DRAFT DECISION

Essential Energy
Distribution Determination

2019 to 2024

Attachment 18
Tariff structure statement

November 2018

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the distribution determination that will apply to Essential Energy for the 2019–24 regulatory control period. It should be read with all other parts of the draft decision.

The draft decision includes the following attachments:

Overview

Attachment 1 – Annual revenue requirement

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

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Glossary of terms

Term	Interpretation
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Anytime demand tariff	A tariff incorporating a demand charge where the demand charge measures the customer's maximum demand at anytime (i.e. not limited to within a peak charging window).
Apparent power	See kVA
capex	capital expenditure
CoAG Energy Council	The Council of Australian Governments Energy Council, the policymaking council for the electricity industry, comprised of federal and state (jurisdictional) governments.
Consumption tariff	A tariff that incorporates only a fixed charge and usage charge and where the usage charge is based on energy consumed (measured in kWh) during a billing cycle, and where the usage charge does not change based on when consumption occurs. Examples of consumption tariffs are flat tariffs, inclining block tariffs and declining block tariffs.
Cost reflective tariff	Consistent with the distribution pricing principles in the NER, a cost reflective distribution network tariff is a tariff that a distributor charges in respect of its provision of direct control services to a retail customer that reflects the distributor's efficient costs of providing those services to the retail customer. These efficient costs reflect the long run marginal cost of providing the service and contribute to the efficient recovery of residual costs.
Declining block tariff	A tariff in which the per unit price of energy decreases in steps as energy consumption increases past set thresholds.
Demand charge	A tariff component based on the maximum amount of electricity consumed by the customer (measured in kW, kVA or kVAr) which is reset after a specific period (e.g. at the end of a month or billing cycle). A demand charge could be incorporated into either an anytime demand tariff or a time-of-use demand tariff.
Demand tariff	A tariff that incorporates a demand charge component.
distributor	distribution network service provider
DUoS	distribution use of system
Fixed charge	A tariff component based on a fixed dollar amount per day that customers must pay to be connected to the network.
Flat tariff	A tariff based on a per unit usage charge (measured in kWh) that does not change regardless of how much electricity is consumed or when consumption occurs.
Flat usage charge	A per unit usage charge that does not change regardless of how much electricity is consumed or when consumption occurs.
Inclining block tariff	A tariff in which the per unit price of energy increases in steps as energy consumption increases past set thresholds.

Term	Interpretation
Interval, smart and advanced meters	Used to refer to meters capable of measuring electricity usage in specific time intervals and enabling tariffs that can vary by time of day.
kVA	Also called apparent power. A kilovolt-ampere (kVA) is 1000 volt-amperes. Apparent power is a measure of the current and voltage and will differ from real power when the current and voltage are not in phase.
kW	Also called real power. A kilowatt (kW) is 1000 watts. Electrical power is measured in watts (W). In a unity power system the wattage is equal to the voltage times the current.
kWh	A kilowatt hour is a unit of energy equivalent to one kilowatt (1 kW) of power used for one hour.
LRMC	Long Run Marginal Cost. Defined in the National Electricity Rules as follows: *"the cost of an incremental change in demand for direct control services provided by a Distribution Network Service Provider over a period of time in which all factors of production required to provide those direct control services can be varied".*
Minimum demand charge	Where a customer is charged for a minimum level of demand during the billing period, irrespective of whether their actual demand reaches that level.
NEL	National Electricity Law
NEM	National Electricity Market
NEO	The National Electricity Objective, defined in the National Electricity Law as follows: *"to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to—* *(a) price, quality, safety, reliability and security of supply of electricity; and* *(b) the reliability, safety and security of the national electricity system".*
NER	National Electricity Rules
opex	operating expenditure
Power factor	The power factor is the ratio of real power to apparent power (kW divided by kVA).
RAB	regulatory asset base
repex	replacement expenditure
Tariff	The network tariff that is charged to the customer's retailer (or in limited circumstances, charged directly to large customers) for use of an electricity network. A single tariff may comprise one or more separate charges, or components.
Tariff charging parameter	The manner in which a tariff component, or charge, is determined (e.g. a fixed charge is a fixed dollar amount per day).
Tariff class	A class of retail customers for one or more direct control services who are subject to a particular tariff or particular tariffs.
Tariff structure	Tariff structure is the shape, form or design of a tariff, including its different components (charges) and how they may interact.
Time-of-use demand tariff (ToU demand tariff)	A tariff incorporating a demand charge where the demand charge measures the customer's maximum demand during a peak charging window. A ToU demand charge might also include an off-peak demand change or minimum demand charge,

Term	Interpretation
	and may include flat, block or time-of-use energy usage charges.
Time-of-use energy tariff (ToU energy tariff)	A tariff incorporating usage charges with varying levels applicable at different times of the day or week. A ToU energy tariff will have defined charging windows in which these different usage charges apply. These charging windows might be labelled the 'peak' window, 'shoulder' window, and 'off-peak' window.
Usage charge	A tariff component based on energy consumed (measured in kWh). Usage charges may be flat, inclining with consumption, declining with consumption, variable depending on the time at which consumption occurs, or some combination of these.

18 Tariff structure statement

This attachment sets out our draft decision on Essential Energy's (Essential) tariff structure statement to apply for the 2019–24 regulatory control period.

A tariff structure statement applies to a distributor's tariffs for the duration of the regulatory control period. It should describe a distributor's tariff classes and structures, the distributor's policies and procedures for assigning customers to tariffs, the charging parameters for each tariff, and a description of the approach the distributor to setting tariffs in pricing proposals. It is accompanied by an indicative pricing schedule.[1] A tariff structure statement provides consumers and retailers with certainty and transparency in relation to how and when network prices will change.

This allows consumers to make more informed decisions about their energy use and result in better outcomes for both individual consumers and the overall electricity system. In particular, the tariff structure statement informs customer choices by:

- providing better price signals—tariffs which reflect what it costs to use electricity at different times allow customers to make informed decisions to better manage their bills.
- transitioning tariffs to greater cost reflectivity—with the requirement that distributors explicitly consider the impacts of tariff changes on customers, by engaging with customers, customer representatives and retailers in developing network tariff proposals.
- managing future expectations—providing guidance for retailers, customers and suppliers of services such as local generation, batteries and demand management by setting out the distributor's tariff approaches for a set period of time.

Background to this decision

This is Essential's second tariff structure statement and applies to the 2019–24 regulatory control period. It must comply with the National Electricity Rules' (NER) distribution pricing principles.[2] These principles require distributors to transition to cost reflective tariffs and, in doing so, to account for impacts on consumers.

In the future direction section of our final decision on Essential's first tariff structure statement, which applies from 1 July 2017 to 30 June 2019, we noted that transitioning to cost reflective pricing will take more than one regulatory control period to achieve.[3] We set an expectation that to comply with the NER, each tariff structure statement proposal should propose additional reforms.[4]

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1 NER, 6.18.1A(a).

2 NER, cl. 6.18.5.

3 AER, *Final Decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 20.

4 AER, *Final Decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, pp. 20-21.

In our final decision on Essential's tariff structure statement for 2017–19, we also stated that there were some elements of Essential's tariff structure statement proposal which comply with the distribution pricing principles but which, in our view, would benefit from further consideration in future. [5]

Specifically, to provide guidance to NSW distributors for their 2019–24 tariff structure statements, we previously identified that NSW distributors should:[6]

- increase the integration between network pricing, network planning and demand management strategies
- develop assignment policies to increase the speed of transition to cost reflective tariffs
- revise charging windows to more closely reflect the times of network congestion
- refine its method for estimating long run marginal cost (LRMC), including the inclusion of replacement capex within marginal cost estimates
- reconsider the use of 30-minute window per month to measure customer demand.

18.1 Essential Energy's proposal

Essential's tariff structure statement proposed for the 2019–24 regulatory control period seeks to continue the pricing reform commenced as part of the 2017–19 tariff structure statement by:

- refining its charging windows for time of use energy charges to reflect the timing of peak demand in the more capacity constrained parts of the network[7]
- removing the opt-out to anytime tariffs for some customers.[8]

Essential also proposed to:

- increase its fixed charge for residential customers by $5 per year[9]
- discount its cost reflective tariffs to reduce the impacts of transitioning to cost reflective tariffs on residential network charges.[10]

18.2 AER draft decision

Our draft decision is to accept the following elements of the Essential's tariff structure statement:

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[5] AER, *Final Decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 21.

[6] AER, *Final Decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 21.

[7] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 28.

[8] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 25.

[9] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 40.

[10] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 26.

- structure of cost reflective tariffs for all customers
- cost reflective choice tariff assignment for some customers
- prescribed tariff assignment to cost reflective tariffs for large business
- approach to setting fixed charges for residential customers
- flat tariffs for customers with accumulation meters
- tightening the peak charging windows for time of use energy and 3-rate demand tariff customers.

We consider that these contribute to compliance with the distribution pricing principles and to the achievement of the network pricing objective.[11]

Furthermore, we commend Essential for the significant consultation it has undertaken to help develop its tariff structure statements. In particular, the establishment and engagement of its Customer Advocacy Group enabled Essential to develop stakeholders' understanding of its tariff framework and provide informed feedback.

