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18 April 2008

By email: MCEMarketReform@industry.gov.au

Manager, MCE Secretariat
Department of Industry, Tourism and Resources
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Re: Alinta AE response to Ministerial Council on Energy consultation:

Cost Benefit Analysis of Smart Metering and Direct Load Control

Alinta AE Limited (AAE) appreciates the opportunity to make this submission to the MCE's Phase 2 consultation on the cost benefit analysis of a national smart meter rollout. We welcome the release of the various consultants reports which present a useful picture of the relativities of various AMI rollout scenarios. There are however some acknowledged uncertainties in the results which may merit further investigation.

As far as the MCE's future program is concerned, AAE considers it essential that the MCE should commit to ongoing distributor exclusivity in the delivery of smart meters. AAE considers that clear priority should be given to developing a nationally consistent legal and regulatory framework for AMI which provides for this exclusivity. A central feature of the framework would be a policy of commitment to full cost recovery if and when a rollout takes place in a particular jurisdiction. Jurisdictions themselves would have the flexibility to decide on the timing of a smart meter roll out where they can establish the existence of positive net benefits.

The legal and regulatory framework should also provide for an industry-led governance structure including a steering committee and technical and regulatory working groups as required. Industry should have responsibility for progressing detailed functional specifications and performance, including coordinated trials.

We have attached a report which reviews the assumptions and data in the Phase 2 Cost Benefit Analysis (CBA). Please note that this report is in two versions: a public version for the MCE website and a confidential version which includes AAE cost date drawn from our participation in the Victorian smart meter program.

Yours sincerely,

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Response to Cost Benefit Analysis of Smart Metering and Direct Load Control

REVIEW OF ASSUMPTIONS AND DATA

United Energy Distribution and

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18 April 2008

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Alinta Asset Management, Australia's leading provider of infrastructure solutions, is the prime contractor for the electricity network owned by United Energy Distribution. AAM is not the agent of United Energy Distribution.

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Key Messages

This document reviews the assumptions and data of the Phase 2 cost benefit analysis. Comments of the overall applicability of the overall approach will be made by asset owners separately to this document.

AAE and UED welcome release of the Phase 2 cost benefit analysis (CBA)

Through the Energy Networks Association, AAE and UED have taken a keen interest in the MCE's national smart meter evaluation in Phase 1. The businesses therefore welcome release of the Phase 2 evaluation, and regard it as useful instrument for considering further directions in the MCE program.

Overall assessment

Although the CBA indicates positive net benefit from a rollout of smart meters on a total national basis, this benefit becomes much more qualified when the analysis:

- is assessed jurisdiction by jurisdiction;
- is assessed at the low end rather than the high end of the indicated net benefits;
- makes allowance for higher costs and/or lower benefits than those assumed, causing the analysis to return a negative net benefit.

Uncertainties in results

AAE and UED note that a significant number of uncertainties surround the CBA evaluations, a fact that has been readily admitted by the MCE's various consultants. The CBA has required a very large number of modelling assumptions, many of which had to be made with little or no historical background as guidance, certainly in Australia. This uncertainty is reflected in the extremely wide range between the high and low estimates for each scenario.

AAE and UED experience as key players in Victorian AMI rollout

AAE and UED are experienced players in the Victorian AMI rollout. Their program has included issuing initial requests for information (RFI) to AMI vendors, followed by comprehensive requests for tender (RFT), and commencing the detailed design phase for the communications and IT infrastructure to facilitate AMI. The businesses are therefore well placed to comment on several of the detailed cost exercises undertaken in the CBA.

Costs appear too low

It appears to AAE/UED that low range costs in the CBA are effectively "lowest possible" costs and do not appear likely to be replicated in an actual AMI rollout program. This view is based on the business's detailed understanding of the scope and scale of rollout and vendor responses to requests for tender (RFT) issued in 2007.

Distribution benefits appear overestimated

While the CBA concludes that no single player has a clear business case for a smart meter rollout, the scenarios attribute by far the largest proportion of rollout benefits to distribution businesses in the form of cost savings and efficiencies. AAE and UED have examined the consultants' quantification of benefits in the light of experience in the Victorian AMI rollout, and conclude that the distribution benefits appear to be overstated in several instances.

Different business starting points

In AAE and UED experience, distribution businesses may have very different starting points in terms of their physical capabilities for a major project like an AMI rollout in terms of:

- network configuration;
- businesses processes; and
- IT capability.

