



**Submission to the Australian Energy Regulator
on
Fair and reasonable charging rates for
CitiPower's Capital Contribution Charge
for Marginal Cost of Network Reinforcement**

14 August 2009

Introduction

This submission (**Submission**) sets out CitiPower's comments on the Australian Energy Regulator's (**AER**) decision and further consultation on CitiPower's capital contribution charge for its Marginal Cost of Network Reinforcement, dated 17 July 2009 (**Decision**).

The Decision sets out the AER's final decision that CitiPower's methodology in calculating the capital contribution charge to new customers for CitiPower's Marginal Cost of Network Reinforcement (**MCR charge**) is not fair and reasonable or consistent with Electricity Guideline No.14. The AER reached this conclusion because it considers that the MCR charge does not reflect the incremental capital costs that would otherwise have been incurred at a later date had the customer not connected to CitiPower's network.

The Decision also proposes a calculation for the MCR charge that the AER considers to be fair and reasonable (**AER Methodology**) and seeks submissions on the proposed AER Methodology and the resultant MCR charges (**AER Charges**) so it can make a final decision on *'the fair and reasonable rates'*.

However, CitiPower considers that the AER's decision regarding a particular methodology and resulting MCR charges that it considers to be fair and reasonable and compliant with Guideline 14 would not preclude CitiPower from making an offer to connect that included MCR charges calculated using a different approach to that proposed by the AER. This is because:

- there are a range of charging methodologies and resultant charges that may be fair and reasonable and compliant with Guideline 14 - that is, there is no single *'correct or appropriate approach'* or resultant set of charges;
- CitiPower's distribution licence does not confer on the AER a function or power of unilaterally prescribing those charges that CitiPower may include in its offer to connect. Rather, the AER is confined to assessing whether CitiPower's charges are fair and reasonable and compliant with Guideline 14; and
- accordingly, in assessing CitiPower's charges for compliance with its distribution licence, the inquiry is not whether those charges are the AER's preferred charges or whether there are alternative charges that are *'more fair and reasonable'*. So long as CitiPower's charges are within the range of charges that is fair and reasonable and compliant with Guideline 14, the matter rests.

In any event, CitiPower considers that the AER Methodology and the resultant AER Charges are not fair and reasonable. This is because:

- in applying the AER Methodology to determine the AER Charges, the AER has used out of date values for the marginal cost of reinforcement (**MCR**) rather than the current values for the MCR; and
- in aggregate, new customers' total MCR charges calculated by applying the AER Charges, in aggregate, represent the cost of bringing forward only that portion of the augmentation capacity that will be utilised to service the new customers' connecting demand (i.e. a *'new customer bring forward factor'* of 1) and not the cost of bringing forward the entire augmentation which will also include the capacity to service existing customers' demand growth and the capacity to maintain average utilisation levels.

If average network utilisation on CitiPower's network is to remain constant over time and new customers' total MCR charges are, in aggregate, to equal the cost of bringing forward in time, as a result of new customer connections, the entire augmentation, it is clear that a new customer's connecting demand brings forward an amount of augmentation capacity that is substantially greater than the new customer's connecting demand. As set out in further detail below, correcting for this '*new customer bring forward factor*' of 1 implicit in the AER Methodology, and using the current 2009 values for the historical MCR, indicates that the AER's proposed per MVA MCR charges should be as follows:

- Zone Substation Bus \$245,792
- HV Feeder \$261,027
- Distribution Substation \$396,526
- LV Street Circuit \$644,928.

Background

The Regulatory Framework

CitiPower's Distribution Licence requires it to make an offer to connect on request, which offer must include a price and other terms and conditions which are '*fair and reasonable*' (clauses 6.1 & 11.3). The Licence provides that any question as to the '*fairness and reasonableness*' of a term or condition is to be decided by the Essential Services Commission (ESC) on the basis of its opinion of the '*fairness and reasonableness*' of the term or condition (clause 11.4). This function has been transferred to the AER by section 23 of the *National Electricity (Victoria) Act 2005*.