We do not approve all elements of Essential Energy's proposal

Our draft decision is also to not accept the following elements of Essential's tariff structure statement and therefore to not approve the tariff structure statement as a whole:

- the description of how Essential will base tariffs on the long run marginal costs and its approach to recovering residual costs
- the tariff assignment policy that will:
    - immediately reassign all customers that receive smart meters to a cost reflective network tariff
    - allow existing customers to opt-out to flat tariffs
    - assign different default tariffs to different types of residential customers
- long run marginal costs calculation which involve the replacement of assets based on both condition and age and are not associated with 'incremental demand' of network services.

Each of these elements, and therefore the tariff structure statement as a whole, requires further work in order to fully comply with the distribution pricing principles.

Furthermore, we have some concerns with the demand tariff-charging window for residential and small business customers that extends from 7am to 10pm weekdays.

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[11] NER 6.18.5 (a)

This charging window likely complies with the distribution pricing principles on account of peak events often occurring across a wide time band within Essential's network.

Nonetheless, customers' ability to avoid this peak charge through their usage decisions will likely be compromised due to its long duration.[12] Further, the difference between the peak charges for demand and energy parameters within the tariffs may be confusing for customers.[13] Essential should undertake further work to ensure this peak charging window is an appropriate balance between cost reflectivity and the customer impact principle.

As a matter of administrative simplicity, Essential is encouraged to create a targeted two-document tariff structure, similar to that of Endeavour Energy.

The first document should be limited to the content that will bind Essential over the regulatory control period and the second should explain Essential's reasons for adopting those binding positions. The result should be a more readable document, improving clarity for retailers, customers and the regulators alike.

18.3 AER's assessment approach

This section outlines our approach to assessing tariff structure statements.

There are two sets of requirements for tariff structure statements. First, the NER set out a number of elements that an approved tariff structure statement must contain.[14] Second, a tariff structure statement must also comply with the distribution pricing principles.[15]

What must a tariff structure statement contain?

The NER requires a tariff structure statement to include:[16]

- the tariff classes into which retail customers for direct control services will be divided
- the policies and procedures the distributor will apply for assigning retail customers to tariffs or reassigning retail customers from one tariff to another
- structures for each proposed tariff
- charging parameters for each proposed tariff
- a description of the approach that the distributor will take in setting each tariff in each pricing proposal.

12 NER, cl. 6.18.5(h)(3).
13 NER, cl. 6.18.5(i).
14 NER, cl. 6.18.1A(a).
15 NER, cl. 6.18.1A(b).
16 NER, cl. 6.18.1A(a).

A distributor's tariff structure statement must be accompanied by an indicative pricing schedule with the tariff structure statement.[17] This guides stakeholder expectations about changes in network charges over the 2019–24 regulatory period.

What must a tariff structure statement comply with?

A tariff structure statement must comply with the distribution pricing principles for direct control services.[18] These may be summarised as:

- for each tariff class, expected revenue to be recovered from customers must be between the stand alone cost of serving those customers and the avoidable cost of not serving those customers.[19]
- each tariff must be based on the long run marginal cost of serving those customers, with the method of calculation and its application determined with regard to the costs and benefits of that method, the costs of meeting demand from those customers at peak network utilisation times, and customer location.[20]
- expected revenue from each tariff must reflect the distributor's efficient costs, permit the distributor to recover revenue consistent with the applicable distribution determination, and minimise distortions to efficient price signals[21]
- distributors must consider the impact on customers of tariff changes and may depart from efficient tariffs, if reasonably necessary having regard to:[22]
    - the desirability for efficient tariffs and the need for a reasonable transition period (that may extend over one or more regulatory periods)
    - the extent of customer choice of tariffs
    - the extent to which customers can mitigate tariff impacts by their consumption
- tariff structures must be reasonably capable of being understood by retail customers assigned to that tariff.[23]
- tariffs must otherwise comply with the NER and all applicable regulatory requirements.[24]

The tariff structure statement must comply with the distribution pricing principles in a manner that will contribute to the achievement of the *network pricing objective:*[25]

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17 NER, cl. 6.8.2(d1).
18 NER, cl. 6.18.1A(b).
19 NER, cl. 6.18.5(e).
20 NER, cl. 6.18.5(f).
21 NER, cl. 6.18.5(g).
22 NER, cl.6.18.5(h).
23 NER, cl. 6.18.5(i).
24 NER, cl. 6.18.5(j); this requirement includes jurisdictional requirements.
25 NER, cl. 6.18.5(d)

The network pricing objective is that the tariffs that a DNSP charges in respect of its provision of direct control services should reflect the DNSP's efficient costs of providing those services to the retail customer.[26]

Role of the Tariff Structure Statement

In 2014, the AEMC made important changes to the distribution pricing rules, including the process through which network tariffs are determined.

This included splitting the network pricing process into two stages.

Table 18-1 Two stage network pricing process

	Requirements
First stage	Distributors develop a proposed tariff structure statement to apply over the five year regulatory control period. The tariff structure statement outlines the distributor's tariff classes, tariff structures, tariff assignment policy and approach to setting tariff levels in accordance with the distribution pricing principles. The tariff structure statement is accompanied by an indicative pricing schedule that sets out expected price levels over the five year regulatory proposal. This document is submitted to the AER for assessment against the distribution pricing principles in conjunction with the distributor's five year regulatory proposal. The AER then approves the tariff structure statement if it meets the distribution pricing principles and other National Electricity Rules requirements.
Second stage	Distributors develop and submit their annual pricing proposals to the AER. The annual pricing proposals essentially apply pricing levels to each of the tariff structures outlined in the approved tariff structure statement. Distributor's proposed pricing levels must be consistent with the indicative pricing schedule, or the distributor must explain why its proposed price levels differ from the indicative pricing schedule. The AER's assessment of the distributor's pricing proposal is a compliance check against the approved tariff structure statement and the control mechanism specified in the AER's regulatory determination.

Splitting the network pricing process into two stages was a significant change from the previous arrangements. The AEMC considered this would meet promote several objectives and allow for:

- Requirements that would facilitate meaningful consultation and dialogue between distributors, the AER, retailers and consumers
- Increased certainty with respect to changes in network tariff structures and more timely notification of approved changes to network tariff pricing levels
- More opportunity for retailers and consumers to inform and educate themselves about how network tariffs will affect them and how they should respond to the pricing signals

[26] NER, cl. 6.18.5(a)

- The AER to have appropriate timeframes and capacity to assess the compliance of the distributors proposed network tariffs against the distribution pricing principles and other requirements, and
- Distributors to maintain ownership of network tariffs and to adjust the pricing levels of their tariffs to recover allowed revenues.[27]

What happens after a tariff structure is approved?

Once approved, a tariff structure statement will remain in effect for the relevant regulatory control period. The distributor must comply with the approved tariff structure statement and be consistent with the indicative pricing schedule[28] when setting prices annually for direct control services.[29]

We will separately assess the distributor's annual tariff proposals for the coming 12 months. Our assessment of annual tariff proposals will be consistent with the requirements of the relevant approved tariff structure statement.

An approved tariff structure statement may only be amended within a regulatory control period with our approval.[30] We will approve an amendment if the distributor demonstrates that an event has occurred that was beyond its control and which it could not have foreseen, and that the occurrence of the event means that the amended tariff structure statement materially better complies with the distribution pricing principles.[31]

18.4 Reasons for draft decision

Our draft decision is to not approve Essential's proposed tariff structure statement because we are not satisfied that it complies with the distribution pricing principles.

Despite being satisfied that parts of tariff structure statement contribute to compliance with the distribution pricing principles and to the achievement of the network pricing objective,[32] we consider that some elements of it require amendment and further detail.

The section below sets out the reasoning for our decision for each customer group. Also we discuss our assessment of Essential's estimate of long run marginal cost and the completeness and compliance of the tariff structure statement with the requirements in the NER. We have also included a series of appendices which support these reasons.

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27 Australian Energy Market Commission*, Rule Determination - National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, November 2014, p. 64.

28 Distributors must explain any material departure from the indicative pricing schedule in their annual pricing proposals. NER 6.18.2(b)(7A).

29 NER, cl. 6.18.1A(c).

30 NER, cl. 6.18.1B.

31 NER, cl. 6.18.1B(d).

32 NER, cl. 6.18.5(d).

18.4.1 Residential and small business tariffs

We are satisfied that the following aspects of Essential's proposal for residential and small business customer contributes to compliance with the distribution pricing principles:[33]

- the tariff structures
- charging windows for the time of use tariff that reflect times of network congestion.

We require Essential to make greater progress towards the network pricing objective by not allowing customers to 'opt-out' of cost reflective tariffs to a flat tariff. Additionally, to achieve full compliance with the distribution pricing principles and other applicable requirements of the NER we also require Essential to:

- adopt a technologically neutral tariff assignment policy that assigns/reassigns all residential customers to the same default tariff with no opt-out to flat tariffs
- provide greater certainty and clarity on its approach to setting prices which will be proposed in its annual pricing proposals.

18.4.1.1 Tariff design, levels and charging windows

Customers should face cost reflective tariffs

We approve Essential's tariff portfolio.[34] We have analysed the cost reflectivity of different tariff structures (see Appendix B for more details). Our indicative analysis found:

- Essential's proposed monthly demand tariff incorporating time of use energy charges, is cost reflective.
    - Therefore, we approve Essential's proposal to apply this tariff structure for residential and small business customers. We consider that the monthly demand tariff, with time of energy charges is suitable for customers to be assigned to automatically (that is, default assignment).
- Essential's time of use energy tariff is cost reflective. We consider a seasonal time of use tariff is also suitable for default assignment.