As a result, it is not possible to conclude that, following an AMI rollout, the detailed business costs which result from the CBA's structured analysis would in any way represent the future cost structure of a particular distribution business.

REVIEW OF ASSUMPTIONS AND DATA IN THE CBA

1 Introduction

1.1 Background to AAE

The Alinta AE (AAE) distribution network covers approximately 950 square kilometres of the north western area of greater Melbourne. With approximately 300,000 customers, it is the smallest of the five electricity distribution businesses in Victoria.

1.2 Background to UED

United Energy Distribution (UED) is one of the largest Victorian electricity distributors and provides services to over 600,000 end-users in Melbourne's southern and eastern suburbs.

Together, AAE and UED account for around 40 per cent of the metering points in Victoria.

1.3 AAE/UED participation in Victorian AMI program

Victoria has taken the lead in Australia in moving away from traditional accumulation meters, first in 2004 with the Essential Services Commission's decision to roll out interval meters and again in 2006 with the Victorian Government's decision to install AMI meters. The legislative framework for AMI has been implemented mainly over 2007.

AAE and UED, together with other Victorian distributors, have been intimately involved over the last two years with (a) responding to the Victorian Government's AMI policy initiative; and (b) resolving the complexities of the planning and conceptual design phase for AMI rollout. AAE and UED have also participated in a wider industry steering committee to coordinate AMI development in Victoria.

Alinta Asset Management is the prime contractor for both the AAE and UED electricity networks and is responsible for the management of a joint AMI program on behalf of both distribution companies. We therefore refer to AAE/UED as a single entity in the context of this joint program and this document has been prepared on behalf of both organisations.

Currently, the joint AAE/UED program is in the selection and detailed design phase for the overall AMI solution encompassing meters, communications technology and information systems.

Parallel with these phases, AAE and UED have made several submissions to the Essential Services Commission (ESC) which is responsible for administering the legislative instrument through which the Victorian Government has established cost recovery for the

AMI rollout. A major submission (required by legislation) was made in December 2007, which put forward AAE and UED's pricing proposals for the recovery from consumers[1] of the capital and recurrent costs of the AMI rollout[2]. While that proposal was based on the best available information at the time, AAE and UED have noted to the ESC that more complete information is becoming available, and that a resubmitted pricing proposal will be made in May 2008.

1.4 Focus of this Submission

The focus of this current submission is on the costs and benefits cited for both Victoria and nationally in the context of the Phase 2 consultants reports and in the light of Victorian experience to date.

AAE/UED note that the MCE's consultation on the Regulatory Impact Statement (RIS) for the Phase 2 cost benefit studies will provide scope for participants to address a number higher level issues, such as:

- interaction between the Victorian and national programs;
- detailed specification and functionality;
- governance structures;
- business case development and the 'split benefits' problem; and
- resolution of exclusivity.

[1] That is, consumers for which AAE/UED will be the responsible meter provider.

[2] This submission was also copied to DRET and the MCE's consultants on a confidential basis. Note that the costs included the phasing out of manually read meters over the 2009-12 period.

2 Overall Assessment of Phase 2 Results

AAE/UED welcome the Phase 2 cost benefit analysis (CBA) consultants reports for providing a detailed assessment of costs and benefits of a national smart meter rollout; and commends the reports for recognising the major difficulties of such an analysis, particularly the lack of essential reference points for assessing many of the costs and benefits.

AAE/UED acknowledge that these reports provide a useful starting point for assessing whether a rollout of smart meters is justified on a:

- total national basis;
- on a partial national basis; or
- even justified at all.

The very wide numerical differences in net benefits between the four national rollout scenarios, and also between net benefits for individual jurisdictions, indicates that there are important underlying factors which drive net benefits at the micro level. AAE/UED submit that these drivers need to be sufficiently understood, and if possible, adequately tested, in order to be confident that any macro cost-benefit estimates are robust enough for policy-making.

2.1 AAE/UED observations

Before addressing some detailed cost and benefits issues later in this submission, AAE/UED wish to make some high-level comments on the following matters. AAE/UED consider it important to form at least a preliminary view on the confidence which stakeholders can have in the cost and benefits indicated by the CBA. The following matters are addressed:

- uncertainty of results;
- the large number of assumptions required and lack of history;
- evidence that no single party has a business case for smart meters rollout;
- stakeholder net benefits and the impact of regulation;
- network related costs and benefits;
- CBA results for Victoria.

