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INTELLIHUB GROUP SUBMISSION TO AEMC REVIEW OF THE REGULATORY FRAMEWORK FOR METERING SERVICES

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Executive summary

Intellihub welcomes the Australian Energy Market Commission's (AEMC) review of the regulatory framework for metering services and the opportunity to make this submission.

Competition in the metering sector has delivered better and more efficient service, less cost and cheaper prices, increased innovation and new technology. More than 1,000 skilled jobs have been created, with promises of many more.

In many respects, the AEMC's Power of Choice reforms have worked.

Today, smart meters give insights in real-time; optimise the home for solar, batteries and electric vehicles; and enable new services like demand response and virtual power plants and dynamic control of hot water.

They give more control over household energy costs, and when deployed at scale they reduce costs to serve, putting downward pressure on electricity prices and help deliver a more competitive electricity retail market.

Intellihub's average installation times have now reduced to three days for new connections, well below the binding service levels set by the AEMC. This compares to the previous regulatory framework, where distributors simply applied a best endeavours approach to service levels.

Installation costs have also halved from the pre-Power of Choice period and metering prices are much lower than during the Victorian regulated smart meter rollout. Under Power of Choice, households are not being charged for smart meters.

Modern smart meters can also deliver a wide range of data and services that benefit retailers, networks, technology providers and the market operator. In response, retailers are offering innovative new services and products.

State Governments too are beginning to put smart meters at the centre of new grid security and energy efficiency policy as part of the energy sector's transition. Smart metering technology is now a key enabler of this transition, the integration of Distributed Energy Resources (DER) and the AEMC's and Energy Security Board's (ESB) broader market reforms.

These capabilities are available today and provide the foundation needed to deliver the energy future promised for Australia.

While the Power of Choice reforms have succeeded in many areas, there are elements of the rules that have created unintended barriers to a more efficient and timely deployment of smart meters.

As a result, Australia is on track for one of the slowest smart meter deployments in the world, with full deployment unlikely until after 2040. Outside of Victoria, only 18% of small customers in Australia have a smart meter.

In contrast, most overseas rollouts have been completed in around seven years. New Zealand reached 50% penetration in just 6 years under its competitive approach and now close to 90% of New Zealand customers have a smart meter.

In Australia, network meter testing rates have slowed and so too have replacements of old failed meters. Proactive meter replacements by electricity retailers are not occurring at the rates that were envisaged three to four years ago, mainly because retailers are absorbing almost all of the costs of smart meters despite the benefits being shared by a range of industry participants.

An estimated 2.4 million electricity meters in Australia are now older than 25 years, with 350,000 of those 50 years or older. They are becoming older, less safe and less reliable.

Households, industry, grid operators and governments are missing out on the benefits of smart meters. The technology is available now and Intellihub is supplying data and services to a range of parties, but its use is limited by regulatory barriers, transaction costs and insufficient incentives.

Regulatory reforms can address these challenges and improve outcomes for customers, while maintaining the competitive metering model and current consumer protections.

In this submission, Intellihub proposes a series of reforms to accelerate the smart meter rollout, unlock the benefits of metering data and services, and reduce metering costs. We are proposing reforms that address:

- **incentives** for parties to deploy smart meters, use smart metering data and services, and test or replace old meters where efficient
- **barriers and transaction costs** to the efficient installation of smart meters and the use of smart meter data and services; and
- **transparency of information** that can improve the efficient functioning of the market.

Reforms to the rules can also be completed by actions by governments that are recommended in this submission. Smart meters are a key enabler of many broader government, AEMC and ESB reforms across the energy sector, and those reforms could more explicitly acknowledge and incentivise the important role smart meters will play in their successful implementation.

This review is well-timed and provides a critical opportunity to address these challenges. Without material changes to the rules, customers will be locked in to using old, last century metering technology for many decades to come.

Adrian Clark
Group Chief Executive Officer
Intellihub

1. Introduction

Who we are

The Intellihub Group (Intellihub) is an Australian and New Zealand based utility services and metering intelligence company focused on electricity, gas and water metering services. We are a leading provider of electricity smart meter services in Australia and are currently deploying smart meters to residential and business customers in most states and territories in Australia.

We are a registered Metering Coordinator (MC) and accredited Metering Provider (MP), Metering Data Provider (MDP) and Embedded Network Manager (ENM) through the Intellihub and Acumen brands. We partner with electricity retailers, distributors and other energy sector participants to utilise smart metering technology to deliver data and services that improve the affordability, reliability and security of the electricity sector.

Structure of this submission

This submission responds to the AEMC's 3 December 2020 consultation paper on the Review of the regulatory framework for metering services (metering review).

The submission is structured as follows:

- Section 2 provides an overview of the benefits of smart meters to consumers and the broader energy sector. It also discusses the benefits of a competitive metering framework and aspects of the current regime that are working well to deliver benefits to consumers.
- Section 3 provides Intellihub's perspectives on the current state of the smart metering market. It discusses the key challenges under the current regulatory framework that have led to a slow pace of smart metering deployment and barriers to accessing smart meter services and data.
- Section 4 sets out Intellihub's views on the key areas that the AEMC's review should focus on to increase the benefits for consumers from smart metering services. It also responds to the AEMC's proposed assessment framework and proposes key principles to guide the assessment of reforms.
- Sections 5 to 7 set out Intellihub's proposed reforms to the metering rules in three proposed focus areas:
    - accelerating the smart meter rollout
    - unlocking the benefits of smart meter data and services
    - reducing the costs of smart meters.
- Section 8 proposes a set of complementary measures that should be adopted by governments or other bodies to support the rules and increase the benefits to consumers from smart meters. These issues are likely to be outside of the scope of the AEMC's rule making powers, but the AEMC has indicated that its review will also consider recommendations to governments or other bodies.
- Appendices 1 and 2 provide more detailed information on specific issues, including a case study on lessons from the New Zealand smart meter rollout.

Ongoing engagement

Intellihub would be happy to provide any further information that the AEMC would find useful to assist in this review. We have already contacted the AEMC to register our interest to be a member of the AEMC's stakeholder reference group for this review.

Please contact Robert Lo Giudice at robert.logiudice@intellihub.com.au or 0419 539 638 if you would like to discuss any aspect of this submission.

2. The benefits of smart meters to consumers and the broader energy sector

Current smart meter services

Smart meters are a key enabler of the transition of the energy sector. They enable a wide range of services to help customers reduce their energy costs. The data and services they can provide to retailers, network operators and AEMO also helps improve reliability, system security, safety and affordability.

Without a smart meter, consumers cannot install solar PV, engage in demand response and be rewarded for reducing their consumption at peak times or using their batteries or electric vehicle to support the grid, access potential future services, or access information about their energy consumption and ways to reduce their usage and costs.

Similarly, smart meters can provide extremely valuable data and services for AEMO and network businesses to help them manage a grid with higher penetrations of renewables and integrate increased amounts of DER while maintaining security and reliability. For example, distribution network service providers (DNSPs) are currently facing increased issues with voltage limits in parts of their networks with high penetration of solar PV. This is challenging to manage efficiently due to a lack of data on their low voltage networks. Smart meter data can help networks manage these issues and increase the amount of DER they allow customers to connect, which can reduce network and wholesale energy costs and benefit all customers.

The following diagram illustrates the services that can be provided by today's smart meters and how this has evolved over time from a simple remote service to a pivotal instrument for enabling future energy policies and services, and connecting with behind the meter appliances and devices.

Figure 1: The smart meter of today

In the consultation paper, the AEMC recognises the potential benefits of smart meters but suggests that smart meters are not currently providing many of the services that could be made possible, largely due to the low penetration rates. On page 35 of the consultation paper, the AEMC notes that the 'general sentiment amongst stakeholders is that smart meter data is being under-utilised in the NEM' and sets out a list of additional services stakeholders have suggested could be offered.

Intellihub agrees that some of these services are currently under-utilised and limited to smaller-scale programs and trials and would be made more widely available if penetration rates increase and the current regulatory barriers that are discussed in this submission are removed.

However, almost all of these 'future' metering services the AEMC identifies in its consultation paper are already available and offered by Intellihub today. The under-utilisation of these services is not due to any technology limitations in the meters themselves – they could all be provided in 2021 if there was sufficient demand for them from consumers, retailers, distributors, AEMO and others.

The following table sets out each of the additional services referred to by the AEMC and whether they are offered today.

Table 1: Advanced smart meter services and their current availability

Service	Current availability
Data for apps to provide real time visibility to consumers of their energy usage	Currently available. Near real-time streaming data (i.e. streaming energy data updated every few seconds, not just 5 minute interval data) is available and currently provided to some retailers. Non-intrusive load monitoring technology is also available to provide insights into the consumption of individual appliances. Apps are currently provided to customers by some retailers.
Improved billing arrangements including pay-as-you-go	Currently available. Many retailers offer monthly billing to smart meter customers. Pay-as-you go meters are not common in Australia and are prohibited in some jurisdictions, but Intellihub offers them in New Zealand.