Essential, unlike Ausgrid and Endeavour Energy, has not proposed seasonal variation in its tariffs. Our analysis of interval meter data found a weaker increase in cost reflectivity from seasonal tariffs for Essential, than for Ausgrid or Endeavour Energy. We think this is likely due to the range of climates within Essential's network. As such, we approve Essential's tariffs not having a seasonal component to them.[35]

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33 NER, cl. 6.18.5(d).

34 Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, pp. 29-30.

35 NER, cl. 6.18.5(a).

Customers with accumulation meters will face flat tariffs

Essential proposed to continue to charge customers who have accumulation meters flat energy tariffs.[36] We consider flat energy tariffs are the most suitable tariffs for customers that do not have interval metering because:

- they reflect that an individual's consumption of additional units of electricity does not impose more costs per unit on the network.[37]
- they are easy to understand.[38]

However, we consider that Essential should not allow customers to opt-out to flat tariffs if they have a smart or interval meter.[39]

We consider Essential should grandfather flat tariffs, allowing customers currently on a flat tariff to stay on it until they receive a new meter or change their connection characteristics.

It is difficult to develop narrow charging windows for Essential Energy

Time of use energy tariffs charge customers different rates per unit of electricity at different times, and demand tariffs only charge customers based on their demand at certain times. These times are called charging windows. Essential proposed the following charging windows:

- 7am to 10pm weekdays for demand charges
- 5pm to 8pm weekdays for peak energy charges and 7am to 5pm and 8pm to 10pm weekdays for shoulder energy charges.[40]

We approve Essential's peak energy charging window. Figure 18-1 shows that Essential's:

- peak energy covers the majority of most zone substation peak events
- demand charging window covers almost all zone substation peak events.

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36 Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 29.

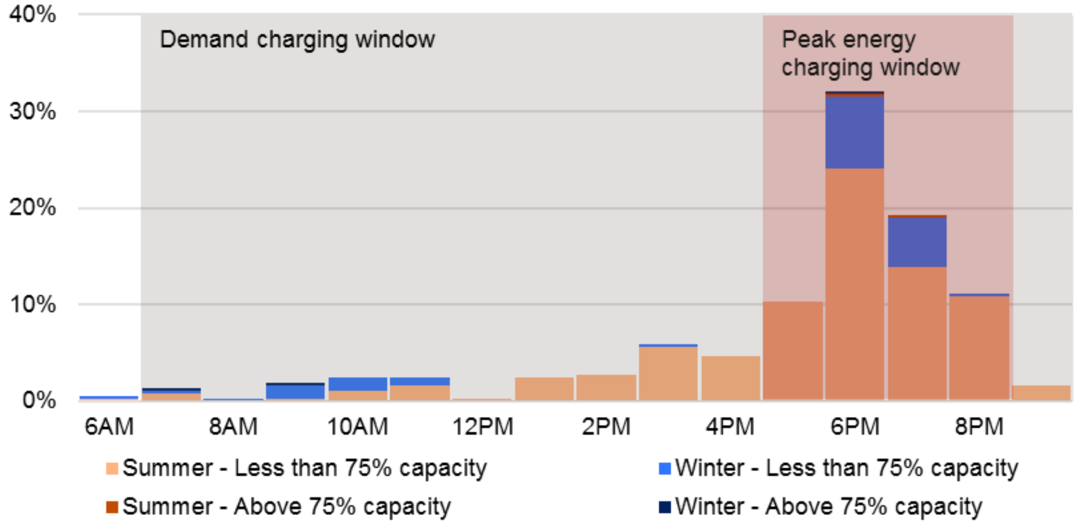
37 Therefore, a flat tariff is more closely based on long-run marginal costs (NER 6.18.5(f)) as the long-run marginal cost per unit of electricity is the same regardless of the quantity purchased by a single customer.

38 NER, cl 6.18.5(i).

39 We note new connections will have smart meters.

40 Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, pp. 28-34.

Figure 18-1 Essential Energy substation zone peak demand events



Source: Essential Energy response to AER information request #028.

We approve the peak energy charging window. It is narrow and covers most peak events. Narrow charging windows send clear signals to customers about when it is efficient to conserve electricity[41] and make it easier for customers to manage their network bill through changing their behaviour.[42]

We approve the broader demand charging window as compliant with the distribution pricing principles, as it targets the broad range of network peak events.[43]

However, we encourage Essential to reconsider its demand charging window for residential and small business demand tariffs. The broad window of 7am to 10pm does not send clear signals to customers about when it is efficient to conserve electricity. It also makes it more difficult for customers to manage their network charges through behaviour.[44] There is almost no ability to offset consumption or demand. The wide charging window will result in mispricing network use as coincident substation zone/feeder level peak demand is unlikely to apply over such a long 15-hour period.[45] This could lead to customers inefficiently curtailing demand when the network is not congested.

Additionally we consider aligning the demand charging window with the peak energy charging window will promote customer understanding and acceptance.[46] We encourage

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41 NER, cl. 6.18.5(a).
42 NER, cl. 6.18.5(h)(3).
43 NER, cl. 6.18.5(a).
44 NER, cl. 6.18.5(h)(3).
45 NER, cl. 6.18.5(a).
46 NER, cl. 6.18.5(i).

Essential to consider this during development of its revised proposal and we also seek stakeholder comments on this important area of tariff design.

Variation from the indicative pricing structure should be predictable

Providing additional clarity helps customers understand their network charges,[47] and the certainty makes it easier for them to make behavioural changes and investments to reduce their network charges over the longer term.[48] Therefore, distributors' annual pricing proposals should not deviate from the indicative pricing schedules, except due to:

- annual variation in the revenue cap compared to the revenue used to model the indicative pricing schedule
- variation to the long-run marginal cost estimate.

We note, and accept, the inclusion of a defined annual change to residential fixed charges in Essential's tariff structure statement.[49] However, overall we consider that Essential's proposed approach to setting prices does not create sufficient certainty for customers. We require the revised tariff structure statement to provide more clarity on how Essential will:

- base each of its tariffs on long-run marginal cost
- recover residual costs that vary due to revenue and long-run marginal cost.

Essential Energy customers stand to benefit from cost reflective tariffs

We approve Essential's decision to discount the price level of its cost reflective tariffs compared to the flat tariff. That is, the cost reflective tariffs will initially be cheaper than the flat rate tariff. We analysed impacts to customers moving to different tariffs, based on historical interval meter data provided by Essential. We found that almost all customers can reduce their network tariffs by moving to a cost reflective time of use or demand tariff. We consider that this will:

- help achieve the network pricing objective
- manage customer impacts
- have minimal distortion on customer usage[50]

However, we note that this approach over time will shift residual cost recovery away from residential and small business customers, as more of these customers face cost reflective tariffs. Therefore it is recommended Essential consider its strategy for residual cost recovery, to ensure that they maintain consistency with the network pricing principle.

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47 NER, cl. 6.18.5(i).

48 NER, cl. 6.18.5(h)(3).

49 We note that the indicative pricing schedule should reflect this annual change.

50 NER, cl. 6.18.5(d).

We seek clarity on why small business customers pay more

Each of the NSW distributors' indicative pricing schedules, including Essential's, include high tariff levels for small business when compared to residential customers.[51]

Further explanation and information is sought from Essential about why it proposes higher tariff levels for small business customers. To date it is not apparent why these customers who are using the same low voltage network as householders pay significantly more to receive the same services.

We are also seeking further information from Essential about why it proposes vastly different fixed charges for different small business tariffs. We note all residential customers will face the same fixed network charge (which is equal to the small business flat tariff fixed charge). Under its indicative pricing schedule for 2023–24, Essential's small business fixed charges are:

- $330.72 for the flat tariff
- $562.06 for the demand tariff
- $2,413.11 for the time of use tariff.[52]

18.4.1.2 Tariff assignment policy

Essential Energy should alter its default and optional tariffs

Essential has proposed:

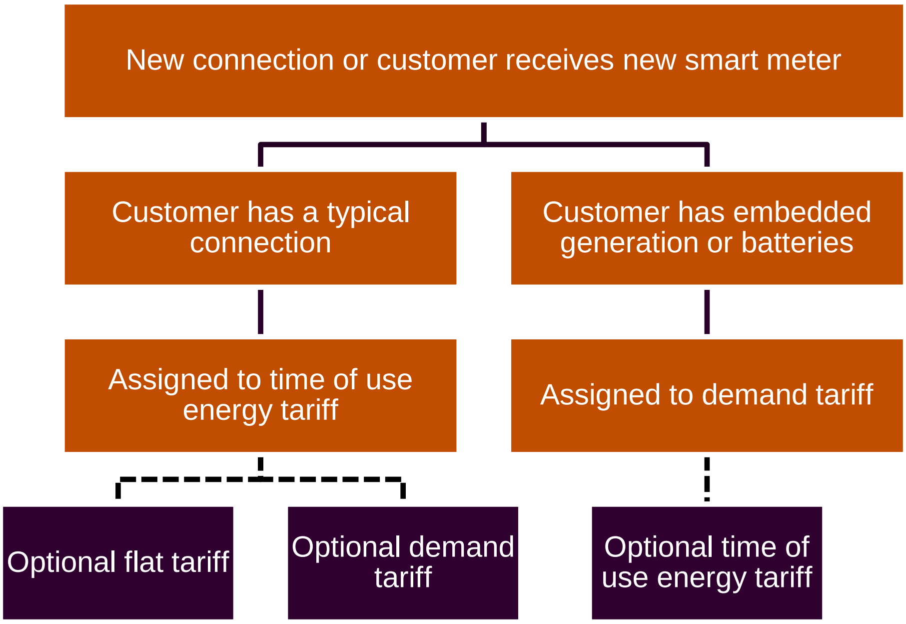
- that default tariff assignment will depend on whether the customer has embedded generation, batteries or an electric vehicle
- to allow assigned and reassigned customers without embedded generation, batteries or an electric vehicle, to opt-out to flat tariffs (see Figure 18-2)[53]
- not to reassign any existing customers that do not receive a new meter

[51] Essential Energy, *2019-24 Tariff Structure Statement - Attachment 1 - Indicative NUOS Pricing Schedule*, April 2018.