2.2 Uncertainty of results

The broad range of national net benefits in the CBA is ($ million NPV)[3]:

Scenario	Minimum	Maximum
distributor led	179	3934
retailer led	(1870)	2410
DLC	34	618
centralised communications	(1524)	2664

AAE/UED observe that the very wide ranges between the minimum and maximum net benefits for each scenario must to a considerable degree be a function of major underlying uncertainties. NERA's discussion of the risks and uncertainties arising from the results[4] acknowledges as much when it says:

> …however, there are considerable limitations associated with the information used that bring into question the conclusions that can be drawn from the quantitative results presented. Specifically:
>
> - no smart meter currently exists that meets the functional specification that we have been asked to examine, meaning that the actual costs of these meters could vary considerably from those used in the analysis;
> - we have only been able to draw a limited extent upon the preliminary cost work being undertaken as part of the Victorian rollout of advanced metering infrastructure, which would be expected to better inform the costs associated with back-end infrastructure;
> - the estimated network business efficiency benefits rely on assumptions surrounding the extent to which activity based costing for special readings and current charges for manual disconnections, when considered together with the transitional cost estimates, reflect the underlying costs that would be avoided with the provision of these services via smart metering; and
> - there is considerable uncertainty as to the likely benefits arising from network outage management.

[3] NERA Economic Consulting: *Consultation Report - Cost Benefit Analysis of Smart Metering and Direct Load Control*, 28 February 2008 Table E.2 p xi. NERA notes that the net benefits reported in Table E.2 reflect a counterfactual of accumulation meters for each jurisdiction.

[4] Op Cit s 18.1

While NERA states that *we believe that the results presented in this study represent the best currently available information*[5] the uncertainty attached to many assumptions that had to be made in defining parameters for the study suggests that, in the absence of additional information, one cannot be certain within the ranges quoted where the actual net benefits might land. This appears to be confirmed by the observation that a relatively small change in costs/benefits can reverse a ranking:

> We note that were the actual costs to be 5 per cent higher than the high end estimate presented in this report or benefits were to be 5 per cent lower than the low end estimates contained in this report the positive minimum net benefit case becomes a negative minimum net benefit case in the lower bound.[6]

AAE/UED observes that the consultants do not give point estimates for each scenario within the net benefit ranges, although when the minimum net benefits are marginal or negative for particular jurisdictions (eg Victoria assuming accumulation meters) they do indicate what further assumptions might be needed to improve the cost benefit ratio.

2.3 Nature and number of assumptions required

A large number of assumptions had to be made for the quantification of costs and benefits[7]. The major categories were:

- the time period for analysis (20 years) and discount factor (8 per cent);
- rollout timeframes by jurisdiction;
- a range of transitional costs, including meters and their installation; communications; meter data and communications management and market operator systems;
- business efficiencies and service quality improvements for distributors and retailers;
- customer service improvements;
- retail efficiencies;
- demand response benefits including network deferral; and
- market benefits, including greenhouse.

The modelling assumptions of the CBA have resulted in major differences in both the quantum of costs and benefits for each scenario, and relative sharing of the net benefits between participants for each scenario. Directionally, AAE/UED accepts these as realistic

[5] Ibid

[6] NERA Op Cit s2.2 p 12

[7] NERA summarises major assumptions in Op Cit sections 4 to 6

outcomes, without necessarily agreeing with the totality of assumptions made or the resulting numbers.

2.4 Stakeholder net benefits – impact of regulation

NERA's summary of net benefits indicates that *no rollout scenario is always net positive* to all stakeholders[8].

NERA goes on to say:

> The justification for a mandatory rollout of smart meters, rather than allowing smart meters to be introduced as a business initiative, is that the costs and benefits of a rollout will accrue over a number of stakeholders. The inability of any one stakeholder to capture all of the benefits may therefore mean that **there is no positive business case for any individual stakeholder to undertake a smart meter rollout**. Mandating a rollout addresses this issue.[9]

NERA then notes that the distributor-led rollout (scenario 1) appears to be an exception, since only distributors enjoy unambiguous (positive) net benefits under maximum and minimum scenarios. However, this is illusory because:

> Although there appears to be a strong positive business case for the distribution businesses to rollout smart meters, it is predicated on the distributors retaining the efficiency benefits that are achieved as a result of a smart meter rollout. In practice, this will not be the case, as the distribution businesses are subject to price regulation and regulators will seek to pass-through to consumers the benefits of the efficiency gains achieved by the distribution businesses in the form of lower network charges going forward. This results in a disconnect between the costs that the distributor would face in rolling out smart meters (ie. the transitional costs) and the resulting business efficiency benefits that the distributor could be expected to retain, which will only reflect a proportion of the benefits estimated by CRA as the regulator can be expected to pass those benefits through to consumers at the time of the next regulatory review[10].

