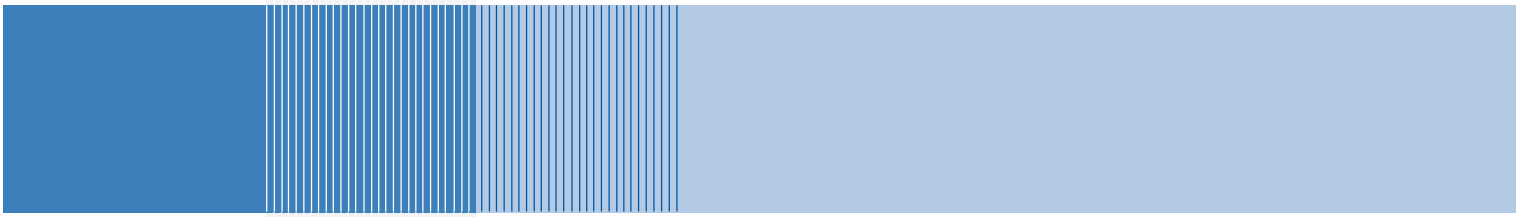
6 August 2010

Treatment of Operating Costs

A Report for Meridian



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1. Introduction

This report has been prepared by NERA Economic Consulting (NERA) at the request of Meridian Energy Limited (Meridian). Its subject is the approach taken by Transpower New Zealand Limited (Transpower) to the allocation between HVDC (DC) and HVAC (AC) customers of a benchmark allowance for operating costs, as set for it by the Commerce Commission (the Commission).

The establishment of a benchmark allowance arose in the context of the Commission's decision on 13 May 2008 to accept an Administrative Settlement proposal (the Administrative Settlement)[1] from Transpower in respect of breaches of the thresholds set under Part 4A of the *Commerce Act 1986*.[2] A feature of the Administrative Settlement was that the level of operating costs to be included in the calculation of Transpower's required revenue from that point forward was to be determined by reference to a 'base amount' of $199.61 million in the 2006/07 year, to be escalated annually at the rate of consumer price inflation.[3]

De-coupling Transpower's 'outturn' operating costs from the setting of this aspect of its annual revenue requirement provided it with an incentive to improve its operating cost efficiency, since:[4]

- if it was able to reduce its operating costs below the benchmark allowance, then it would be entitled to retain the additional profits arising from that out-performance; and
- if its outturn operating costs exceeded the benchmark allowance, then it would not be entitled to recover this over-run from customers.

One feature of the Administrative Settlement was that it did *not* establish separate operating cost thresholds for HVAC (AC) and HVDC (DC) customers (or for AC and DC assets).[5] Rather, it was left to Transpower to determine how to allocate the benchmark allowance between these two customer groups from year to year. Transpower contends to have made that allocation by employing a 'causer pays' principle, so as to promote 'allocative efficiency'. Specifically, in a letter to Meridian, Mr Howard Cattermole, General Manager Corporate Services, claims that: [6]

> '[T]he primary purpose of the operating cost regulation was to allow Transpower to recover a level of operating costs consistent with efficient outcomes. To achieve this, we determined that as far as possible customer charges should reflect actual costs.

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1 Commerce Commission, *Decision and Reasons for Not Declaring Control of Transpower New Zealand Limited & Decision to Reset Transpower's Thresholds*, 13 May 2008 (hereafter: 'Administrative Settlement').

2 Part 4A of the *Commerce Act 1986* has since been repealed and replaced with Part 4 of the *Commerce Amendment Act 2008*.

3 Administrative Settlement, pp.73-77.

4 Administrative Settlement, p.74.

5 Administrative Settlement, p.77.

6 Letter from Howard Cattermole, General Manager Corporate Services for Transpower, 'Re Economic Value Accounts, 28 June 2010.