[52] Essential Energy, *2019-24 Tariff Structure Statement - Attachment 1 - Indicative NUOS Pricing Schedule*, April 2018, p. 11.

[53] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 29.

Figure 18-2 Essential Energy residential assignment policy



Source: Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 29.

We do not approve Essential's tariff assignment policies for:

- new customers:
- customers that receive a new smart meter.

In the past, we have stated a clear preference for technologically neutral tariff structure statements. For example, we did not permit SA Power Networks to introduce a solar tariff in its 2015–16 pricing proposal or its 2017 proposed tariff structure statement.[54] Our preference is that Essential's tariff assignment policy is technologically neutral. Essential should assign customers with and without new technology to the same tariff by default, and provide them with the same optional tariffs. We also consider that default tariff assignment to different tariffs may make it more difficult for customers (and retailers) to understand what network tariff they will face.[55]

We deem that Essential should not offer retailers the option to opt customers out of cost reflective network tariffs. Opt-out to flat network tariffs puts in jeopardy progress towards the achievement of the network pricing objective over the five-year regulatory control period.[56] To be clear, we are only looking at distributor behaviour. This decision regards network tariffs and not whether retailers to pass through cost reflective tariffs or not.

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[54] AER, *Tariff structure statement proposal SA Power Networks*, Draft Decision, August 2016, p. 17.

[55] NER, cl. 6.18.5(i).

[56] NER, cl. 6.18.5(d).

We recommend a sampling period for customers with new meters

Essential proposed to immediately assign all customers with a new smart meter to a cost reflective tariff.[57] We support the immediate assignment of:

- new customers
- existing customers that change their connection characteristics, including through upgrading to 3-phase power or installing embedded generation.

However, we recommend that Essential should provide customers that receive a new interval meter, without changing their location or connection, with a 12-month data-sampling period. 12-months of interval meter data should help customers:

- understand their network charges and how they can change their behaviour to reduce network charges[58]
- make a more informed selection of retail tariffs.[59]

We are open to approving extending this 12-month data-sampling period to all assigned and reassigned customers, if supported by distributors and stakeholders. We consider that all customers could benefit from the opportunity to analyse their first 12-months of data. However we consider that distributors should allow customers to face immediately cost reflective tariffs during the data sampling period if they wish to do so. This is particularly important for Essential, where most customers will face lower network charges as a result of opting-out of the sampling period.

We encourage distributors, retailers, governments and consumer groups to offer support to customers in understanding how to minimise their network charges and select appropriate retail tariffs.

18.4.2 Medium and large business tariffs

We are satisfied that the following aspects of Essential's proposal for medium and large business customers contributes to the compliance with the distribution pricing principles and to the achievement of the network pricing objective:

- the proposed tariff structures
- the determination of charging windows that reflect times of network congestion, and
- prescribed tariff assignment to cost reflective tariffs.

We require Essential to make greater progress towards the network pricing objective by providing greater transparency on how it calculates individual business tariffs.[60]

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[57] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 26.

[58] NER, cl. 6.18.5(i).

[59] This should help retail customers mitigate the impact of changes in tariffs. NER, cl. 6.18.5(h).

18.4.2.1 Tariff design, levels and charging windows

The below discussion focuses on the issues we found that are unique to Essential's proposal for medium and large businesses. Our findings and discussion above on Essential's charging windows and approach to setting prices for residential and small business customers are also applicable to medium and large business customers.

We approve Essential Energy's tariff structures

Essential proposed that:

- low voltage customers would have a choice between time of use, 3-rate demand tariffs with time of use energy charges and peak demand tariffs with time of use energy charges
- high voltage and sub-transmission customers would face 3-rate demand tariffs with time of use energy tariffs.[61]

Essential proposed that every medium and large business would face a cost reflective tariff.[62] This maintains the current business tariffs structures. Our analysis of interval meter data of Essential's low voltage customers found that:

- demand tariffs with time of use energy tariffs were cost reflective
- time of use tariffs were cost reflective.[63]

We consider that this analysis can be extrapolated to high voltage and sub-transmission customers. We judge that these tariff structures for medium and large business customers will contribute to the achievement of the network pricing objective.[64]

In addition, we note that medium and large business customers are generally informed and need to be informed given the scale of the electricity expenses. Therefore, we consider that medium and large business customers can understand the tariffs Essential is proposing,[65] and are capable of managing their electricity usage to manage their electricity costs.[66]

We seek clarity on individually calculated tariffs

Essential's tariff structure statement includes individually calculated tariffs as part of its suite of network tariffs for sub-transmission customers. In Essential's tariff structure statement it

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60 NER, cl. 6.18.5(d).

61 Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, pp. 31-33.

62 Ausgrid, *Attachment 10.01 - Tariff structure statement*, April 2018, pp. 28-29.

63 NER, cl 6.18.5(a).

64 NER, cl. 6.18.5(d).

65 NER, cl. 6.18.5(i).

66 NER, cl. 6.18.5(h)(3).

assesses eligibility for individually calculated tariffs on a case-by-case basis.[67] We consider that specifying eligibility criteria is best practice.

It appropriate for these large customers to face individually calculated tariffs, the costs they impose may be discrete or they may have greater ability to bypass the distribution network (e.g. by connecting directly to TransGrid). However, at present the tariff structure statement does not outline how Essential will calculate these tariffs, except for passing through transmission location and time signals

We require Essential to outline its approach to setting individually calculated tariffs, in particular outlining how they will diverge from the standard sub-transmission tariffs. This will also mean Essential will need to detail how it calculated each individually calculated tariff as part of the annual pricing process, albeit on a commercial in confidence basis.

18.4.2.2 Tariff assignment policy

We support all aspects of Essential's proposed tariff assignment policy for medium and large business customers. This includes:

- prescribed cost reflective tariff assignment for all high voltage and sub-transmission customers
- cost reflective tariff assignment policy for low voltage customers (with annual usage over 160MWh).[68]

Essential's proposed tariff assignment policy will mean that all customers capable of facing a cost reflective tariff will do so, ensuring progress towards the network pricing objective.[69] Additionally, we consider that medium and large business customers due to the scale of their electricity expenditure are able to understand their tariffs[70] and manage their usage to mitigate the impacts of changes on their retail bills.[71]

18.4.3 Long run marginal cost estimate

An important feature of this draft decision is the concept of long run marginal cost. Long run marginal cost is equivalent to the forward looking cost of a distributor providing one more unit of service, measured over a period of time sufficient for all factors of production to be

[67] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, p. 33.

[68] Essential Energy, *2019-24 Tariff Structure Statement*, April 2018, pp. 31-33.

[69] NER, cl 6.18.5(d).

[70] NER, cl 6.18.5(i).

[71] NER, cl 6.18.5(h)(3).

varied.[72] Long run marginal cost could also be described as a distributor's forward looking costs that are responsive to changes in electricity demand.

The NER require network tariffs to be based on long run marginal cost.[73] However, not all of a distributor's costs are forward looking and responsive to changes in electricity demand. If network tariffs only reflected long run marginal cost, a distributor would not likely recover all its costs. Costs not covered by a distributor's long run marginal costs are called 'residual costs'. The NER require network tariffs to recover residual costs in a way that minimises distortions to the price signals for efficient usage that would result from tariffs reflecting only long run marginal cost.[74]

Below we describe Essential's approach to estimating long run marginal costs (section 18.4.3.1). We then set out our assessment of this approach having regard to the framework in appendix C (section 18.4.3.2) as the basis of our assessment regarding compliance with the pricing principles.

18.4.3.1 Essential Energy estimation method

Essential used the Average Incremental Cost approach to estimate long run marginal costs over a 15 year forecast period.

Essential stated the Average Incremental Cost approach is less data intensive than an alternative approach, known as the Turvey approach, making it easier to apply and to explain during stakeholder consultation. Hence, it is a cost-effective approach to estimating long run marginal costs.[75]

Essential stated its method for estimating long run marginal costs is consistent with its method applied in its first tariff structure statement. In response to the AER's feedback, Essential extended the forecast horizon to 15 years and included replacement expenditure in its calculations.[76]

In addition to growth-related capex and opex, Essential included the capacity-enhancing replacement capex outlined below in its calculations of long run marginal cost via the Average Incremental Cost approach:[77]

- replacement of bare overhead conductors

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72 NER, cl 10 Glossary defines long run marginal costs as the cost of an incremental change in demand for direct control services provided by a distribution network service provider over a period of time in which all factors of production required to provide those direct control services can be varied.

