendments to the specification of price input methodology to allow Transpower to seek the recovery of prudent additional net opex costs it incurs in the period between the time of a catastrophic event and a reconsidered individual price-quality path taking effect.

Treating forecast major capex as actual opex during the regulatory period

- E14 We have made amendments to the specification of price input methodology to allow Transpower to recover operating costs incurred on any approved major capex projects. These costs will be treated as recoverable costs.
- E15 We identified that an adjustment mechanism is required to maintain incentive neutrality where actual expenditure made against the approved major capex allowance ends up being accounted for as opex. This is to enable such expenditure to be recovered in revenues in the course of the regulatory period as recoverable costs. This input methodology amendment has the effect of:
- E15.1 allowing Transpower to recover the total costs incurred in completing the project on a timely basis, irrespective of whether they are capex or opex;
 - E15.2 preserving the integrity of the major capex overspend incentive by continuing to apply the major capex allowance for the project when assessing the overspend adjustment; and

- E15.3 taking the opex outside the IRIS incentive and therefore not affect the integrity of that incentive.
- E16 The individual price-quality path for RCP2 aims to provide greater accuracy in its reflection of expenditure on major capex projects between capex and opex. This reflects that there may be some circumstances where the expenditure amounts we approve in the major capex allowance may implicitly include items that, in the course of the project, may ultimately be required to be accounted for as opex (such as project feasibility costs) or treated under GAAP accounting as opex rather than capex.²⁵⁸
- E17 A similar issue arose in setting the individual price-quality path for the first regulatory period.²⁵⁹
- E18 The key issue for major capex that ends up getting accounted for under GAAP as opex, is to ensure that the accounting treatment does not impact on the neutrality of the incentive mechanisms between the two different types of expenditure.
- E19 The major capex overspend adjustment incentive in Schedule B of the Capex IM is asymmetric (i.e. it only penalises overspends and does not reward underspends). The IRIS incentive for opex is currently asymmetric, but we are currently consulting on whether to make it symmetric (which is our preferred approach).
- E20 If our preferred approach of making the IRIS symmetrical is adopted, the effective substitution of expenditure originally forecast in the major capex allowance as capex, but then actually accounted for as opex under GAAP, could have the effect of incentivising Transpower to spend on projects in a way that does not encourage efficiency.²⁶⁰ This amendment will address this issue.

²⁵⁸ External Reporting Board “New Zealand Equivalent to International Accounting Standard 16 Property, Plant and Equipment (NZ IAS 16), issued November 2004 and amended up to 28 February 2014. This accounting standard sets out examples of various situations where project expenditure may not be capitalised into a capital asset for GAAP accounting purposes. In those cases, the expenditure would be treated for GAAP accounting purposes as opex.

²⁵⁹ For RCP1 we needed to address the treatment of transmission alternative costs, which are clearly not accounted for as capex for GAAP purposes. We concluded then that allowing those costs to be treated as recoverable costs is the most appropriate treatment under the individual price-quality path. This has the effect of taking the resulting opex outside of the IRIS opex incentive calculations and is intended to be neutral with respect to the incentives. See Commerce Commission “Input Methodologies (Transpower) Reasons Paper” (December 2010), paragraphs 7.3.65 to 7.3.67.

²⁶⁰ Under the current incentive mechanisms Transpower would be penalised for exceeding its opex allowance, but receive no benefit for underspending its major capex allowance. The natural incentive is therefore not to strive to reduce the spending against the major capex allowance and may have the effect of rewarding spending up to the major capex allowance. The net result may be that the overall spend on the combined opex and major capex may exceed the major capex allowance with a negligible or negative incentive effect.

- E21 No similar classification mechanism is required between base capex and opex, as the respective expenditure incentives are both symmetrical and the incentive rates are approximately aligned.

Forecast CPI for the purposes of setting capex allowances

- E22 We have amended the definition of forecast CPI in the Capex IM to align with the Reserve Bank's policy objective which targets inflation around a mid-point of 2%.
- E23 Consistent with the similar recent amendment for electricity distribution businesses, this amendment for Transpower ensures that the method of forecasting CPI reflects the recent change in the Reserve Bank's PTA. The recent change in the PTA is that the Reserve Bank of New Zealand is to target a 2% rate of CPI inflation. This is the mid-point of the target band of 1-3%.
- E24 We concluded that the mid-point of the Reserve Bank's range is the appropriate long-term reference point in setting the forecast CPI. This approach assumes that:
- E24.1 there are no shocks to inflation after the end of the Reserve Bank's forecast period; and
 - E24.2 any monetary policy that the Reserve Bank may undertake results in inflation moving to the mid-point of the target range after two years, before remaining constant at that level.

Definition of 'related party'

- E25 We have amended the definition of 'related party' to be more precise. The amended definitions in the Transpower IMs now include a new defined term 'related party transaction'.
- E26 The definition of 'related party' applies to both the application of the individual price-quality path and to information disclosure. The intent for the purposes of the individual price-quality path and information disclosure is that the definition should only capture the activities of Transpower's subsidiaries and Transpower's non-grid activities, rather than those of entities outside of the immediate Transpower group.
- E27 Related party transactions must be valued based on, or linked to, specified objective and verifiable information. The terms (especially price) and conditions agreed between the related parties can influence the information disclosed by the regulated entity. This in turn can hinder an interested person's ability to assess profitability.
- E28 For this reason, different considerations apply to the disclosure of related party transactions, as compared to other transaction values, so it can be clearly demonstrated that the transaction prices approximate what could be expected in arm's-length transactions. As a result, the disclosed transaction value may differ from the actual transaction value.

- E29 The GAAP reporting standard indirectly referred to in that definition of ‘related party’ could be interpreted as having the effect in Transpower’s case of including all Government-related entities as related parties to Transpower.²⁶¹ This would include Transpower’s shareholder (ie, the Crown), the arms of the Crown (ie, Government departments) and State Owned Enterprises such as Meridian Energy Limited, which is an unintended consequence.
- E30 Rather than apply a limitation on our interpretation of the existing definition or provide Transpower with an exemption from the definition in the accounting standard, our preferred approach was to make this clarifying amendment to the input methodologies.

²⁶¹ External Reporting Board “New Zealand Equivalent to International Accounting Standard 24 Related Party Disclosures (NZ IAS 24)” paragraph 9. Issued November 2009, and including amendments to 31 December 2012.

Attachment F: Reconsideration of price-quality path after a catastrophic event

Purpose of this attachment

- F1 This attachment sets out our decision on why we do not consider that any additional expenditure allowance is required for Transpower’s individual price-quality path to compensate for any potential additional net costs or lower-than-forecast revenues resulting from a future catastrophic event.

Transpower’s price-quality path may be reconsidered in the event of a catastrophic event

- F2 Under the Transpower input methodologies, an individual price-quality path may be reconsidered if there is a catastrophic event that imposes material costs.
- F3 If, as a result of a catastrophic event, Transpower expects to earn below-normal returns under its existing individual price-quality path, a reconsidered individual price-quality path allows for Transpower to have an alternative path determined on an *ex ante* basis, based on the best information available at that time.
- F4 This would require a reconsideration of Transpower’s opex and base capex allowances for future years of the regulatory period to take into account the impact of the catastrophic event.

We will allow Transpower to recover any prudent additional net expenditure incurred in the intervening period

- F5 Transpower may incur additional costs between the time of the catastrophic event and the reconsidered individual price-quality path taking effect. Consistent with our decision for Orion,²⁶² we have amended the Transpower IMs to allow Transpower to recover prudent net additional costs that arise in the period between a catastrophic event and a reconsidered individual price-quality path taking effect.²⁶³
- F6 We consider it appropriate to provide the ability for Transpower to recover additional net costs incurred in responding to future catastrophic events because:
- F6.1 allowing recovery of additional net costs helps strengthen incentives for Transpower to focus on restoring its network in the aftermath of a catastrophic event (without necessarily maintaining the same level of planning and oversight as it would for business as usual expenditure); and

²⁶² Commerce Commission “Setting the customised price-quality path for Orion New Zealand Limited – Final reasons paper”, 29 November 2013, Attachment C.

²⁶³ Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014).

- F6.2 additional expenditure following a catastrophic event may be vital to meet demand in a region. Consumers benefit from this expenditure because it helps mitigate any deterioration in quality of service.

A catastrophic event will have a more material impact on Transpower's costs than its revenues

- F7 Transpower is subject to a revenue cap. This means that it faces limited exposure to the risks associated with lower-than-forecast revenues due to a future catastrophic event. Transpower's revenue risks are limited to the timing of cash-flows and not to its ability to recover the full building blocks revenue amount for each year.
- F8 A catastrophic event is therefore likely to have a more material impact on Transpower's costs. This includes Transpower's opex and base capex, which are capped *ex ante* under the individual price-quality path determination, and its major capex.²⁶⁴

Net additional base capex

- F9 Under the 'asset valuation' input methodology, any additional base capex incurred as a result of a catastrophic event gets added to the RAB at the time of commissioning of the resulting asset, whether that is a replacement asset or a new asset. This has the effect under the MAR wash-up of allowing Transpower to increase future revenues to allow it to recover that expenditure over the life of the asset.
- F10 To dis-incentivise Transpower overspending relative to the approved base capex allowance, the base capex expenditure adjustment ordinarily penalises Transpower for any amount that it overspends on base capex. This has the effect of neutralising the increased revenues described above.
- F11 However, the Capex IM's base capex expenditure adjustment also provides for the Commission to make a discretionary adjustment to the amounts it applies to. This mechanism is intended to provide the Commission with the flexibility to exclude or include values that we consider should correctly be classified as base capex.²⁶⁵ We consider using the existing adjustment mechanism would provide an effective way of allowing Transpower to recover its prudent net additional base capex costs.

²⁶⁴ We note that the input methodologies allow for the value of assets that are damaged beyond repair, but not disposed of, to remain in the RAB. Transpower will therefore be able to continue to recover the return on and of these assets (net of any insurance proceeds).

²⁶⁵ Commerce Commission "Transpower Capital Expenditure Input Methodology Reasons Paper" (31 January 2012), paragraph 3.3.9. The example provided contemplated flexibility to accommodate the movement of base capex to major capex.

- F12 Although the only example provided in the 2012 Capex IM reasons paper contemplated a different purpose, we consider that we could use the discretionary element of the base capex expenditure adjustment to reduce any additional net base capex that Transpower has prudently incurred as a result of a catastrophic event.
- F13 This would occur by adjusting the amount included in the yearly base capex expenditure adjustment, which would allow Transpower to retain the higher revenue allowance resulting from the wash-up mechanism.²⁶⁶
- F14 In deciding what adjustment to make we would take into account, among other things, the extent to which Transpower has appropriately considered substitution of any base capex already allowed for in the base capex allowance.

Additional opex

- F15 The amended Transpower IMs provide for recovery of any prudent net additional opex incurred before the reconsidered individual price-quality path takes effect and that Transpower incurs as a direct result of the catastrophic event.
- F16 Transpower may recover in its revenues any net additional prudent opex that arises in the period between a catastrophic event and a reconsidered individual price-quality path taking effect, at our discretion.
- F17 Net additional opex will be included as a recoverable cost under the reconsidered individual price-quality path.
- F18 In deciding what amount to approve at the time, we would take into account, among other things, the extent that Transpower has appropriately considered substitution of any opex already allowed for in the opex allowance.

Additional major capex

- F19 Any additional major capex required as a result of the catastrophic event would be dealt with through the major capex overspend adjustment if it related to further prudent expenditure on an existing project, or through Transpower submitting a major capex proposal to the Commission if the event caused a new project to be initiated.²⁶⁷

²⁶⁶ Capex IM, Schedule B, clause B1, item 'g' in the adjustment formula.

²⁶⁷ Any additional prudent expenditure on major capex projects as a result of catastrophic event may be recovered by Transpower applying to the Commission for a major capex amendment for any additional major capex incurred as a result the catastrophic event (Capex IM, clause 3.3.4). The Commission also has discretion to reduce the amount of major capex to which the overspend adjustment would otherwise automatically apply, if this is considered appropriate (Capex IM, clause B4). Transpower would otherwise bear 100% value of the after-tax revenue for costs in excess of the total approved costs for a given major capex project.

Transpower submitted that the existing catastrophic event threshold test is defective

- F20 In its submission on our draft decisions, Transpower stated that the wording of the cost threshold set out in clause 3.7.1(c)(iv) of the Transpower IMs is “convoluted and open to different interpretation.”²⁶⁸
- F21 We do not agree with Transpower on this issue. We discuss the reasons why we see no need to amend the cost threshold at this time in our reasons paper on input methodology amendments for Transpower.²⁶⁹

²⁶⁸ Transpower “Response to IPP Draft Decision” (27 June 2014), p. 55.

²⁶⁹ Commerce Commission “Amendments to input methodologies for Transpower 2014” (28 August 2014).

Attachment G: Supporting analysis for grid output measures

Purpose of this attachment

- G1 In this attachment we present additional detail that supports our decision in setting the grid output measures.
- G2 Below we set out how we have satisfied the following requirements and criteria in the Capex IM when evaluating Transpower’s proposed measures.²⁷⁰ We are required to assess:
- G2.1 the quality of service that reflects consumer demands;
 - G2.2 the extent to which a revenue-linked measure is a recognised measure of grid outputs that are valued by customers;
 - G2.3 the extent to which the measures are recognised measures of performance or measures of risk, in supplying electricity transmission services;
 - G2.4 the strength of the relationship between the measures, base capex and opex;
 - G2.5 the extent to which the proposed measures comply with the Capex IM; and
 - G2.6 the extent to which the proposed targets are reasonable.

The quality of service that consumers demand and the adequacy of the proposed grid output measures

- G3 This section discusses how the measures proposed by Transpower relate to the aspects of Transpower’s performance valued by consumers.

Aspects of performance valued by consumers and Transpower’s proposed measures

- G4 Transpower identified in its proposal various aspects of performance that are important to customers.²⁷¹ These are summarised in Table G1. This table also compares these important aspects of performance with the measures of performance that Transpower proposed for RCP2.

²⁷⁰ Specific criteria for considering grid output measures that we must take into account are set out in clauses A4 and A6 of Capex IM.

²⁷¹ Transpower “Expenditure Proposal for Regulatory Control Period 2” (2 December 2013), p. 122.

- G5 We consider two aspects of performance are not adequately covered by the proposed measures. These are the impact of outages on the electricity market and the financial impact of interruptions. This view was supported by Partna, who also came to similar conclusions.²⁷²

Table G1: Proposed measures and consumer requirements

Consumer requirements – aspects of Transpower’s performance that consumers value	Proposed measures that meet consumer requirements
Transpower’s ability to provide service without interruption	GP1, GP2 and GP3
The impact that outages of Transpower’s assets can have on the electricity market	Partly, by targeting the availability of circuits that significantly affect market prices
The need to provide accurate communications during unplanned interruptions	OM1, OM2 and OM3
The financial impact that interruptions have on consumers	Partly through GP1 and GP2
Power quality issues such as voltage quality	Partly through OM6

The extent to which the measures are valued by customers

- G6 We received positive submissions from MEUG,²⁷³ Carter Holt Harvey²⁷⁴ and Pacific Aluminium²⁷⁵ in response to our draft decision on the asset health measures. Based on these responses we are satisfied that asset health measures are useful and valued by consumers.
- G7 To establish the asset performance and grid performance measures that are valued and useful to customers, Transpower consulted widely with its customers. Transpower’s stakeholders appear to be very positive about the manner in which Transpower engaged with them in developing the measures for RCP2.^{276, 277}

²⁷² Partna report, p. 7.

²⁷³ MEUG “Transpower asset health grid output submission” (11 July 2014).

²⁷⁴ Carter Holt Harvey “Submission on draft decision – Transpower’s Individual price-quality path for 2015-2020.” (27 June 2014) p. 2

²⁷⁵ Pacific Aluminium ““Submission on draft decision – Transpower’s Individual price-quality path for 2015-2020” (27 June 2014). P. 8

²⁷⁶ Major Electricity Users’ Group ‘Transpower RCP2 submission’ (3 March 2014), p. 1.

- G8 Likewise, there appears to be a good level of support from stakeholders for the approach that Transpower has taken, as well as general support for the overall outcomes.
- G9 In response to the questions that we published in our Issues paper, stakeholders submitted the following be considered or included:
- G9.1 a measure of performance and reliability of notifications for planned interruptions;²⁷⁸
 - G9.2 improved reporting on interruptions after an event;²⁷⁹
 - G9.3 quarterly reporting on GP1, GP2, OM5 and OM6;²⁸⁰
 - G9.4 reporting on the financial impact of interruptions on customers;²⁸¹
 - G9.5 investigations on power quality measures and momentary interruption targets.²⁸²
 - G9.6 market-based measures included, particularly for HVDC and HVAC;²⁸³
 - G9.7 a link to some of the other measures to revenue;²⁸⁴
 - G9.8 refining the VoLL with the Authority;²⁸⁵
 - G9.9 a refined report of time on N-security to include the number of times special protection schemes are activated.²⁸⁶

²⁷⁷ Powerco 'RE: Cross submission on the Issues Paper on Transpower's individual price-quality path and proposal for the next regulatory control period' (10 March 2014), p. 1.