> Accordingly, the methodology adopted was to (ex post) adjust the recovery of the operating cost allowance to *best reflect the causers of the operating costs. Economically, this is consistent with allocative efficiency*.' (emphasis added)

We have been asked by Meridian Energy Limited (Meridian) to consider the way that Transpower has undertaken that apportionment, and the appropriateness of the underlying 'causer pays' principle for that purpose. In particular, we have been asked whether the methodology is consistent with what would be observed in a workably competitive market and whether it can be expected to deliver allocative efficiency benefits in the manner intended. The remainder of this report is structured as follows:

- **section two** describes the basic economics of causer- or user-pays prices, including the circumstances in which such prices can be anticipated to enhance the allocative efficiency of markets;
- **section three** details the approach that Transpower has employed to allocate its annual operating cost benchmark during the course of the Administrative Settlement and the attendant consequences for AC and DC customers;
- **section four** considers whether the outcome of Transpower's allocation methodology is consistent with what one might expect to observe in a workably competitive market, and the attendant consequences for allocative efficiency; and
- **section five** concludes.

2. 'Causer Pays' Pricing

In workably competitive markets, the principal mechanism for achieving allocative efficiency[7] is through *price signals*. Prices in such markets generally are set by reference to the quantity of a good or service that is consumed, and to the costs associated with its provision. More specifically, prices tend to reflect the *efficient costs* that producers are caused to incur to provide the good or service to a *particular customer*. Market forces will act to preclude prices that are set in a materially different way, ie:

- if a business tries to set a price so as to recover costs that had not been efficiently incurred, it will lose business to its rivals and be forced either to improve its cost efficiency to reduce its price, or to the exit market;
- if a business tries to set a price that includes the costs associated with serving *other customers*, it will lose sales and be forced either to reduce its price or to exit the market; and
- if a business sets a price *below* the costs associated with supplying customers, unless it is able to improve its cost efficiency, it will not produce sufficient revenue to remain a going concern and will be forced to the exit market.

From the perspective of consumers, they will only purchase a good or service if they perceive that the obtainable benefits will outweigh the price they must outlay, which will in turn reflect the costs imposed upon the supplier. Signalling to consumers the consequences of their consumption decisions drives the crucial resource allocation function of workably competitive markets, ie:

- if the demand for a good or service at the current market price exceeds the available supply, then more resources (labour, land and capital) will be diverted to increase the production of that good or service; and
- if the supply of a good or service at the current market price exceeds demand, then resources will be re-allocated to the production of *other* goods and services that consumers value more highly.

The resulting price signals are therefore able to deliver an allocation of goods and services that consumers want to buy, at prices that will cover the efficient costs of production and that consumers will be willing to pay. For this reason, regulators tasked with applying economic regulation so as to *replicate* the outcomes of workably competitive markets will generally require regulated prices to be set in precisely this manner. Specifically, the regulated price for a customer will generally be established so as to reflect (as far as possible) the efficient costs that a producer is caused to incur to provide the regulated service to that customer.

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[7] Allocative efficiency is a measure of the extent to which the resources in a market have been used to produce the goods and services that consumers demand and value most. Allocative efficiency is achieved when it is not possible to re-allocate the allocation of resources (so as to produce a different mix of goods and services) to make someone better off without making someone else worse off as a consequence. For example, monopoly prices harm allocative efficiency because they result in reduced production of goods or services for which there would be positive demand at a more competitive price.

In contrast, charging customers prices that bear *little or no resemblance* to the efficient costs of supply are likely to give rise to allocative *inefficiency*. Consider a stretch of road that is prone to congestion during rush hours. Presently, there is almost no connection between the charges levied upon most New Zealand motorists and their use of the road network.[8] Consequently, motorists pay little attention to the costs their decision to drive will cause others to incur, including the costs of congestion and any negative environmental externalities.[9] Because these additional costs are not signalled in any way, over-consumption is likely to result, ie, motorists may obtain fewer benefits than the costs they impose (particularly at congested times of the day).

This inefficient over-consumption is potentially addressed by levying a cost-reflective congestion charge on motorists that elect to travel along the road during peak periods. Once faced with a price that reflects the true cost of their conduct, road users could then decide whether the benefits of travelling that route at that time outweigh the costs and, if necessary, *change their behaviour* in a socially beneficial way. Specifically, they will choose either:

- to take action to reduce or avoid the impact of the congestion charge by travelling at another time or by a different route; or
- to pay a charge equivalent to that cost which can be used to compensate the other parties (in the event that the benefits are perceived to outweigh the costs).