73 NER, cl. 6.18.5(f).

74 NER, cl. 6.18.5(g)(3).

75 Essential Energy, *16.1 TSS Attachment 6 - How we design our tariffs*, 30 April 2018, p. 8.

76 Essential Energy, *16.1 TSS Attachment 6 - How we design our tariffs*, 30 April 2018, p. 8.

77 Essential Energy, *16.1 2019–24 Tariff Structure Statement*, 30 April 2018, p. 37; Essential Energy, *16.1 TSS Attachment 6 - How we design our tariffs*, 30 April 2018, p. 9.

- condition-based transformer replacement
- zone substation power transformer replacement.

Table 18-2 includes Essential's long run marginal cost estimates.[78]

Table 18-2 Essential Energy LRMC estimates

Service	Voltage level LRMC ($/kVA)	Cumulative LRMC ($/kVA)
Sub-transmission	14	14
High voltage	104	117
Low voltage	21	138

Source: Essential Energy, Response *to information request 024 - 024.1 - 16.1 LRMC Model - Public*, 24 July 2018.

18.4.3.2 Assessment of LRMC approach

We are not satisfied that Essential's approach to estimating long run marginal cost contributes to compliance with the distribution pricing principles or to the achievement of the network pricing objective. In particular, we consider that Essential's estimates include replacement capital expenditure (repex) which increases the capacity of the network due to age and condition, rather than being responsive to changes in demand.

Incorporation of repex into LRMC

We do not consider Essential's proposed approach to incorporating repex into its long run marginal cost estimates contributes to compliance with the distribution pricing principles or to the achievement of the network pricing objective.

Essential clarified that 'capacity-enhancing replacement capex' is the proportion of expenditure associated with additional capacity where an asset is replaced with the modern equivalent of a higher capacity. These involve the replacement of assets based on both condition and age.[79]

For each such projects, the proportion of the overall project costs that relates to increasing network capacity was determined, and these costs were included in the long run marginal cost calculations.[80]

78 We noted inconsistencies in the long run marginal cost figures Essential Energy submitted in various parts of its regulatory proposal. Essential Energy acknowledged these inconsistencies and submitted the updated figures in Table 18-2. Essential Energy,

79 Essential Energy, *Response to information request 024 - Public*, 27 July 2018, pp. 1–2.

80 Essential Energy, *Response to information request 024 - Public*, 27 July 2018, p. 2.

Hence, these projects involve the replacement of assets based on both condition and age and are not associated with ‘incremental demand’ of network services. While some of these projects may involve a change in network capacity, incremental use of the network is not the driver of this repex.

As we set out in appendix C, incremental changes in demand must be the driver for any expenditure to be consistent with the definition of 'marginal cost'. This being the case, we are not satisfied that Essential's approach is consistent with the definition of long run marginal cost. We require Essential to amend its estimates as part of its revised proposal. Appendix C to this draft decision sets out guiding principles for estimating long run marginal costs. We require Essential to apply these principles in its revised proposal.

Estimation method

We consider that Essential's method for deriving its long run marginal costs estimates contributes to compliance with the distribution pricing principles.

We consider that the Average Incremental Cost approach is fit for purpose at this stage of tariff reform for Essential.

As we discuss in appendix C, long run marginal costs largely depends on the level of congestion in different locations within a network (as well as temporal factors). However, postage stamp pricing applies across Essential's network and will continue to apply in the 2019–24 regulatory control period. This limits the extent to which end customers can receive and respond to long run marginal cost signals.

In this context, we consider that the limitations of the Average Incremental Cost approach—the perception that the estimates they derive are not the best representations of long run marginal costs—are outweighed by its relatively low cost of implementation.[81] In particular, the Average Incremental Cost approach uses inputs that are readily available as part of a distributor's regulatory proposal: namely, the expenditure and demand forecasts for the 2019–24 regulatory control period.

Forecast horizon

We consider Essential's proposed forecast horizon contributes to compliance with the distribution pricing principles.

Essential used a forecast horizon of 15 years to derive its long run marginal cost estimates using the Average Incremental Cost approach. This meets the minimum 10 year forecast horizon that we consider adequately captures the 'long run' (see appendix C).

[81] NER, cl 6.18.5(f)(1).

18.4.4 Statement structure and completeness

Essential must include the following elements within its tariff structure statement:

- the tariff classes into which its customers will be grouped
- the policies and procedures Essential will apply for assigning customers to tariffs or reassigning customers from one tariff to another (including applicable restrictions)
- the structures for each proposed tariff
- the charging parameters for each proposed tariff
- a description of the approach that Essential will take in setting each tariff in each annual pricing proposal during the regulatory control period.[82]

Essential must also accompany its proposed tariff structure statement with an indicative pricing schedule which sets out, for each tariff for each regulatory year of the regulatory control period, the indicative price levels determined in accordance with the tariff structure statement.[83]

Essential's proposed tariff structure statement largely incorporates each of the elements required under the NER. However its proposal was not sufficiently clear regarding its approach to setting tariffs in each annual pricing proposal This means that, as discussed above, Essential's revised tariff structure statement must be clear how tariffs will vary from the indicative pricing schedule if there is variation in revenue or changes to long-run marginal cost calculations.

Essential Energy should improve the format of its tariff structure statement

We consider that the configuration of Essential's tariff structure statement is not best practice. Essential's tariff structure statement consists of a main document and six attachments. The main document includes significant repetition and explanatory content. We consider that this makes it difficult for the reader to identify what content is binding under the NER and increases the risk of inconsistencies within the document (e.g. the proposed tariff structure statement received in April was inconsistent regarding whether residential customers without new technology could opt-out to anytime flat tariffs[84]).

We recommend that Essential adopt the "two document" approach applied by Endeavour Energy.[85] Under a "two document" approach:

- the first document should only include binding tariff structures aspects on Essential over the regulatory control period

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[82] NER, cl.6.18.1A(a).

[83] NER, cl.6.18.1A(e).

[84] Essential Energy, *Your Power, your say 2019-24 Tariff Structure Statement*, April 2018, pp 25, 29.

[85] Endeavour Energy, Tariff Structure Statement 1 July 2019 - 30 June 2024, April 2018.

- the second document should explain Essential's reasons for what it has proposed.

This approach improves the clarity for the retailers, customers and AER.[86]

86 NER, cl. 6.18.5(i).

A Retail/network characteristics and relevance to tariff reform for Essential Energy

Purpose

Electricity distributors are required to develop their network tariff strategies against a backdrop of a unique set of environmental conditions. Some of these conditions will constrain the reform of network tariffs whilst other conditions will enable more reform to occur than otherwise the case.

The unique environmental factors relevant to a network pricing context include the following:

- Network design and operating conditions –The nature of the electricity network influences the level and spatial variation in long-run marginal cost of supplying an additional increment of network capacity.
- Penetration of interval metering – Metering functionality is a critical enabler of efficient tariff reform.
- Price elasticity of demand – the extent that consumers respond to network pricing by changing their usage influences the design of efficient tariffs in a number of ways, such as from a residual cost recovery perspective.
- Economic conditions – variations in the business cycle influence the rate of growth in new network connections and investment in new major energy appliances and DER
- Weather conditions – the seasonal nature of peak demand influences the design of efficient tariffs from a peak charging perspective.
- Retailer pricing behaviour – the extent that retailers pass through network pricing signals influences the nature, timing and distribution of the benefits of tariff reform.
- Government intervention – government policy can influence the nature and pace of tariff reform.

The AER must take into account these unique environmental conditions when assessing whether a tariff structure statement proposal complies with the distribution pricing principles set out in Chapter 6 of the NER.