The '*fairness and reasonableness*' of CitiPower's connection charges are regulated by the AER in accordance with clauses 3 and 5 of the ESC's Electricity Industry Guideline No. 14 Provision of Services by Electricity Distributors Issues 1 dated April 2004 (**Guideline 14**). Clause 3 of Guideline 14 regulates the '*fairness and reasonableness*' of CitiPower's connection charges for '*new works and augmentations*' required to facilitate connection, referred to as '*capital contribution charges*'. Clause 5 regulates the '*fairness and reasonableness*' of all of its other connection charges (see clauses 3.1.2 & 3.1.3 of Guideline 14).

Clause 3.3.2(a)(2) of Guideline 14 provides that a customer's capital contribution may include an amount in respect of a relevant augmentation that is the difference between:

- (a) the present value of the incremental capital costs the distributor will incur in undertaking that augmentation at an earlier date as a result of the customer having connected to the distributor's distribution system; and
- (b) the present value of the incremental capital costs the distributor would otherwise incur in undertaking that augmentation at a later date, if the customer had not connected to the distributor's distribution system.

CitiPower's MCR Charges

CitiPower's current MCR charges are a per MVA average, across CitiPower's network, of historical MCR costs.

The CitiPower MCR charges set out in the Decision (e.g. at v), set out below for ease of reference, are the per MVA average of CitiPower's historical MCR costs expressed in 2008 dollars and, thus, were the MCR charges applied by CitiPower in 2008:

- Zone Substation Bus \$257,634;
- HV Feeder \$273,603;
- Distribution Substation \$415,632; and
- LV Street Circuit \$676,002.

The per MVA average of CitiPower's historical MCR costs expressed in 2009 dollars and, thus, the MCR charges currently applied by CitiPower are as follows:

- Zone Substation Bus \$264,230;
- HV Feeder \$280,608;
- Distribution Substation \$426,272; and
- LV Street Circuit \$693,308.

The AER Decision

The Decision (at page 20) sets out the AER's final decision that CitiPower's methodology in calculating the MCR charge is not fair and reasonable because, while aspects of its approach have merit, its approach does not take into account the timing of future augmentations and, thus, does not comply with Guideline 14:

'Some aspects of CitiPower's approach to charging upstream augmentation cost on a per unit basis have merit because this approach is (1) simple and minimises the administration costs; and (2) avoids the problem where the marginal customer triggers the need for a network capacity upgrade and potentially bears the full costs of augmentation. However, the AER concludes that CitiPower's existing charge rates do not comply with Electricity Guideline No.14 because these rates do not take appropriate account of the timing of future augmentations.'

However, the Decision also establishes a further consultation process on 'the fair and reasonable rates' for the MCR associated with new customers connecting to the network. In particular, the AER seeks views on how the MCR charge might be calculated to account for the timing of future augmentations. In doing so the AER proposes, at page 23, the AER Methodology, which is broadly described in the Decision as follows:

'In respect of the bring-forward calculation, the AER considers there is merit in establishing a broad rule for estimating the bring-forward factor, rather than determining it on a customer-by-customer basis.'

One approach to determining a bring-forward factor involves establishing the average time by which augmentations need to be brought forward due to new customers. This can be calculated as the difference between:

- the average time for network augmentation of various network components due to the increase in electricity demand (usage) of new and existing customers; and*
- the average time for network augmentation of various network components due to the increase in electricity demand (usage) of existing customers.'*

Power of AER to prescribe fair and reasonable charges

The AER's final decision that CitiPower's existing MCR charges are not fair and reasonable and do not comply with Guideline 14 has implications for CitiPower's compliance with its distribution licence, CitiPower appreciates the provision by the AER of guidance on what it considers would constitute fair and reasonable charges in respect of the MCR. However, CitiPower observes that the AER's decision regarding what it considers to be fair and reasonable MCR charges would not preclude CitiPower from making an offer to connect based on MCR charges that differed from those MCR charges that the AER ultimately determines to be fair and reasonable. This is because:

- there are a range of charging methodologies and resultant charges that may be fair and reasonable and compliant with Guideline 14 - that is, there is no single '*correct or appropriate approach*' or resultant set of charges;
- CitiPower's distribution licence does not confer on the AER a function or power of unilaterally prescribing those charges that CitiPower may include in its offer to connect; and
- it necessarily follows that, in assessing whether CitiPower's proposed charges are fair and reasonable and compliant with Guideline 14, it is not open to the AER to find that those charges are not compliant with CitiPower's licence obligations simply because the AER prefers different charges or it considers that there are '*more fair and reasonable*' charges.