²⁷⁸ Meridian 'Transpower RCP2 submission' (3 March 2014), p. 2.

²⁷⁹ Carter Holt Harvey 'Transpower RCP2 submission' (3 March 2014), answer to Q30.

²⁸⁰ Ibid.

²⁸¹ Ibid.

²⁸² Ibid.

²⁸³ Meridian 'Transpower RCP2 submission' (3 March 2014), p. 2.

²⁸⁴ Ibid.

²⁸⁵ Carter Holt Harvey 'Transpower RCP2 submission' (3 March 2014), answer to Q30.

²⁸⁶ Ibid, answer to Q24.

- G10 Having considered this feedback and what is feasible to introduce for RCP2 we have:
- G10.1 included three additional performance-based grid output measures (PMD7, PMD8 and PMD9) that are not linked to revenue;²⁸⁷
 - G10.2 revised the targets for three categories of points of service in the GP1 measure; and
 - G10.3 accepted all other targets proposed by Transpower.

The extent that the measures are recognised measures of performance, or of risk in supplying electricity transmission services

- G11 To evaluate their appropriateness, we reviewed Transpower's proposed grid performance and asset performance measures with those used by transmission network owners in Australia and the United Kingdom.²⁸⁸ We found that measures used by other transmission network owners are not fully matched by Transpower's suite of measures.
- G12 In particular, measures that signal the economic impact of interruptions and the market impact of outages had not been included.²⁸⁹ In Attachment I we recommend that Transpower develops an appropriate measure that will meet consumer demands.
- G13 Asset health measures are a relatively new initiative and are being developed and used by utilities all over the world. Asset health measures are seen as tools to improve the efficiency of managing assets that have long service lives and can continue to provide satisfactory service after their design lives.
- G14 Due to increasing industry focus, we consider that asset health measures will become a recognised measure of performance in the near future.

The strength of the relationship between the measures, base capex, and opex

- G15 Asset health measures have a direct link with base capex and opex. In a mature asset management system, asset health indices play a leading role in forecasting R&R capex.²⁹⁰ We expect Transpower to achieve this level of maturity by the end of RCP2.

²⁸⁷ We discuss these measures in Attachment I.

²⁸⁸ Partna report.

²⁸⁹ Ibid, p. 6.

²⁹⁰ Replacement and refurbishment capex represents more than 60% of Transpower's RCP2 base capex.

G16 We consider there is a relatively weak link between the expenditure forecast and the grid performance and asset performance measures that Transpower proposed. We observe the following:

G16.1 It is not clear to us whether Transpower has correctly targeted its expenditure for improving performance at 'high priority' points of service. Transpower indicates that it targeted assets directly connected to these points of service.²⁹¹

G16.2 However, our analysis shows that the current level of performance for high priority points of service is close to the long-term targets. Deviations from actual performance were caused by high impact events in parts of the grid not directly connected to the points of service. This means that expenditure may need to be targeted elsewhere to reduce interruptions cause by the high impact events. On this basis, Transpower may need to revise its priority.

The proposed measures comply with the requirements of the Capex IM

G17 We are satisfied that Transpower has met the requirements of the Capex IM in relation to grid output measures. We consider the revenue-linked measures are quantifiable, controllable by Transpower, auditable and replicable over time.²⁹²

G18 The Capex IM requires the Commission to determine one revenue-linked measure of asset performance and one revenue-linked measure of grid performance.²⁹³ Transpower proposed and we accepted three sets of revenue-linked measures for grid performance, two for asset performance and six for asset health.

G19 An asset performance measure quantifies the performance, reliability or availability of the grid at either the level of individual assets, substations or the whole grid.²⁹⁴ Transpower has proposed the number of interruptions, average duration of interruptions and P90 duration of interruptions as three grid output measures. We are satisfied that these three measures comply with requirements of Capex IM.

G20 A grid performance measure is not defined explicitly in the Capex IM. Transpower has proposed the availability of the HVDC system and availability of selected critical HVAC circuits as grid performance measures. We are satisfied that these sets of measures quantify the level of service provided by the core grid.

²⁹¹ Transpower 'Expenditure Proposal for Regulatory Control Period 2' (2 December 2013), p. 4.

²⁹² Capex IM, clause A5(c).

²⁹³ Capex IM, clause 2.2.2.

²⁹⁴ Capex IM, clause 1.1.5, definitions.

- G21 An asset health measure quantifies the fitness for service of the grid and reflects the output of benefit delivered by R&R capex. We are satisfied that the measures meet the requirements of the Capex IM.
- G22 Clause F11 of the Capex IM sets out the information Transpower is required to provide for grid output measures. However, in our view, Transpower has not clearly described the relationship between the measures and the key purpose of the investment, or the effect that the base capex would have on the measures. To be able to provide this information for RCP3, Transpower has agreed to further develop these measures, as set out in Attachment I.
- G23 We are also satisfied that the measures were prepared according to the policies and processes referred to in the base capex proposal.²⁹⁵ The key feature was that Transpower consulted with its stakeholders when it developed its proposed measures.

The extent to which the proposed targets for revenue-linked measures are reasonable

- G24 In this section we discuss the extent to which targets for the revenue-linked measures are reasonable. We discuss:
- G24.1 targets for asset health measures;
 - G24.2 targets for asset performance and grid performance measures remain constant over the RCP;
 - G24.3 targets for grid performance measures GP1;
 - G24.4 targets for grid performance measures GP2 and GP3; and
 - G24.5 targets for asset performance measures.

Targets for asset health measures

- G25 The targets for the asset health measures are directly linked with the planned number of assets to be replaced or refurbished. We consider this is appropriate.

Targets for asset performance and grid performance measures remain constant

- G26 One of our concerns with Transpower's proposed targets for the asset performance and grid performance measures is that they remain constant over RCP2, and as such, do not continue to challenge Transpower to improve its performance over the five year period.

²⁹⁵ Capex IM, clause A4(c).

G27 Transpower's main approach to setting its targets has been to use historical averages. It had not linked the relationship between forecast performance of the grid and the investments made since 2012. Many of these investments, as well as those in Transpower's RCP2 forecasts, are being undertaken to improve performance. For this reason we expected to see a larger impact on grid performance than is provided in Transpower's proposed targets.

Targets for grid performance measures

G28 In this section we discuss:

G28.1 our concerns with the targets for GP1 measures;

G28.2 the targets for GP1, GP2 and GP3 measures applicable in RCP2;

G28.3 reasons for our decision on targets for GP1 measures for high priority point of service;

G28.4 reasons for our decision on targets for GP1 measures for standard point of service;

G28.5 reasons for our decision on targets for GP1 measures for N-security point of service; and

G28.6 targets for generator and important points of service.

We are concerned with Transpower's proposed targets for three GP1 measures

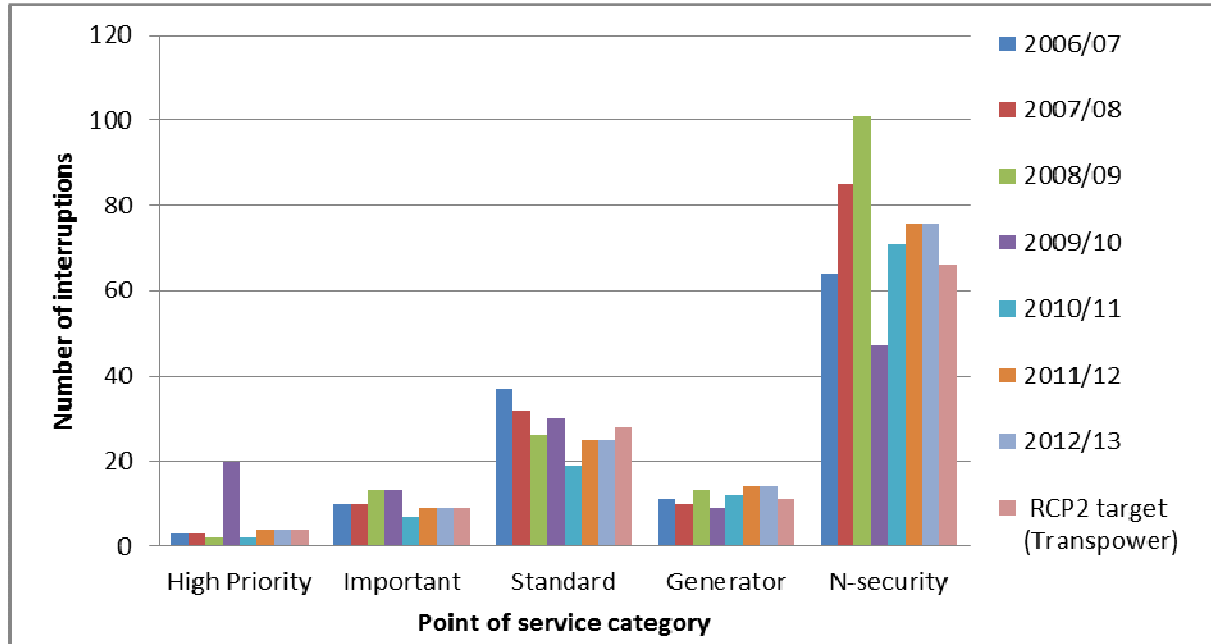
G29 Another concern is that on examination of the information provided by Transpower, we concluded that the proposed targets for high priority, standard and N-security points of service appeared to be easily achievable. We examined this further.

G30 One of the reasons we found for the soft targets is that Transpower had based its RCP2 target on the average of its historical performance. Automatic under-frequency load shedding (AUFLS) events had caused a proportionately large number of interruptions and have biased the average away from underlying performance particularly for 'high priority', 'important' and 'standard' points of service. These, in turn, had made the targets for these points of service less challenging.

G31 A problem with including AUFLS in the data when setting targets is that there is a potential that such targets may provide an incorrect focus for investments to improve performance. This is because AUFLS events are not generally caused by the failure of assets at points of service but are normally due to events, often remote from the points of service, that disconnect significant generation from the system.

G32 In order to make the targets more appropriate, we asked Transpower to revise its targets, caps and collars by removing AUFLS interruptions from the data. The results are shown in Figure G1 below.²⁹⁶

Figure G1: Amended historic performance and revised targets for GP1



G33 In making our decisions:

G33.1 we removed interruptions due to AUFLS from the historic data used to set the targets for the grid performance measures GP1, GP2 and GP3;

G33.2 we amended that target for high priority points of service to reflect observed underlying performance;

G33.3 we amended that target for standard points of service in line with the observed trend of improving performance;

G33.4 we amended that target for N-security points of service to allow for improvements in performance due to recent investments to improve reliability;

G33.5 we have accepted Transpower's proposed targets for GP1 measures for important and generator points of service; and

G33.6 we have accepted Transpower's proposed targets for GP2 and GP3 for all points of service.

²⁹⁶ Transpower 'RLPM without AUFLS Calculations' (28 March 2014).

Our targets for RCP2

G34 Table G2 shows the historical average performance by the category of point of service and various targets.²⁹⁷ The table also demonstrates the impact of the removal of AUFLS events from Transpower's data, and show our decisions.

Table G2: Targets for GP1 (number of interruptions)

Point of service category	Transpower's long-term target	Historic average with AUFLS interruptions	Transpower's proposed targets	Historic average without AUFLS interruptions	Transpower's revised targets without AUFLS	Our targets
High Priority	2	7	5	5	4	2
Important	8	13	11	10	9	9
Standard	39	33	33	28	28	26
Generator	11	11	11	11	11	11
N-security	63	69	67	68	66	56

Table G3: Targets for GP2 (average duration of unplanned interruptions - minutes)

Point of service category	Transpower's long-term target	Historic average with AUFLS interruptions	Transpower's proposed targets	Historic average without AUFLS interruptions	Transpower's revised targets without AUFLS	Our targets
High Priority	30	89	65	97	70	70
Important	30	161	100	155	100	100
Standard	60	72	65	66	65	65
Generator	60	177	130	177	130	130
N-security	60	93	80	93	80	80

²⁹⁷ Transpower 'Expenditure Proposal for Regulatory Control Period 2' (2 December 2013), p. 125.

Table G4: Targets for GP3 (minutes)

Point of service category	Transpower's long-term target	Historic average with AUFLS interruptions	Transpower's proposed targets	Historic average without AUFLS interruptions	Transpower's revised targets without AUFLS	Our targets
High Priority	60	137	100	165	120	120
Important	90	341	240	334	240	240
Standard	130	131	130	135	130	130
Generator	240	436	350	436	350	350
N-security	215	215	215	215	215	215

G35 As shown in Table G2, Transpower's revised targets for high priority, standard and N-security points of supply were still not sufficiently challenging. We therefore revised these targets and discuss our reasons below.

Transpower is already achieving its proposed GP1 target for high priority points of service

G36 Our decision is to set the target, cap and collar as 2, 0 and 4 respectively.

G37 Table G5 shows Transpower's RCP2 proposal, our draft decision, Transpower's revised submission and our decision.

Table G5 RCP2 GP1 Target for high priority points of service

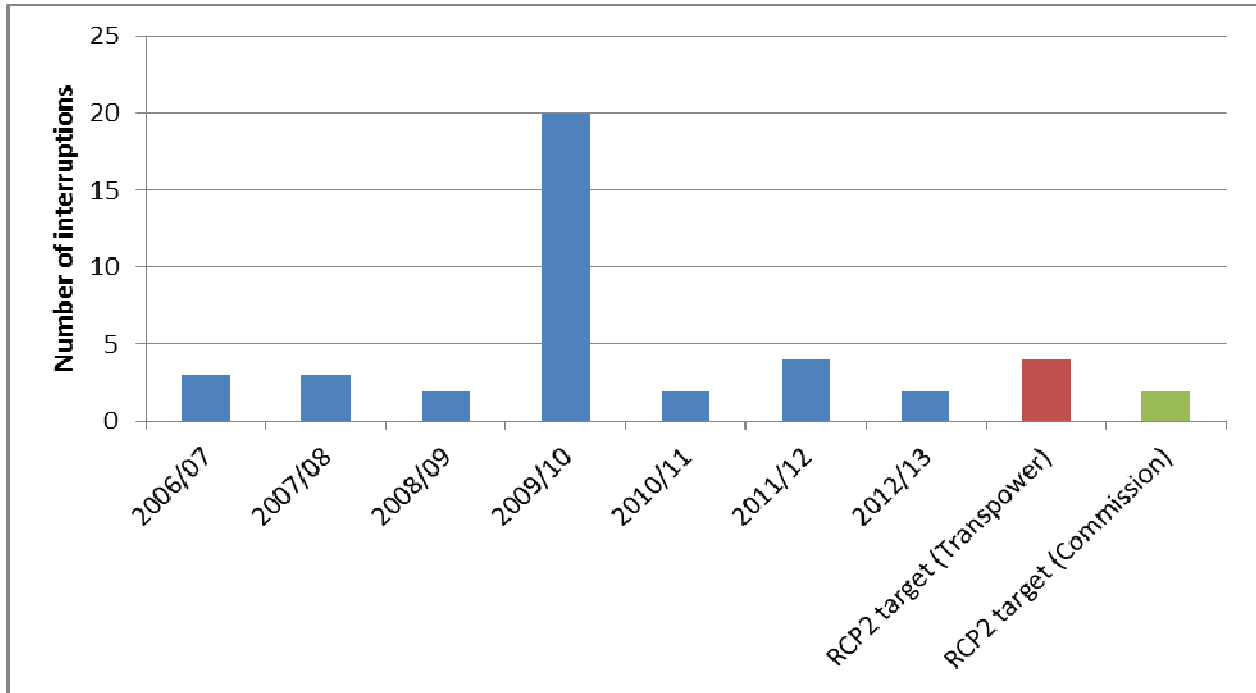
	Transpower's RCP2 proposal without AUFLS	Commission draft decision	Transpower's revised submission	Commission decision
Target	4	2	4	2
Cap	1	0	1	0
Collar	7	4	7	4

G38 Transpower's proposed targets are due to interruptions caused by high impact faults (HILP) distorting the average of the historic performance data.²⁹⁸

²⁹⁸ In 2009/10 HILP events combined with underlying performance resulted in 20 interruptions.

G39 Figure G2 shows that except for 2009/10, Transpower’s actual performance for the high priority points of service has been less than its proposed target of four. Therefore, we did not use the average of historical performance to set the targets for high priority point of service. Rather we set the target to 2 to reflect underlying performance.