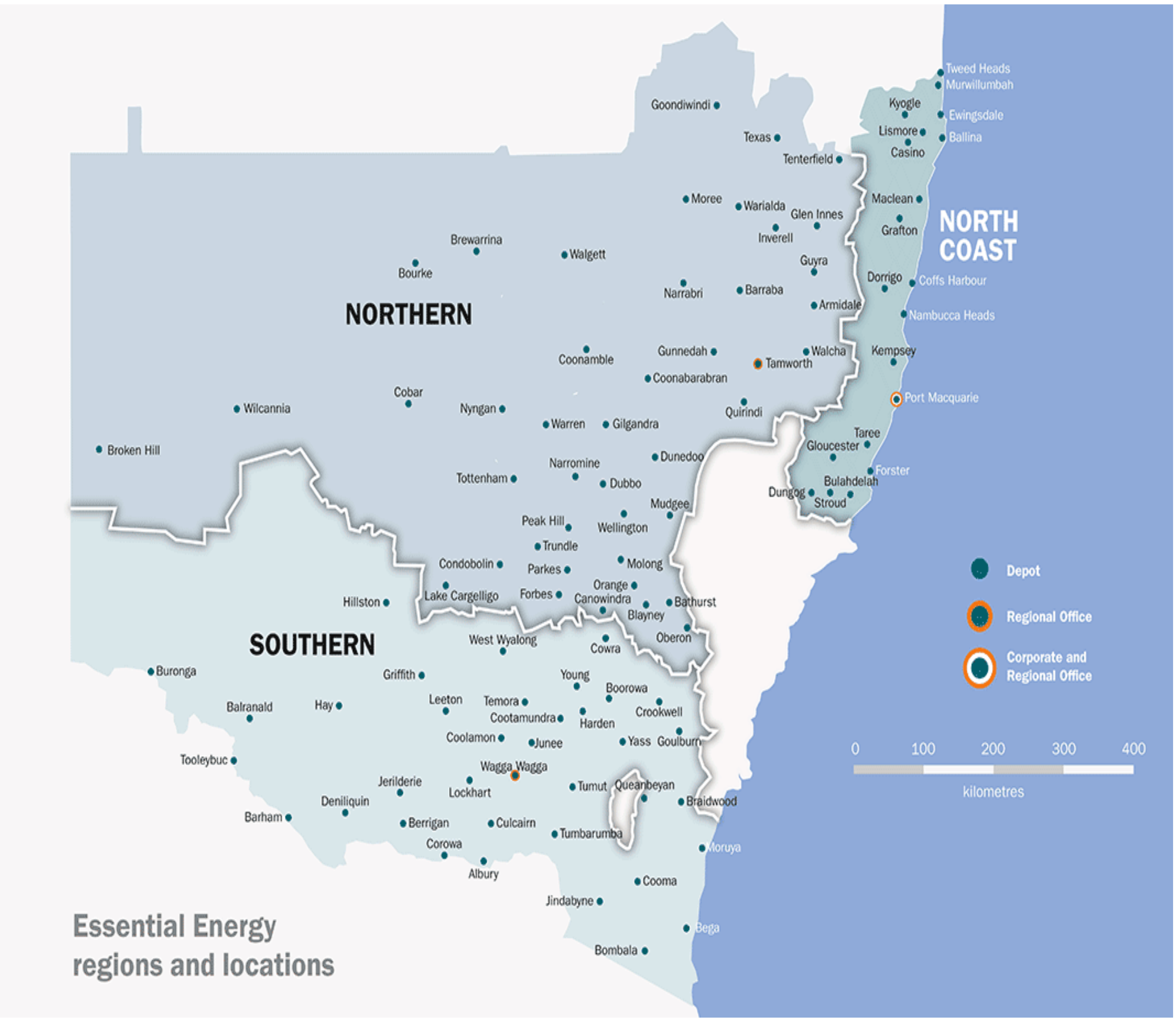
This appendix aims to provide background information and insights into the unique environmental factors faced by each distributors from a network pricing perspective.

Key characteristics of Essential Energy's electricity network

Essential's network is one of the largest electricity networks in Australia covering 737,000 square kilometres and serving around 840,000 customers. Essential provides electricity distribution services to customers in coastal and inland areas that have different seasonal drivers of peak network use. It should also be noted that some areas of Essential's network have a very low population density, resulting in a high cost to serve on an individual customer basis in these areas.

Essential's electricity distribution network is shown in Figure 18-3 below.

Figure 18-3 Essential Energy Electricity Network



Source: Essential Energy 2018

Maximum Demand Growth

At a system-wide level, summer peak demand in Essential's electricity network occurs during extremely hot conditions in January and February, whereas winter peak demand occurs during extremely cold conditions.

While winter peak demand has been around 2,000 MW and has consistently occurred at 6.30pm on a cold winter evening, the timing of summer peak demand has shifted from a mid-afternoon peak (3.30pm) towards an early evening peak (5pm to 6pm). This shift in the timing of summer peak demand is likely to reflect in part the influence of increased Solar PV penetration in Essential's network area.

The table below provides a comparison of the Essential's forecast of summer and winter peak demand at the 10 per cent and 50 per cent Probability of Exceedance.

Table 18-3 Forecast of maximum demand - Essential Energy

Season	Probability of Exceedance	2020	2021	2022	2023	2024
Summer Peak Demand	10%	2,479	2,487	2,489	2,499	2,503
	50%	2,284	2,291	2,290	2,298	2,294
Winter Peak Demand	10%	2,382	2,384	2,391	2,395	2,411
	50%	2,310	2,309	2,314	2,312	2,332

Source: Essential Energy 2018

Essential is forecasting modest growth in maximum demand over the next five years, which is broadly consistent with the Australian Energy Market Operator (AEMO) forecast for most other jurisdictions in the NEM, as shown in the table below.

Table 18-4 Forecast of maximum demand by NEM region – 50 per cent Probability Of Exceedance[87]

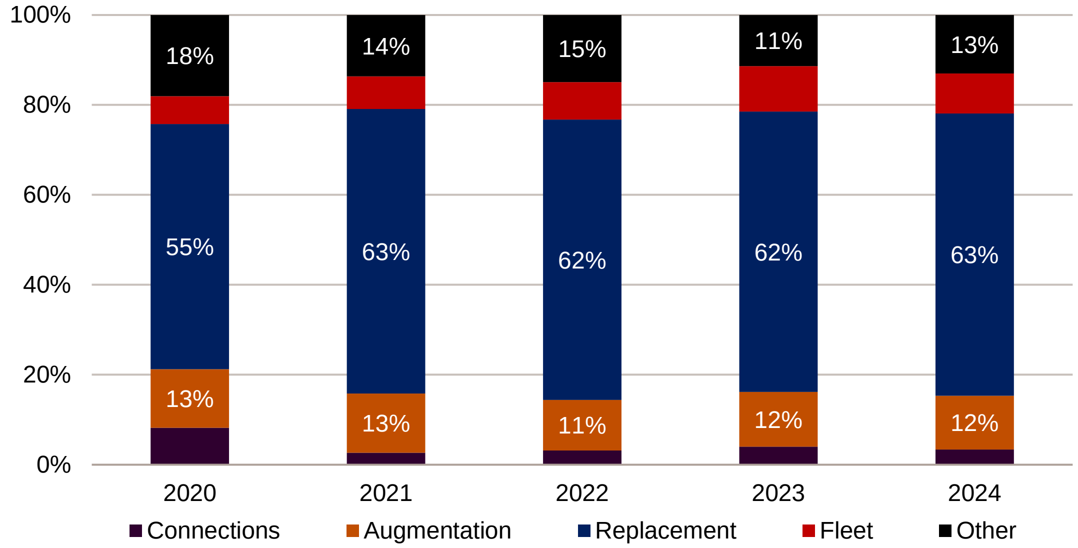
NEM region	Season	2018	2022	2028
New South Wales	Summer	12,664	12,400	13,172
	Winter	11,725	12,125	12,970
Queensland	Summer	8,625	8,554	8,857
	Winter	7,273	7,605	8,047
Victoria	Summer	8,803	9,221	9,679
	Winter	7,274	7,845	8,323
South Australia	Summer	2,849	2,954	3,004
	Winter	2,301	2,431	2,483
Tasmania	Summer	1,337	1,371	1,367
	Winter	1,662	1,707	1,703

Source: AEMO 2018

As with most other electricity distributors, replacement-related capital expenditure is a major driver of Essential's network costs over the medium term, as highlighted in the figure below.

87 Probability of Exceedance means the probability that a maximum demand level will be met or exceeded (for example due to weather conditions) in a given time period.

Figure 18-4 Composition of Capital expenditure - Essential Energy



Source: Essential Energy 2018

The relatively high importance of replacement capital expenditure in the cost function of most electricity distributors in Australia has implications for the design of cost reflective network tariffs.[88]

Energy Consumption

The table below shows the current AEMO medium term forecast of annual electricity consumption, expressed in MWh, by jurisdiction.[89][90]

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[88] AER 2017, Final Determination - Tariff structure statements - Ausgrid, Endeavour and Essential Energy, February, p.92-93

[89] www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/NEM_ESOO/2017/2017-Electricity-Statement-of-Opportunities.pdf

[90] www.aer.gov.au/system/files/PWC%20-%2004.4P%20AEMO%20PWC%20Maximum%20Demand%2C%20Energy%20Consumption%20and%20Connection%20Forecasts%20-%20Sep%202017.pdf

Table 18-5 Forecast electricity consumption by state and territory

Year	NSW	QLD	SA	TAS	VIC	NT
2019	66,705	49,422	12,053	10,388	43,303	1,843
2020	66,441	49,363	11,834	10,412	43,184	1,829
2021	66,505	49,334	11,826	10,474	43,468	1,829
2022	66,662	49,622	12,210	10,546	43,995	1,830
2023	66,267	49,912	12,167	10,429	44,145	1,831
2024	66,557	50,202	12,184	10,460	44,552	1,835
2025	67,238	50,407	12,248	10,510	45,294	1,839
2026	68,010	50,388	12,032	10,417	45,264	1,844
2027	68,803	50,304	11,839	10,343	45,298	1,848

Source: AEMO 2017

The key insights from the table above are:

- Queensland and Tasmania are forecast to be the only NEM regions to experience growth in electricity consumption over the decade to 2021-22.
- The majority of the growth in Queensland (+6 per cent) over this period reflects the recent growth in coal seam gas production.
- The modest growth in Tasmania (+0.3 per cent) over this period reflects the expected weak growth in both population and gross state product. Continued growth in rooftop Solar PV installations and improvements in energy efficiency are also a factor.
- Annual electricity consumption is forecast to decline over the medium term in Victoria (-8 per cent), South Australia (-4 per cent), New South Wales (-3 per cent) and Northern Territory (-1 per cent).