Accordingly, while the AER's decision may provide certainty as to a set of charges that the AER would consider to be fair and reasonable and compliant with Guideline 14, it would remain open to CitiPower to include in its offer to connect charges for the MCR that differ from those determined by the AER provided that CitiPower's charges, and the methodology for their determination, are within the range of charges and methodologies for their calculation that are fair and reasonable and compliant with Guideline 14.

There is no single 'correct or appropriate approach' or resultant set of charges

CitiPower considers that it is well established, by reference to the relevant authorities, that there will be a range of charging methodologies and resultant charges that are fair and reasonable. In determining whether terms and conditions of access are reasonable and whether underlying costs are reasonable, there are no absolute answers, nor is there necessarily one correct approach.¹

It is also the case that clause 3.3.2(a)(2) of Guideline 14 is not prescriptive but expressed in terms that would allow a number of different approaches that nonetheless comply with its terms. That is, while Guideline 14 must be complied with, it does not provide a detailed prescription of how the MCR charges are to be calculated.

In short, there is no single '*correct or appropriate*' approach or resultant set of charges.

¹ The Australian Competition Tribunal has stated on a number of occasions that, in determining whether terms and conditions of access are reasonable, there are no absolute answers, nor is there necessarily one correct approach: *Application by GasNet Australia (Operations) Pty Ltd* (2004) ATPR 41-978 at [29]; *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (2007) ATPR 42-137 at [15]; *Application by Vodafone Network Pty Ltd & Vodafone Aust Ltd* (2007) ATPR 42-150; *Telstra Corporation Ltd (No 3)* (2007) ATPR 42-160 at [189].

AER may not unilaterally prescribe the charges that CitiPower includes in its offer to connect

CitiPower's distribution licence confers on the AER a power to determine any question as to whether an offer to connect, including the price terms thereof, made by CitiPower is fair and reasonable. However, CitiPower's distribution licence does not confer on the AER a power to prescribe its preferred methodology and charges from within the range of charges and methodologies that are fair and reasonable and compliant with Guideline 14.

In CitiPower's view, the AER's power is limited to:

- determining the fairness and reasonableness, and compliance with Guideline 14, of the terms and conditions, including the MCR charges, in CitiPower's offer to connect; and
- enforcing those licence obligations.

In particular:

- Clause 11 provides only that any question of the fairness and reasonableness of the terms and conditions, including price terms, in CitiPower's offer to connect is to be determined by the AER. There is no provision for the AER to prescribe the terms and conditions of that offer.
- Clause 17 establishes a process pursuant to which CitiPower may submit for the AER's approval, either voluntarily or on receipt of a communication from the AER requiring CitiPower to do so, a statement of CitiPower's proposed charge and terms and conditions for the provision of any excluded service (in this case, the charge distributors may levy on customers by way of capital contributions for new works and augmentation). If approved by the AER, CitiPower's offers to connect must then comply with the approved statement (clause 11.3(b)). The explicit provision of a process in CitiPower's distribution licence for approval only of charges and conditions for the provision of any excluded service conveys that the AER does not have power to unilaterally prescribe terms and conditions, including price terms, for inclusion in CitiPower's offer to connect.

In summary we believe the AER cannot find CitiPower's charges in connection offer are not compliant with licence obligations because it prefers a different charge or there is a 'more fair and reasonable' charge

It follows from what has been said above that, in assessing whether the charges in CitiPower's offer to connect are fair and reasonable and compliant with Guideline 14, it is not to the point that there is some other method of setting charges that is, or may be, preferred by the AER or, in the AER's opinion, *'more fair and reasonable'*. Provided CitiPower's charges are within the range of charges that is fair and reasonable and compliant with Guideline 14, the matter rests.²

Where the MCR charge proposed by CitiPower falls within the range of choice reasonably open and consistent with Guideline 14, it would not be open to the AER to find that the proposed MCR charge is not fair and reasonable and/or not compliant with Guideline 14 simply because it prefers a different MCR charge or can identify one which it believes would better achieve the objective of fair and reasonable charges.

² *Re Telstra Corporation Limited* (2006) ATPR 42-121 at [63] & [67]; *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (2007) ATPR 42-137 at [15]; *Telstra Corporation Ltd (No 3)* (2007) ATPR 42-160 at [189].