Figure G2: Amended historic performance and revised targets for ‘high priority’ POSs



G40 In response to our draft decision, Transpower stated that the target in our draft decision is too severe to provide effective incentive and in its view, the effectiveness of the incentive regime is severely diminished if it is not based on achievable targets.²⁹⁹ We disagree with Transpower.

G41 Figure G2 shows that:

G41.1 Transpower’s proposed target is too easily achievable. Transpower performed better than its proposed RCP2 target in all years since 2006/07 except 2009/10. In 2009/10, 17 of the 20 interruptions were due to two high impact low probability (HILP) events,³⁰⁰ and

²⁹⁹ Transpower argued that it is more appropriate for the target to be the average performance over the past seven years. Transpower “Response to IPP Draft Decision” (27 June 2014); p. 48.

³⁰⁰ One event was in October 2009 and the other one was in January 2010.

- G41.2 Transpower achieved our target in three of the previous six years and last year's performance was better than our target.³⁰¹ Based on historical performance, it is clear that our target is achievable.
- G42 If we were to adopt Transpower's proposed target, we would effectively be rewarding Transpower for maintaining its current level of performance. Such an outcome is against the purpose of performance incentives which is to incentivise Transpower to improve its current level of performance.
- G43 Transpower has also raised concerns that by setting a challenging target, we are forced to set an unrealistic collar. Transpower considers this as unacceptable, citing that there have been several occasions in the past seven years when a single uncontrollable event would breach the collar.³⁰² Transpower argued that there is strong likelihood of performing worse than the collar in multiple years.³⁰³
- G44 We agree that single events can cause a large number of interruptions but we do not agree that this justifies setting easily achievable targets for the reasons set out below.
- G44.1 We note that since 2006/07, Transpower has performed worse than the collar only once.
- G44.2 We also consider that the recent major investments in the grid have reduced the likelihood of a single event that can cause a large number of interruptions. As discussed in Chapter 4, Transpower also has the same view.
- G44.3 We also note that in RCP2, Transpower has planned investments to reduce the likelihood of HILP events.
- G44.4 In addition, we note that apart from the Auckland region, other major regions such as Christchurch, Wellington and Hamilton have no more than two high priority points of service. A single uncontrollable event in any of these regions will not cause the number of interruptions to exceed the collar we have set for RCP2.

³⁰¹ In 2013/14, Transpower had zero interruptions at high priority points of service. Refer to "Transpower Response to Commerce Commission's additional Information Request RCP2 submission Q079 (7 July 2014).

³⁰² Transpower "Response to IPP Draft Decision" (27 June 2014); p. 49.

³⁰³ Transpower "Response to IPP Draft Decision" (27 June 2014); p. 49.

GP1 targets for standard points of service reflect RCP2 objectives for these points of service

G45 Our decision is to set the target, cap and collar as 26, 21 and 31 respectively. We consider that our target is consistent with Transpower's objective of 'maintaining service performance at standard sites'.³⁰⁴

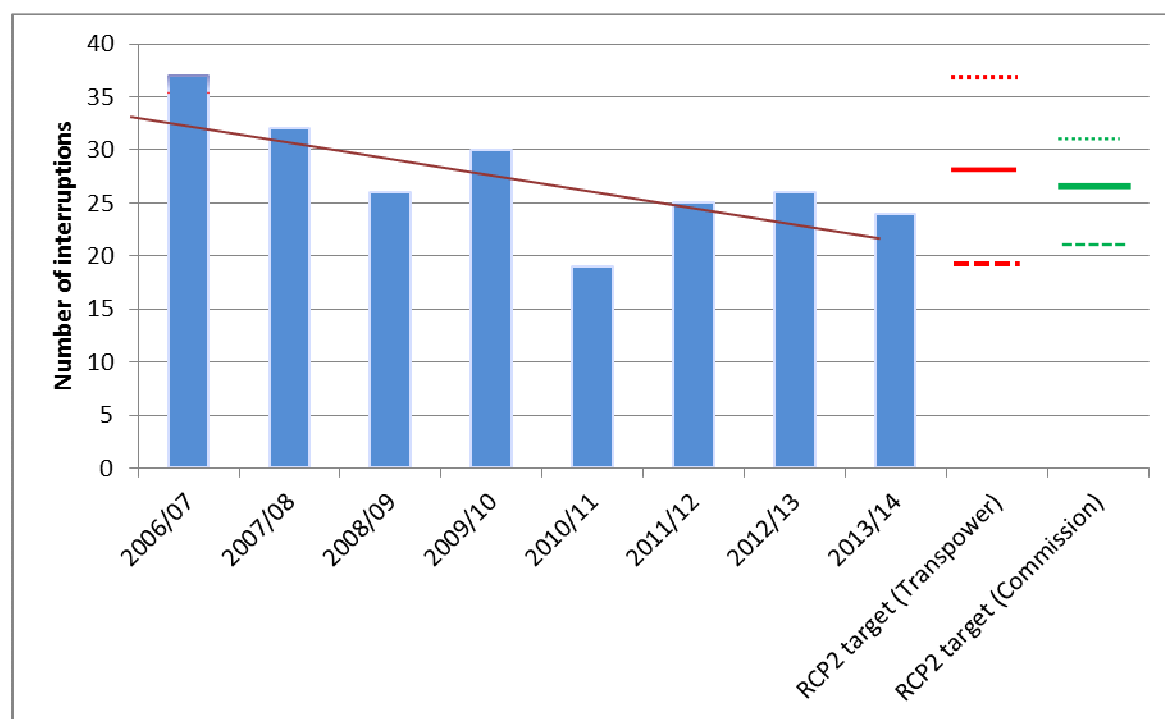
G46 Table G6 shows Transpower's RCP2 proposal, our draft decision, Transpower's revised submission and our decision.

Table G6: GP1 target and historical performance for standard points of service

	Transpower's original proposal	Draft decision	Transpower's revised submission	Decision
Target	28	26	28	26
Cap	11	21	19	21
Collar	45	31	37	31

G47 Figure G3 below shows historical performance between 2006/07 and 2013/14. Transpower's proposed target, and our target, cap and collar for RCP2 are shown along with a trend line which shows an improving performance.

Figure G3: GP1 target and historical performance for standard points of service



³⁰⁴ Transpower 'Expenditure Proposal Regulatory Control Period 2' (December 2013), p. 4.

- G48 Our draft decision was based on the observation that performance has been improving since 2006/07 data.³⁰⁵ 2013/14 performance supports this observation. In fact, since 2010/11 historical performance has been better than our target.
- G49 In response to our draft decision, Transpower has submitted that the GP1 target for the standard points of service should be reverted to 28.³⁰⁶ Transpower's proposed target is significantly worse than its performance since 2010/11. In contrast, our RCP2 target reflects the average performance for the five years since 2009/10. There is clear evidence that performance since 2010/11 has been better than performance between 2006/07 and 2010/11.³⁰⁷
- G50 When performance is improving, through investments being funded by consumers, it is more appropriate to recognise this trend when setting future targets.³⁰⁸
- G51 Transpower has also mentioned that we should not set targets that require a level of investment inconsistent with its view of the needs of its customers.³⁰⁹ We agree, and have set our target accordingly. Through our target, we are not expecting any improvement in performance during RCP2. As shown in Figure G3, in the previous five years, Transpower has performed worse than our target only once.
- G52 We also consider that while Transpower can gradually transition to its long-term target of 33-39 interruptions per year, consumers will expect a reduction in price consistent with the reduced quality.³¹⁰ Transpower will need to demonstrate how it proposes to share the cost-quality trade-off with consumers.

GP1 target for N-security points of service should be consistent with current performance

- G53 Our decision is to set the target, cap and collar as 56, 38 and 74 respectively. We consider that our target is consistent with the current level of performance.
- G54 Table G7 below shows Transpower's RCP2 proposal, our draft decision, Transpower's revised submission and our decision. Figure G4 below shows the historical performance since 2006/07, Transpower's proposed targets, and our target, cap, collar. The trend line representing historical performance.

³⁰⁵ In its submission, Transpower incorrectly stated that we used the median of the data to set the target. Transpower "Response to IPP Draft Decision" (27 June 2014); p. 49.

³⁰⁶ Transpower "Response to IPP Draft Decision" (27 June 2014); p. 48.

³⁰⁷ The average performance between 2006/07 and 2010/11 is 28.8 while the average performance between 2009/10 and 2013/14 is 24.5.

³⁰⁸ The 2013/14 performance shows that that we could have set an even lower target but we decided to retain the target set in our draft decision.

³⁰⁹ Transpower "Response to IPP Draft Decision" (27 June 2014); p. 49.

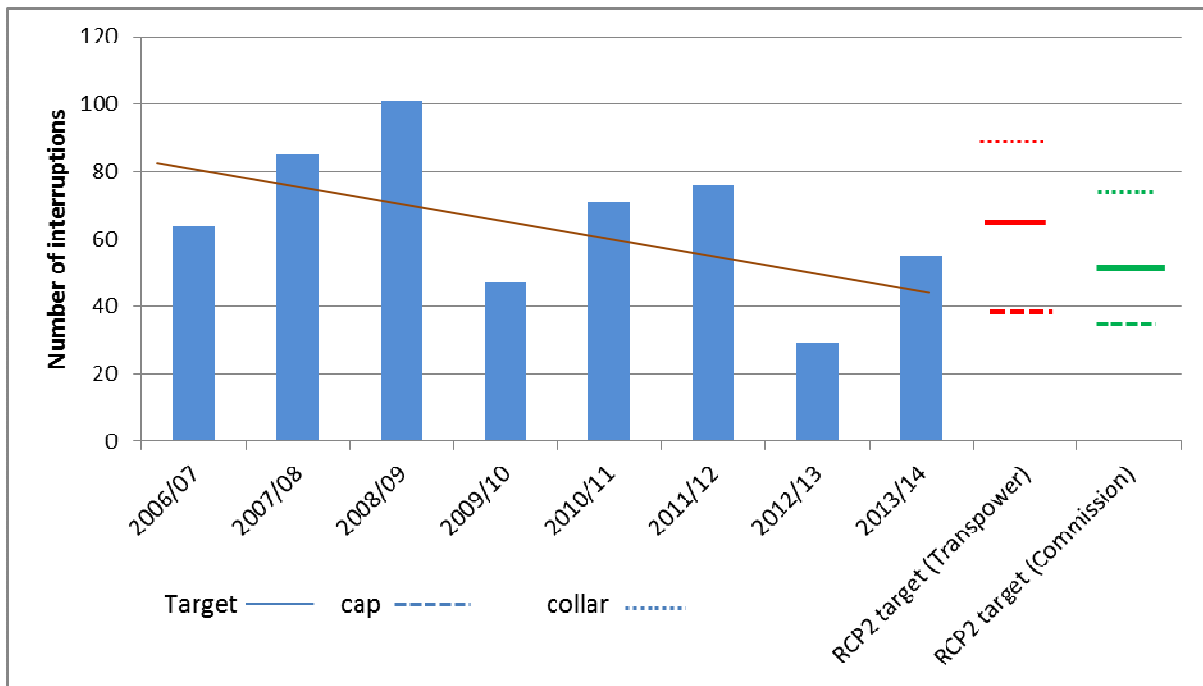
³¹⁰ Transpower "Service Performance Measures BR04"; (1 October 2013); p.17. Table 4 lists the long term targets by category of points of service.

Table G7: GP1 target and historical performance for N-security points of service

	Transpower's original proposal	Draft decision	Transpower's revised submission	Decision
Target	66	50	63	56
Cap	53	26	39	38
Collar	76	74	87	74

G55 Based on 2013/14 performance, we have amended the target, cap and collar as shown in Table G7.

Figure G4: GP1 target and historical performance for N-security points of service



G56 Figure G4 shows that performance was worsening between 2006/07 and 2008/09. But there has been a turnaround since 2009/10. Average performance between 2009/10 and 2013/14 reduced to 55.6 from an average of 73 interruptions per year between 2006/07 and 2010/11. The average performance between 2006/07 and 2013/14 is 66 interruptions per year.

G57 Our target of 56 represents the average performance over the previous five years. We consider that this target better represents the current level of performance than Transpower's proposed target of 66.

G58 Transpower maintains that target should not be more challenging than the long-term targets. Transpower submitted that the RCP2 target should be close to its long-term target of 63.³¹¹ However, in its RCP2 proposal Transpower had qualified that its long-term targets were tentative:

We have proposed ranges for these long-term targets and will review these during RCP2, in preparation for RCP3. During this time we will refine our models for estimating long-term performance.³¹²

G59 The issues with setting the RCP2 target to Transpower's long-term target are that:

G59.1 there is a step reduction in performance without a corresponding adjustment in price;

G59.2 at this stage the long-term targets are tentative; and

G59.3 within RCP2 Transpower will potentially get increased revenue by delivering the current level of performance if RCP2 targets are based on long-term targets.

G60 When Transpower transitions to its long-term target, we expect it to provide consumers with an appropriate price-quality trade-off.³¹³

GP1 targets for 'important' and 'generator' points of service are reasonable

G61 We are satisfied that GP1 targets for important and generator points of service and all the GP2 and GP3 targets are challenging. Our assessment of these targets is below.

G62 We reviewed these targets by considering:

G62.1 Transpower's priority of improving performance at 'high priority' and important sites and maintaining service performance at other points of service,³¹⁴

G62.2 Transpower's proposed long-term targets;

G62.3 the best, worst and average of historical performance since 2007; and

G62.4 trend in historical performance where applicable.

³¹¹ Transpower "Response to IPP Draft Decision" (27 June 2014); p. 48.

³¹² Transpower "Service Performance Measures BR04"; (1 October 2013); p.17, footnote 13.

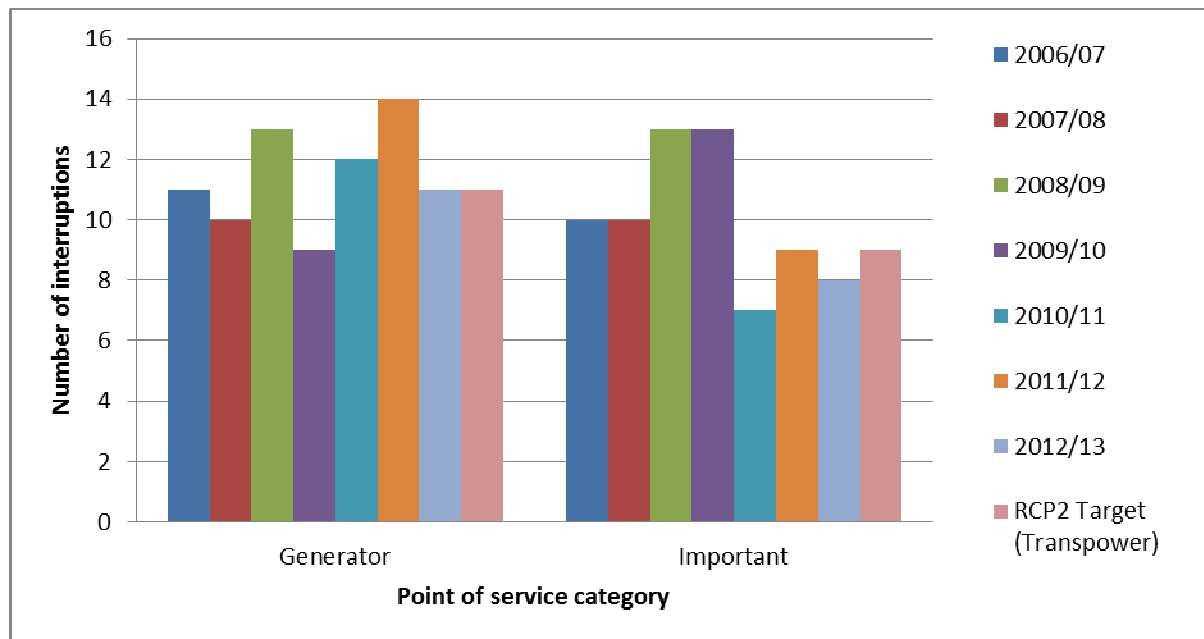
³¹³ Transpower "Service Performance Measures BR04"; (1 October 2013); p.17. Table 4 lists the long term targets by category of points of service.

³¹⁴ Transpower 'Expenditure Proposal for Regulatory Control Period 2' (2 December 2013), p. 4.

G63 Figure G5 shows the historic performance and our decision on the GP1 targets for generator and standard points of service.

G64 For generator points of service, Transpower has set a long-term target of 11 interruptions. In two years since 2006 however, historical performance has been better than the proposed long-term target. Since the target of 11 appears reasonable, and as generators did not submit otherwise, we consider that this level of service reflects customer demand. Therefore our decision is to accept Transpower's proposed targets for RCP2.