Service	Current availability
Monitoring of safety issues such as neutral integrity and cross-polarity	Currently available. All Intellihub smart meters provide the data necessary to detect neutral integrity issues that are observable at the metering point.
Providing visibility of the LV network, including power quality and network outage information	Currently available. Intellihub has arrangements in place with some DNSPs to provide data in near real-time to enable applications including: - Power quality monitoring - Unplanned outages, fault identification, workforce optimisation - Neutral integrity - Dynamic voltage control - Long term DER hosting capacity improvement - LV modelling - Bushfire risk management - Long term/day ahead load forecasting - New connections process improvement - Dynamic line rating - New tariff structures, e.g. time of use (TOU) solar sponge tariffs. Some of these services require higher penetration rates of smart meters, but many are effective with penetration rates of around 30% or more.
System security functions	Currently available. Examples include the SA relevant agent service for remote disconnection of solar PV systems to manage system security emergencies. Intellihub has also held discussions with AEMO on smart meter solutions for managing DER exports at times of minimum demand that can provide a more targeted alternative to disconnection of generation. Intellihub is also in the process of releasing meters that will meet AEMO's frequency control ancillary service (FCAS) specifications to measure and validate FCAS provision from connected DER. More services can be provided if AEMO or governments specify the requirements.
Optimisation of controlled load for hot water	Currently available. Intellihub meters have load control devices capable of dynamic control and optimisation. These services are currently being provided to retailers and DNSPs.
Demand management	Currently available. Smart meters are a key enabler for demand management services. Some retailers are currently offering demand management services using data from Intellihub meters.
Optimisation of DER generation and storage	New products to optimise DER including generation, storage and appliances that are connected through the smart meter are planned for launch in 2021.
Utilisation of electric vehicles (EVs) for energy storage	Intellihub smart meter data currently enables optimised EV charging and tariff options including using EVs for storage and vehicle-to-grid VPP services.
Improved integration of renewable energy	Currently available as noted above, plus Intellihub's meters enable dynamic export control and solar inverter monitoring services.
Virtual power plants (VPPs)	Currently available. Intellihub offers VPP services and currently has over 2,000 sites in VPPs.
Research and market planning	Currently available, subject to customer and retailer consent.

Smart meter benefits available now

The key benefits that can be provided by these services and the potential savings to consumers are illustrated in the following figures.

Figure 2: Key benefits of smart meters

Figure 3: Potential savings to consumers from smart meters

Source: (1) https://fbe.unimelb.edu.au/exchange/edition1/smart-customers-save; (2) Solar Analytics Savings Calculator for a customer using a 6kW system instead of a 4kW system with dynamic export limiting; (3) finder.com.au/time-of-use-vs-single-rate – assuming energy mix is 80:20 off-peak to peak; (4) Combination of Essential Energy fees for connection and disconnection, 2020; (5) Comparing a tier 1 and tier 3 retailer for a household using 3900 kWh on a single rate tariff; (6) https://www.energy.vic.gov.au/electricity/smart-meters - Smart Meter Provision stakeholder engagement by KPMG

Linkages to other AEMC and ESB projects and priorities

As the AEMC notes in the consultation paper, the services and data that can be provided by smart meters are a key prerequisite for successful implementation of several AEMC and ESB projects. Intellihub agrees with the AEMC that key related projects include the ESB's Post 2025 Market Design project and the ESB's Data Strategy.

Smart meters are also a key enabler for other AEMC and ESB projects and proposed reforms including the implementation of two-sided markets, demand response, DER integration, the future role of distribution networks and network tariff reforms. Smart meters can also support AEMO's current work on system security, in particular data and services to manage the challenges associated with minimum demand. Smart meter data will also be critical to the success of the proposed Consumer Data Right.

The benefits of the competitive approach to metering

The competitive model for metering services that was introduced by the AEMC has delivered many benefits to consumers compared with a distributor-led regulated rollout of smart meters. Reverting to a more regulated approach to smart metering would lead to massive disruption to the market and deprive consumers of these benefits.

Services

As discussed above, current smart meters can provide consumers, retailers, distributors and other energy sector participants an extremely broad range of services and data. At the time of the 2015 rule change, some stakeholders were concerned that the minimum services specification only required a small number of services and were uncertain about the AEMC's view that the competitive market would deliver a broader range of services without the need for prescriptive regulation. The AEMC's vision for this part of the rules has proven correct, with current smart meters providing a very wide range of services far beyond the minimum specification as illustrated in Table 1 above.

The limited level of prescription in the minimum services specification has enabled metering businesses like Intellihub to continuously upgrade their metering technology to add new services that were not available or even contemplated in 2015. At the time the rules were made in 2015, the main focus of metering was remote reading, remote disconnection and reconnection and a limited set of data that could be useful for customers, retailers and DNSPs. Modern smart meters have evolved well beyond these functions to become a key tool for DER integration and enabling new services for customers.

This contrasts with the Victorian regulated rollout, where the same prescriptive functional specification that was developed almost 20 years ago still applies and locks in old technology.

Costs and prices

The competitive approach has resulted in significant reductions in costs and prices compared with a regulated approach or compared with the market prior to the 2015 rule change.

Three aspects of costs and prices illustrate these reductions. More details on costs and prices can be provided on a confidential basis if it would be useful to the AEMC.

- **Metering costs to MCs:** About half of the total upfront cost to an MC of deploying a smart meter is the hardware cost and the other half is the installation cost. Installation costs have approximately halved since 2015, largely due to increased scale. Meter hardware costs have also reduced. Intellihub predicts that installation costs will fall further if the regulatory changes proposed in this submission are made to increase efficiency and scale by accelerating the rollout and reducing issues that result in multiple site visits or an inability to complete jobs.
- **Metering prices to retailers:** Intellihub charges retailers an annual fee for its metering services rather than a one-off hardware or installation fee, with the annual price varying depending on the meter type. Intellihub's average annual price to retailers is up to 50% less

than the annual regulated prices charged by Victorian DNSPs to retailers during the Victorian rollout.[1] This lower price has been achieved despite the Victorian DNSPs having the scale advantages that should have come with a mandated rollout to every premises.

- **Metering prices to customers:** One of the key benefits of the competitive approach has been that we understand that almost no small customers are being charged for smart meters. Retailers are generally absorbing the costs of smart metering services and are not increasing prices or charging customers different prices based on whether they have a smart meter or manually-read meter. Regulated retail prices under the Default Market Offer and Victorian Default Offer were not increased to account for any smart metering costs. This compares with the Victorian regulated rollout where customers experienced a significant increase in retail prices due to increased metering costs.

Service levels

Intellihub acknowledges that some customers experienced unacceptable delays with meter installations in the first year or so after the commencement of the new rules. MCs and retailers have addressed these issues and responded to new rules introduced by the AEMC.

Under the current rules, customers have the certainty of binding maximum installation timeframes, with meaningful financial penalties if those timeframes are not met. This contrasts with the non-binding or best endeavours obligations that applied when distributors were responsible for metering.

Intellihub considers that installation timeframes are now significantly shorter than the timeframes experienced when distributors were responsible for metering prior to the new rules commencing in 2017, noting that there was almost no visibility of DNSPs' installation timeframes.

During 2020, Intellihub's average installation timeframes were 4 business days for new connections and 11 business days for additions and alterations. To date for 2021, the average installation timeframe for new connections has fallen further to 3 business days.

This compares with the regulated timeframes under the rules of 6 and 15 business days respectively, with exceptions to those timeframes applicable in a range of circumstances. During July to December 2020, Intellihub installed over 99% of meters within these timeframes. More detailed information on timeframes and reasons for exceptions to the standard timeframes can be provided on request if it would be useful to the AEMC.

3. The current slow pace of deployment means consumers are missing out on these benefits

Overall, the competitive smart metering framework put in place by the AEMC in 2015 has been a success, but there are important parts of the framework that have not delivered on expectations and are resulting in consumers missing out on the benefits of smart meters.

The main issues are the extremely slow pace of the current deployment of smart meters and barriers to increased use of smart metering data and services.

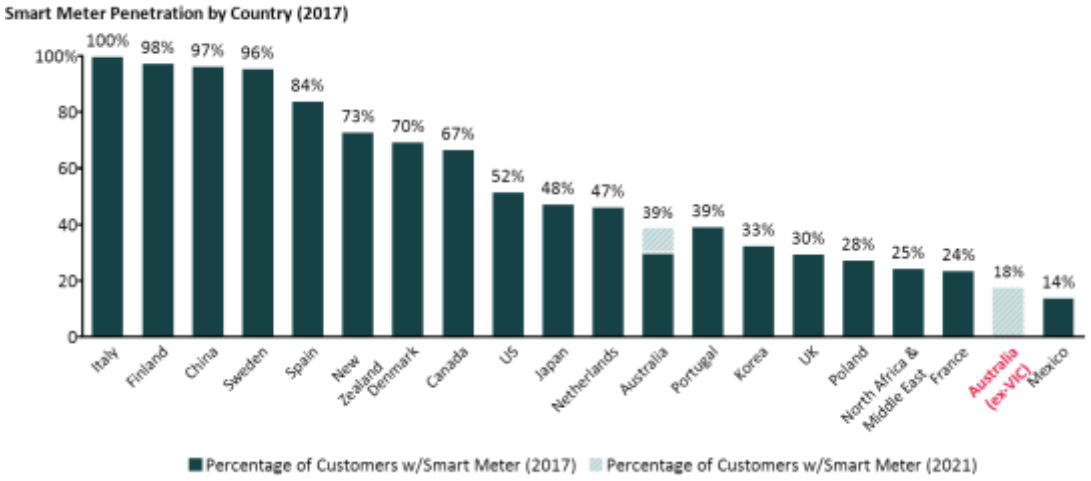
As shown in the data in the AEMC's consultation paper, only about 18% of small customers in the NEM outside of Victoria currently have a smart meter. Based on AER data, only around 430,000

[1] Based on a comparison between Intellihub's average metering charge and AusNet Services' regulated charges for smart metering services from 2012-2017, adjusted for inflation.

smart meters were installed in the year to March 2020, which is about 4.5% of current meter fleet for small customers.