NERA do not quantify how or to what extent any efficiency benefits could be passed back to consumers, and AAE/UED would certainly not expect this exercise to be attempted in a CBA. However, AAE/UED are most concerned that the CBA itself could present an appearance of accurately quantifying such benefits at an individual business level. Instead, AAE and UED are of the very strong view that any consideration of post-AMI distribution costs must be left to the assessment of individual business costs in future regulatory processes, based on the facts presented at that time.

[8] NERA Op Cit table 15.5 p 138

[9] NERA Op Cit p 138. Emphasis added.

[10] NERA Op Cit p139

2.5 Network related costs and benefits in scenario 1

2.5.1 Cost categories

Based on NERA's overview, there are major categories of transitional costs which would apply to distributors under scenario 1[11]. The categories and the percentage contributions of each cost category to total costs in scenario 1 are as follows:

Category	Per cent
meters and their installation	48 - 62
communications	18 - 23
meter/ data and communications management	6 - 8
distribution systems*	4
TOTAL of above	74 - 97

*to support the distributor activities expected to be undertaken as a result of the rollout of smart meters

There would also be additional transitional costs such as program costs, and ongoing operating costs associated with smart meters and their infrastructure, including communications operating costs.

As is evident throughout NERA's section 5.1.4, the impact of the various rollout scenarios on costs determines both the cost levels and their allocation amongst stakeholders. AAE/UED does not comment on the numerous detailed assumptions required for this analysis, except to observe that the overwhelming contribution of distribution network costs to total costs for all scenarios places a very high burden of proof on the analysis to justify both the methodology and quantum of costs arrived at for networks.

2.5.2 Network benefits

The key distribution business benefits expected to result from a smart meter rollout are[12]:

- The avoided costs of routine manual meter reading;
- The avoided cost of special reads;
- The avoided costs of manual disconnections and reconnections;
- Reductions in calls to faults and emergency lines; and
- Avoided cost of customer complaints about voltage quality of supply.

[11] NERA Op Cit s 5.1.1. All costs were developed by EMCa in their workstream.

[12] NERA Op Cit section 6.1.1. Network efficiencies are derived the stream 2 report prepared by CRA.

These five categories account for 67 to 74 per cent of the total annual distribution business efficiencies identified on a national basis[13]. In turn, distribution efficiencies are the overwhelming source of total stakeholder benefits in scenario 1.

2.6 CBA results for Victoria

2.6.1 High level conclusions

NERA summarises the Victorian CBA results as:

> The results of the cost benefit analysis for Victoria show that a rollout of smart metering under the distributor-led scenario (Scenario 1) has a positive NPV if the low cost estimate is assumed. In this case, the rollout would be justified solely on the basis of avoided meter costs and business efficiency benefits alone. However, if the high cost estimate is assumed then the rollout only becomes justified if the higher benefit estimate is also assumed or if the alternative counterfactual is assumed.[14]

Adopting the alternate counterfactual increases the NPV of the benefits by between $112 and $151 million and turns the low case negative into a (very small) positive.

AAE/UED note that the reversal of the cost benefit ranking described by NERA reinforces the points made in sections 2.2 and 2.3 above concerning overall uncertainty of the CBA results (including where a realistic point lies within a given range) and the extreme importance of the assumed inputs.

2.6.2 Cost and benefit drivers

2.6.2.1 Costs

Costs were derived from the EMCa Workstream 2 report as described by NERA:

> the key drivers of costs for each jurisdiction are the costs of metering and the costs of installation. Average meter costs per NMI for Victoria have been estimated by EMCa as between $138 and $192 per NMI. In relation to installation costs EMCa has estimated a range of $45 to $82 per NMI.[15]

2.6.2.2 Benefits

NERA comments:

[13] Although the magnitude of these benefits varies among jurisdictions due to (eg) the number of special reads, or whether customers are usually disconnected on moving-out.