Figure G5: Historic performance and GP1 targets for generator and important points of service



G65 For 'important' points of service, our decision is to accept Transpower's proposed target of 9. We recognise that Transpower's proposed target is higher than the average performance since 2010/11. The target is the same as the performance in 2011/12 but higher than that in 2010/11 and 2012/13.

GP2 targets are reasonable

G66 We are satisfied the GP2 targets are reasonable. Our assessment of these targets is below.

G67 Figure G6 shows the historical performance and Transpower's proposed targets for GP2. Figure G7 shows the historic number of interruptions.

G68 We observe that the distribution of average duration of interruptions is random and does not correlate with the number of interruptions. For this reason we are satisfied with Transpower using historical performance as the basis for setting targets for GP2, provided Transpower makes allowance for outliers.

G69 For the GP2 measures, Transpower’s proposed targets are better than the seven year historical levels, except for ‘standard’ points of service which is close to the historical average. We also note that the difference between the historical average and the targets Transpower is proposing accounts for any outliers in the data. For these reasons, we are satisfied with the targets that Transpower has proposed for GP2 measures.

Figure G6: Historic performance and GP2 targets by category of points of service

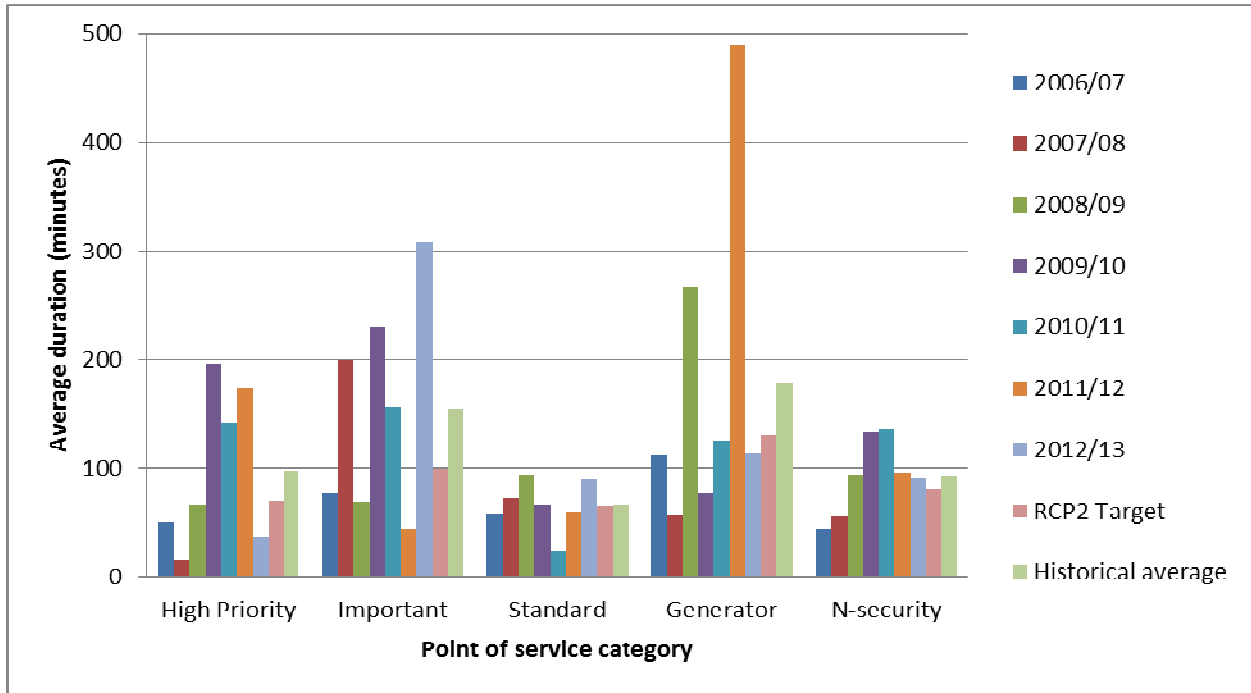
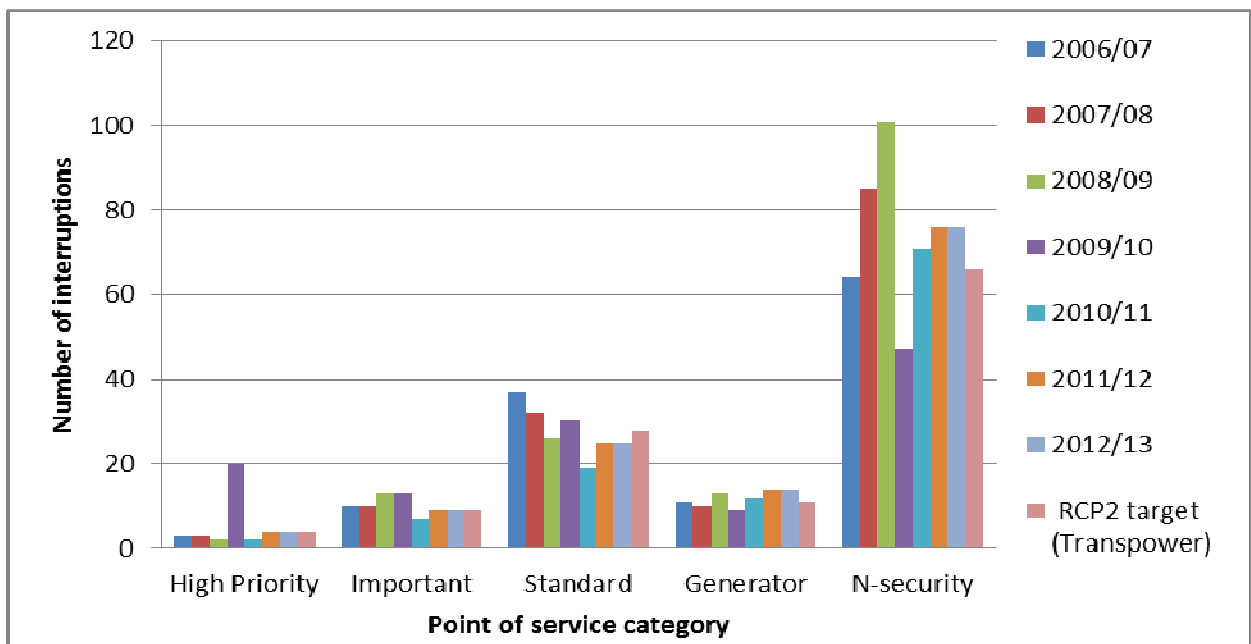


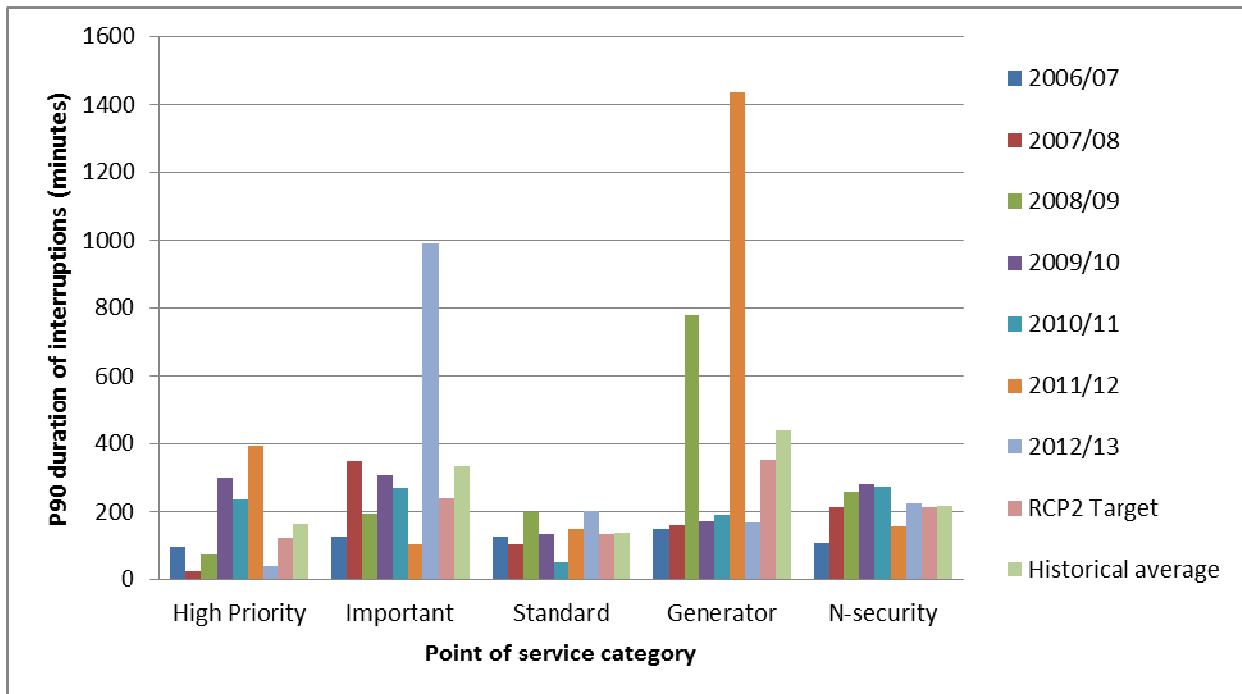
Figure G7: Historic number of interruptions by category of points of service



GP3 targets are reasonable

- G70 Figure G8 shows the historical performance and Transpower’s proposed targets for GP3. Figure G7 shows the historic number of interruptions.
- G71 We observe that the distribution for the P90 duration of interruptions is random and does not correlate with the number of interruptions. For this reason we are satisfied with Transpower using historical performance as the basis for setting targets for GP3, provided it makes allowance for outliers.
- G72 We observed that for categories of points of service that have outliers, Transpower has proposed targets less than the historical averages and for other categories Transpower has proposed targets close to the historical average. We are satisfied with the manner in which Transpower has set the targets for GP3.

Figure G8: Historic performance and GP3 targets by category of points of service



- G73 We also considered whether the major incidents in 2009/10 had significant effects on the targets for GP3. In our assessment, while these incidents had an effect on underlying data used to calculate the targets, Transpower has proposed reasonable targets, which have been set better than the historical average. This target has also, however, been beaten by Transpower in four of the seven previous years.

The targets for the asset performance measures

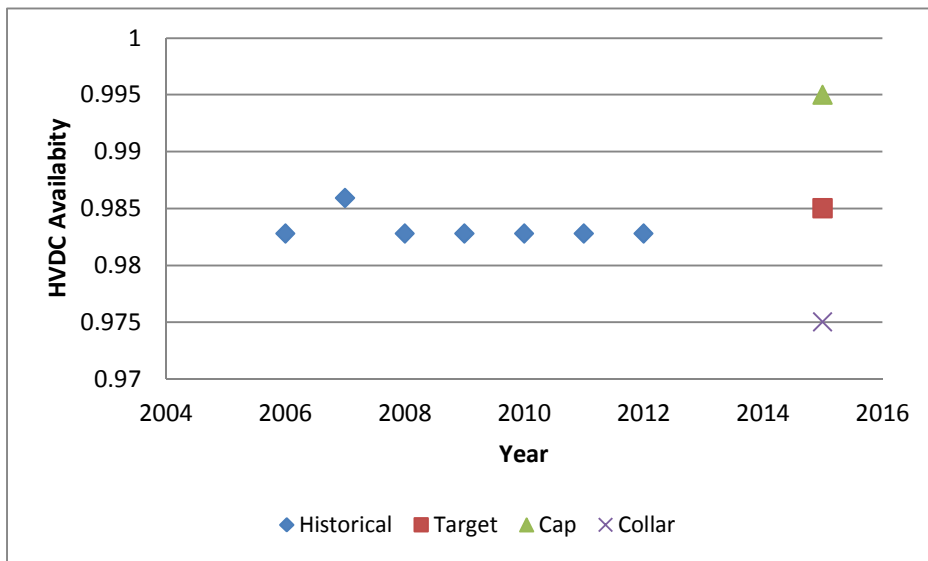
G74 Below we discuss our reasons for accepting Transpower's proposed targets for the AP1 and AP2 measures.

The target for HVDC availability is reasonable

G75 We are satisfied that the AP1 and AP2 targets are reasonable.

G76 Figure G9 shows the historical availability for pole 2, along with the targets, caps and collars.

Figure G9: Historical availability of HVDC for pole 2, targets, caps and collars for AP1



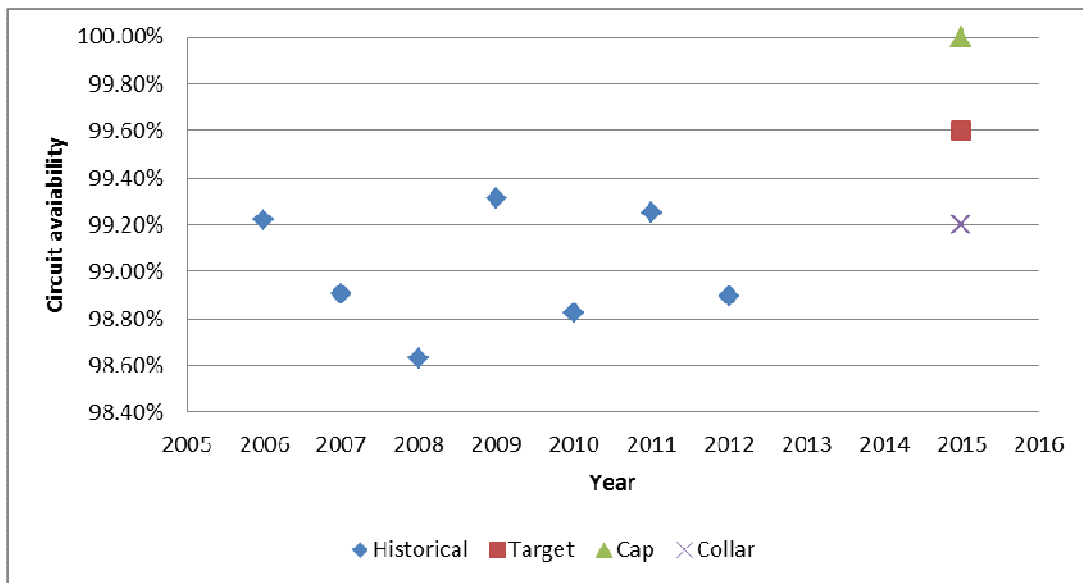
G77 We are satisfied that the HVDC targets are reasonable. Meridian also submitted that the HVDC target is an appropriately challenging target based on historical performance.³¹⁵

The target for HVAC circuit availability is challenging

G78 Figure G10 shows the historical availability for the HVAC circuits and the targets, caps and collars. The graph shows that Transpower has set a very challenging target for HVAC circuit availability.

³¹⁵ Meridian 'Transpower RCP2 submission' (3 March 2014), p. 2.

Figure G10: Historical availability of HVAC circuits, targets, caps and collars for AP2



- G79 There is a risk that targeting a high level of availability could incentivise Transpower to reduce maintenance on these circuits, which may not be to the long-term benefit of consumers. To test the appropriateness of Transpower’s targets, we compared Transpower’s target with those of transmission network owners in Australia. Table G8 compares the availability targets for HVAC transmission circuits of Transpower with transmission network owners in Australia.
- G80 As seen in Table G8 below, Transpower’s target, cap and collar are higher than those of any of the Australian transmission network owners, although the collars and targets for ElectraNet and TransGrid are close to Transpower’s.
- G81 In response to our enquiry, Transpower responded that it was comfortable with these targets.³¹⁶ For these reasons, we have accepted Transpower’s proposed targets, caps and collars for AP2.

³¹⁶ Meeting between Transpower and the Commission on 14 March 2014.

Table G8: Transmission line availability targets for Australian transmission network owners and Transpower

TNO	Measure	Collar	Target	Cap
Transpower	Critical HVAC circuits	99.2	99.6	100
SP AusNet ³¹⁷	Total transmission circuit	98.4	98.8	99.1
ElectraNet ³¹⁸	Total transmission circuit	99.1	99.5	99.6
Powerlink ³¹⁹	Transmission circuit	97.6	98.8	99.9
Transcend ³²⁰	Critical transmission circuits	97.9	99.1	99.8
TransGrid ³²¹	Transmission circuits	99.1	99.3	99.4

³¹⁷ Australian Energy Regulator 'SP AusNet transmission determination 2008-09 to 2013-14' (January 2008), p. 174. <http://www.aer.gov.au/sites/default/files/AER%20Final%20decision.pdf>.

³¹⁸ Australian Energy Regulator 'ElectraNet transmission determination 2008-09 to 2012-13' (11 April 2008), p. 91. <http://www.aer.gov.au/sites/default/files/Final%20decision%20%2811%20April%202008%29.pdf>.