Proposed AER Methodology and AER Charges are not fair and reasonable

The AER Methodology

The AER Methodology first derives or estimates the peak demand growth rate of CitiPower's new and existing customers in combination, the peak demand growth rate of CitiPower's existing customers, the existing average network utilisation of CitiPower's various network components and the level of utilisation, on average, at which a component of CitiPower's network requires augmentation, as follows:

- **Peak demand growth rate of CitiPower's new and existing customers in combination: 1.98 per cent.** The AER derives a figure for combined peak demand growth rate of new and existing customers from the ESC's *Final Decision, Electricity Distribution Price Review 2006-10 (EDPR)*. The EDPR indicated that CitiPower's benchmark forecast non-coincident zone substation peak demand increased from 1,699 MVA in 2005 to 1,874 MVA in 2010, an average compound growth rate of 1.98 per cent (page 24).
- **Peak demand growth rate of CitiPower's existing customers: 0.52 per cent.** The AER derives a figure for peak demand growth rate of existing customers by subtracting an estimate for the peak demand growth rate of new customers (using growth rates of overall customers as a proxy) of 1.46 per cent from the peak demand growth rate of CitiPower's new and existing customers in combination above to yield 0.52 per cent (pages 24-25).
- **Existing average network utilisation of CitiPower's various network components including the high voltage network, low voltage network and subtransmission network: 82 per cent.** The AER estimates this figure by taking the mid point of the range of utilisation for network components that have not been identified as requiring augmentation in the next 4 years. This range, based on data provided by CitiPower was 72 to 92 per cent (pages 29-30).
- **The level of utilisation, on average, at which a component of CitiPower's network requires augmentation: 115 per cent.** Using data provided by CitiPower, the AER derives an average level of utilisation at which components in CitiPower's network have been identified as requiring major augmentation of 115 percent (pages 25-29).

The AER Methodology then uses the above information to derive the expected average time to augmentation for a network component if no new customers were connected and the expected average time to augmentation if new customers were connected as follows:

- **The expected average time to augmentation for a network component if no new customers were connected: 63.5 years.** This is the difference between augmentation percent level utilisation and average per cent utilisation of the network divided by the annual percentage peak demand growth of existing customers, $(115\% - 82\%) / 0.52\%$ per year. This gives the number of years for utilisation to go from 82% to 115% at a growth rate of 0.52% per year, 63.5 years.
- **The expected average time to augmentation for a network component if new customers were connected (in addition to existing customers): 16.7 years.** This is the difference between augmentation percent level utilisation and average per cent utilisation of the network divided by the annual percentage peak demand growth of all customers, $(115\% - 82\%) / 1.98\%$ per year. This gives the number of years for utilisation to go from 82% to 115% at a growth rate of 1.98% per year, 16.7 years.

The final step of the AER Methodology involves calculating the net present value of bringing an augmentation forward through time from 63.5 years out to 16.7 years out (being the (average) effect on augmentation timing of a new customer signing up). The AER calls this the net present value factor (see page 21 of the Decision). Using the CitiPower weighted average cost of capital, the net present value factor is equal to 0.3361.

The AER applies this net present value factor to CitiPower's MCR costs applied in 2008 to yield the following proposed per MVA charges:

- Zone Substation Bus \$86,591;
- HV Feeder \$91,958;
- Distribution Substation \$139,694; and
- LV Street Circuit \$227,204.

It is intended that these per MVA charges will be applied to a new customer's connecting demand (i.e. MVA) to determine the total MCR charges payable by that new customer.

The AER Methodology, therefore, has the following features:

- The AER Charges are calculated using CitiPower's MCR costs applied in 2008 rather than those MCR costs that are currently applied.
- New customers' total MCR charges, in aggregate, represent the cost of bringing forward from 63.5 years out to 16.7 years out only that portion of the augmentation capacity that will be utilised to service the new customers' connecting demand (i.e. MVA) and not the cost of bringing forward the augmentation in its entirety from 63.5 years out to 16.7 years out.
- The expected average times to augmentation for a network component, used by the AER in calculating its net present value factor, are premised on average network utilisation on CitiPower's network elements of 82% at the time a new customer connects. This is evident from the following description of the AER's calculation of these expected average times to augmentation set out in its Decision (at 30):

'...the average overall utilisation factor is assumed to be 82 per cent, being the mid-point between 72 and 92 per cent.