The underlying composition of energy consumption by major customer segment is changing over time, reflecting the influence of energy conservation, uptake of energy efficient appliances and new energy technologies, price response and changes in the underlying structure of the economy away from energy-intensive sectors.

Another important driver of energy consumption is the adoption of Distributed Energy Resources. The following table provides a regional comparison of the cumulative installation of Solar Photo voltaic systems by state and territory over the historical ten year period to 2017 period.

Table 18-6 Solar PV system installations by state and territory

Year	NSW	QLD	SA	VIC	NT	TAS	ACT
2009	14008	18283	8569	8429	215	1452	803
2010	69988	48697	16705	35676	637	1889	2323
2011	80272	95303	63553	60214	401	2475	6860
2012	53961	130252	41851	66204	513	6364	1522
2013	33998	71197	29187	33332	1024	7658	2411
2014	37210	57748	15166	40061	1026	4207	1225
2015	33477	39507	12081	31345	1197	2020	1066
2016	29495	34422	12604	26724	1745	2487	1001
2017	43060	46268	16151	31287	1939	2389	1940
2018	37906	34733	13724	23901	1310	1683	1994

Source: 2018 Clean Energy Regulator

The general growth in solar PV installations over the past decade reflects the falling real price of these systems, the incentives under existing energy-based electricity tariff structures and the influence of government incentives.

The highest number of solar PV system installations have been recorded in Queensland, New South Wales, Victoria and South Australia.

There are currently around 154,000 customers in Essential's network with small scale Solar PV Systems with a total installed capacity of 350 MW. Essential expects the number of customers with Solar PV to grow to around 190,000 customers by the end of the 2019-24 regulatory control period.

Energy Consumption per residential customer

The following table highlights the differences in annual electricity consumption for a representative residential customer by jurisdiction.[91] This variation reflects differences in temperature conditions, the mix of appliances and the market penetration of gas for heating and cooking.

[91] AEMC 2017 Residential Electricity Price Trends Report. This publication is available from https://www.aemc.gov.au/markets-reviews-advice/2017-residential-electricity-price-trends

Table 18-7 Comparison of current electricity consumption per residential customer by NEM region

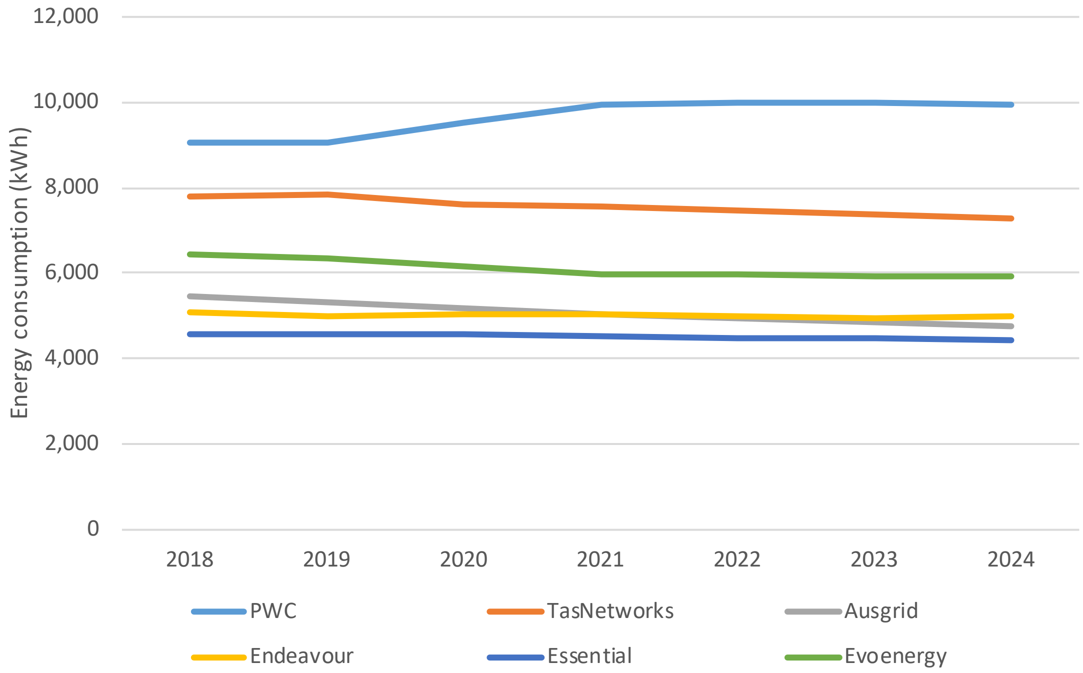
Region	kWh per annum
Queensland	5,240
New South Wales	4,215
Australian Capital Territory	7,151
Victoria	3,865
Tasmania	7,908
Northern Territory	6,613
South Australia	5,000

Source: AEMC 2017

The key points from the above table are summarised below:

- The influence of colder temperatures have resulted in Tasmania and the Australian Capital Territory having the highest annual residential electricity consumption in Australia.
- Victoria and New South Wales have the lowest annual residential electricity consumption, in part reflecting the higher penetration of gas for heating and cooking.
- Annual residential electricity consumption is similar in South Australia and Queensland

Figure 18-5 Residential average energy consumption per customer by electricity distributor



Source: AER analysis

Interestingly Power and Water Corporation and TasNetworks are the only electricity distributors covered by the analysis shown in the figure above that are forecasting residential energy consumption per customer to increase over the next regulatory control period. Endeavour Energy is forecasting residential energy consumption per customer to remain stable over the next regulatory control period. Essential and Ausgrid are forecasting residential energy consumption per customer to continue to decline over the medium term.

Customer numbers

The table below shows that Essential is forecasting relatively strong growth in the number of customers connected to its electricity distribution network over the next regulatory control period.

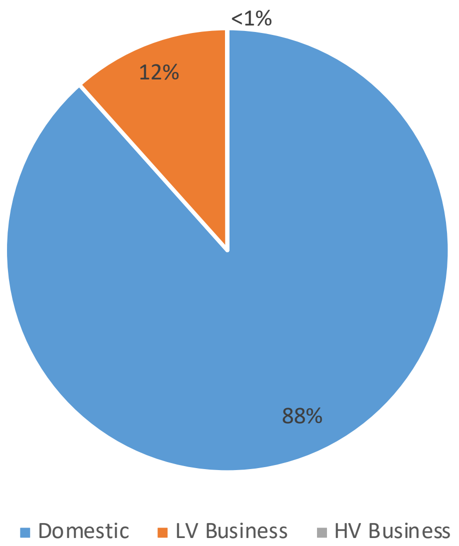
Table 18-8 Annual Customer numbers by type – Essential Energy

	2019	2020	2021	2022	2023	2024
Residential	751,062	772,634	779,979	787,324	794,412	800,529
LV Business	98,319	99,491	99,603	99,677	99,913	100,148
HV Business	207	213	214	214	215	216
Total	849,588	872,337	879,795	887,214	894,540	900,893

Source: 2018 Essential Energy

As with other electricity distributors in the NEM, the residential and LV business segments in Essential's network area account for a high annual share of total energy consumption and total customers (see figures below).

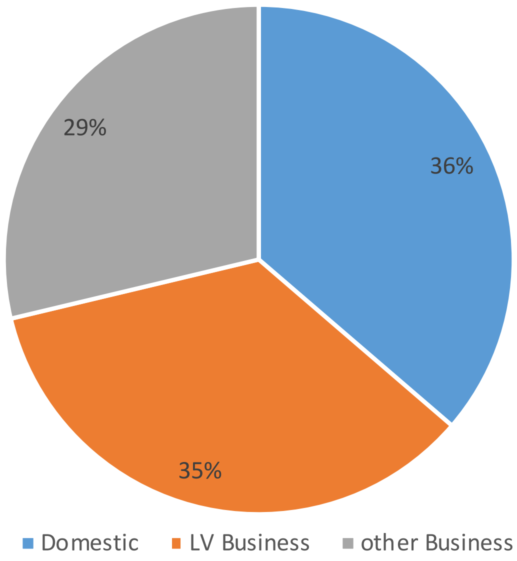
Figure 18-6 Essential Energy customer numbers by customer segment - 2019



Source: Essential Energy

While there is a small number of business customers connected at the high and sub-transmission voltage level of the electricity network, the large size of these customers means that they account for a material share of Essential's total energy consumption per annum, as shown in the figure below.

Figure 18-7 Essential Energy energy consumption by customer segment - 2019



Source: Essential Energy 2018

Network costs, revenues and average network prices

The expected change in the annual revenue requirement is a key determinant of the pace of network tariff reform. This is because it is easier to gain overall customer acceptance of cost reflective pricing if the majority of customers are likely to pay less during the period that tariffs are being transitioned to cost reflectivity.

Standard control distribution revenue

Essential has proposed modest real increases to their annual revenue requirement over the next five years for its standard control distribution service, as shown in Table 18-9 below.