³¹⁹ Australian Energy Regulator 'Powerlink Transmission determination 2012-13 to 2016-17' (April 2012), p. 229. <http://www.aer.gov.au/sites/default/files/Powerlink%20-%20Final%20decision%20-%20April%202012.pdf>.

³²⁰ Australian Energy Regulator 'Transend Transmission Determination 2009-10 to 2013-14' (14 October 2009), p. 3. <http://www.aer.gov.au/sites/default/files/Amended%20Transmission%20determination%20%2814%20October%202009%29.pdf>.

³²¹ Australian Energy Regulator 'TransGrid transmission determination 2009-10 to 2013-14' (28 April 2009), p. 117. <http://www.aer.gov.au/sites/default/files/TransGrid%20final%20decision.pdf>.

Attachment H: Cost escalation factors

Purpose of this attachment

- H1 This attachment discusses our decision on the cost escalators that we use to convert real expenditure into nominal expenditure allowances. This includes:
- H1.1 the NZD/USD exchange rate
 - H1.2 the foreign exchange exposure in IST
 - H1.3 forecast CPI inflation, and
 - H1.4 metals real price effects.

Opex and base capex allowances have had cost escalators applied to them

- H2 Transpower has compiled its proposed expenditure allowances in constant prices, expressed in 2012/13 dollars. To convert its real expenditure forecasts into nominal amounts, Transpower has used cost escalators on identified costs.
- H3 Cost escalators are comprised of:
- H3.1 changes in the general rate of inflation as measured by the CPI, and
 - H3.2 real price effects representing changes in specific cost inputs (such as copper, steel or labour) that are influenced by factors other than the general rate of inflation (such as foreign exchange rates or labour market conditions).
- H4 We have assessed the escalators proposed by Transpower against the following criteria:
- H4.1 the extent that the data, analysis and assumptions used in developing them are robust, and
 - H4.2 the extent that the application of cost escalators reflect the underlying characteristics of costs.
- H5 Overall, and while still holding some reservations, we accept Transpower's conceptual approach to developing cost escalators. In the future we will expect a rigorous retrospective review of the accuracy of competing forecast methodologies to be a central part of justifying proposed set of cost escalation factors.
- H6 While we accept the broad approach taken, we have used several assumptions that differ to those proposed by Transpower.

- H7 To ensure that the cost escalators are as accurate as possible, we requested that forecasts be updated for the final decision where relevant. Transpower has complied with this request.³²²

We have accepted Transpower's proposed cost escalation approach

- H8 We have accepted Transpower's cost escalation approach but have replaced Transpower's proposed NZ dollar/ US dollar exchange rate forecast with forward exchange rates from Bloomberg.
- H9 We have also reversed our draft decision to remove the foreign exchange exposure assumption that applied to IST other (hardware and software).
- H10 We have amended the definition of forecast CPI in the Capex IM to allow us to use a different forecast CPI assumption than that used in the proposal. We consulted separately on the necessary amendment to the Capex IM for the forecast CPI. The amendment aligns with the approach used to forecast CPI for Electricity Distribution Businesses' default price-quality paths.
- H11 We hold concerns around Transpower's methodology for forecasting metals prices and expect further analysis of this method's forecasting efficacy if it is to be proposed in the future.
- H12 We are satisfied that Transpower has applied CPI and calculated real price effects to its forecasts of 2012/13 real expenditure in an appropriate and consistent way. CPI and real price effects are applied independently at the portfolio level. Real expenditure is then escalated by the sum of the two inflationary effects.
- H13 We are concerned with the degree of transparency on the allocation of weights used to effectively calculate real price effects. In future we expect a transparent and rigorous justification of these weights to be included as part of a complete proposal.

³²² Transpower's updated forecasts include data available up to the end of June 2014.

What Transpower proposed

- H14 Transpower commissioned the New Zealand Institute of Economic Research (NZIER) to forecast both the rate of CPI inflation and real price effects.³²³ In producing these forecasts for Transpower, NZIER:
- H14.1 identified cost items for escalation based on, among other things, cost materiality,³²⁴ assessed in terms of the value at risk from cost escalation;
 - H14.2 selected indices or reference prices to understand how cost inflation has occurred historically and how it might then change over RCP2, with the chosen indices or reference prices for each cost item then being forecast to derive the cost escalation factors; and
 - H14.3 used different methodologies to forecast different types of cost escalation, including, in some instances choosing to use third-party forecasts of cost escalation.³²⁵
- H15 NZIER has updated its forecast cost escalation factors, to include data up to June 2014. Transpower's updated cost escalation factors are summarised in Table H1.

³²³ For further details see: CR02 – Cost Escalation Forecasts – Frameworks, Forecasts and Forecast Methods

³²⁴ NZIER also considered Transpower's RCP1 proposal, costs commonly escalated by Australian transmission operators, and the perceived likelihood of cost inflation, as well as the views of Transpower.

³²⁵ For metals prices NZIER used futures prices, market consensus and World Bank forecasts. For Labour Cost Indices (LCI) and the Producer Price Index (PPI) NZIER used econometric models. NZIER initially forecast the USD/NZD exchange rate over RCP2 by taking an average of NZ banks forecasts (the banks forecasts reach out to 2017, and NZIER extrapolates the 2017 forecast of the USD/NZD rate out to 2020); NZIER adopted our draft decision USD/NZD exchange rate forecast when it updated its forecasts to inform our final decision. NZIER notes its CPI forecasting approach is consistent with the requirements of the Capex IM at the time of forecast.

Table H1: Summary of NZIER's updated cost escalation and foreign exchange forecasts (2013-2020)

Cost item	Applied to	Forecast measure	Methodology/source	Average yearly growth (USD) (%)	Average yearly growth (NZD) (%)
Labour					
Grid opex labour	Labour for routine maintenance and maintenance project portfolios	Labour Cost Indices (LCI) all groups	Econometric time series model	n/a	2.4
Grid base capex labour	Labour for grid base capex portfolios	LCI Construction	Econometric time series model	n/a	2.7
IST labour	Labour for IST base capex and opex portfolios	LCI Professional and technical Services industry	Econometric time series model	n/a	2.4
Departmental labour	Departmental labour—excludes labour capitalised to projects	LCI for Electricity, Gas and Water industry	Econometric time series model	n/a	2.6
Metals					
Copper	Base capex and maintenance projects	London Metal Exchange (LME) Copper price (USD)	Futures prices and average of market forecasts	0.6	1.7
Aluminium	Base capex and maintenance projects	LME Aluminium price (USD)	Futures prices and average of market forecasts	4.6	5.8
Steel	Base capex and maintenance projects	Hybrid of World Bank steel price index and Asia Hot-Rolled Coil (USD)	Median of market forecasts	1.5	2.6
Other metals	Base capex and maintenance projects	World Bank Metals and Mineral Price Index (USD)	World Bank forecast	1.0	2.1
Other					
Construction	Base capex and maintenance projects	Producer Price Index (PPI)—Outputs, for Heavy and Civil Engineering industry	Econometric time series model	n/a	3.9
IST other (hardware and software)	IST base capex and opex portfolios	All groups CPI	Extrapolation of RBNZ forecast	n/a	2.0
Foreign exchange	Used to Convert USD forecasts into NZD forecasts	USD/NZD market exchange rate	Draft decision USD/NZD forecast (forward rates)	n/a	-1.1

We have replaced Transpower’s forecast of the exchange rate with forward exchange rates

- H16 We consider that Transpower’s proposed approach to forecasting the NZ dollar/US dollar exchange rate is inappropriate. We have replaced Transpower’s forecast with forward exchange rates from Bloomberg.³²⁶
- H17 There is no single prevailing method for forecasting foreign exchange rates. Forecasting exchange rates is often a problematic and uncertain exercise.
- H18 We view the forward exchange rate as an objective measure that is internally consistent across the forecast period. The use of forward exchange rates avoids arbitrary extrapolation.
- H19 The use of forward exchange rates is broadly consistent with that used for Transpower in its opex capex review for the period 2012/13 to 2014/15³²⁷ and for Orion in its customised price-quality path determined in 2013.³²⁸
- H20 In its submission on the draft decision, Transpower states it is comfortable with our approach to forecasting exchange rates, subject to there being an appropriate foreign exchange wash-up mechanism.³²⁹ We address the FX wash-up mechanism in Chapter 5.
- H21 Table H2 below shows our forecast for the NZ dollar/US dollar exchange rates and compares this to Transpower’s proposal.

³²⁶ Bloomberg is a recognised provider of business, financial and economic information.

³²⁷ See www.comcom.govt.nz/regulated-industries/electricity/electricity-transmission/transpower-price-path-compliance/opex-capex-review-2012-13-2014-15/

³²⁸ See <http://www.comcom.govt.nz/regulated-industries/electricity/cpp/orion-cpp/>

³²⁹ Transpower “Response to IPP Draft Decision” (27 June 2014), p. 11.

Table H2: Comparison of Transpower’s proposed, our draft decision and our final decision for NZ dollar/US dollar exchange rates

	2013	2014	2015	2016	2017	2018	2019	2020
Transpower’s proposal (Bank average and extrapolation)	0.82	0.82	0.75	0.70	0.69	0.69	0.69	0.69
Draft Decision (Bloomberg forward exchange rates)	0.82	0.85	0.82	0.79	0.77	0.75	0.73	0.72
Final Decision (Bloomberg forward exchange rates)	0.82	0.83	0.82	0.79	0.77	0.76	0.74	0.72

Note: The draft decision exchange rates are based on the forward NZ dollar/US dollar rates provided by Bloomberg’s professional data services on 6 August 2014 and the Reserve Bank’s historical arithmetic monthly exchange rate. We calculated the forward exchange rate (for 2015-2020) as the arithmetic average of the bid and the offer rates at that time. The settlement date for the forward rates is the middle of each calendar year, ie the first week of July in each of the forecast years. The 2013 and 2014 exchange rates are the arithmetic average monthly exchange rate over July 2012 to June 2013 and July 2013 to June 2014 respectively, provided by the Reserve Bank.

We have allowed foreign exchange exposure on ‘IST other (hardware and software)’

- H22 We have accepted Transpower’s proposed foreign exchange exposure on IST other (hardware and software).
- H23 For the draft decision, we considered that Transpower’s proposed IST other (hardware and software) real price effect was unjustified. Our view was that Transpower had not provided sufficiently detailed reasoning to allow for foreign currency exposure in this cost category.
- H24 In its submission on our draft decision³³⁰ and subsequent response to an information request, Transpower provided the required information needed to justify the proposed IST other (hardware and software) exposure to foreign exchange movements.
- H25 We note that in its updated cost escalation factors report, NZIER broadly supports exposing products sourced from overseas, where costs are tied to an exchange rate, to foreign exchange rate movements for the purposes of forecasting cost escalation factors.³³¹

³³⁰ Transpower “Response to IPP Draft Decision” (27 June 2014), p. 12-13.

³³¹ NZIER “Cost escalation forecasts: Frameworks, forecasts and forecast methods”, June (2014), p. 10-11.

We have amended how forecast CPI is calculated

- H26 Our approach to forecast CPI required an amendment to the definition of forecast CPI in the Capex IM.³³²
- H27 Transpower applied the definition provided by clause 1.1.5 of the Capex IM when forecasting CPI for its expenditure proposal.
- H28 Forecast CPI is taken from the Reserve Bank’s Monetary Policy Statements. At the time of the proposal the term beyond the latest forecast was calculated using the arithmetic average of the final four quarters of the Reserve Bank’s forecast.
- H29 This definition means that long-term CPI forecasts have the potential to vary significantly depending on the different points in the cycle at which Monetary Policy Statements are produced.
- H30 We have previously expressed a view that forecast CPI beyond the term of the Reserve Bank forecast should move toward the mid-point of the Reserve Bank’s inflation target, given the modifications made to the PTA under which the Reserve Bank operates at the time of the current Governor’s appointment.³³³ This view is reflected in the definition of forecast CPI in the Electricity Distribution Services IM.³³⁴ We think this consideration applies equally to Transpower’s proposal.
- H31 Our change to the definition of forecast CPI results in a change to forecast CPI (using the Reserve Bank’s June Monetary Policy Statement), summarised in Table H3.

³³² The amendment affects the predictability of Transpower’s revenues and prices, but not the actual revenue and prices that eventuate, during RCP2. The forecast CPI assumptions for the base capex and opex allowances are ‘washed-up’ for actuals during the regulatory period. Therefore, improved forecast CPI assumptions improve the predictability of Transpower’s revenue and prices, but will have no impact on actual revenue and prices during RCP2 as these are based on actual CPI.

³³³ The current Policy target Agreement sets as an objective that inflation should average around the mid-point of the target range (which is 2%, between the lower limit of 1% and the upper limit of 3%).

³³⁴ For a background on this decision refer to Commerce Commission “specification and Amendment of Input Methodologies as Applicable to Default Price-Quality Paths Reasons Paper” (28 September 2012), paragraph 37-39.

Table H3: Comparison of proposed, our draft decision and final decision for forecast CPI

	2013	2014	2015	2016	2017	2018	2019	2020
Transpower's proposal	0.9%	1.4%	1.9%	2.1%	2.1%	2.1%	2.1%	2.1%
Draft decision (proposed consequential amendment)	0.68%	1.40%	1.87%	1.91%	1.96%	2%	2%	2%
Final decision	0.68%	1.62%	2.09%	1.80%	2.09%	2.06%	2.03%	2%

We have concerns about the forecast metals cost escalation factors

- H32 We have accepted Transpower's metals cost escalators (US dollar denominated). Transpower has updated its forecasts of metals prices.³³⁵
- H33 In our draft decision, we provisionally accepted Transpower's proposed metals cost escalators. We were concerned that, for some commodities, sharp changes in real price effects were forecast with limited explanation.
- H34 Transpower forecasts copper and aluminium cost escalation factors though the use of futures markets prices one to two years ahead, with consensus forecasts used to make up the rest of the regulatory period. Cost escalation factors for steel are forecast using consensus forecasts only.³³⁶
- H35 In the draft decision we sought views on whether appropriate guidance to forecasting metals prices could be had from commodity pricing theory.
- H36 In its submission on our draft decisions, Transpower maintained that its proposed methodology was the most suitable method for forecasting metals costs over RCP2. Transpower referenced the updated NZIER cost escalation report in which NZIER makes the following points on its forecast methodology:³³⁷
- H36.1 On consensus forecasts and forecast averaging: A mid-point of consensus forecasts embody more information and better formed expectations than the forecasts of a single forecaster – it argues this is particularly relevant for international forecasts. NZIER refer to academic literature which generally states that *ex ante* forecast accuracy can be substantially improved through a method of combining individual forecasts; and

³³⁵ Transpower response to information request Q085.

³³⁶ The other metals category is based on the World Bank Metals and Mineral Price Index.

³³⁷ NZIER "Cost escalation forecasts: Frameworks, forecasts and forecast methods", June (2014), p. 13-15.

- H36.2 On futures prices used for copper and aluminium price forecasts: Futures prices are used to capture the current state of the market and the extent to which the market is presently above or below some average or expected longer-term ('equilibrium') spot price. NZIER assume futures prices are a one-for-one predictor of the expected spot price, it acknowledges this is an approximation.³³⁸ NZIER maintain futures prices are better predictors than modelling prices as a random walk.
- H37 NZIER consider that in principle futures prices could be extrapolated beyond the end of the futures price data series, potentially using a risk-free rate and based on a no-arbitrage condition, but note:
- H37.1 Prices over the long-term are affected by a range of policy and supply and demand factors which will not be factored into shorter-term futures prices. Using consensus forecasts is a method which captures these kinds of long-term 'structural factors';
- H37.2 Extrapolating futures price will not resolve forecast error problems. Any risk premium associated with holding a futures contract will be largest over the long-term – longer-term futures are likely to be a biased estimator; and
- H37.3 Global long run interest rates would have to be forecast and such a number, while often a single stable number, would be subject to forecast error.
- H38 We are aware that commodity prices are notoriously volatile and variable between forecasting agencies and the forecasting methodologies employed. In future we expect a rigorous retrospective analysis of competing forecast methodologies to be a central part of justifying a proposed set of cost escalation factors.
- H39 We note NZIER's observation that the updated metals price forecasts are more subdued than those previously forecast in October 2013 and included in the proposal.³³⁹
- H40 Pacific Aluminium questions the conceivability of being able to challenge Transpower's cost escalation proposals. In particular, the commodity weights applied to the metals price forecasts used in order to arrive at cost escalation factors for Transpower's work portfolios, and the metals forecasts themselves. We note that:
- H40.1 It is challenging to assess the commodity weightings, applied at the portfolio level, used to calculate real price effects. However, the difficulty in assessing

³³⁸ Futures price can be greater than spot because of the opportunity cost of holding the futures contract. Alternatively, the futures can be less than the spot because of a risk premium.