[14] NERA Op Cit s 10.3.1 p 90

[15] Ibid

> As for all other jurisdictions, the vast majority of the business efficiency benefits are driven by the distribution network efficiencies estimated by CRA. In the case of Victoria, these network benefits comprise 92 to 99 per cent of the total business efficiency benefits.[16]

The key components of the network efficiency benefits calculated by CRA for Victoria are (summarised from NERA)[17];

Annual Benefit	Range ($ Million)
special reads reduction	20.3
avoided cost routine reading	16.4
avoided connect/reconnect	9.0 – 13.9
avoided cost timeswitch replacement	9.5
Total of above	55.2 – 60.1
% of total network benefits	**76 - 70**

2.6.3 AAE/UED comment

From the above, assumed network benefits (and costs) are obviously fundamental to the CBA scenario 1 results. In view of the importance of these assumptions, AAE/UED has compared a number of the CRA and EMCa inputs to the CBA with AAE/UED's estimates derived from its AMI planning phase in Victoria[18]. These are discussed in section 4 (costs) and section 5 (benefits).

[16] Ibid

[17] NERA Op Cit p 93

[18] This phase obtained cost data through a comprehensive request for information (RFI) from domestic and international AMI vendors.

3 Phase 2 Costs and Victorian December 2007 Cost Estimates

3.1 Introduction

In this section, AAE and UED have attempted to compare the transitional AMI implementation costs for Victoria derived for Phase 2[19] with comparable estimates for their businesses developed as part of the Victorian AMI rollout. The numerical comparisons are shown in Confidential Appendix 1 (capex) and Confidential Appendix 2 (opex).

There have been substantial issues of comparability in making these comparisons and AAE/UED would not claim that they are any more than indicative of the order of magnitude of any differences which might exist. Some encountered problems were:

- The EMCa report does not always quantify items at a Victorian level, and it has been necessary to apportion their national numbers to Victoria on a logical basis; and
- While EMCa present their capex numbers as annual dollars, their opex numbers are presented as 20-year NPVs[20].

While these issues do affect comparability, AAE/UED observe that in several cases the differences between the two sets of estimates are marked. Although the EMCa report presents many findings, it does not often explain in detail the assumptions behind them, making it difficult to discern why the EMCa and AAE/UED estimates might differ. We offer some tentative explanations in section 4.3 below.

3.2 Highlights of comparisons

The AAE/UED costs are higher in nearly all categories of capex and opex.

For capex:

- Meters and installation costs are approximately 20% to 30% above the high end in the Phase 2 CBA;
- Communications capex is approximately 60% above the high end in the CBA;
- IT capex is more than double the high estimate in the CBA;

For opex:

- Communications opex is approximately 10 times the high end in the CBA;

[19] Specifically, the Workstream 6 results produced by Energy Market Consulting associates (EMCa) in their February 2008 report to the MCE.

[20] See EMCa p 158. The AAE/UED estimates cover a four-year period.

- IT opex is approximately 60% above the high end in the CBA;
- There is no apparent allowance in the EMCa report for transitional costs such as rollout compensation & claims and back-office functions.

3.3 Detailed comments by AAE/UED

3.3.1 Range of costs in CBA

It appears to AAE/UED that low range costs in the CBA are effectively "lowest possible" costs and do not appear likely to be replicated in an actual AMI rollout program. This view is based on the businesses's detailed understanding of the scope and scale of rollout and vendor responses to requests for tender (RFT) issued in 2007.

In contrast, AAE/UED costs for items such as meters and installation are likely to be near the high range costs after deducting contingency and some of the cost components not included in the CBA (such as rewiring and possibly the scale of asbestos board replacement)

3.3.2 Communications

Given the large difference between communications estimates made by AAE/UED and those in the CBA, it appears there are quite different assumptions for mesh meter communications design. AAE/UED note that they have tested various AMI systems, whereas it appears the CBA consultants would only have had access to vendor advice.

3.3.3 Rollout scale

The CBA does not appear to have taken account of the complexity of an AMI rollout of the scale required. For example, there is no significant allowance in the CBA for back office costs and (less certainly) an allowance for compensation & claims.

3.3.4 Immature technology

The CBA does not appear to have taken account of the 'early generation' nature of the technology required for AMI. There appears to be an underestimate of the testing required and not sufficient contingency to account for immature technology. This might reflect a strong reliance on vendor information and estimates as extensive trials and testing of equipment to be rolled has yet to be completed in Australia.

3.3.5 Additional cost activities not recognised

The CBA does not appear to have recognised additional costs of reading, validating and substituting data.