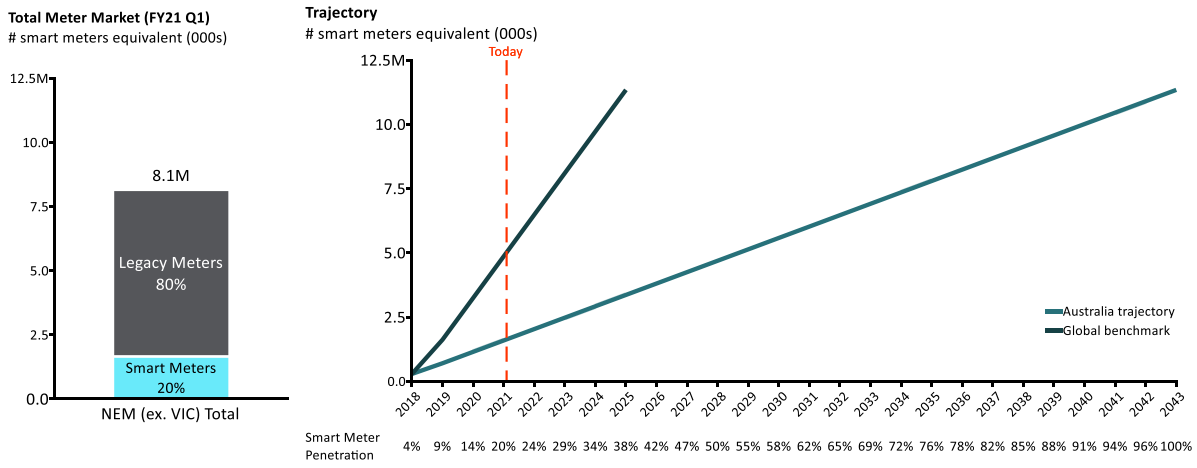
This deployment rate per year puts Australia on track for one of the slowest smart metering rollouts in the world, with full deployment to all customers unlikely to occur until after 2040.

Figure 4: Australian smart meter penetration compared with other OECD countries and global benchmarks



Source: Source: Intellihub analysis of data from European Commission DG Energy, Bloomberg New Energy Finance, Natural Resources Canada, AER retail energy market performance update as at Q1 FY21

Figure 5: Current smart meter penetration and trajectory



Source: Intellihub analysis of AER retail market performance data as at Q1 FY21

The AEMC's review should assess the reasons for this very slow rate of deployment and recommend a package of reforms to accelerate the rollout.

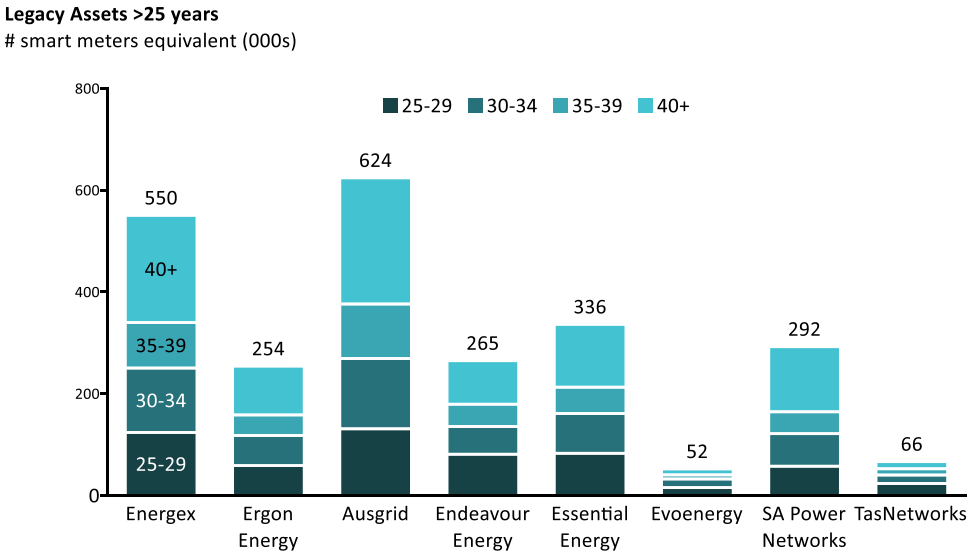
Intellihub's experience and its analysis of AER data indicates that:

- Almost all of the current smart meter installations are due to faults, family failures, new connections or customers installing solar PV.
- Meter installation rates for new connections and solar PV appear to be in line with expectations and there are no indications that these rates should be higher.

- The current rates of family failures are surprisingly low and have fallen well below the levels seen before implementation of the metering competition rule change in late 2017. A key cause appears to be record low volumes of meter tests by many DNSPs. For example, average annual testing rates for type 5 and 6 meters by NSW DNSPs are currently less than half the levels of tests that were undertaken prior to the contestability rules commencing.
- The current rates of proactive retailer new meter deployments are extremely low. The AEMC's rule change was partly based on an expectation that retailers would proactively offer customers smart meters under the opt-out arrangements, but that is not happening. In the year to March 2020, AER data shows that only 0.6% of customers received a smart meter under a retailer new meter deployment.

One consequence of this very slow rollout is that many customers are stuck with old technology. Intellihub estimates that around 2.4 million customers in the NEM have a meter that is over 25 years old, with over 350,000 being more than 50 years old.

Figure 6: Legacy meters that are over 25 years old



Source: Intellihub analysis of DNSP data from Meter Asset Management Plans and other documents submitted to the AER and published by the AER, supplemented by Intellihub statistical analysis

4. Proposed focus areas and principles for the AEMC's review

Intellihub supports the scope and areas of focus for the review identified by the AEMC in the consultation paper and the review terms of reference.

Consistent with those documents, Intellihub recommends that to increase consumer benefits from smart meters, the AEMC review should focus on reforms that:

- accelerate the rollout of smart meters so more consumers can benefit
- unlock the benefits of smart meter data and services
- reduce the costs of smart meters by removing unnecessary regulatory costs and barriers.

These three areas are interrelated. Unlocking benefits and reducing costs will help accelerate the rollout by improving the economic case for proactively deploying smart meters. Similarly, accelerating the rollout will deliver scale benefits that will help unlock benefits and reduce costs.

Intellihub considers that significant improvements to the regulatory framework can be made in relation to each of these areas, while maintaining the key features of the current regime including the competitive model and current consumer protections.

Intellihub's proposals for reforms in each of these areas are set out in sections 5 to 7. There is no single 'silver bullet' that can solve all of these issues. However, a series of targeted reforms can materially improve outcomes by addressing:

- **incentives** for parties to deploy smart meters, use smart metering data and services, and test or replace old meters where efficient
- **barriers and transaction costs** to the efficient installation of smart meters and the use of smart meter data and services
- **transparency of information** that can improve the efficient functioning of the market.

Consistent with the terms of reference and consultation paper, Intellihub considers that it is important that the review should have a broad scope. The review should not just be limited to potential changes to the NER and NERR, but should also consider what recommendations the AEMC should make to jurisdictional governments and other bodies on complementary measures they can take to remove barriers and help realise the benefits of smart meters. Recommendation for these complementary actions are set out in section 8.

Intellihub supports the AEMC's proposed assessment framework. However, the proposed framework is very high-level, as is to be expected at the commencement of the review.

As the review progresses, Intellihub proposes that the AEMC should apply the following principles to test the effectiveness of the current regulatory regime and develop recommended reforms:

- The regulatory framework should enable customer choice and competition. This includes competition for the provision of metering services to drive lower costs and better services, and making it easier for customers to access a smart meter if they want one.
- The regulatory framework should recognise the benefits of an increased penetration of smart meters for customers and the broader energy system. Reforms should remove any inefficient barriers and unnecessary costs that are slowing the deployment of smart meters, and consider what other measures can be taken to accelerate the rollout while maintaining competition, choice and appropriate customer protections.
- The rules should provide efficient incentives for the use of smart metering data and services by all parties including DNSPs, remove inefficient barriers to the provision of services and implement mechanisms to reduce the transaction costs of providing data and services.
- Appropriate obligations for testing, inspecting and replacing meters can help reduce the costs of smart meters while also accelerating the rollout and still protecting customers from accuracy and safety risks.
- Increased transparency of information regarding the metering market (e.g. non-confidential data held by AEMO and the AER) can improve customer outcomes.