³³⁹ Transpower response to information request Q085.

these weights is not particular to using metals forecasts as inputs but a feature of the composite approach;

- H40.2 We view the applied weightings as reasonable, though acknowledge the weightings lack transparency; and
- H40.3 Forecasting economic variables, including metals prices, over the RCP is a notoriously difficult task that requires judgement.
- H41 We expect future proposals to transparently derive and justify the weights applied to the various forecasts employed under the composite approach to cost escalation.
- H42 Pacific Aluminium suggests using a broader index to calculate cost escalation factors. We consider that a single broad index, while potentially simpler to forecast and apply, will be unlikely to adequately reflect Transpower's cost profile.

Attachment I: Initiatives that we suggest Transpower implements during RCP2

Purpose of this attachment

- I1 This attachment contains the detailed description of:
- I1.1 the asset health and other initiatives to improve the link between expenditure and service performance;³⁴⁰
 - I1.2 the other performance measures that Transpower has undertaken to develop and report on during RCP2 and additional performance measures that consumers demand;³⁴¹ and
 - I1.3 suggested business improvement initiatives for Transpower.³⁴²
- I2 Each section contains the suggested initiatives and the reasons that the initiatives have been suggested.

The difference between the three initiatives

- I3 We have classified the development initiatives three categories as set out in below.
- I3.1 The first category represents initiatives that Transpower has already been developing to enhance the link between expenditure and service performance. These include the asset health models, the circuit critically framework and understanding the financial impact of interruptions.
 - I3.2 The second category includes initiatives that Transpower has committed to undertake. Transpower presented these as ‘other measures’ in its RCP2 proposal and in response to our draft decision submitted that these should be treated as business improvement initiatives. We have decided to treat them as ‘performance measure development initiatives’. Transpower has committed to developing the six measures it proposed. We recommend that Transpower also considers developing the additional measures we have

³⁴⁰ Transpower is already developing asset health models for its fleets. Refer to Transpower “Expenditure Proposal Regulatory Control Period 2” (December 2013); p.39.

³⁴¹ In Transpower’s proposal and our draft decision these measures were referred to as ‘other measures’. We will now refer to them as ‘performance measure development initiatives’. In its submission to our draft decision, Transpower has undertaken to develop these during RCP2. Refer Transpower “Response to IPP draft Reasons” (27 June 2014), p. 52.

³⁴² These are initiatives that were discussed in Chapter 6 of our draft decision. Transpower has indicated its acceptance subject to staff capability and availability. Refer Transpower “Response to IPP draft Reasons” (27 June 2014), p. 10.

included, since they relate to either customer service or assessing the financial impact of interruptions and outages. All these aspects of performance are important to the consumers.

I3.3 The third category includes the business improvement initiatives recommended in our draft decision and accepted by Transpower in its response to our draft decision.

I4 This attachment is in three parts:

I4.1 improving the link between expenditure and service performance;

I4.2 performance measure development initiatives; and

I4.3 business improvement initiatives.

Reporting on the three sets of initiatives

I5 Table I1 below presents a summary of the manner in which we expect Transpower to report on the three sets of initiatives we have identified.

Table I1: Summary of reporting requirements for development and improvement initiatives

Description	Form of reporting	Information
Asset health model reporting	Performance and development	<ul style="list-style-type: none"> Asset health model development (for all fleets, not just the three that were initially proposed by Transpower for revenue-linking). Roll-out reporting of actuals if/when Transpower develops models for the other asset fleets.
PMD1-PMD6, PMD8 ³⁴³	Performance and development	<ul style="list-style-type: none"> Transpower has advised that it will report on these initiatives as per Transpower's proposal (section 10.5).
PMD9	Performance and development	<ul style="list-style-type: none"> Transpower has objected to this measure. We recommend that as part of its focus on customer service, Transpower reports on the number of times it fails to provide appropriate reports within 42 days of interruptions.
PMD7	Performance and development	<ul style="list-style-type: none"> Recommend that Transpower reports on this to meet consumer and stakeholder concerns.
Business improvement initiatives	Development	<ul style="list-style-type: none"> Project plan Updates on progress

³⁴³ PMD1 to PMD6 relate to OM1 to OM6 in Transpower's proposal.

- 16 We recommend three categories of reporting for the initiatives discussed in this attachment.
- 16.1 Reporting on ‘change in remaining life’ of the asset health measures associated with tower painting, replacement of transformers and replacement of outdoor circuit breakers is coded in the individual price-quality path and Transpower will report on the measures. We recommend that Transpower reports on its progress on developing asset health models for the remaining asset fleets. We also recommend that Transpower reports on the ‘changes in remaining life’ due to investment during RCP2 for these fleets, as the models for the become sufficiently developed. The output of the RCP2 investments on the asset health model should also be reported.³⁴⁴ Shadow reporting will allow Transpower to offer a model fully tested for implementation in RCP3.
- 16.2 Transpower has committed to reporting on development initiatives PMD1 to PMD6.³⁴⁵ We recommend that in addition, Transpower also considers PMD7 to PMD9 since outputs of these measures are important to consumers and stakeholders.
- 16.3 Reporting on the business development initiatives is at Transpower discretion. We note that during RCP1, Transpower regularly provided updates to the Commission on the business development initiatives it was developing.

Improving links between expenditure and service performance

- 17 We suggest an initiative that is targeted at strengthening links between expenditure and service performance; and better targeting where expenditure is needed. This initiative has three dimensions:
- 17.1 continuing Transpower’s development of its asset health modelling;
- 17.2 improving Transpower’s asset criticality framework; and
- 17.3 developing a better understanding of the economic impact from interruptions.

³⁴⁴ Transpower has submitted that it will consider a network health model for RCP3 implying further development of its asset health models. Refer Transpower “Feedback on Stakeholder Submissions on Setting Transpower’s individual price-quality path for 2015-2020, Reasons for draft decision (16 May 2014).

³⁴⁵ Transpower “Expenditure Proposal Regulatory Control Period 2” (December 2012), p. 131, fn 107.

- I18 We have proposed monitoring measures for these three dimensions. These are discussed under separate headings below.
- I19 Over RCP1 we have observed progress in Transpower’s development of its risk-based asset management approach. The inputs into the asset risk framework are the asset health measure and the criticality rating. Asset health is a proxy for the likelihood of asset failure, while criticality is the proxy for the consequence of asset failure. Transpower has implemented selected asset health models and introduced a criticality framework based on point of supply, but the links between expenditure and service performance needs are not yet well developed.
- I10 The proposed initiative aims to strengthen the quality of asset risk assessment and therefore improve the basis on which expenditure decisions are made. Transpower has identified that the regular review and monitoring of the risk profile of its assets is essential to achieving its asset risk management objectives.³⁴⁶ This allows for better understanding of anticipated issues and therefore improved justification for proposed expenditure. Measures that better reflect the economic impact of interruptions will enhance the asset criticality framework.
- I11 The key benefits of this initiative are:
- I11.1 more robust and explainable decision-making that provides improved justification for expenditure;
 - I11.2 better targeting of expenditure that will result in long-term benefits to consumers;
 - I11.3 determining a level of confidence in justification for expenditure;
 - I11.4 providing a consistent and appropriate risk-based approach to prioritisation of investments across the grid; and
 - I11.5 improved predictability of decision making and results over time.

³⁴⁶ Transpower “Business Improvement Initiatives” (March 2012).

Continuing to develop asset health models

- I12 We suggest that:
- I12.1 Transpower should develop a programme for asset health modelling for each asset portfolio. The development programme for each asset portfolio should include milestones with clear deliverables. Where Transpower is not going to develop models for any asset fleets, it should be clearly explained; and
 - I12.2 Transpower should provide annual reports on the progress against the development programme, including the reasons for any significant changes in the programme.
- I13 The target for completion is before the submission of Transpower's quality and expenditure proposal for RCP3. That is, all the models should be completed, populated, and used by Transpower in developing its proposal for RCP3.
- I14 We consider that this suggested initiative will address areas of concern listed below that we identified with the RCP2 documentation and evaluation.
- I14.1 Asset health models did not cover all assets.
 - I14.2 The asset health models provided by Transpower did not reconcile with the proposed expenditure. This is because the models did not reflect the challenge stages by Transpower's management and were not updated to reflect any changes.³⁴⁷
 - I14.3 Existing models were untested; over time these models should be developed and use most recent data.
 - I14.4 Confidence in asset health indicators is reliant on the quality of models. For example, we have noted potential bias issues with Transpower's transformer model owing to pessimistic views for condition.³⁴⁸ The consequence of such bias would result in shorter asset lives and replacing them earlier than is possibly necessary.

³⁴⁷ Strata report, paragraphs 246-248.

³⁴⁸ Ibid, paragraph 378.

- I14.5 Asset health models are not sufficiently developed to use as a practical tool for linking improvements in asset health as a result of capital expenditure and the capital expenditure incentive scheme.³⁴⁹
- I15 Our proposed initiative is consistent with Transpower’s proposal for RCP2. Transpower proposed the continued development of asset health modelling by extending asset health modelling across the majority of Transpower equipment and by continuing to improve asset health models, including improved confidence in existing health indicators.³⁵⁰

Improving the asset criticality framework

- I16 We suggest that:
- I16.1 Transpower develop a programme for improving its asset criticality framework, including having asset criticality assigned to all circuits or network branches (the programme should include milestones with clear deliverables); and
- I16.2 Transpower provide annual updates on the progress against the development programme, including the reasons for any changes in the programme.
- I17 Transpower should have asset criticality assigned to all circuits or branches before Transpower submits its quality and expenditure proposal for RCP3. That is, the revised asset criticality framework should be used by Transpower in developing its quality and expenditure proposal for RCP3.
- I18 We consider that this proposed initiative would address an issue identified with the RCP2 documentation that asset criticality at point of service level only captures consequence of failure at a very high level. Transpower appears to be using this measure as a proxy for the criticality of individual circuits or branches in the grid.
- I19 Our suggested initiatives are consistent with Transpower’s proposal for RCP2. Transpower has indicated that it intends to improve the criticality framework by developing performance requirements for each circuit or branch in the grid and then feeding this into the asset management models.³⁵¹

³⁴⁹ In response to our draft decision, Transpower proposed to use ‘Asset health measures’ as a tool to link its replacement and refurbishment expenditure to changes in ‘asset health’ or ‘asset remaining life’. Transpower “Response to IPP Draft Decision” (27 June 2014), pp. 39-46.

³⁵⁰ Transpower “Expenditure Proposal for Regulatory Control Period 2” (2 December 2013), section 2.7.2.

³⁵¹ Ibid.

Understanding the economic impact of interruptions

- I20 We suggest that:
- I20.1 Transpower report on the viability and benefits of developing measures that better account for the economic impact of interruptions; and
 - I20.2 subject to the outcome of the report on viability and benefits, Transpower provide a development programme for economic impact measures, including milestones with clear deliverables.
- I21 The suggested initiatives aim to enable Transpower to develop better targeted service performance requirements that can be used to inform its asset criticality framework.
- I22 Transpower has proposed grid output measures that use categorisations predominantly based on the size of the load or generation and the significance (national importance) of the service at a particular connection point. This provides a relatively coarse range of service performance requirements. Including the economic impact of interruptions at a connection point level would help create a more granular view of level of service performance requirements.³⁵²

Performance measures development initiatives

- I23 In this section, we discuss:
- I23.1 the nine performance measure development initiatives (PMD1 to PMD9);
 - I23.2 the reporting for the performance measure development initiatives; and
 - I23.3 our reasons for retaining the three additional other measures (PMD7 to PMD9) we proposed in our draft decision.

We recommend nine performance measure development initiatives for RCP2

- I24 We recommend that Transpower considers developing nine performance measures (measures) in RCP2. These consist of six that Transpower proposed and three that we have included as a result of consumer demand.
- I25 Transpower proposed six ‘other measures’ for RCP2.³⁵³ These measures are coded OM1 to OM6 in Transpower’s proposal and reflect aspects of Transpower’s performance that are important to consumers.³⁵⁴

³⁵² Partna report, paragraphs 42-45.

³⁵³ Transpower “Expenditure Proposal for Regulatory Control Period 2” (2 December 2013), pp. 129-130.

- 126 Transpower has undertaken to develop these measures further and may propose them as additional grid output measures for RCP3.³⁵⁵
- 127 In addition to these six other measures proposed by Transpower, we added three other measures (PMD7 to PMD9) in our draft decision.³⁵⁶ We included these additional measures due to the submissions we received on our Issues paper, our evaluation of Transpower's proposal and Partna's findings.
- 128 Transpower accepted PMD8 but submitted that it rejects PMD7 and PMD9 because it is already required to report on these through other regulations. We recommend that Transpower considers them further for the reasons presented later in this section.
- 129 In response to our draft decision, Transpower submitted that the PMD1 to PMD6 do not fit the Capex IM definition of grid output measures and therefore they should be treated as development initiatives.³⁵⁷ Although we do not agree with Transpower's submission, we have decided to treat these as performance development initiatives rather than grid output measures.
- 130 We do not accept Transpower's criticism that the nine other measures do not fit the Capex IM definition of grid output measures as part of the grid output measures framework under the Capex IM. Transpower concedes (at least for some of the other measures) that they could be grid output measures in the future but considers development is required to establish the best measurement approach and to capture baseline information.
- 131 We consider that it is not always necessary to have identified a metric for measuring before prescription as a grid output measure is available. Prescription of a fully dimensioned measure, with specified metrics, might be appropriate where the purpose of imposing reporting obligations (via information disclosure requirements) is simply to capture baseline information.
- 132 However, it may be that prescription as a grid output measure, combined with flexibility about the measurement metric in associated information disclosure requirements, provides the most useful mechanism for developing a preferred measurement approach at some point in the future.

³⁵⁴ Transpower "Expenditure Proposal for Regulatory Control Period 2" (2 December 2013), p. 129.

³⁵⁵ Transpower "Response to IPP Issues Paper" (3 March 2014), p. 52. However, on page 64 Transpower mentions that the set of grid output measures should be adaptive rather than additive.

³⁵⁶ We now refer to them as PMD7 to PMD9 respectively.

³⁵⁷ Transpower "Response to IPP draft decision" (3 March 2014), section 6.3.1.

- I33 The Capex IM clearly contemplates the potential incorporation of other measures as part of the grid output measures framework. Clause 2.2.2(1)(e) provides the ability for the Commission to determine one or more performance-based measures, asset capability grid output measures, and asset health grid output measures to which the (revenue-linked) grid output mechanism will not apply. The reasons paper commentary sitting behind the Capex IM expands on this noting:
- I33.1 Transpower may propose both revenue-linked grid output measures, but may also propose other measures;
 - I33.2 we will then determine which measures, or others as we see fit, to apply; and
 - I33.3 measuring performance and linking this to revenue, as well as disclosing other measures, will provide incentives to balance cost/quality trade-offs.³⁵⁸
- I34 Whether the other measures proposed by Transpower (and the further three we suggested) should be incorporated as grid output measures in for the 2015-2020 individual price-quality path is for us to determine in light of the Capex IM framework, applying the relevant evaluation criteria.

Reporting on the nine performance measure development initiatives

- I35 A summary of the reporting requirements is in Table I1 above. We recommend that Transpower reports on these measures to inform interested parties about:
- I35.1 the status of the specification of the measures;
 - I35.2 the results of customer and consumer consultations;
 - I35.3 the state of the information systems to provide inputs to quantify the measures; and
 - I35.4 how actual performance is tracking against the targets of measures with targets.
- I36 In our draft decision we proposed that Transpower report its performance against the other measures through the individual price-quality path. In response, Transpower submitted that these measures should not be codified in the individual price-quality path because codifying them will impair Transpower's ability to further develop these measures.

³⁵⁸ Capex IM Reasons paper, par 3.4.

- 137 We agree with Transpower that codifying the reporting requirements may hinder Transpower's ability to develop these measures in the manner that will reflect consumer demands. We therefore recommend the reporting requirements to allow for appropriate development.
- 138 Apart from reporting progress on development of these initiatives, we recommend that Transpower also reports on the information shown in Table I2 below.

Table I2: Suggested reporting on performance measure development initiatives

Performance measure development initiative		Suggested reporting
PMD1	Time to provide initial information following an unplanned interruption.	<ul style="list-style-type: none"> • The percentage of unplanned interruptions where Transpower contacted affected customers within 15 minutes. • The maximum time taken by Transpower to contact an affected customer.
PMD2	Time to provide updated information following an unplanned interruption.	<p>For unplanned interruptions that were not restored within 30 minutes:</p> <ul style="list-style-type: none"> • the percentage of interruptions where Transpower updated affected customer within 30 minutes; • the maximum time taken by Transpower to update an affected customer; • the number of affected customers that were not updated.
PMD3	Accuracy of notified restoration times following unplanned interruptions.	<p>The percentage of unplanned interruptions that were restored:</p> <ul style="list-style-type: none"> • within 10 minutes of the advised estimated restoration time; • within 30 minutes of the advised estimated restoration time; • more than 30 minutes after the advised estimated restoration time.
PMD4	Extent that Transpower meets planned outage restoration times.	<p>The percentage of planned outages where:</p> <ul style="list-style-type: none"> • the end time was after the planned end time; • the end time was more than 30 minutes after the planned end time; • actual end time was over 30 minutes earlier than planned end time.
PMD5	Extent that Transpower places customers on 'N' security.	<ul style="list-style-type: none"> • The percentage of time that each point of service was reduced to N-security. • The number of hours a point of service was on N-security.