The average augmentation trigger level of all network components is assumed to be 115 per cent.

The expected average time to augmentation for a network element, if no new customers were to be connected, can be calculated at $(115-82)/0.52$ per cent per year, or 63.5 years.

The expected average time to augmentation for a network element, due to the connection of new customers, is $(115-82)/1.98$ per cent per year, or 16.7 years.' [Emphasis added]

That is, it is implicit in the AER's calculation of the time to augmentation that the utilisation of the network component immediately post augmentation is 49% in order to achieve an average utilisation of 82% as demonstrated by $(115\% + 49\%)/2 = 82\%$. However the AER Methodology only uses the capacity utilisation figures to determine the bring forward time periods. It does not use them to adjust for the effects of augmentations on overall system average system capacity utilisation over time. Indeed the effect of augmentations on overall network capacity utilisation over time

does not appear to be accounted for at all in the AER Methodology. CitiPower sets out below what is required to meet the augmentation costs of maintaining average system capacity utilisation over time.

Application of MCR values that are not current

In applying the AER Methodology to determine the AER Charges, the AER has used out of date values for the MCR, rather than current values for the MCR. Whereas the AER uses CitiPower's per MVA 2008 MCR costs, the AER should have used CitiPower's 2009 MCR values which are as follows:

- Zone Substation Bus \$264,230;
- HV Feeder \$280.608;
- Distribution Substation \$426,272; and
- LV Street Circuit \$693,308.

Applying the AER Methodology to CitiPower's MCR values for 2009 (but otherwise leaving the AER Methodology unchanged) gives the following MCR charges:

- Zone Substation Bus \$88,808;
- HV Feeder \$94,312;
- Distribution Substation \$143,270; and
- LV Street Circuit \$233,021.

Bring-forward cost attributable to new customers, in aggregate, should represent cost of bringing-forward entire augmentation

As discussed above, the total MCR charges payable by a new customer pursuant to the AER Methodology and Charges represent the cost of bringing forward in time (from 63.5 years out on average to 16.7 years out on average) only that portion of the augmentation capacity that will be utilised to service the new customer's connecting demand. By contrast, the aggregate cost incurred by CitiPower as a result of new customer connections is the cost of bringing forward the entire augmentation (from 63.5 years out on average to 16.7 years out on average). This is the incremental cost of an augmentation for the purposes of Guideline 14, as the AER recognises when it describes this incremental cost in the Decision (at 11) as follows:

'Electricity Guideline No. 14 specifies that the incremental cost should reflect the difference between:

- *the present value of the augmentation costs the distributor will incur as a result of the customer being connected; and*
- *the present value of the costs the distribution would otherwise incurred in undertaking the augmentation at a later date due to increase [sic] in demand by existing customers, assuming no new customers were connected'.*

It is unclear from the Decision whether the AER intended that, in aggregate, new customers' total MCR charges would represent only the bring-forward cost of that portion of the augmentation capacity that will be utilised to service the customers' connecting demand. However, it would appear that, to the extent that this was intentional, the AER's approach was premised on a submission by CitiPower to this effect in its *Submission to the Essential*

Services Commission on the Draft Decision regarding CitiPower's Capital Contribution Charge for Marginal Cost of Network Reinforcement dated 23 January 2009 (**CitiPower's Earlier Submission**). In particular, in the Decision, the AER states (at 21) that:

'In respect to the first of CitiPower's concerns regarding the ESCV's approach, the AER agrees that any equitable approach should consider only the customer's share of a capacity upgrade.'

To clarify, in CitiPower's Earlier Submission (at 10), CitiPower maintained that, if the per MVA average, across CitiPower's network, of its historical MCR costs was adopted as the MCR charge, then the resultant charge should be applied to the new customer's connecting demand to determine its total MCR charges. However, CitiPower also maintained that, if the MCR charges were to be determined using a 'bring-forward factor' calculation, the resultant bring-forward costs should, in the aggregate, represent the cost of bringing forward the entire augmentation. In particular, CitiPower's Earlier Submission stated (at 15):

'As disclosed by clause 3.3.2(a)(2) of Guideline 14, any bring-forward cost calculated for the purpose of determining capital contribution charges should reflect the difference in the costs incurred by the distributor as a result of the bringing-forward of the augmentation. The difference in the costs incurred by the distributor are a function of the total cost of the brought-forward augmentation and not that part of the cost attributable to the customer. For example, in bringing-forward an augmentation from 10 years to 5 years, the resultant difference in the costs incurred by the distributor would include the cost of financing the total augmentation cost 5 years earlier than would otherwise be required.'