5. Proposed reforms – accelerating the smart meter rollout

Intellihub proposes the following reforms to accelerate the smart meter rollout so consumers can access the benefits of smart meters.

Table 2: Reforms to accelerate the smart meter rollout

Reform	Problem to be addressed	Description of reforms
Old meters over a certain age should be replaced	As discussed in section 3 of this submission, the slow pace of the smart meter rollout is leaving many customers with old meters that mean they are missing out on significant benefits. The current very low levels of testing and family failure replacement of type 5/6 meters is contributing to this slow rollout. Many customers have old meters that are well past their economic life and may have safety or accuracy issues. The most effective way to accelerate the smart meter rollout would be to require that all meters over a certain age be replaced with a smart meter. This would dramatically increase deployment rates and lead to scale efficiencies that would reduce costs and increase the benefits of smart metering data and services to a range of parties. This reform would also help ensure that all customers eventually get access to a smart meter, with priority going to those with the oldest meters. This would mitigate the risk that rollouts target the lowest cost or highest value customers (e.g. urban customers and those who can afford DER) and other customers miss out or have to wait much longer. An alternative approach drawing on the successful New Zealand competitive rollout (see Appendix 1) would be to require that all old meters are either tested or replaced within a certain period.	Require all type 5 or 6 meters over a specified age (e.g. 25-30 years) to be replaced with a smart meter within a specified timeframe (e.g. 5 years). Alternatively, require all type 5 or type 6 meters over a specified age (e.g. 25 years) to either be tested or replaced within the next 5 years.
Improve the transparency of type 5/6 metering and upcoming family failures	Insufficient data is publicly available to understand and improve the efficiency of the metering market. MCs have very limited access to information regarding DNSPs' legacy metering fleets such as meter types and volumes, testing approaches and rates. Very little data is available on meter ages and forecast family failures, which makes it very difficult for MCs to efficiently plan the replacement of old meters. Some data is contained in metering asset management strategies and test plans that are provided by DNSPs to AEMO and to the AER as part of their regulatory proposals, but some DNSPs claim confidentiality over this data so it is not published by the AER. AEMO does not publish any metering asset management strategies and test plans.	The public availability of information on DNSP metering fleets should be improved by requiring DNSPs to publish their metering asset management strategies and test plans and provide data on to all MCs on meter ages, meter volumes, testing approaches and rates, forecast family failure dates and replacement plans. The requirements for distribution annual planning reports should also be expanded to include forward-looking plans for managing faults and family failures in DNSPs' metering fleets.

Reform	Problem to be addressed	Description of reforms
Strengthen type 5/6 meter testing requirements	Testing requirements for type 5 and 6 meters are unclear and give DNSPs' extremely high levels of discretion as to how many meters they test and inspect. Based on AER RIN data, testing rates for type 5/6 meters have fallen dramatically since the new rules were introduced in late 2017. For example, between 2009-2017, Ausgrid tested an average of 1,621 meters per year, but from 2018-2024 Ausgrid forecasts testing rates to fall to just 488 meters per year. Reductions of 30-50% have also occurred with all other NSW and QLD DNSPs. The NSW DNSPs are only undertaking a total of about 2,000 tests per year out of about 5 million meters. This may indicate that DNSPs previously had an incentive to test and replace meters when new meters were added to their regulated asset base (RAB) but now have an incentive to minimise testing rates to reduce opex.	The reasons for large decreases in type 5/6 meter test rates should be reviewed and the current testing requirements for type 5/6 meters should be strengthened and made more transparent.
Make the opt-out notice requirements more flexible	Retailers can install new smart meters for customers under a new meter deployment, but must provide opt-out notices that meet very prescriptive requirements in the rules. Almost no customers opt-out in practice, but the existence of this right is important for some customers and it should be retained. However, the rules requirements for the content and timing of the opt-out notices are extremely prescriptive. Retailers have indicated that these requirements are a significant barrier to undertaking new meter deployments and a reason why the rates of those deployments are well below expected levels.	The content and timing requirements for opt-out notices should be reviewed to remove unnecessary prescription and reduce barriers to retailers undertaking new meter deployments.
Enabling customers to request a smart meter	Customers currently do not have any right to have a smart meter installed on request. Some retailers will install a smart meter on request, but others will only fulfil a request where a new or replacement meter is required e.g. for solar PV. Customers should be able to request a smart meter from their retailer if they want one (e.g. to access a new tariff or service) and should not need to change retailers just to access a smart meter.	Require all retailers to offer small customers a smart meter on request. Alternatively, the AER's Energy Made Easy comparison website should indicate which retailers will offer customers a new smart meter as part of their retail package.
Reform how DNSPs recover the costs of type 5/6 meter assets	When the new rules were introduced, the AER reformed DNSPs' charges for type 5/6 meters. Metering charges were split into an operating charge that ceases to be paid when the meter is replaced and a capital charge that continues to be paid by the retailer even when the old meter is replaced. This means that when a retailer replaces a type 5/6 meter with a smart meter, it has to pay for the remaining asset value of the old meter as well as paying for the new meter. In some DNSP areas this is not a significant issue as capital costs can be as low as $1-2 a year. But in most	Review the method for how DNSPs recover the capital costs of type 5/6 meters that are replaced with a smart meter and consider whether there are alternatives that do not create a barrier to the replacement of old type 5/6 meters. If the AEMC considers that it is more appropriate for this issue to be addressed by the AER rather than by amendments to

Reform	Problem to be addressed	Description of reforms
	DNSP areas these capital costs have become a major barrier to the deployment of smart meters and a key reason for the current cost gap between installing a new smart meter and continuing to use the old type 5/6 meter until it fails. For example, current capital charges for Ausgrid and Ergon are $15-17 a year and for Energex they are $25-28 a year. Due to the age profile of some of these DNSPs' metering fleets, these capital charges will continue to be high for at least the next 10 years. Some DNSPs also charge an extremely high 'final read' fee when a type 5 meter is replaced with a smart meter, which can be over $70. This acts as an 'exit fee' that makes replacing the meter with a smart meter uneconomic.	the rules, it should recommend that the AER addresses this issue in upcoming distribution determinations. Also recommend that the AER review DNSPs' final read fees and consider whether there are alternative approaches that avoid creating a barrier to the efficient installation of smart meters.

Intellihub does not support changing the rules so that small customers can appoint their own Metering Coordinator. This proposal would not be an effective way to accelerate the rollout or unlock the benefits of smart meters and appears to have very little stakeholder support. It would add unnecessary confusion for customers and further complicate an already complex contractual model. Customers should be able to focus on the services they want, rather than the technology used to deliver those services.

A better alternative to improve customer choice would be the proposal above that enables customers to request a smart meter from their retailer. The current inability of customers to require retailers to offer them a smart meter could be a barrier for some customers who want to access a tariff or service that needs a smart meter.

6. Proposed reforms – unlocking the benefits of smart meter data and services

Intellihub has observed an increase over the past 6 to 12 months in the number of retailers who are proactively exploring new products that take advantage of the capabilities of Intellihub's advanced products.

It appears that a number of retailers have historically spent considerable time, effort and costs to 'bed down' the rollout of smart meters but are now investigating a range of new services that may result in proactive or targeted deployments increasing. This would improve further with the reforms proposed in this submission to accelerate the rollout and reduce metering costs.

Accordingly, the focus of the reforms below is on unlocking the benefits of smart meters for other parties such as DNSPs and third party service providers.

Intellihub proposes the following reforms to unlock the benefits of smart meter data and services.

Table 3: Reforms to unlock the benefits of smart meter data and services

Reform	Problem to be addressed	Description of reforms
Reducing barriers to providing data and services to DNSPs	Intellihub is providing smart metering data and services to some DNSPs, but it is currently largely limited to small-scale programs. The complexity of the rules and commercial arrangements means there are currently high transactions costs and barriers to providing data to DNSPs that make it hard to scale-up these programs. A key issue is a lack of clarity of consent requirements. The rules provide that data can be provided to any person with the customer's consent, or can be provided to DNSPs to enable them to meet their obligations to provide a safe, reliable or secure network without customer consent (clause 7.15.4). But the rules also provide that data and services can only be provided to DNSPs or other parties on a commercial basis subject to the terms of the MC's appointment by the retailer (clause 7.6.1(b)). This means that retailers can, and do in practice, contractually require their consent before data or services are provided to any person including DNSPs. Intellihub has successfully obtained some retailers' consent to provide data to DNSPs for current projects, but not all retailers have agreed and the transaction costs of obtaining consent from every retailer whenever data is proposed to be shared are very high. Retailer consent may be appropriate in certain circumstances, e.g. where there are competition or privacy concerns, but should not be needed each time data is provided to DNSPs to improve the operation of their networks. Intellihub understands that some DNSPs also consider the lack of standard formats for providing and accessing smart meter data to be a significant barrier, as they may receive data in different formats from each MC. Common formats could also reduce costs for MCs, as they would avoid each DNSP asking for the same data in a different format.	Clarify the circumstances in which retailers can require consent before data and services are provided to DNSPs. This could be done by providing that consent is not required for certain types of data or services that are provided to DNSPs. Retailers and MCs should continue to be able to agree reasonable revenue-sharing arrangements where data or services are provided to DNSPs or any other party on a commercial basis so that charges paid by these parties reduce the costs of smart metering rollouts and help drive greater adoption. Consider whether there would be benefit in establishing a mechanism for agreeing common formats for specified types of data that are provided to DNSPs. For example, common formats could be specified in the B2B procedures and data could be exchanged using the B2B e-Hub. It would remain up to MCs and DNSPs to agree what data is provided and the charges for its provision, but common formats could reduce the costs of providing and using this data.
Enhancing incentives on DNSPs to use smart meter services and data	DNSPs may not have sufficiently strong financial incentives to acquire smart metering data and services to improve the efficient operation of their networks or as a lower cost alternative to traditional network capex solutions. Expenditure on smart metering data and services should qualify for the Demand Management Incentive Scheme (DMIS) and Demand Management Innovation Allowance (DMIA), but there appears to be extremely limited use of these mechanisms by DNSPs for smart metering services and data at present.	Review whether changes should be made to the economic regulation regime to increase financial incentives on DNSPs to use smart metering data and services and recover the costs where it is an efficient solution. Expand the requirements for distribution annual planning reports to include data access plans for improving their LV system visibility.