Performance measure development initiative		Suggested reporting
PMD6	Number of unplanned momentary (of less than one minute) interruptions.	The number of momentary interruptions: <ul style="list-style-type: none"> • at each point of connection; • by category.
PMD7	Energy not supplied for each point of service for each unplanned interruption. ³⁵⁹	For each unplanned interruption including interruptions caused by AUFLS: <ul style="list-style-type: none"> • the estimated unserved energy (MWh) by point of service for the interruption; • the date, time and duration of the interruption; • where unserved energy for the interruption is greater than 0.5 system minutes: <p style="margin-left: 40px;">the reasons for the interruption;</p> <p style="margin-left: 40px;">Transpower's response to the interruption; and</p> <p style="margin-left: 40px;">any changes to Transpower's policies or standards as a result of the interruption.</p>
PMD8	Extent that Transpower meets planned outage start times for critical circuits and equipment.	For all planned outages of selected HVDC circuits and components of the HVDC links: ³⁶⁰ <ul style="list-style-type: none"> • the percentage of outages that the start time was within 30 minutes of the planned start time; • the percentage of outages that the start time was more than 60 minutes after the planned start time.
PMD9	Extent that Transpower provides its reports to affected parties on unplanned interruptions within 15 working days of the interruption. Transpower will report any exceptions on the number of times it did not meet the timeframe.	<ul style="list-style-type: none"> • The number of unplanned interruptions where Transpower did not provide a report within 42 working days to affected customers. • The percentage of unplanned interruptions where Transpower did not provide a report within 42 working days to affected customers.

³⁵⁹ This measure concerns 'unplanned interruptions' rather than 'all interruptions' which could be inferred from our draft reasons paper.

³⁶⁰ The selected HVDC circuits are listed in the individual price-quality path determination.

Consumers have asked for measures PMD7, PMD8 and PMD9

PMD7 measure links interruptions and the cost of interruptions

- I39 We recommend that, via PMD7, Transpower reports the estimated unserved energy due to unplanned interruptions until Transpower develops an appropriate measure that provides the financial impact of interruptions to customers and consumers. This measure complements the ‘understanding the economic impact of interruptions’ initiative described above.
- I40 We also recommend that Transpower explores the feasibility of estimating VoLL for each category of points of service so that, for the grid output measures in RCP3, it can set incentive rates that are linked with VoLL.
- I41 Transpower has submitted that it rejects our proposed measure PMD7 because it is already required to provide an estimate of unserved energy as part of its post event reports to customers.³⁶¹ We further note that, while Transpower may be disclosing an estimate of unserved energy, it is not making this publically available so that all interested consumers have access to this data.³⁶²
- I42 For the reasons set out below, we recommend that Transpower reports the estimated unserved energy along with its GP1 reporting.
- I42.1 Transpower’s customers have told Transpower that knowing the economic impact of interruptions is important to them.³⁶³
- I42.2 Submitters reiterated their desire for reporting on the financial impact of interruptions on consumers, in response to our Issues paper.³⁶⁴ Such submissions indicate that the information on financial impact of interruptions that Transpower currently provides does not meet the requirements of the affected consumers.
- I42.3 Our independent advisor, Partna, also identified that the need for measures that quantify the economic impact of interruptions and market impact of outages was raised by stakeholders throughout Transpower’s consultation on quality measures.³⁶⁵

³⁶¹ Transpower ‘Response to IPP draft Reasons’ (27 June 2014), p. 53.

³⁶² Transpower has submitted that it does need to provide this information because it is requested by a party that is no longer a direct transmission customer. Transpower ‘Response to IPP draft Reasons’ (27 June 2014), p. 53, note 110.

³⁶³ Transpower ‘Expenditure Proposal Regulatory Control Period 2 (December 2013), p. 122.

³⁶⁴ Carter Holt Harvey “Transpower RCP2 submission” (3 March 2014), answer to Q30.

³⁶⁵ Partna Consulting Group “Review of Transpower’s Proposed Quality Measures” (April 2014), p. 15.

- I42.4 Partna has identified that, compared to international practice, a measure revealing the financial impact of interruptions is missing from Transpower's suite of measures and recommended measures that directly monitor the economic impact of interruptions on customers.³⁶⁶
- I42.5 In our draft decision we included a business development initiative titled 'understanding the economic impact of interruptions'. We consider that PMD7 is an intermediary measure until Transpower develops a more appropriate measure for understanding the economic impact of interruptions.

Performance measure development initiative PMD8

- I43 We note that Transpower has accepted developing this measure along with its PMD4.
- I44 This measure is related to the initiative titled 'Assessing the market impact when planning outages.' We suggest that:
- I44.1 Transpower develop processes to optimise the timing of planned outages, taking into account the market impact of the outages, and to include the monitoring of the forecast market impact against actual market impact at the time of outage; and
- I44.2 Transpower provide annual reports on the development of the processes to optimise the timing of planned outages, as well as the data on the forecast against actual market impacts.
- I45 This was identified as a potential development area by Partna.³⁶⁷ Market impacts of outages are a metric that is used for other TNSPs overseas.
- I46 The timing of outages can have a significant impact on the market and energy costs. Ultimately, consumers will pay for any increases in costs. Optimising the timing of these outages to reduce the impacts on the market will benefit the consumers.

³⁶⁶ Partna Consulting Group "Review of Transpower's Proposed Quality Measures" (April 2014) p. 6.

³⁶⁷ Partna report, paragraphs 42-45.

PMD9 monitors an element of customer satisfaction

- I47 Carter Holt Harvey submitted that we should include a measure for customer satisfaction as recommended by Partna.³⁶⁸ MEUG also cross-submitted that this be included either as a performance measure or business development initiative.³⁶⁹
- I48 We will not include a measure for customer satisfaction for RCP2. This is because Transpower has stated that it will disclose the results of its customer satisfaction survey on its website, as quoted below. We consider that this commitment by Transpower will provide interested parties with relevant information on customer satisfaction. Transpower states:
- We currently share the results of our customer satisfaction survey with our customers (in an aggregated form). We have no objection to publishing the results of this survey and propose to disclose this information (in an aggregated form) on our website. We do not consider that it would be appropriate to make this a requirement of ID and in particular we would not support a prescriptive format for the disclosure.³⁷⁰
- I49 During RCP2, we intend to monitor Transpower’s disclosure and may require formal reporting from RCP3 if consumers are still not satisfied with Transpower’s voluntary disclosure.
- I50 In our draft decision we proposed PMD9 which is related to ‘customer satisfaction’. PMD9 monitors the number of times Transpower fails to provide a report on unplanned interruptions to its customers within a reasonable time following the unplanned interruption.
- I51 PMD9 will incentivise Transpower to provide appropriate reports on interruptions to supply to affected parties within a reasonable time frame following an interruption. Consumers indicated that they wanted Transpower to regularly report on how it was performing in terms of GP1, GP2, PMD5 and PMD6.³⁷¹
- I52 We consider that regular additional reporting on these measures is not very useful. Instead we consider that it is more useful to consumers and interested parties for Transpower to report, in a timely manner, explaining the reasons for any interruptions and the corrective actions that Transpower has taken or plans to take.

³⁶⁸ Carter Holt Harvey “Submission on draft decision – Transpower’s Individual price-quality path for 2015-2020” (27 June 2014); p. 1.

³⁶⁹ MEUG “Transpower individual price-quality path cross submission” (11 July 2014); par. c(iii).

³⁷⁰ Transpower “Transpower Information Disclosure regulation: cross-submission” (27 January 2014); p. 2.

³⁷¹ Carter Holt Harvey “Transpower RCP2 submission” (3 March 2014), Q22 and Q30.

We expect that this will assure affected consumers that Transpower is focused on resolving supply issues that affect them.

- I53 Transpower has submitted that it rejects PMD9 on the basis that it is already required to provide post event reports to customers within 42 days. Consequently, we have revised the timeframe to 42 days.
- I54 We recommend that Transpower considers an appropriate measure that reflects this aspect of consumer demands. We consider that such a measure will complement Transpower's move towards being a more customer focused business and may help Transpower identify aspects of customer service it needs to focus on.
- I55 Carter Holt Harvey submitted that PMD9 should specify the contents on the report that Transpower provides to its customers.³⁷² We have decided not to include any requirement on the report except to specify that Transpower should provide an appropriate report. Our reasons are that:
- I55.1 assessing the contents of the report for compliance will be too intrusive; and
 - I55.2 the contents of the report can be agreed between Transpower and its customers or affected consumers.

Business improvement initiatives

- I56 We recommend that Transpower develops the following business processes.
- I56.1 Improve processes, polices and data maturity that underpin expenditure forecasts.
 - I56.2 Improve the cost estimating processes
 - I56.3 Undertake economic evaluation of policies.
 - I56.4 Undertake strategies to mitigate resource availability risks.
- I57 We provide further details on these below.

³⁷² Carter Holt Harvey "Submission on draft decision – Transpower's Individual price-quality path for 2015-2020" (27 June 2014); p. 1.

Improving processes, policies and data maturity that underpin expenditure forecasts

- I58 We suggest that:
- I58.1 Transpower continues to develop its systematic business processes as part of implementing its Maximo asset management information system to enhance its risk-based approach to asset management;
 - I58.2 Transpower documents unsystematic interventions in decision-making, the reasons for the interventions and subsequent changes made yearly to models or data. Further, changes in risk profile from such interventions should be identified, justified and reported on the same basis;
 - I58.3 Transpower develops processes to verify the inputs for its models, both source data and modelled data; and
 - I58.4 Transpower develops a set of guidelines for quantitative analysis that are used in the development of forecasts and proposals.
- I59 We consider that the suggested initiatives will help address areas of concern identified in the RCP2 documentation.
- I59.1 The processes by which the forecast expenditure for the proposal was established showed evidence of a lack of robustness, repeatability and quality review in some areas. Some of the decision-making appears to have been unsystematic and undocumented.
 - I59.2 Transpower identified integrated works planning as an initiative for the current regulatory period. This involved implementing formal policies and processes for managing, monitoring and prioritising expenditure.³⁷³ During our review of the expenditure proposal, the degree of formality in integrating work programmes was unclear.
 - I59.3 The inclusion of a challenge process when setting the expenditure forecasts is a significant improvement. However, the minutes of challenge meetings provided by Transpower did not provide details of which expenditure was subject to challenge, nor of the nature of challenges actually made. A number of decisions appear to have been made outside of the asset health models and it is unclear how these decisions were fed back into the models to improve the models.³⁷⁴

³⁷³ Transpower “Business Improvement Initiatives” (March 2012)

³⁷⁴ Strata report, paragraphs 243-247.

- I59.4 Transpower has used asset management models to prioritise capital work at the fleet level. However, in the final programme of work, on which the expenditure proposal was based, management appeared to have intervened in the prioritisation process of a number of projects. This intervention was unsystematic. We suggest Transpower reviews the reasons that interventions were made and use that information to change or recalibrate models or review data sources. This should reduce the number of interventions over time.

Improvements in the cost estimating process

I60 We suggest that:

- I60.1 Transpower develops a programme for updating and reviewing its cost estimation system, TEEs, with the development programme for TEEs to include milestones with clear deliverables;
- I60.2 Transpower carries out regular audits to ensure the programme is being met and the processes are being complied with;
- I60.3 Transpower provides annual reports on the progress against the development programme, including the reasons for any significant changes in the programme; and
- I60.4 Transpower provides annual reports on the variance between BC1+ and BC3 estimates and between BC3 estimates and the actual cost.³⁷⁵ The variances are expected to narrow over time as the estimation process improves.

I61 We consider that these suggested initiatives will address areas of concern that were identified with the RCP2 documentation.

- I61.1 We have identified a number of issues with the cost estimation system, and are not very confident in the outputs from the estimating model in a number of areas. There is insufficient evidence to show that Transpower is using the system for the majority of its projects. Also there does not appear to be a consistent approach to reviewing actual costs and recalibrating the models.³⁷⁶
- I61.2 The majority of expenditure in the current proposal is based on first level business cases. There needs to be confidence that these are reasonable estimates of the actual costs.

³⁷⁵ BC refers to business case.

³⁷⁶ Strata report, paragraph 229-233.

- I61.3 One of the RCP1 initiatives was the comparison of its business case estimates (ie, BC1(+) and BC3 estimates) against actual costs. This was to be used as a measure of the estimating accuracy and for updating of models if required. From the information it provided, Transpower appears to have only done this on a sporadic basis.

Undertaking economic assessments

I62 We suggest that:

- I62.1 Transpower identifies policies and design standards that directly affect expenditure;
- I62.2 Transpower develops a programme for economic assessments of the identified policies, standards, and models. The development programme should include milestones with clear deliverables for the initial economic assessment and future reviews; and
- I62.3 Transpower documents the completed economic assessments.

I63 We consider that these suggested initiatives will address the following areas of concern that were identified with the RCP2 documentation.

- I63.1 Transpower has strategies, policies, design standards, asset management models and business cases that it uses to determine the need, the timing, and the scope of work. We would expect that these are supported by appropriate economic assessments to ensure that it is making the optimal decisions.
- I63.2 Transpower has done economic assessments in some areas. However, there are a number of areas where there is insufficient evidence to show that Transpower has undertaken such assessments. This could lead to Transpower making less than optimal investment decisions.
- I63.3 There are a number of areas where the timing of projects has been set using models or policies, or even subjective decisions. In many cases it appears an economic assessment was not done.
- I63.4 Transpower has offered no tangible benefits assessment for its proposed ICT expenditure.³⁷⁷ It is therefore difficult to be sufficiently certain about what benefits customers will see from the investment in terms of operational savings for the same or higher service levels.

³⁷⁷ Strata report, paragraphs 500-502, and 512-515.

Mitigating resource availability risks

I64 We suggest that:

- I64.1 Transpower undertakes regular long-term forecasting of resource requirements against availability and develops mitigation plans to address any resource shortfall;
- I64.2 Transpower assesses the effects on service levels and the economic effects of changes in forecasts due to resource constraints; and
- I64.3 Transpower provides annual reports on resource requirement against availability, any issues that have been identified, the mitigation strategies, and the economic effects of any shortfalls.

I65 We consider that suggested initiatives will help address the following areas of concern identified in the RCP2 documentation.

- I65.1 Lack of resource has been cited as a reason for Transpower's inability to deliver some capex and opex work in RCP1. This is a general issue, but in some specific areas (such as tower painting) the issue is significant.
- I65.2 In particular, Transpower has identified lack of labour resource as the main reason for its inability to deliver the optimal programme for tower painting.³⁷⁸
- I65.3 Steps have been taken to address the shortfall. However, Transpower has indicated to the Commission that in RCP2 it may still not have enough resources to meet the work required to maintain the optimal risk profile in this fleet. This is causing the backlog in required work to grow.

³⁷⁸ Strata report, paragraph 363.

Attachment J: Summary of decisions required by the Capex IM

- J1 Table J1 below sets out a summary of the decisions the Capex IM requires us to make by 29 August 2014.³⁷⁹
- J2 Definitions for bolded terms contained within this table are as set out in either the Transpower IM or Capex IM, or as listed below Table J1.

Table J1: Summary of decisions required by the Capex IM

Capex IM requirement	Decision
Base capex allowance (nominal)	<p>For disclosure year 1 July 2015 to 30 June 2016: \$235.2 million.</p> <p>For disclosure year 1 July 2016 to 30 June 2017: \$249.5 million.</p> <p>For disclosure year 1 July 2017 to 30 June 2018: \$242.0 million.</p> <p>For disclosure year 1 July 2018 to 30 June 2019: \$231.6 million.</p> <p>For disclosure year 1 July 2019 to 30 June 2020: \$213.1 million.</p>
Base capex incentive rate	33%
Major capex incentive rate	33%

³⁷⁹ See Capex IM, Part 2.