CitiPower repeats, and relies on, these submissions in respect of the AER Methodology and submits that the AER Methodology should be adjusted such that the aggregate bring-forward cost attributable to new customers will include the cost of the bring-forward in time, attributable to new customers' connections, of the entire augmentation.

'Net present value factor' calculation should be premised on assumption of constant average network utilisation over time

It is reasonable to assume that the average utilisation of CitiPower's network will remain constant over time. Such an assumption is reasonable because, if this assumption did not hold and average network utilisation were allowed to increase over time, this would be associated with a diminution of network reliability performance over time and an increasing cross-subsidisation of new customers by existing customers.

Illustration of CitiPower's concerns outlined above and calculation of 'correction factor' for use in remedying those concerns

CitiPower illustrates below its concerns outlined above, and the derivation of a 'correction factor' to remedy those concerns.

Consider a case where there are two augmentations of given network element at different points in time with demand growth for new and existing customers in the intervening period. While this scenario makes use of two specific augmentations, these two augmentations are intended to illustrate the average augmentation.

It follows from an assumption of constant average network utilisation over time, together with the AER's estimate of CitiPower's average network utilisation (of 82%) and the level of utilisation at which, on average, a network component requires augmentation (of 115%), that, on average, immediately following augmentation, the network utilisation of the network component augmented must be 0.49%.

In the first augmentation, the network element is augmented to a total capacity of 1 MVA. Assuming, for the reasons outlined above, that the average utilisation of CitiPower's network will remain constant over time, the utilisation of the network element would need to fall from 115% to 49% immediately following the first augmentation (82% being the midpoint between 115% and 49%), in order to maintain an average network utilisation of 82%. Therefore, the assumed demand associated with an assumed augmentation that takes the total capacity of the network element to 1MVA is 0.49 MVA.

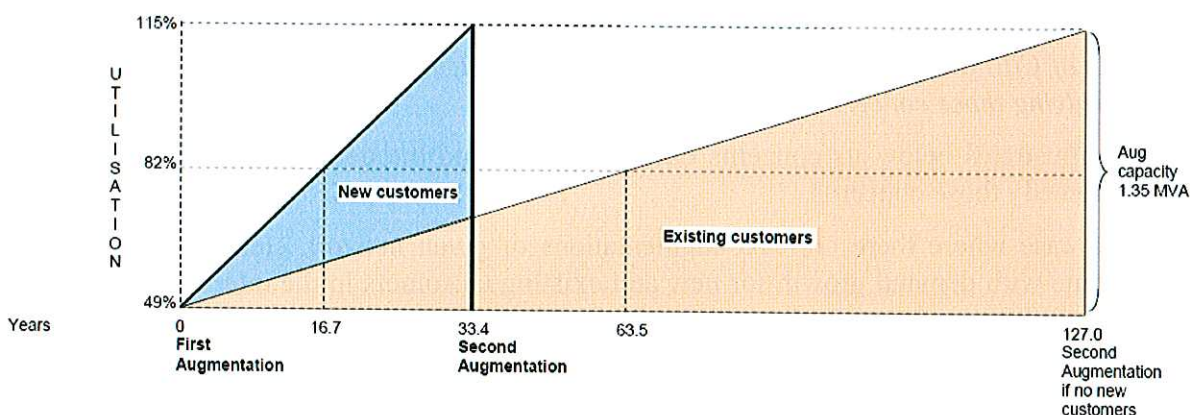
The second augmentation will take place when utilisation of the network element next reaches 115%. Given the assumption that the first augmentation brought the capacity of the network element to 1 MVA, utilisation will reach 115% when demand reaches 1.15 MVA. The total demand increase between the first and second augmentations will have been 0.66 MVA (1.15 MVA less 0.49 MVA).