Reform	Problem to be addressed	Description of reforms
Increasing incentives to using smart meters as an alternative to legacy network load control services	Smart meters can provide hot water load control services that are a more advanced and lower cost alternative to legacy network load control systems. Intellihub is providing load control services to many DNSPs who are comfortable that smart meter load control services are a more efficient alternative to network load control equipment. Intellihub has also been working with a DNSP and retailers as part of a successful program to install new smart meters in an area as a lower cost alternative to replacing network load control equipment that has reached the end of its life. ARENA is also funding smart hot water load control projects that demonstrate approaches for rewarding customers for actively controlling hot water systems (see https://arena.gov.au/news/storing-excess-solar-from-the-grid-using-hot-water-systems/). However, some DNSPs continue to insist on using network load control equipment instead of smart metering load control services and are continuing to replace and install new network load control equipment. The economic regulation framework should dis-incentivise this approach, but it has not done so for all DNSPs in practice. These investments are generally below the RIT-D threshold so there is no requirement to consider lower cost alternatives (although arguably in some cases they should be treated as a program of replacement work with a collective value above the threshold). When the rules were made in 2015, there was a concern load control was not included in the minimum services specification and may not be provided by MCs, so 'network device' provisions were included to allow DNSPs to keep installing network devices and prohibit MCs from removing them unless there was insufficient space on the meter board. Now that it has been proven that smart metering load control is widely available and low cost, these provisions are not needed and lead to inefficient outcomes.	The AEMC should consider a range of options to incentivise or require DNSPs to use smart meter load control services instead of inefficient expenditure on maintaining, replacing or installing network load control equipment. Options include: • Unbundle new or replacement load control from the regulated standard control service so that it must be competitively procured by DNSPs rather than using regulated capex to install network devices (similar to the changes made for type 4 metering services). If the AEMC considers that it is more appropriate for this issue to be addressed by the AER rather than in the rules, it should recommend that the AER addresses this issue in upcoming distribution determinations. • Amend the network device provisions to allow MCs to remove existing network devices used for load control if the MC offers to provide a smart meter service with equivalent or better functionality. • Expanding the requirements for distribution annual planning reports to include asset class strategies for load control devices.
Removing compliance barriers to installing smart meters as an alternative to legacy network load control services	Retailers, DNSPs and MCs have experienced rules compliance barriers when installing smart meters as an alternative to network load control equipment that has reached the end of its life. In the Intellihub program referred to above where smart meters were installed as a lower cost alternative to replacing network load control equipment that had reached the end of its life, 'no action' letters were required from the AER to enable the installation of the smart meters.	If network load control equipment is faulty or at the end of its life and is replaced by a service that requires the installation of a new smart meter to provide load control services, the replacement of the meter should be treated like a family failure replacement for meter transfer and customer

Reform	Problem to be addressed	Description of reforms
		notification purposes. This can be achieved by amending the definition of a 'maintenance replacement' in the NERR to include these circumstances.
Reducing barriers to providing data and services to other parties	As with the issues above regarding the provision of data and services to DNSPs, providing data and services to other parties is made difficult due to a lack of clarity, potential barriers and transaction costs. The main issue is consent requirements.	Clarify the circumstances in which data can be provided to third parties and the associated consent requirements.

Intellihub does not support regulation of the price of metering data or services. There is no evidence of market power or any other market failure that would justify access and pricing regulation. The metering market is highly competitive, with numerous MCs, MPs and MDPs. Intellihub is currently providing data and services to a range of parties, including DNSPs, at commercially negotiated prices. Price regulation would impose significant costs for no clear benefit.

Similarly, a requirement to provide additional data or services to DNSPs for 'free' would not be appropriate or efficient. This would effectively be a heavy-handed form of access and price regulation, with the price set to zero. There is no precedent for applying such an approach to a commercial service where the service provider does not have an alternative regulated method of cost recovery. Further, there is no evidence that this data is being unreasonably withheld by MCs, MPs and MDPs and the above measures to address consent issues are a much more commensurate response to any currently perceived issues.

If DNSPs value smart metering data or services, they can acquire them on a commercial basis. The revenue received by metering businesses for these services can be shared with retailers to improve the economic case for smart meter deployments and help accelerate the rollout.

Providing additional data is not 'free' and the costs of developing systems to collect and share the data must be borne by someone. If Metering Coordinators are required to provide additional data to DNSPs that is not paid for by DNSPs, the costs of doing so (and the foregone revenue) will be passed on to retailers through increased metering charges, and may be passed on to customers through higher retail electricity prices. Those increased costs to retailers will also further hinder the economic case for retailers to deploy smart meters, slowing the rollout further. This approach would therefore be counter-productive – if not enough meters are deployed, they can't provide useful data to DNSPs or anyone else.

Under the current economic regulatory framework, DNSPs can pay for access to such data or services and recover the costs of doing so where it is efficient. The AER has recently approved the recovery of such costs by DNSPs and published a guideline on its approach to the assessment of this type of expenditure for DER integration.

Regulation would also deter innovation in new metering services if there is no way to recover the costs of research and development on new services.

The AEMC's focus should instead be on reforms to increase incentives and reduce barriers to providing additional data and services to DNSPs and others on a commercial basis to enable value-stacking of the many services smart meters can provide and make their deployment more economic.

7. Proposed reforms – reducing the costs of smart meters

Intellihub proposes the following reforms to reduce the costs of smart meters by removing unnecessary regulatory costs and barriers.

Table 4: Reforms to reduce the costs of smart meters

Reform	Problem to be addressed	Description of reforms
Avoiding unnecessary physical inspections of smart meters	The current inspection requirements for smart meters in the rules are unclear and the manner in which they are currently being interpreted and applied by AEMO is leading to inefficient outcomes and unnecessary costs. AEMO's current practice when approving metering asset management strategies will lead to significant additional costs for consumers and further slow the pace of smart meter deployment. AEMO's current practice also does not sufficiently recognise that the advanced remote monitoring capabilities of smart meters can perform most of the functions that were traditionally performed by a physical inspection of manually-read meters, reducing the need for physical inspections of smart meters. If the rules are not amended to clarify this issue, the current approach will require millions of unnecessary inspections to be carried out, which will materially increase metering costs and retail electricity prices, delay the deployment of smart meters and reduce the ability of customers to access their benefits.	Clarify the inspection requirements for type 4 meters to avoid the need for unnecessary physical inspections of every smart meter. Intellihub and other metering businesses considered submitting a separate rule change on this important issue in 2020, but understand that AEMC staff preferred for it to be addressed as part of this review instead of a separate rule change process. This issue and the proposed rule changes are described in detail in Appendix 2.
Enable access to DNSPs' keys for locked metering sites	Some meters can only be accessed with keys that are held by the DNSP. In some jurisdictions, DNSPs have provided access to these keys to MCs and their personnel. But DNSPs in SA and NSW continue to refuse to do so. This is leading to MCs being unable to install smart meters, increased costs, delays and poor outcomes for consumers.	Require DNSPs to provide MCs access to locked metering sites, subject to agreeing to appropriate security arrangements.
Consistency in metering installation rules	When metering was the responsibility of DNSPs prior to the introduction of metering competition, detailed service and installation rules applied and provided clarity around technical requirements for metering installations in each jurisdiction. These rules have not been updated for smart metering and are not suitable for a competitive smart metering rollout. Considerable inefficiency also arises from a lack of nationally consistent metering installation rules. The metering industry has developed proposed replacement rules, but they have no legal status.	Implement a process for developing and authorising consistent metering installation rules.

8. Complementary measures that should be adopted by governments or other bodies

In addition to the above changes to the rules, Intellihub proposes that a series of complementary measures should be adopted by governments or other bodies to support the rules and increase the benefits to consumers from smart meters. These issues are likely to be outside of the scope of the AEMC's rule making powers, but the AEMC has indicated that its review will consider recommendations to governments and other bodies, including changes to jurisdictional instruments.