To summarise, prices that reflect the *efficient costs* associated with supplying a good or service to *particular consumers* enhance allocative efficiency by signalling to those consumers the costs associated with particular consumption decisions. Purchases will only be made if consumers consider that the obtainable benefits outweigh the price. Those consumption decisions then drive the crucial resource allocating function of the market. Appropriately defined 'causer'- or 'user-pays' prices can therefore provide consumers with the information they need to make appropriate decisions and, crucially, to enable market participants to *change their behaviour* in a beneficial way.

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[8] Although users must pay petrol and diesel excises and registration charges, these are not affected by when and where a road user chooses to drive.

[9] However, some of the costs associated with congestion may be taken into account by road users when considering whether to drive during rush hours, such as lost travel time, increased fuel use and vehicle operating costs. These are the private costs against which they would weigh the benefits and, beyond a certain point, decide not to travel.

3. Transpower's Allocation Methodology

The Administrative Settlement 'capped' the quantum of operating costs that Transpower was permitted to recover from AC and DC customers during its term.[10] Rather than establishing separate *ex ante* operating cost thresholds for AC and DC customers (eg, based on their respective 'shares' of the 'base' amount), Transpower has undertaken a retrospective allocation of the operating cost allowance on the basis of whom it perceives to have 'caused' operating costs to be incurred during the period. Specifically, at the end of each year, Transpower has implemented the following *ex post* adjustment process:

- *outturn* operating costs are apportioned between AC and DC customers, ie, the proportion of total outturn operating costs perceived by Transpower to have been 'caused' by AC customers is included in the Economic Value (EV) account for AC customers, and likewise for DC customers;
- total outturn operating costs are then compared to the benchmark allowance for the year, and the quantum of over- or under-recovery calculated; and
- any under- or over-recovery is then shared between AC and DC customers based on their attributed share of *outturn* operating costs to ensure that the total charged to customers' EV accounts equals the benchmark allowance.

To illustrate, suppose that the annual benchmark allowance was $200 million and, at year's end, Transpower had incurred operating costs of $300 million, resulting in a $100 million over-run. Suppose also that Transpower perceives that AC customers have 'caused' 90 per cent ($270 million) of outturn operating costs and DC customers 10 per cent ($30 million). Transpower's *ex-post* methodology would consequently involve deducting 90 per cent of the $100 million cost over-run from outturn AC operating costs in the EV account, and 10 per cent from DC costs, ie:[11]

- the operating costs charged to the AC EV account would be $180 million, ie, $270 million outturn *less* a $90 million rebate; and
- the operating costs charged to the DC EV account would be $20 million, ie, $30 million outturn *less* a $10 million rebate.

Table 1 summarises Transpower's allocation of operating costs to AC and DC customers in the EV accounts between 2007 and 2009 using this methodology. It shows that although Transpower recovered only its benchmark allowance in each year (ie, the base allowance inflated annually by the consumer price index (CPI)), the retrospective re-allocation process has resulted in it attributing a growing share of the operating cost threshold to DC customers, and a declining fraction to AC customers.

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[10] Specifically, this allowance was equal to a 'base amount' of $199.61 million in the 2006/07 year, to be escalated annually at the rate of consumer price inflation. *See:* Administrative Settlement, pp.73-77.

[11] Note that the larger AC 'rebate' reduces the AC year-end revenue requirement by a greater amount than the DC rebate reduces the DC year-end revenue requirement, with equivalent effects on the respective customer EV account balances.

Table 1
Allocation of Operating Costs through the EVA

	2007		2008		2009	
	AC	DC	AC	DC	AC	DC
	$m	$m	$m	$m	$m	$m
Outturn Opex						
Maintenance	110.9	11.1	126.4	8.5	135.8	8.4
Intercompany	6.3	6	6.4	5.7	11.9	5.4
A+G	50.9	0.3	52.2	0.3	54.8	0.3
Ancillary Services	0	1.7	0	15.8	0	28.6
Total, AC vs. DC **(A)**	168.1	19.1	185	30.3	202.5	42.7
Total Outturn Opex (B)	**187.2**		**215.3**		**245.2**	
Opex Cap (C)	**199.6**		**207.6**		**211.5**	
Re-allocation (D) = (B) - (C)	**-12.4**		**7.7**		**33.7**	
Proportion of Outturn Opex	90%	10%	86%	14%	83%	17%
Re-allocation **(E)**	11.1	1.3	-6.6	-1.1	-27.8	-5.9
Charge to EV Account (A) + (E)	**179.2**	**20.4**	**178.4**	**29.2**	**174.7**	**36.8**
Annual % Change in Outturn Opex	-	-	*10.1%*	*58.6%*	*9.5%*	*40.9%*
Annual % Change in Opex Charge	-	-	*-0.5%*	*43.5%*	*-2.1%*	*26.1%*
CPI	-		*4%*		*1.9%*	