3.3.6 The 'large' vs 'small' DB issue

On p 109 EMCa explain that:

For the purposes of this analysis, we have assumed that the four Victorian distribution licence-holders that are managed in pairs (that is, Powercor / Citipower and Alinta / United Energy Distribution) take advantage of the efficiencies of the scale of their joint operations and so are treated as "large" DBs. We note that the smaller entities (Citipower and Alinta), which each have around 290,000 NMIs, would otherwise be treated as smaller DBs, similar to Aurora (see below).

Aurora in Tasmania has around 260,000 NMIs. This business has a smaller current investment in IT than the "large" businesses and, consistent with this, a lower IT expenditure would be required for smart metering, with less emphasis on integration and automation of business processes. For Aurora, EMCa has allowed costs 50% of those for large DBs.

We wish to point out that it is incorrect to treat UED and AAE as a single entity. Although the two organisations are aiming to achieve benefits by choosing to operate a joint AMI program, the two organisations have different ownership structures and will, for example, require separate software licences and separate IT physical infrastructure.

4 Phase 2 Benefits and Victorian Business Experience

4.1 Introduction

In this section, AAE and UED have attempted to critically evaluate the network benefits and recurrent costs for Victoria derived for the Phase 2 CBA [21] in the light of their experience in the Victorian AMI rollout.

CRA International has ascribed total annual benefits to Victoria of $49 - $77 per customer in scenario 1, or between $120 and $187 million[22]. If one excludes demand response and reduction in unserved energy as basically market benefits then CRA's numbers imply that distribution businesses will realise 77 to 91 per cent of total benefits[23].

4.2 General issues with benefits in scenario 1

4.2.1 Accuracy of the claimed benefits

CRA has ascribed benefits to the distribution businesses largely on the basis of activities that are assumed to be avoided under AMI with a commensurate reduction in business costs. AAE/UED appreciate that this approach has some logic, but are concerned that many of the benefits cited by CRA will be either:

- difficult to achieve (eg a reduction in call centre usage by customers);
- result in lesser dollar savings than those cited by CRA (eg avoided cost of meter reading); or
- may be offset by increased costs in other meter-related activities (eg meter testing and maintenance).

The costs faced by a distribution business in moving to AMI will not all be transitional, yet this does not appear to be sufficiently reflected in the CBA. Our analysis in section 3 above noted that the CBA had not adequately recognised several additional ongoing costs under AMI.

[21] Specifically, the Workstream 2 results produced by CRA International (CRA) in their February 2008 report to the MCE.

[22] CRA report, Appendices H and J.

[23] CRA Appendices H and J. NOTE: these are NOT the 20-year NPV net benefit estimates presented by NERA in their Overview report.

4.2.2 Timing of the benefits

Where the retailer on behalf of a customer currently requests a service order to undertake a special read or a connection/disconnection and these services (under AMI) no longer require a field visit, then the revenue that distributors earn falls away immediately as does most of the cost. Any remaining cost for these services is likely to be subsumed into the metering services excluded services; for example, in the form of communication cost.

On the other hand, the outage benefits - once they are able to be quantified as part of a regulatory price review process - would be passed back to the customer in the form of a reduction in the network charges during the next pricing review. It may take some time for sufficient penetration of smart metering and revised systems and work processes to be introduced before the benefits may even start to be realised. The benefits in this case will be different depending on the distributors' starting points for network reliability and management, and are unlikely to be realised in a competitive metering model.

4.3 Comment on four main benefit areas

AAE/UED have reviewed and provide comments on four of the benefits areas, which represent about 60% of the expected societal benefits.

The four areas reviewed are:

- improved outage management;
- avoided cost of meters,
- avoided cost of meter reading; and
- avoided connection and disconnection costs.

4.3.1 Outage Management

The CRA report notes benefits in relation to outage management in the following areas:

- Reduced calls to faults and emergency lines based on a 50% reduction in calls to a customer service representative and improved IVR setup;
- Reduced cost of supply restoration and improved ability to deal with nested outages;
- Avoided cost of wasted field investigation; and
- A reduction in unserved energy.

4.3.1.1 Overseas experience is not directly applicable

We note that the consultants derive many of these benefits from overseas experience, however much of the experience derives from the USA which lacks sophisticated outage management systems. For example, UED has a SCADA system which monitors continuity of supply at strategic locations of the distribution network and links to a sophisticated outage management system. Much of the benefit envisaged in the USA has already been

achieved in Australia through the network management systems in place today. Whilst incremental improvement is always sought, it will be harder to achieve than the 60% reported reductions from overseas players.