Table 5: Complementary measures

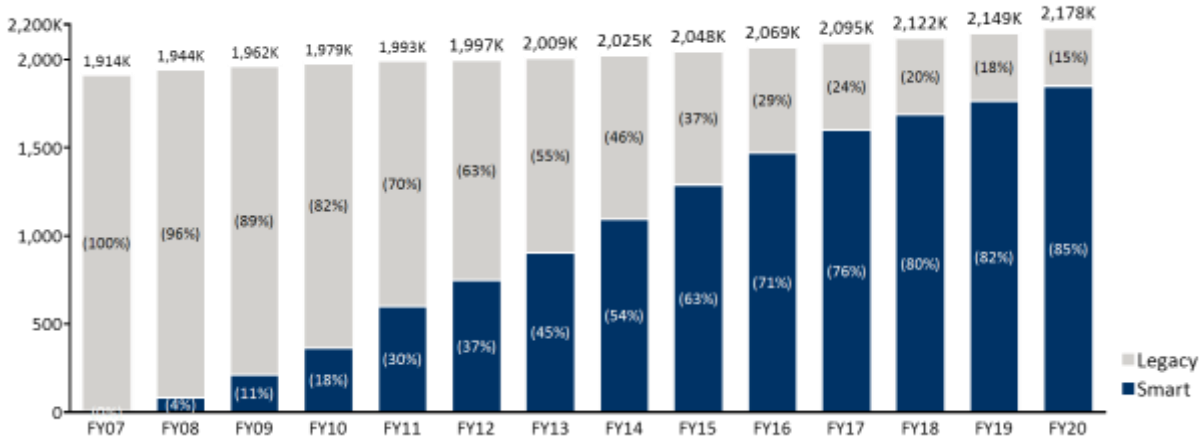
Issue	Proposed action
Unlock state restrictions on remote connection services: One of the benefits of smart meters is the ability to undertake remote disconnections and reconnections. This service provides significant cost savings and leads to better service for customers, e.g. the ability to have the power connected immediately on moving house. Most jurisdictions allow these services, without any issues. But Queensland still prohibits them.	Recommend that all governments remove prohibitions on the use of remote disconnection and reconnection services.
Government funding to accelerate rollout: Smart meters provide significant benefits to consumers, the energy sector and the broader economy. But the current rollout is being slowed by a split-incentives problem where the entire cost of the rollout is funded by retailers even though benefits accrue to a wide range of parties. The cost differential between installing a new smart meter and paying to use the old type 5/6 meter until it fails has led to retailers undertaking extremely few proactive new meter deployments. An accelerated rollout would also deliver other public policy benefits, including economic stimulus and increased employment for thousands of electricians.	Recommend that governments consider a funding mechanism to accelerate the smart meter rollout. Government funding could be structured as an incentive for installing smart meters, with a payment of a specified amount for each installation of a smart meter to replace an existing manually-read meter. This payment would be made to electricity retailers. The objective would be to remove the current cost differential to retailers between charges for continuing to use an old manually-read meter until it fails and charges for a new smart meter. The funding would be capped at a certain number of meters to kick-start the rollout, after which time scale efficiencies and new services should enable an accelerated rollout to continue.
Cost recovery mechanism or funding to improve customer site compliance issues: Asbestos boards, ceramic fuses and other compliance work required to be done by the customer before the smart meter can be installed results in smart meters not being installed for some customers. These compliance issues can also result in considerable costs for customers or create safety issues as MCs cannot compel customers to remedy the issues. In the Victorian rollout, DNSPs fixed some of these issues (e.g. asbestos boards) and recovered the costs through their regulated metering charges, but that is not an option under the competitive model so some other source of funding is required to remedy these problems. A source of funding to address	Recommend that governments develop and implement a mechanism to fund payments to customers, retailers or MCs up to a specified amount to address site compliance issues. It may be appropriate to target such a mechanism at certain vulnerable customers, e.g. concession or hardship customers.

Issue	Proposed action
these issues would accelerate the rollout, reduce costs for customers and address safety risks.	
Metering competition in Victoria: The AEMC determined that the metering competition rule change should apply in all NEM jurisdictions, but the Victorian government made derogations from the rules that mean that only DNSPs can be the MC in Victoria and the out-dated Victorian minimum functional specification continues to apply in Victoria. As a result, Victorian consumers are missing out on the benefits of competition and the latest smart metering technology. This is likely to lead to increased costs and poorer services as Victorian DNSPs' meters reach the end of their life in the next few years and need to be replaced.	Recommend that the Victorian government undertake a robust stakeholder consultation process on whether to extend the current derogations or whether metering competition should apply in Victoria. This consultation should occur well in advance of the end of the current 2021-26 regulatory period to allow time for any changes to be implemented.
Facilitating B2B service orders for remote services: A new long-term industry-wide solution is needed for implementing service orders for remote services to improve outcomes for consumers and reduce the risk of errors or delays. This issue has been discussed by the B2B working group for some time, without a solution being agreed. More detail on this issue can be provided on request.	Recommend that AEMO and the Information Exchange Committee (IEC) prioritise resolution of a long-term solution to this issue.

Appendix 1 – Lessons from the New Zealand smart meter rollout

Background

The 2008 roll-out of Advanced Metering Infrastructure (AMI) in New Zealand was undertaken by the industry voluntarily, and at no additional direct cost to consumers.[1] At the time, this was in stark contrast to the roll-out of AMI internationally which was largely regulated – yet the New Zealand rollout is widely considered to have been incredibly successful in delivering benefits across the supply chain, particularly to customers.



Source: NZ Electricity Authority ('EA'), Intellihub Analysis

In just 6 years, New Zealand reached 50% smart meter penetration. Today, 12 years after the launch of the program, the number is close to 90%.

In contrast, the Australian (ex-Victoria) rollout has entered year 4 of the roll-out with a penetration of only 18%.

What were the Electricity Authority's objectives?

The NZ Electricity Authority created 9 clear objectives set out in their *'Guidelines on Advanced Metering Infrastructure':*

1. *provide regular and accurate meter readings, eliminate estimated bills and provide flexible billing options*
2. *reduce network non-technical losses by decreasing the incidence of theft or fraud and vacant premises consumption*
3. *reduce costs to generate and deliver electricity*
4. *improve the reliability of the overall electricity network by providing relevant network information*
5. *minimise barriers to competition in both generation and retail*
6. *provide increased and relevant information to electricity users to assist in promoting the efficient use of electricity and enable consumers to make their own decisions on cost conservation*
7. *contribute to the Government's energy and conservation policy objectives*
8. *provide a platform for future energy-focused innovation*

9. *provide an increased accuracy in the settlement process, allowing retailers to optimise their contracted positions against consumer.*

What were the drivers of the NZ AMI roll-out?

The primary drivers for the New Zealand roll-out were:[1]

1. **Meter accuracy and safety:** In 1999, requirements for aged meter certification were introduced to ensure that all meters were operating safely and accurately within accuracy tolerances. The industry held significant concerns that a portion of the aged basic meter fleet were no longer accurate and also presented an unacceptable safety risk to consumers. The new rules required retailers to ensure that meters at residential and small commercial premises were either replaced or fully recertified by 2015. Most retailers chose to upgrade their customers to smart meters during this timeframe.

2. **The legacy metering charge ceased to be owed when replaced with a smart meter:** The annuity for a legacy meter was no longer owed to the distributor by the retailer once they upgraded to smart.

3. **The operational efficiencies reduced retailers' costs to serve, offsetting the cost differential between legacy and smart meters:** The benefits associated with accurate metering information and corresponding reduction in invoice queries enabled reasonable savings in retailer back-office and settlement processes; this covered the $15-$20 p.a. difference between the cost of legacy meters and smart meters.

4. **The competitive provision of metering assets:** The ability to choose between metering service providers enabled them to choose the best service and/or price, resulting in a better outcome for the consumer. Furthermore, as some of New Zealand's major retailers did not own meters, they faced no stranded metering asset costs if switching from existing basic meters to advanced meters.

Why didn't they regulate the market?

The NZ Electricity Commission considered that the benefits of AMI to consumers could be realised under the in-flight, contestable roll-out of AMI[1]. The key reasons cited were:

1. The roll-out happened within an acceptable timeframe (see above chart);

2. Competition ensured that the full potential of AMI systems being rolled out were being realised where it was economic to do so, and that the financial risk of investment in AMI system was not being met by consumers;

3. There was always a high level of compliance with voluntary guidelines;

4. AMI technology (at the time) was not fully developed, which created a risk that regulation may create additional costs and result in obsolescence; and

5. AMI was being successfully rolled-out whereas regulation would likely have increased costs to consumers. In contrast, they determined that the roll-out of AMI was being achieved at no direct additional cost to consumers.

What were the outcomes?

Several sources[1,2] have cited a number of outcomes that were both intended and achieved, including:

1. Integration of consumers into the electricity market using innovative tariffs
2. Accurate monthly customer invoicing – no estimates
3. Reductions in network losses
4. More accurate monthly wholesale market settlements
5. Retailers able to manage vacant consumption
6. New retailers entering the electricity market with the innovative competitive service offerings to customers
7. Voluntary roll-out did not result in any discernible cost increase to customers.[1,2]

Product case studies

- Flick was a new entrant retailer that uses 30-minute AMI information to invoice customers at wholesale cost.
- Flick provides web browser access to customers to keep track of their expenditure and the savings made on their tariff.
- Customers receive incentives from the pricing to shift consumption to low cost weekend and night periods.