Table 1 illustrates that between 2007 and 2009, the *outturn* operating costs attributed to AC and DC customers grew significantly. Specifically, outturn AC operating costs increased by 10.1 and 9.5 per cent, respectively in 2008 and 2009, and outturn DC operating costs increased by 58.6 and 40.9 per cent. Although both outturn AC *and* DC operating costs increased over the period, there was divergent movement in the *allocation* of the operating cost *allowanc*e, ie, between 2007 and 2009:

- AC customers' share of the operating cost allowance fell from **90** to **83 per cent;** and
- DC customers' share of the operating cost allowance increased from **10** to **17 per cent**.

There was a similar discrepancy in the *rate of change* in operating costs allocated by Transpower to the AC and DC EV accounts. The operating costs charged to the DC EV account increased at a rate well in excess of the movement in the CPI over the period, whereas the operating costs charged to the AC EV account declined (notwithstanding the increase in *outturn* AC operating costs). Specifically:

- in 2008, operating costs charged to the DC EV account increased by **43.5 per cent** and operating costs charged to the AC EV account reduced by **0.5 per cent** (compared to a **4 per cent** increase in the CPI); and
- in 2009, operating costs charged to the DC EV account increased by **26.1 per cent** and operating costs charged to the AC EV account reduced by **2.1 per cent** (compared to a **1.9 per cent** increase in the CPI).

In other words, there was a significant shift in the *incidence* of operating costs over the Administrative Settlement, with DC customers assuming a growing proportion. This was caused primarily by unprecedented increases in Transpower's instantaneous reserve charges,[12] which were attributed solely to DC customers.[13] The increase followed Transpower's decision to restrict the use of Pole 1 of the HVDC link,[14] which meant that it had no alternative supply path for southward flows and a reduced path for northward flows, increasing its exposure to such charges.[15] Specifically:

- prior to 2007, Transpower had historically incurred a maximum of **$3.3 million** in instantaneous reserve fees in a single year; and
- these fees increased to **$14.8 million** (from $0.7 million) in the 2007/08 financial year[16] (a 2,014 per cent increase) and to **$27.5 million** in 2008/09 (an 86 per cent increase).[17]

Transpower's allocation of operating costs – particularly its treatment of instantaneous reserve charges – compounded the negative balance of the DC EV account over the term of the Administrative Settlement. The methodology has therefore had a material effect on the *prices* ultimately paid by AC and DC customer, as determined by the application of the Transmission Pricing Methodology. Specifically, in 2008 and 2009, application of Transpower's *ex-post* allocation approach has:

- increased retrospectively the HVDC revenue requirement, and so the level of HVDC charges to be levied upon South Island generators; and
- reduced retrospectively the HVAC revenue requirement, and so the level of connection and interconnection charges to be levied upon AC customers.

Put another way, the *ex-post* adjustments have in both years resulted in HVDC charges being *higher* and HVAC charges *lower* than they would otherwise have been without such adjustments. In the following section we consider whether such an outcome could reasonably be expected to arise in a workably competitive market, as well as the consequences of Transpower's approach for allocative efficiency.

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[12] This is reflected in the substantial growth in ancillary service costs highlighted in Table 1.

[13] Sufficient reserve generation is procured by the System Operator in each 30-minute trading period to cover the possible sudden loss of the largest generating unit in each island. If the HVDC link, which is treated as a generating unit, is the largest supplier into an island, the System Operator allocates to Transpower, as the link's owner, a major share of the costs of the reserves it must procure for that island for that period.

[14] In September 2007, Transpower removed Pole 1 of the HVDC link from regular service, and later reintroduced it for 'emergency use' and for northbound transfer only.

[15] Commerce Commission, *Decision and Reasons for not amending Transpower's administrative settlement to include Instantaneous Reserve Fees as Pass-Through costs*, 22 June 2009, p.8.