At the level of demand of 1.15 MVA, the augmentation required to maintain an average network utilisation of 82% will need to increase the capacity of the network element to 2.35 MVA, such that the demand of 1.15 MVA will utilise 49% of the network element immediately following the second augmentation ($1.15 \text{ MVA} / 49\% = 2.35 \text{ MVA}$).

It follows that the second augmentation will increase capacity by 1.35 MVA (being 2.35 MVA less 1 MVA). It is clear therefore that the 0.66 MVA of demand growth occurring after the first augmentation will have caused the need for the capacity of the network element to increase by 1.35 MVA at the time of the second augmentation.

As set out above, the AER's proposed calculation uses annual demand growth rates respectively of 0.52 per cent for existing customers and 1.46 per cent for new customers (derived by taking the AER's growth rate for new and existing customers of 1.98% and subtracting the growth rate for existing customers of 0.52%). These figures can be used to calculate the proportion of the 0.66 MVA of demand growth that can on average be attributed to new customers. This proportion is 74 per cent (being $1.46\% / (1.46\% + 0.52\%)$) and so 74 per cent of the 0.66 MVA growth, or 0.49 MVA, can be attributed to new customers.

The following diagram shows the timing of the two augmentations and the customer demand and utilisation growth that makes the second augmentation necessary.



Accordingly, 0.49 MVA of new customer demand will have caused the requirement for 1.35 MVA of augmentation capacity to have been brought forward.

The general result is that the new customer bring forward factor is 2.755 (being $1.35\text{MVA}/0.49\text{MVA}$), rather than 1, as implicitly assumed by the AER proposed approach. This new customer bring forward factor (when multiplied by the AER's net present value factor and CitiPower's historical MCR cost) ensures that, in aggregate, new customers' MCR charges will reflect the cost to CitiPower of bringing forward in time the entire augmentation, and that average network utilisation is implicitly assumed to remain constant (at 82%) over time.

A more general explanation

The appropriate factor to apply to the historical MCR cost can also be stated in the following more general way, which makes the derivation of the AER's net present value factor and the average proportional augmentation capacity increase associated with a new customer's connecting demand explicit:

- a. To maintain average network utilisation of 82%, an average augmentation needs to leave the utilised capacity at the network element at 49%. Because demand at the network element will increase to 115% of capacity before another augmentation is triggered, the capacity at the element increases with an augmentation to $115\%/49\%$, or 2.35 times, its pre augmentation capacity. The proportional increase in capacity delivered by the augmentation, relative to the pre augmentation capacity, is therefore, on average, 1.35 times the existing capacity (being $2.35 - 1$).
- b. If no new customers connected, the present value of augmentation costs would, on average, be (applying the average proportional augmentation capacity increase of 1.35 from step a. and the discount factor of 0.0195 for 63.5 years to the historical MCR costs):

$$1.35 \times \text{MCR} \times 0.0195.$$
- c. If new customers also connected, the present value of augmentation costs would, on average, be (as for step b. but here applying the discount factor of 0.3556 for 16.7 years):

$$1.35 \times \text{MCR} \times 0.3556.$$
- d. The *incremental* bring forward cost caused by the new customers is the difference between the two expressions at steps b. and c. above:

$$1.35 \times \text{MCR} \times 0.3361.$$
- e. The above incremental bring forward augmentation cost caused by new customers is caused by an increase in new customer demand equal to 49% of the original capacity of the network element, which is the portion of demand growth triggering the augmentation that is attributable to new customers (being 74% of the 66% (i.e. 115% less 49%) capacity increase that triggers the augmentation). Therefore, the expression at d. is divided by the new customer demand increase to yield a bring forward cost per MVA of new customer capacity of:

$$1.35 \times \text{MCR} \times 0.3361 / 0.49 = 0.93 \times \text{MCR}.$$

MCR charges resulting from AER Methodology as adjusted to remedy CitiPower concerns

Using the average '*net present value factor*' of 0.3361 calculated by the AER and correcting for the issues identified by CitiPower above, the brought forward cost of augmentation for new customers will be the product of 0.3361, 2.755 and the historical MCR cost current as at the present time. That is, CitiPower's historical MCR cost for 2009 should be multiplied by a factor of 93%. This yields the following per MVA charges:

- Zone Substation Bus \$245,792;
- HV Feeder \$261,027;
- Distribution Substation \$396,526; and
- LV Street Circuit \$644,928.