- Another new entrant, Electric Kiwi, enables customers to take advantage of time of use tariffs by encouraging them to use off-peak times.
- They have introduced a free 'Hour of Power' where the consumer can pick a time slot for completely free energy during off peak-times.
- The consumer can save up to 15% by altering their washing machine and dishwashing cycles and changing showering times.

- Globug are a subsidiary of the Mercury business and offer a pre-pay service for power which relies on the ease of connecting and reconnecting power via the smart meter.
- When a consumer has not topped up the allowance, their phone app clearly shows that they are close to their limit through a simple traffic light system.
- Once the limit is reached, Globug communicates with the smart meter to disconnect the service. If the customer requires the property to be reconnected, this can be done in real-time once the account is topped up.

Lessons for Australia

1. The NZ smart meter rollout was successful using a contestable market to keep costs down and ensure the program cost was not passed on to consumers
2. Testing requirements for old manually-read meters were a key contributor to the success and speed of the rollout
3. Testing requirements and compliance by metering providers ensured that the roll-out occurred safely and quickly
4. Removal of legacy meter fees when replaced by smart meters supported the retailer business case for replacing meters
5. Smart meter services such as remote control energisation and time-of-use interval data have proven useful for a suite of new market entrants, improving competition.

References

1. *Advanced Metering Infrastructure in New Zealand: Roll-out and Requirements (Electricity Commission, 2009)*
2. *Perspective on New Zealand Smart Meter rollout, Smart Energy Forum (Electricity Authority, 2014)*
3. *Guidelines on Advanced Metering Infrastructure (Electricity Authority, 2010)*

Appendix 2 – Additional details on proposed changes regarding smart meter inspection requirements

Introduction

Intellihub proposes that the AEMC amend the NER to clarify the inspection requirements for smart meters and make consequential clarifications to the testing and inspection requirements for all whole current type 4, 4A, 5 and 6 meters.

The current inspection requirements for smart meters in the NER are unclear and the manner in which they are currently being interpreted and applied by AEMO is leading to inefficient outcomes and unnecessary costs. AEMO's current practice when approving metering asset management strategies appears contrary to the relevant provisions of the NER and will lead to significant additional costs for consumers and further slow the pace of smart meter deployment. AEMO's current practice also does not sufficiently recognise that the advanced remote monitoring capabilities of smart meters can perform most of the functions that were traditionally performed by a physical inspection of manually-read meters, reducing the need for physical inspections of smart meters.

If the rules are not amended, the current approach will require millions of unnecessary inspections to be carried out, which will materially increase metering costs. This cost increase is likely to lead to an increase in small customers' retail energy charges of around $10-15 per customer per year, delay the deployment of smart meters and reduce the ability of customers and market participants to access the benefits of smart meters, to the detriment of the long term interests of consumers.

Overview of testing and inspections

Clause 7.9.1 and Schedule 7.6 of the NER set out the requirements for testing and inspections of metering installations. Neither "testing" nor "inspection" is defined in the NER but in simple terms:

- Testing involves assessing whether the metering installation meets the accuracy requirements set out in Schedule 7.6
- An inspection involves checking for signs to indicate whether the metering installation is correctly wired and secure and checking certain other issues. S7.6.2 of the NER states:

  "A typical inspection may include:

  (1) check the seals;

  (2) compare the pulse counts;

  (3) compare the direct readings of *meters*;

  (4) verify *meter* parameters and physical connections; and

  (5) *current transformer* ratios by comparison."

This proposal focusses on type 4 meters, but also proposes consequential changes in relation to type 4A, 5 and 6 meters.

Traditionally, inspections for small customer meters have been performed by undertaking a physical inspection of the meter. However, type 4 meters have advanced remote monitoring capabilities that can perform many of the functions of a physical inspection and identify issues far sooner and more cost effectively than a physical inspection. Intellihub uses remote monitoring to carry out several checks daily for every type 4 meter. Intellihub takes appropriate action to make sure all downloaded data is validated and investigates the reason for failure of validation of data or alarms. Any issues found following remote monitoring result in a site inspection to investigate.

Current requirements of the NER and AEMO procedures

Clause 7.9.1(a) of the NER provides that:

"(a) A person who arranges or carries out testing of a metering installation under this clause 7.9.1 must do so in accordance with:
(1) this clause 7.9.1; and
(2) the relevant inspection and testing requirements set out in Schedule 7.6."

Clause S7.6.1(c) of Schedule 7.6 relevantly provides that:

"(c) The Metering Coordinator (or any other person arranging for testing) must ensure that testing of the metering installation is carried out:
(1) in accordance with clause 7.9.1 and this Schedule 7.6; or
(2) in accordance with an asset management strategy that defines an alternative testing practice (other than time based) determined by the Metering Coordinator and approved by AEMO, and:
(3) in accordance with a test plan which has been registered with AEMO;"

Table S7.6.1.2 governs the maximum period between tests as follows. The part of this table that is relevant to this proposal is the row relating to whole current meters:

Table S7.6.1.2 Maximum Period Between Tests

Unless the *Metering Coordinator* has developed an asset management strategy that defines practices that meet the intent of this Schedule 7.6 and is approved by *AEMO*, the maximum period between tests must be in accordance with this Table S7.6.1.2.

Description	Metering Installation Type				
	Type 1	Type 2	Type 3	Type 4 & 4A	Types 5 & 6
CT	10 years	10 years	10 years	10 years	10 years
VT	10 years	10 years	10 years		n/a
Burden tests	When *meters* are tested or when changes are made				
CT connected Meter (electronic)	5 years	5 years	5 years	5 years	5 years
CT connected Meter (induction)	2.5 years	2.5 years	5 years	5 years	5 years
Whole current Meter	The testing and inspection requirements must be in accordance with an asset management strategy. Guidelines for the development of the asset management strategy must be recorded in the *metrology procedure*.				

Table S7.6.1.3 governs the period between inspections as follows:

Table S7.6.1.3 Period Between Inspections

Unless the Metering Coordinator has developed an asset management strategy that meets the intent of this Schedule 7.6 and is approved by AEMO, the period between inspections must be in accordance with this Table S7.6.1.3.

Description	Metering Installation Type			
	Type 1	Type 2	Type 3	Type 4, 4A, 5 & 6
Metering installation equipment inspection	2.5 years	12 months (2.5 years if *check metering* installed)	> 10 GWh: 2 years 2≤ GWh ≤ 10: 3 years <2 GWh: when *meter* is tested	When meter is tested

No material changes were made to Schedule 7.6 as part of the AEMC's competition in metering rule change in 2015, other than moving it from schedule 7.3 to schedule 7.6 and consequential changes such as adding references to type 4A meters.

The relevant provisions of AEMO's Metrology Procedure Part A are as follows:

8. ROUTINE TESTING AND INSPECTION OF METERING INSTALLATIONS

(a) Unless an MC has an Asset Management Strategy, metering installations must be tested and inspected in accordance with clause 7.9 and schedule 7.6 of the NER. Section 8 provides AEMO's guidelines in respect of a proposed Asset Management Strategy that the MC will need to take into consideration when seeking approval of an Asset Management Strategy.

(b) An acceptable alternative testing practice or test plan for in-service meter performance must demonstrate compliance with Australian Standard "AS 1284.13: Electricity Metering in-service compliance testing".

...

(d) Where the MC is not testing and inspecting metering installations in accordance with clauses 7.9 and S7.6 of the NER (i.e. not time-based), the MC must include in its Asset Management Strategy an alternative inspection practice that meets the requirements of clause S7.6 of the NER.

AEMO's current practice in approving inspection requirements in asset management strategies

Through its Intellihub and Acumen MC businesses, Intellihub currently has AEMO approved asset management strategies. The testing and inspection elements of those strategies are very high level.

Intellihub has for some time been seeking to have a revised metering asset management strategy for Intellihub and Acumen approved by AEMO to update certain aspects of the strategies. As part of the revised strategy, Intellihub and Acumen have set out testing and inspection arrangements in more detail as requested by AEMO. However, AEMO has refused to approve the proposed strategy due to a disagreement regarding inspection requirements.

Consistent with the requirements in Table 7.6.1.3 of the NER, Intellihub and Acumen's proposed revised strategy states in relation to whole current metering installation testing and inspections:

> "Whole Current meters shall be tested as per AS1284 sample testing by attributes, with populations based on meter model and the year of manufacture.
>
> Whole Current metering installations shall be inspected whenever the site is attended for any reason (e.g. communication issue/upgrade), and/or when meter is tested or replaced. Ongoing Advanced Remote Monitoring, Desktop Inspections and Site Inspection Process Review (see Sections 6.3, 6.4 & 6.5) will be used to provide assurance that our sites comply with the requirements of NER."

The proposed revised strategies also contain several provisions in relation to remote monitoring and physical inspections that are in addition to what is required by the relevant provisions of the NER.