For example, Puget Sound Energy in Seattle achieved significant benefits in the area of outage management through the introduction of an automated meter reading system. However, when interviewed by a UED and AAE team, it became apparent that PSE had never implemented a SCADA system, and thus had no ability to map customer calls in an outage occurrence. This is not the case with AAE and UED and therefore these types of benefits may not be achievable in our organisations.

4.3.1.2 Benefits of reduced calls may not be realisable

Recent storm activity in Melbourne in April 2008 has indicated that customers are not willing to sit patiently wondering if distributors know about their outages. Customers seek interaction with a person and to gain an understanding of when they will be back on supply. We are concerned at the implication that 50% of calls would no longer require a customer service representative to speak to a customer. Unprecedented storm activity that results in an avalanche of calls also reflects that customer satisfaction levels would be unable to be met or maintained if this resulted in a halving of current staff levels. Avalanche call situations caused by weather events are unpredictable and there are limited resources available to deal with these situations.

We also consider it questionable whether there is any benefit, or even whether it is practical, to provide the detail that AMI will allow if linked into an IVR ie identifying the feeder outage information in a consumer understandable manner while the customer is on the phone for a brief period. There were many wire-down incidents during the April 2008 storm and it was important that customers called in to notify these potentially dangerous conditions. The AMI infrastructure can only distinguish between “supply on” and “supply off” and will not be able to provide information that is important to public health and safety.

4.3.1.3 Benefits of reduced restoration time may not be achievable

It should be noted that:

- recent storm activity:
- the AMI trials conducted in AAE/UED areas; and
- overseas experience

all suggest that the communications network for AMI may be unreliable when most needed. When dealing with nested outages, the data may not always be in the hands of the network control room, or may not be reliable due to the compromised communications network.

In addition, restoration activities may be focused on safety factors, life support criticality, larger number of customers off supply etc. Field work crews and vehicles will prioritise work based on a number of factors, and dealing with nested outages whilst at a location may not be a high priority depending on the outage event. The April 2008 storm certainly confirmed

that initial activities have been focused on "make safe" and restoration of supply to significant number of customers on SCADA control.

4.3.1.4 Avoided cost of wasted investigation

The CRA report suggests that a network control room will have information at hand at the premise level to determine whether the customers meter is on supply or whether the lack of supply might rest with the customer's electrical installation eg fuses, safety switch etc. This benefit is estimated to be $0.90/customer per year.

When receiving these types of calls from customers, which are not linked to outages already registered in a distributor's outage system, the customer is run through a script of checks to try to isolate the problem before a field crew is sent. We consider that whether a field crew is sent or not is unlikely to change under AMI to any measurable extent.

AAE/UED agree that smart meter information may provide additional confidence to the customer service representative or the network control room taking the query about supply. However, this is subject to a number of considerations:

- The reliability and timeliness of the 'last gasp' data from the meter; and
- The timeframes to test the ability to communicate with the meter if that is deemed necessary.

4.3.1.5 Reduction in unserved energy

The CRA report suggests that the estimated benefit of reduced unserved energy is $0.70-$2.40 per customer per year. This benefit assumes that an outage at an individual premise level may be identified prior to a SCADA notification or prior to a customer call. In fact, the rectification time from detection is unlikely to improve. However, where smart metering is linked to sophisticated outage management systems, the outage might be notified to a field crew earlier. The benefit to the consumer is the extra energy consumed by getting the premise back on supply sooner.

This benefit presumes that an outage may occur while a customer is at work or whilst the customer is asleep, and that the network control room may have the necessary data to take action without the customer requesting assistance. To date there has been little consideration regarding the actual processes required in these circumstances. Some issues are:

- whether a field crew should attend to an outage at a customer premise level without a request; and
- whether a field crew should attend to an outage after business hours (whilst the customer is asleep) without notifying the customer that they are on their premise?

There is a debate that is yet to be had on the balance of customer rights and service levels on these matters.

The existence of benefits in this area also assumes that the data from a meter can be provided in a timely manner. There is also an assumption that disconnections for non-payment or at one party's request can be filtered out such that wasted truck visits are avoided. Similarly, feeder level faults or storm events need to be able to be dealt with via sophisticated rules to ensure that meaningful information is provided into a control room to manage the faults.