[16] Transpower, *Annual Report 2007/08*, p.2.

[17] Transpower, *Annual Report 2008/09*, p.4.

4. Implications of Transpower's Methodology

Transpower contends that its *ex-post* approach to allocating operating costs between AC and DC customers reflects 'the causers of the operating costs' and is 'consistent with allocative efficiency'.[18] However, in reaching the conclusion that its methodology is efficiency enhancing, Transpower has paid insufficient attention to at least two important factors that suggest otherwise. We describe these factors below.

4.1. Interdependent Charges

We explained earlier that prices in workably competitive markets generally reflect the efficient costs that producers are caused to incur to provide a good or service to a *particular customer.* In our opinion, it is simply not possible for Transpower to give effect to this principle through its *ex-post* re-allocation. In addition to the intrinsic difficulties associated with ascertaining whether it is AC or DC customers that have 'caused' Transpower to incur particular operating costs,[19] there is the more fundamental problem created by the *interdependency* of the AC and DC operating cost charges.

Because the operating costs that Transpower could recover during the period were *capped*, any decision to allocate a *greater* proportion of the operating cost allowance to one group of customers meant allocating a *lesser* proportion to another. Specifically, Transpower's decision to allocate a growing proportion to DC customers meant allocating a shrinking proportion to AC customers, and attendant *downward pressure on HVAC charges*. The trouble is that this outcome was *not* precipitated by AC customers causing Transpower *to incur fewer costs* over the period. In fact, AC costs *increased,* as Table 2 illustrates.

Table 2
Annual Percentage Change in Operating Costs

	AC			DC		
	2007	**2008**	**2009**	**2007**	**2008**	**2009**
	$m	**$m**	**$m**	**$m**	**$m**	**$m**
Total Outturn Opex	168.1	185	202.5	19.1	30.3	42.7
Annual % Change	**-**	**10.1%**	**9.5%**	**-**	**58.6%**	**40.9%**
Opex Charged to EV Account	179.2	178.4	174.7	20.4	29.2	36.8
Annual % Change	**-**	**-0.5%**	**-2.1%**	**-**	**43.5%**	**26.1%**

In other words, the downward pressure on HVAC charges was not indicative of a reduction in the (efficient) operating costs associated with providing Transmission services to AC

[18] Letter from Howard Cattermole, General Manager Corporate Services for Transpower, 'Re Economic Value Accounts, 28 June 2010.

[19] In some cases, those difficulties are likely to be intractable. For example, although Transpower has attributed 100 per cent of instantaneous reserve charges to DC customer, it is questionable whether those customers can reasonably be said to have 'caused' Transpower to incur those costs. For example, Transpower's exposure to instantaneous reserve charges is greatest in those periods in which the HVDC link becomes the 'largest injector' into the South Island. Myriad factors can potentially contribute to the HVDC link flowing south; including insufficient generation by South Island generators and buoyant demand from South Island load.

customers. Rather, the reduction simply reflects the fact that it was not possible for Transpower to allocate more operating costs to DC customers without reducing the allocation to AC customers. The net result is that Transpower *has not* in fact given effect to the 'causer pays' principle. Rather, it has provided the misleading signal to AC customers that they have caused it to incur *fewer* operating costs over the period, when in fact those costs have increased. Returning to our earlier example, Transpower's approach is analogous to:

- levying a congestion charge on a sub-set of the motorists that elect to travel along a stretch of road during peak periods; and
- making off-setting payments to the remaining motorists that travel along the same stretch of road during peak periods.

Put simply, it was impossible for Transpower to simultaneously provide appropriate price signals to DC and AC customers through the application of its *ex-post* re-allocation methodology. Any allocative efficiency gains from providing a stronger signal to one group of customers were undone by sending inappropriate signals to others. Indeed, a methodology that responds to increased AC operating costs by placing downward pressure on HVAC charges cannot be expected to promote allocative efficiency. This counterintuitive outcome could not reasonably be expected to arise in a workably competitive market, and is likely to have *harmed* allocative efficiency.