AEMO has refused to approve this revised strategy. AEMO has advised Intellihub that it will only approve the strategy if the strategy provides that every type 4 meter is physically inspected at least once every 10 years.

Other competitive metering businesses have had similar experiences and have sought to resolve this disagreement though discussions with AEMO. The metering industry arranged discussions through the Competitive Metering Industry Group (CMIG) with AEMO, the AER and the AEMC during late 2019. The AER stated that it was unable to provide guidance on the interpretation of this aspect of the rules and that if metering businesses considered that the NER is ambiguous it is open to metering businesses to submit a rule change request to the AEMC.

In October 2019, AEMO published a position paper entitled "Whole current metering installation testing & inspections" setting out AEMO's position on these issues. In that paper, AEMO states:

> "For inspection of metering installations, the intent of Schedule 7.6 for an inspection is:
>
> - a physical site visit to confirm compliance of the metering installation
> - a practice of inspecting meters when tested only applies if testing of meters is time based."

AEMO provides no authority for these statements, which appear contrary to the NER.

AEMO's paper notes that smart meters "provide functionality that might be leveraged to assist MCs to assist in meeting the requirements of the rules" and that "If well managed and controlled, a remote monitoring process has the capacity to identify and then rectify some issues far sooner than a periodic physical inspection". AEMO states that it expects Metering Coordinators to include information in their asset management strategies on how they will use these advanced capabilities, but states that "remote monitoring is not an adequate replacement for a physical site inspection as it cannot provide assurance for all matters required in an inspection that would meet the intent of Schedule 7.6. Therefore, AEMO does not consider an inspection practice based solely on remote monitoring will meet the intent of Schedule 7.6".

Intellihub is not proposing that remote monitoring should be used as a complete substitute for physical inspections. Intellihub is simply proposing what the clear words of Schedule 7.6 already require, which is that type 4 meters are only required to be inspected when tested. Remote monitoring capabilities would be used to supplement physical inspections, not replace them.

Following publication of its position paper, AEMO's position in relation to inspection requirements has not changed in practice, with AEMO still insisting that an inspection of every type 4 meter is required at least once every 10 years.

AEMO's approach in relation to inspection requirements for type 4 meters is inconsistent with current practice regarding inspections for type 5 and 6 meters. If AEMO's requirement that every type 4 meter is tested at least once every 10 years was applied to type 5 and 6 meters, inspection rates should be about 10% per year. In contrast, AER regulatory information notice data demonstrates that DNSPs are only inspecting between 0.06% and 1.27% of their type 5/6 meters per year.

By insisting that every type 4 meter is physically inspected once every 10 years, AEMO is requiring far more inspections for remotely-read type 4 meters than it currently requires for manually-read type 5 and 6 meters, when the opposite should be the case given the remote monitoring capabilities of type 4 meters.

Intellihub considers that the correct interpretation of the current rules and AEMO procedures is that:

- in accordance with Table S7.6.1.2, the testing regime for whole current meters is as set out in the asset management strategy approved by AEMO;
- in accordance with the Metrology Procedure Part A and current AEMO practice when approving asset management strategies, sample testing in accordance with AS 1284:13 is a permitted basis for testing whole current meters;
- in accordance with Table S7.6.1.3, type 4, 4A, 5 and 6 meters are only required to be inspected when tested;
- as a result:
    - whole current type 4 meters are only required to be tested in accordance with the asset management strategy utilising a sample testing methodology that is consistent with AS 1284:13
    - whole current type 4 meters are only required to be inspected when tested; and
    - AEMO has no authority to require in an asset management strategy that every whole current type 4 meter must be inspected every 10 years rather than being inspected only when tested.

Issues with the current arrangements

Intellihub considers that the current provisions of the NER related to inspection requirements for type 4 meters are unclear and inefficient, and are creating outcomes that are contrary to the long term interests of consumers.

This lack of clarity is demonstrated by AEMO holding a very different view of how to interpret the relevant provisions compared with Intellihub and other competitive metering providers. Intellihub and CMIG sought to resolve this lack of clarity through discussions with AEMO, the AER and the AEMC but those discussions have been unsuccessful, so a rule change is the only remaining option to clarify the requirements.

AEMO's interpretation and application of the current NER provisions will lead to Intellihub and other Metering Coordinators incurring significant costs to undertake millions of unnecessary inspections, with those costs being ultimately borne by consumers.

Intellihub estimates that the proposed rule would reduce metering costs by approximately $10-$15 per customer per year compared with AEMO's current approach to inspection requirements. This reduction in metering costs would be passed on to customers through lower retail electricity charges than would apply under AEMO's current approach. It may also benefit consumers by lowering the cost of smart meter deployment and thereby supporting a faster deployment than has been seen to date.

The lack of clarity regarding the current rules is also damaging regulatory certainty and the ability of Intellihub and other parties to invest in smart metering services. The uncertainty regarding the rules requirements means that Intellihub cannot accurately forecast the number of inspections that are required and the resulting costs. This makes it very difficult for Intellihub to set efficient charges for metering services and for Intellihub and its retailer customers to forecast the cost of metering services over the life of a new smart meter and make efficient decisions regarding the deployment of smart meters.

Proposed changes and rationale

Intellihub proposes that this issue be addressed by amending schedule 7.6 of the NER to clarify the inspection requirements for type 4 meters, and making consequential clarifications to the testing and inspection requirements for all whole current type 4, 4A, 5 and 6 meters, by:

- Amending the introductory words to Tables S7.6.1.2 and S7.6.1.3 to clarify that the testing and inspection requirements in the tables apply unless the Metering Coordinator has developed an asset management strategy that sets out alternative practices (ie to remove any suggestion under the current wording that AEMO can refuse to approve the inspection requirements of an asset management strategy even if the proposed requirements are as set out in the table)
- Amending Table S7.6.1.2 to remove the reference to "and inspection". Those words are confusing and inappropriate given that the title and introductory words to Table 7.6.1.2 make it clear that this table should only relate to testing, with inspection requirements set out in Table 7.6.1.3
- Amending Table S7.6.1.3 to clarify that for all type 4, 4A, 5 and 6 meters an inspection is only required when the meter is tested, regardless of the method used for determining the frequency of tests (ie regardless of whether a time based method is used or whether an AS 1284:13 compliant sample testing by attributes method is used).

Intellihub has also considered an alternative approach where Schedule 7.6 is amended to specify inspection requirements for type 4 meters that are different to those for type 4A, 5 and 6 meters. This approach recognises that the remote monitoring capabilities of type 4 meters can perform many of the functions of traditional physical inspections and that accordingly less frequent physical inspections should be required for type 4 meters compared with type 4A, 5 and 6 meters.

Under this alternative approach, Table 7.6.1.3 would be amended to provide that for type 4 meters: "The metering installation must be physically inspected whenever it is tested or attended for any other reason. Remote monitoring capabilities must be used to complement physical inspections and a metering installation must be physically inspected if remote monitoring identifies issues that warrant an inspection."

The proposed change would contribute to the NEO by improving the efficient investment in, and efficient operation and use of, metering services, which would benefit the long term interests of consumers in relation to price, quality, safety, reliability and security of supply of electricity and the reliability, safety and security of the national electricity system.

In particular, the proposed change will increase regulatory certainty and reduce the costs of inspections, which will:

- Lead to lower costs for the provision of metering services, which given the competitive market for smart metering services will be passed on to retailers through lower metering charges than would otherwise apply and to customers though lower retail energy prices than would otherwise apply
- Reduce the cost differential between smart meters and manually-read meters, which will help accelerate the deployment of smart meters compared with the current rules and enable increased access to the benefits of smart meters for consumers and energy market participants, including in relation to:
    - **Price**: there will be direct price benefits to consumers with smart meters due to their ability to access improved data and the new services and tariffs enabled by smart

meters. There will also be indirect price benefits for all consumers (not just those with smart meters) from reduced network costs due to the use of smart meter data and services by DNSPs as a lower cost alternative to traditional capital expenditure solutions and changes in demand due to increased adoption of tariffs that are enabled by smart meters.

- **Quality, reliability and security of supply**: there will be benefits for network businesses and AEMO and improved consumer outcomes in relation to power quality (eg managing voltage), reliability (eg increased visibility of outages so they can be remedied more quickly, the ability to use load control and other services to reduce peak demand, and data to increase visibility and better manage the low voltage network), and security of supply (eg data to help AEMO manage the system).
- **Safety**: there can be safety benefits to consumers from services smart meters can provide now or in the future, eg neutral integrity monitoring.

Intellihub considers that it is appropriate to address inspection requirements for smart meters in the NER rather than leaving them to AEMO's discretion in approving asset management strategies or developing procedures due to the material impact of this issue on participants' costs and the ability to realise the benefits of smart meters. Clarifying the NER will increase regulatory certainty and enforceability and reduce costs by avoiding drawn-out processes for submitting and approving asset management strategies where there are significant disagreements regarding the required contents of the strategies and the efficient level of inspections. This increase in regulatory certainty will promote the NEO by enabling more efficient decisions regarding investment in metering services.

Intellihub notes that it is consistent with the current level of detail in chapter 7 for an issue of this materiality to be set out in the NER rather than left to AEMO procedures or AEMO's discretion in approving asset management strategies.