The majority of the customer minutes off supply (therefore amount of unserved energy) is associated with interruptions at the high voltage level, for which UED/AAE have already in place sophisticated SCADA monitoring and control. Rapid response capability is therefore already in place and is unlikely to be improved by smart meters.

4.3.2 Avoided cost of meters

The avoided cost of meters relates to two benefit areas:

- The avoided cost of meter replacement programs due to the mandate for the distributor to roll out to all customers below 160 MWh per annum for which they are responsible for metering services; and
- The avoided cost for installation of meters with export/import capability as new embedded generation comes on line.

The NER provides obligations on the responsible person to manage meters according to an approved asset management plan whether the meters are new or old and whether the distributor or the retailer manages the meters. This obligation will not disappear. It will in fact be replaced by higher costs in meter testing as new meter families come into use. The benefits assume that the technology deployed will be robust/accurate in the field and will not result in earlier replacement programs. This assumption can only be proven under Australian conditions over the next decade.

The second aspect of benefits outlined by the CRA report includes avoided costs of installing import/export metering as all smart meters will have this capability and the capability should be able to be turned on remotely. AAE/UED assume that the meters and systems employed will be able to do this. However we note that this was not part of the original trials.

The uptake on PV cells has been estimated and may depend on many factors eg: the cost of PV cells (or other embedded generation); and retail feed in tariffs and other green initiatives for the customer to reduce supply from the network.

Again, if these benefits eventuate, they will be in the form of lower capital costs in the metering asset base and will pass onto consumers at the next meter pricing review. Given the legal framework established by the Victorian DPI, for the next 7-8 years this will be a benefit to consumers sooner than the typical 5-year distribution pricing period.

4.3.3 Avoided cost of meter reading

Benefits relating to the avoided cost of meter reading are in the following areas:

- Avoided manual meter reading costs;
- Reduced costs of PDEs; and
- Avoided cost of meter reading route management.

4.3.3.1 Avoided manual meter reading costs

The benefits of avoided manual meter reading are estimated at $6.70 per customer per annum. Each distributor will have a different mix of accumulation and interval meters and underlying read costs for each. Some distributors have lower costs than envisaged by the CRA report and hence the benefits stated in the report will not be realised, and actual benefits will be lower. The benefits appear to be overstated by a significant amount.

4.3.3.2 Reduced costs of PDEs (Portable data entry units)

A 90-95% reduction in PDE costs is also estimated in the report. These attributed 'benefits' appear high. This also presumes that if the communications network fails, there will be no requirement under the NER for NEMMCO to request the responsible person to obtain the meter reading via a field visit, even if the market is tight in relation to prudential requirements.

We consider PDEs may still be required for manual reading where field visit disconnects are undertaken (eg AMI CT meters) or in the event of manually read meters for any consumers above 160 MWh/pa. Reduced PDE costs that may be achieved will be reflected by lower capital in the metering service charges and will be reflected in a lower meter asset base and ultimately lower costs to the consumers.

4.3.3.3 Avoided cost of meter reading route management

The report assumes that there is no requirement for future meter reading route management, as this is all managed remotely via the communications network. To meet the high levels of data turnaround time, manual meter reads will be replaced by polling or remote reading routes to maximise the ability to meet the performance and service levels. We suggest that the $0.8-$1.60 of avoided route management benefits is excessive. The actual benefit is more like 10% of the lower estimate of the range.

4.3.4 Avoided costs of special reads

The avoided costs of special reads are generally based on the published excluded service charge with 25-29% of customers requesting a special read. The benefit reported across all customers is $8.30 per customer per year. We consider that the requests for special reads for AAE/UED areas are about 18%, resulting in an immediate 30% reduction in the benefits.

As the requests to undertake special reads reduce, so does the distributors revenue and actual costs. The benefit to the customer who has an AMI meter operating in accordance with the functionality is immediate.

4.3.5 Avoided costs of connections and disconnections

The reported benefit per customer for avoided connection/disconnection costs is $3.70-$5.70 per year, based on 7-29% of customers disconnected each year and costed at the distributors published excluded service charge. The AAE/UED percentage of disconnections is at the lower end of the reported range. We consider that disconnections will not cease as events such as home renovations, moving of meter boards and property development will still require connections and disconnections in the field. CT AMI metered customers will also require manual connection/disconnection.

In addition, whilst there is potential for benefit in this area, industry and/or regulators have yet to be comfortable with the safety aspects of remote reconnection and also the swiftness of remote disconnection where customers are unable to pay.