4.2. Potential for Behavioural Change

Prices that reflect the efficient costs associated with providing a good or service can promote allocative efficiency by signaling to consumers the consequences of their conduct. Once cognisant of the true cost of their conduct, consumers can decide whether the benefits associated with a consumption decision outweigh the costs. They can then change their behaviour in a beneficial way, eg, by eschewing consumption of a good or service that they do not value sufficiently to pay a cost-reflective price. This in turn drives the crucial resource allocating function of the market, ie, if there is excess demand, resources will enter the market and, if there is excess supply, resources will be diverted elsewhere.

Of course, to elicit desirable behavioural change, consumers must know the price that they will pay (and so the underlying costs) *before* they decide whether to consume a good or service. The trouble with Transpower's methodology for allocating operating costs is that customers *do not know* the costs that they will face until *after* they have been incurred. In other words, the price signal is provided *after* the relevant conduct has occurred. It is then too late for customers to take action to reduce or avoid the impact of those costs. Moreover, the *ex-post* charge provides no useful gauge to customers of their likely allocation in the coming year, since there will be an equivalent *ex-post* adjustment at year's end.

Consequently, even if Transpower's methodology could reasonably be said to reflect the 'causers' of operating costs (which, for the reasons we described in the previous section, it cannot), a retrospective allocation entails no allocative efficiency benefits, because AC and DC customers are not able to change their behaviour in response to the signal. Adopting our previous example, Transpower's approach is analogous to levying an *undisclosed* congestion charge on a motorist that has *already* driven along a stretch of road. Levying such a charge cannot elicit efficient consumption decisions because:

- the motorist cannot subsequently undo her decision so as to avoid the imposition of the charge, even if it turns out to exceed the benefits that she obtained; and
- the charge provides no reliable indication of the potential future cost of driving that route, since the congestion charge will change in the interim by an unknown amount.

The *ex-post* allocation of operating cost therefore cannot provide price signals to DC and AC customers that are capable of enticing desirable behavioural change. Because the allocation is undertaken retrospectively, any signal is provided *after* the 'cost causing conduct' has occurred when it is too late for a different decision to be made. Put simply, the allocation serves no useful purpose. For this reason, the approach would not be seen in a workably competitive market, and is likely to have reduced allocative efficiency.

4.3. An Alternative Approach

In our opinion, a firm in a workably competitive market would neither contemplate nor be able to implement the *ex-post* adjustments that Transpower has undertaken. The approach has placed inappropriate downward pressure on HVAC charges, and the *ex-post* nature of the adjustments has meant neither AC nor DC customers were in position to respond to those (often incorrect) price signals in any event. An approach more consistent with workable competition would have been to establish *ex-ante* operating cost allowances for AC and DC customers and to have persevered with those thresholds to provide an enduring price signal.

One means of giving effect to this principle would have been to establish separate *ex-ante* operating cost thresholds for AC and DC customers at the outset of the Administrative Settlement period based on their respective shares of the initial 'base amount' of $199.61 million, and to have escalated those thresholds annually in line with the CPI. Such an approach would have prevented downward pressure from being placed on HVAC charges at a time of rising costs, and provided AC and DC customers with much greater certainty over the future effects on HVAC and HVDC charges.

5. Conclusion

We have been asked to consider the manner in which Transpower has been allocating operating costs between AC and DC customers during the period of its Administrative Settlement with the Commission. In particular, we have been asked to consider whether the *ex-post* methodology employed by Transpower is an approach that would be observed in a workably competitive market, and whether it is likely to have promoted allocative efficiency. In our opinion, a firm in a workably competitive market would not contemplate the *ex-post* adjustments that Transpower has undertaken, since:

- the growing proportion of operating costs attributed to DC customers has placed downward pressure on HVAC charges, despite the fact that the operating costs associated with serving these customers has also increased; and
- even if the adjustment provided appropriate price signals (which they do not) they serve no useful purpose since they are provided after the supposed 'cost causing conduct' has taken place, rendering them incapable of enticing desirable behavioural change.

By adopting such an approach Transpower is therefore likely to have *reduced* allocative efficiency. In our opinion, a firm in a workably competitive market would be more likely to have established separate *ex-ante* operating cost allowances for AC and DC customers and persevered with those thresholds to provide an enduring price signal. One means of giving effect to this principle would have been to establish separate *ex-ante* operating cost thresholds for AC and DC customers at the outset of the Administrative Settlement period based on their respective shares of the initial 'base amount' of $199.61 million, and to have escalated those thresholds annually in line with the CPI.

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