Revenue-linked grid output measures:	
Description of grid output measure	Grid output measure
AP1: HVDC availability (%)	<p>For each disclosure year in the regulatory period: the HVDC energy availability of the HVDC link as a percentage of annual capacity, where the HVDC energy availability of the HVDC link comprising HVDC poles 2 and 3 is calculated as a percentage term in the following manner:</p> $100 - \frac{\sum_{j=0}^N (\text{reduction in capacity due to outage } j) (\text{duration of outage } j \text{ in hours})}{(\text{maximum capacity of HVDC link}) (\text{total number of hours in the disclosure year})} 100$ <p>where: <i>j</i> is the outage that reduced capacity of the HVDC link in the disclosure year <i>N</i> is the total number of outages associated with the HVDC link</p>
AP2: HVAC availability (%)	<p>For each disclosure year in the regulatory period: average percentage of time that the HVAC circuits listed in Schedule G—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014 are available, where the percentage term is calculated in the following manner:</p> $100 - \frac{(\text{total duration (in hours) of all outages on the HVAC circuits listed in Schedule G})}{(\text{number of HVAC circuits listed in Schedule G}) (\text{total number of hours in the disclosure year})} 100$
GP1A: number of unplanned interruptions	For each disclosure year in the regulatory period : total number of unplanned interruptions across all points of service in the high priority category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014).
GP1B: number of unplanned interruptions	For each disclosure year in the regulatory period : total number of unplanned interruptions across all points of service in the important category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014).
GP1C: number of unplanned interruptions	For each disclosure year in the regulatory period : total number of unplanned interruptions across all points of service in the standard category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014).
GP1D: number of unplanned interruptions	For each disclosure year in the regulatory period : total number of unplanned interruptions across all points of service in the generator category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014).

GP1E: number of unplanned interruptions	For each disclosure year in the regulatory period : total number of unplanned interruptions across all points of service in the N-security category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014).
GP2A: average duration (minutes) of unplanned interruptions	For each disclosure year in the regulatory period : average duration (minutes, rounded to the nearest whole minute) of unplanned interruptions at points of service in the high priority category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014), where: <ul style="list-style-type: none"> • average duration is calculated as the total duration of all unplanned interruptions divided by the total number of unplanned interruptions • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
GP2B: average duration (minutes) of unplanned interruptions	For each disclosure year in the regulatory period : average duration (minutes, rounded to the nearest whole minute) of unplanned interruptions at points of service in the important category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014), where: <ul style="list-style-type: none"> • average duration is calculated as the total duration of all unplanned interruptions divided by the total number of unplanned interruptions • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
GP2C: average duration (minutes) of unplanned interruptions	For each disclosure year in the regulatory period : average duration (minutes, rounded to the nearest whole minute) of unplanned interruptions at points of service in the standard category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014), where: <ul style="list-style-type: none"> • average duration is calculated as the total duration of all unplanned interruptions divided by the total number of unplanned interruptions • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.

<p>GP2D: average duration (minutes) of unplanned interruptions</p>	<p>For each disclosure year in the regulatory period: average duration (minutes, rounded to the nearest whole minute) of unplanned interruptions at points of service in the generator category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014), where:</p> <ul style="list-style-type: none"> • average duration is calculated as the total duration of all unplanned interruptions divided by the total number of unplanned interruptions • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
<p>GP2E: average duration (minutes) of unplanned interruptions</p>	<p>For each disclosure year in the regulatory period: average duration (minutes, rounded to the nearest whole minute) of unplanned interruptions at points of service in the N-security category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014), where:</p> <ul style="list-style-type: none"> • average duration is calculated as the total duration of all unplanned interruptions divided by the total number of unplanned interruptions • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
<p>GP3A: duration (minutes) of P90 unplanned interruption</p>	<p>For each disclosure year in the regulatory period: duration (minutes, rounded to the nearest whole minute) of the unplanned interruption that is at the 90th percentile when all unplanned interruptions across all points of service in the high priority category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014) are ranked by duration from shortest to longest, where:</p> <ul style="list-style-type: none"> • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.

GP3B: duration (minutes) of P90 unplanned interruption	<p>For each disclosure year in the regulatory period: duration (minutes, rounded to the nearest whole minute) of the unplanned interruption that is at the 90th percentile when all unplanned interruptions across all points of service in the important category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014) are ranked by duration from shortest to longest, where:</p> <ul style="list-style-type: none"> • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
GP3C: duration (minutes) of P90 unplanned interruption	<p>For each disclosure year in the regulatory period: duration (minutes, rounded to the nearest whole minute) of the unplanned interruption that is at the 90th percentile when all unplanned interruptions across all points of service in the standard category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014) are ranked by duration from shortest to longest, where:</p> <ul style="list-style-type: none"> • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
GP3D: duration (minutes) of P90 unplanned interruption	<p>For each disclosure year in the regulatory period: duration (minutes, rounded to the nearest whole minute) of the unplanned interruption that is at the 90th percentile when all unplanned interruptions across all points of service in the generator category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014) are ranked by duration from shortest to longest, where:</p> <ul style="list-style-type: none"> • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.

GP3E: duration (minutes) of P90 unplanned interruption	<p>For each disclosure year in the regulatory period: duration (minutes, rounded to the nearest whole minute) of the unplanned interruption that is at the 90th percentile when all unplanned interruptions across all points of service in the N-security category (as that category is identified in Schedule F—including mark-ups—of the draft Transpower individual price-quality path determination provided by Transpower to the Commission on 11 July 2014) are ranked by duration from shortest to longest, where:</p> <ul style="list-style-type: none"> • the duration of an unplanned interruption means the elapsed time (in minutes, rounded to the nearest whole minute) from the start of the unplanned interruption until the earlier of either: <ul style="list-style-type: none"> ○ restoration; or ○ seven days after the unplanned interruption started.
AH1: number of towers coated	For each disclosure year in the regulatory period : total number of transmission towers refurbished for asset replacement and/or asset refurbishment .
AH2: number of grillages commissioned	For each disclosure year in the regulatory period : total number of grillages commissioned for asset replacement and/or asset refurbishment .
AH3: number of insulators commissioned	For each disclosure year in the regulatory period : total number of insulators commissioned for asset replacement and/or asset refurbishment .
AH4: number of outdoor circuit breakers commissioned in the regulatory period	For the final disclosure year in the regulatory period : total number of outdoor circuit breakers commissioned during the regulatory period for asset replacement and/or asset refurbishment .
AH5: number of transformers commissioned in the regulatory period	For the final disclosure year in the regulatory period : total number of transformers commissioned during the regulatory period for asset replacement and/or asset refurbishment .
AH6: number of outdoor to indoor conversions commissioned in the regulatory period	For the final disclosure year in the regulatory period : total number of outdoor to indoor conversions commissioned during the regulatory period for asset replacement and/or asset refurbishment .

Description of grid output measure (for each disclosure year unless otherwise specified)	Category / Circuits / Disclosure year	Grid output target	Cap	Collar	Grid output incentive rate (\$000 per unit)
AP1: HVDC availability (%)		98.5	99.5	97.5	1000
AP2: HVAC availability (%)	Selected circuits	99.6	100	99.2	2500
GP1A-E: number of unplanned interruptions	High Priority	2	0	4	606
	Important	9	4	14	242
	Standard	26	21	31	133
	Generator	11	6	16	133
	N-security	56	38	74	10
GP2A-E: average duration (minutes) of unplanned interruptions	High Priority	70	30	110	15
	Important	100	30	170	9
	Standard	65	0	130	5
	Generator	130	50	210	4
	N-security	80	45	115	3
GP3A-E: duration (minutes) of P90 unplanned interruption	High Priority	120	80	160	15
	Important	240	170	310	9
	Standard	130	60	200	5
	Generator	350	260	440	4
	N-security	215	170	260	3
AH1: number of towers coated	2015/16	451	489	413	29.7
	2016/17	529	567	491	29.7
	2017/18	531	569	493	29.7
	2018/19	553	591	515	29.7
	2019/20	564	602	526	29.7
AH2: number of grillages commissioned	2015/16	408	438	378	10.2
	2016/17	408	438	378	10.2
	2017/18	408	438	378	10.2
	2018/19	409	439	379	10.2
	2019/20	409	439	379	10.2
AH3: number of insulators commissioned	2015/16	1526	1630	1422	2.1
	2016/17	1466	1570	1362	2.1
	2017/18	1402	1506	1298	2.1
	2018/19	1315	1419	1211	2.1
	2019/20	1380	1484	1276	2.1
AH4: number of outdoor circuit breakers commissioned in the regulatory period	2019/20	155	166	144	51.8

AH5: number of transformers commissioned in the regulatory period	2019/20	26	28	24	1370
AH6: number of outdoor to indoor conversions commissioned in the regulatory period	2019/20	16	17	15	2710
Grid output measures to which the grid output mechanism will not apply:					
Description of grid output measure (for each disclosure year)	Grid output measure				
AH1RL: change in remaining life (years) of tower coating	For each disclosure year in the regulatory period : the difference in the average remaining life (years, specified to three decimal places) of the tower coating of transmission towers, within Transpower's asset replacement and asset refurbishment programme, between that which exists at the end of the current disclosure year and that which existed at the end of the preceding disclosure year .				
AH4RL: change in remaining life (years) of outdoor circuit breakers	For each disclosure year in the regulatory period : the difference in the average remaining life (years, specified to three decimal places) of outdoor circuit breakers, within Transpower's asset replacement and asset refurbishment programme, between that which exists at the end of the current disclosure year and that which existed at the end of the preceding disclosure year .				
AH5RL: change in remaining life (years) of transformers	For each disclosure year in the regulatory period : the difference in the average remaining life (years, specified to three decimal places) of transformers, within Transpower's asset replacement and asset refurbishment programme, between that which exists at the end of at the end of the current disclosure year and that which existed at the end of the preceding disclosure year .				
CPI & FX:					
Forecast CPI used to determine base capex allowances	For disclosure year 1 July 2015 to 30 June 2016: 1.80% For disclosure year 1 July 2016 to 30 June 2017: 2.09% For disclosure year 1 July 2017 to 30 June 2018: 2.06% For disclosure year 1 July 2018 to 30 June 2019: 2.03% For disclosure year 1 July 2019 to 30 June 2020: 2%				

Forecast FX rates used to determine the base capex allowances	<p>USD/NZD: For disclosure year 1 July 2015 to 30 June 2016: 0.79 For disclosure year 1 July 2016 to 30 June 2017: 0.77 For disclosure year 1 July 2017 to 30 June 2018: 0.76 For disclosure year 1 July 2018 to 30 June 2019: 0.74 For disclosure year 1 July 2019 to 30 June 2020: 0.72</p> <p>EUR/NZD: For each disclosure year in the regulatory period: 0.57</p> <p>GBP/NZD: For each disclosure year in the regulatory period: 0.47</p> <p>AUD/NZD: For each disclosure year in the regulatory period: 0.79</p> <p>JPY/NZD: For each disclosure year in the regulatory period: 61.28</p> <p>SEK/NZD: For each disclosure year in the regulatory period: 5.1</p> <p>CAD/NZD: For each disclosure year in the regulatory period: 0.71</p>				
Amount/percentage of base capex allowances to which forecast FX rates may apply (nominal commissioned \$millions NZD)					
Currency	2015/16	2016/17	2017/18	2018/19	2019/20
NZD not exposed to FX	181.0	189.0	183.0	175.7	162.7
NZD exposed to FX	28.9	29.8	30.1	27.3	25.5
USD/NZD	18.1	21.2	20.7	20.0	17.7
EUR/NZD	5.9	8.1	6.8	7.3	5.9
GBP/NZD	0.1	0.1	0.1	0.1	0.1
AUD/NZD	0.3	0.3	0.3	0.3	0.3
JPY/NZD	0.4	0.4	0.4	0.4	0.4
SEK/NZD	0.5	0.6	0.6	0.5	0.5
CAD/NZD	-	-	-	-	-
Total	235.2	249.5	242.0	231.6	213.1

J3 Definitions for bolded terms contained within the revenue-linked grid output measures, or the grid output measures to which the grid output mechanism will not apply, are as set out in either the Transpower IM or Capex IM, or as listed below:

- J3.1 **category** means a group of **points of service** identified by reference to a characteristic of service (high priority, important, standard, generator, or N-security);
- J3.2 **customer** means any generator, distribution business, **consumer**, or other entity in New Zealand that is connected, or applies to be connected, to the **grid**;

- J3.3 **HVAC** means high voltage alternating current;
- J3.4 **HVDC** means high voltage direct current;
- J3.5 **HVDC link** has the same meaning as defined in the **code**;
- J3.6 **HVDC pole** means an **HVDC** system circuit between Benmore and Haywards comprising the converter stations at Benmore and Haywards and the **HVDC** transmission circuit between them, carried on **HVDC** overhead line and undersea cable, connecting the converter stations;
- J3.7 **interruption** means the cessation of conveyance of electricity from **grid** assets owned by **Transpower** to the assets owned or operated by a **customer** at a **point of service** to the **grid**;
- J3.8 **outage** has the meaning set out in clause 12.130 of the **code**, as amended from time to time, other than as specified in sub clauses 12.130(2)(c) and 12.130(2)(d) of the **code**, and excludes those that are:
- J3.8.1 of less than one minute duration;
 - J3.8.2 at the request of, or caused by, a **customer**; and
 - J3.8.3 due to correct operation of **Transpower**'s assets caused by events in the **customer**'s assets
- J3.9 **point of service** has the same meaning as defined in the **code**;
- J3.10 **restoration**, to a **customer**, means:
- J3.10.1 for generators:
 - J3.10.1.1 when the generator circuit breaker is closed; or
 - J3.10.1.2 the generator is notified that **Transpower** equipment has been returned to service and is available for generation to be reconnected; or
 - J3.10.1.3 operational control for connecting the **Transpower** assets is returned to the generator; and
 - J3.10.2 for **customers** other than generators:
 - J3.10.2.1 when the first feeder is closed, if feeder circuit breakers have been opened; or
 - J3.10.2.2 when the supply bus is relivened, if feeder circuit breakers have remained closed after the interruption; or

- J3.10.2.3 75% of the load is returned to service by way of a backfeed within the customer's system or by generators; or
 - J3.10.2.4 when Transpower has readied all its equipment and has made reasonable efforts to advise the customer that the equipment can be returned to service;
- J3.11 **unplanned interruption** means any **interruption** for a period of one minute or longer in respect of which less than 24 hours' notice, or no notice, was given, either to the public or to **customers** affected by the **interruption**, and
- J3.11.1 for **unplanned interruptions** at **points of service** in the generator **category** excludes any:
 - J3.11.1.1 **unplanned interruptions** originating on another party's system and where the **Transpower grid** operated correctly;
 - J3.11.1.2 **unplanned interruptions** to the auxiliary load used for internal purposes by electricity generators;
 - J3.11.2 for **unplanned interruptions** at **points of service** in anything other than the generator **category**, excludes any:
 - J3.11.2.1 load restrictions achieved completely by the use of controllable load, interruptible load or demand-response;
 - J3.11.2.2 automatic under-frequency load-shedding;
 - J3.11.2.3 **unplanned interruption** originating on another party's system and where the **Transpower grid** operated correctly;
 - J3.11.2.4 **unplanned interruption** for which all load is supplied by a backfeed or by embedded generation.

Attachment K: Terms used in this paper

Term	Meaning
AH	Asset health
AP	Asset performance
AUFLS	Automatic under-frequency load shedding
Base capex	Base capital expenditure
Capex	Capital expenditure
Capex IM	<i>Transpower Capital Expenditure Input Methodology Determination [2012] NZCC2</i>
The Commission	Commerce Commission
CPI	Consumers price index
DR	Demand response
DRMS	Demand response management system
E&D	Enhancement and development
EV	Economic value
FTE	Full time equivalent
FX	Foreign exchange
GAAP	Generally Accepted Accounting Principles
GEIP	Good Electricity Industry Practice
GP	Grid performance
GRS	Grid reliability standards
HILP	High impact low probability
HVAC	High voltage alternating current
HVDC	High voltage direct current
ICT	Information and communications technology
IRIS	Incremental Rolling Incentive Scheme
IST	Information and systems technology
LCI	Labour Cost Indices
LME	London Metal Exchange
MAL	Monetary Authority Law
MAR	Maximum allowable revenue
MEUG	The Major Energy Users' Group
MWh	Megawatt hour
NIGU	North Island Grid Upgrade
NZIER	New Zealand Institute of Economic Research
Opex	Operating expenditure
Partna	Partna Consulting Limited
PB	Parsons Brinckerhoff
PTA	Policy Targets Agreement
R&R	Replacement and refurbishment
RAB	Regulatory Asset Base
RRL	Risk Reinsurance Limited
RTU	Remote terminal units
SMS	Substation management system
SPS	System Protection Scheme

Strata	Strata Energy Consulting Limited
TNSP	Transmission network service providers
TCSD	Term credit spread differential
TPM	Transmission Pricing Methodology
Transpower	Transpower New Zealand Limited
Transpower IMs	<i>Transpower Input Methodologies Determination</i> [2012] NZCC 17
VoLL	Value of lost load
WACC	Weighted average cost of capital