Table 18-9 Essential Energy proposed distribution revenue requirement

Nominal ($m)	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Distribution standard control revenue	985	1,024	1,065	1,107	1,151	1,197

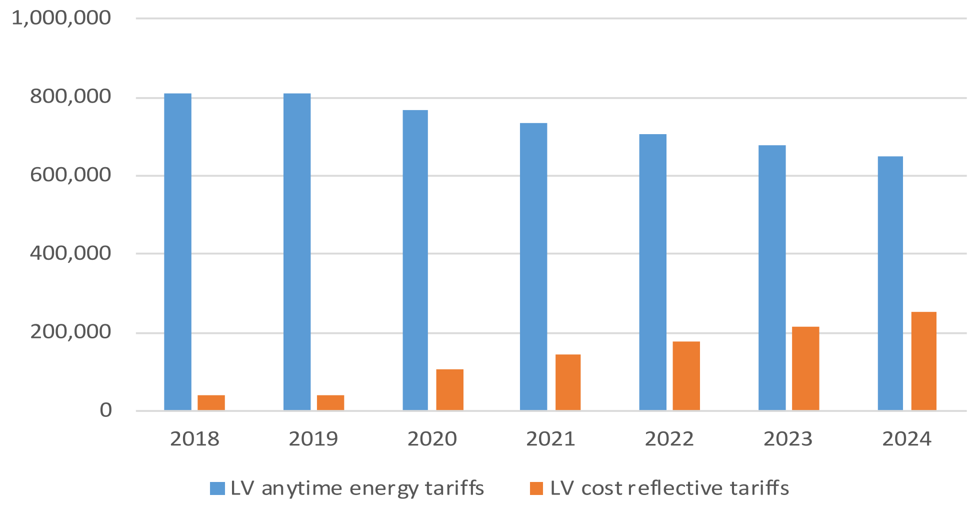
Source: Essential Energy 2018

Interval metering penetration

The penetration of interval metering is a relevant factor to consider from a network pricing perspective because cost reflective network pricing can only be implemented for customers with an interval meter installed in their premise.

The following figure shows the forecast annual number of residential customers with interval metering installed in the next regulatory control period by cost reflective and legacy tariffs.

Figure 18-8 Essential Energy residential and small business interval customer by tariff type



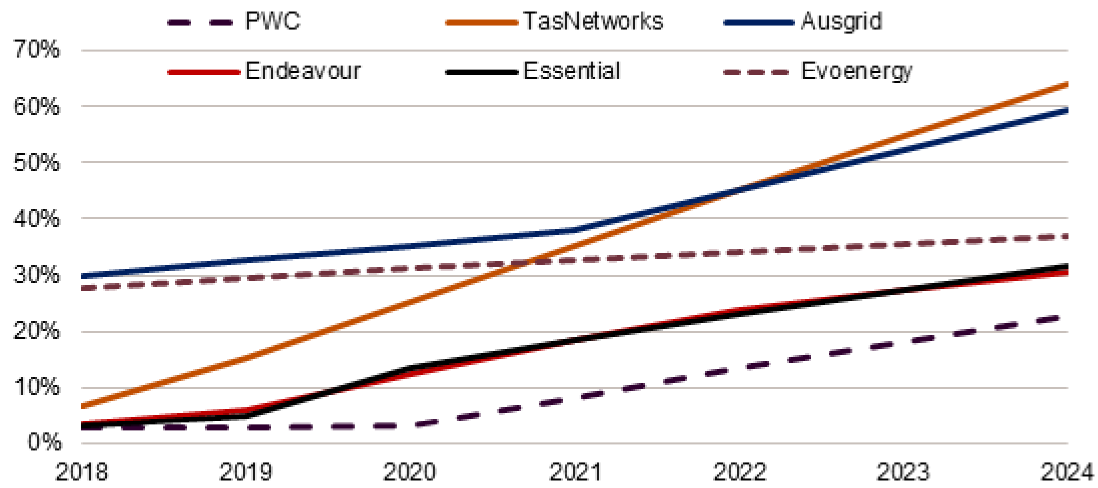
Source: Essential Energy 2018

It is clear from the figure above that Essential's proposed mandated approach to the introduction to more cost reflective network tariffs is expected to result in a substantial increase in the number of customers on a more cost reflective time of use network tariff by the end of the next regulatory control period.

The figure below compares the forecast number of interval metered customers by selected electricity distributors in Australia. This forecast growth reflects the installation of smart metering on a new and replacement basis, as required to comply with the new metering provisions in the NER.[92]

[92] Australian Energy Market Commission, National Electricity Amendment (Expanding competition in metering and related services) Rule 2015; National Energy Retail Amendment (Expanding competition in metering and related services) Rule 2015, 26 November 2015.

Figure 18-9 Forecast penetration on interval metering in residential sector by electricity distributor



Source: AER analysis

The key points from the figure above are summarised below:

- All electricity distributors covered by the analysis are expected to have a significant penetration of interval metering in the residential sector by the end of the next regulatory control period.
- TasNetworks and Ausgrid are expected to have the highest penetration of interval metering in the residential customer segment with a penetration of 64 per cent and 59 per cent, respectively, by the end of the next regulatory control period.
- Endeavour Energy and Essential are forecast to have a penetration of interval metering in the residential customer segment of 31per cent and 32 per cent, respectively, by the end of the next regulatory control period.
- Power and Water Corporation is expected to have the lowest penetration of interval metering in the residential sector. Nevertheless, the penetration of Type 4 interval metering is expected to rise to around a quarter of all residential customers by the end of the next regulatory control period.

Overview of proposed network tariff assignment procedures

The extent that an increase in the penetration of interval metering translates to an increase in the number of customers on more cost reflective tariffs is dependent on the network tariff assignment and re-assignment policies of the electricity distributors.

Table 18-10 provides a comparison of the proposed tariff assignment procedure by electricity distributor.

Table 18-10 Comparison of tariff assignment policies for residential and small business customers by selected electricity distributor

DNSP	Description of Proposed tariff assignment policy
Ausgrid	Assign all new and existing customers with usage greater than 15 MWh pa to applicable demand tariff Assign all new customers with usage between 2 MWh pa and 15 MWh pa to applicable seasonal Time of Use energy tariff Existing customer that upgrade to an interval meter with usage between 2 MWh pa and 15 MWh pa to applicable seasonal Time of Use energy tariff All customers using less than 2 MWh pa assigned to transitional anytime energy tariff with opt-in to a seasonal Time of Use energy tariff.
Endeavour Energy	All new connections will be assigned to the applicable transitional demand tariff with the option to opt-out to the flat energy tariff. Existing connections that upgrade to a 3 phase or bi-directional flow will be assigned to transitional demand tariff with opt-out to flat energy tariff. Existing customers with an interval meter (eg. due to end of life replacement) to remain on anytime energy tariff with opt-in to demand tariff.
Essential Energy	Assign all new connections and existing connections with a new occupant to applicable Time of Use energy tariff. Assign all customers that connect new energy technologies (Solar PV, electric vehicles and battery) to applicable demand tariff. Existing customers that upgrade to an interval meter due to end of life replacement to remain on flat energy tariff with opt-in to demand tariff.
TasNetworks	Assign all new connections to the applicable flat energy tariff with option to opt-in to applicable cost reflective demand tariff. Existing customers that upgrade to an interval meter to remain on flat energy tariff with option to opt-in to applicable cost reflective demand tariff. All existing and new customers have option to opt-in to applicable cost reflective demand tariff.
Evoenergy	Assign all new connections to demand tariff with the option of opt-in to applicable Time of Use energy tariff. Assign all existing customers that upgrade to an interval meter to a demand tariff with the option of opt-in to applicable Time of Use energy tariff.

DNSP	Description of Proposed tariff assignment policy
Power and Water Corporation	Assign all new connections to applicable demand tariff with opt-out allowed to the applicable Time of Use energy tariff. Re-assign existing customers that upgrade to an interval meter due to change in connection characteristic to applicable demand tariff with opt-out to applicable Time of Use energy tariff.

Source: 2018 proposed tariff structure statements

The key points from the above table are summarised below:

- TasNetworks' proposed tariff assignment policy based on voluntary opt-in to cost reflective tariffs in the next regulatory control period to 2023–24 will result a glacial pace of tariff reform compared to other jurisdictions. With the number of customers on legacy tariffs expected to increase over the medium term under the opt-in approach, it will take well over a decade to complete the transition to cost reflective pricing.
- Evoenergy and Power and Water Corporation propose to adopt a mandated demand tariff assignment policy for all new customers and existing customers that have their basic accumulation meter replaced or upgraded. Evoenergy will allow customers on a demand tariff to voluntarily move to the Time of Use energy tariff.
- Essential proposes to adopt a mandated demand tariff assignment policy for all new customers and existing customers that upgrade to an interval meter for the purpose of connecting a Solar PV system, battery or electric vehicle charger to the electricity network.
- Endeavour Energy proposes to require that all new customers and existing customers that upgrade to a 3-phase connection will be assigned to a transitional demand tariff but with the option to voluntarily opt-in to the cost reflective demand tariff. Existing customers with a single phase connection that have their basic accumulation replaced with a Type 4 interval meter will remain on the anytime energy network tariff.
- Ausgrid proposes to adopt a mandated cost reflective tariff assignment policy for all new and existing residential customers with a Type 4 meter installed that consume more than 2 MWh pa. Customers that consume less than 2 MWh pa will be assigned to an anytime energy tariff with the option to voluntarily opt-in to the more cost reflective seasonal Time of Use tariff.

Tariff classes

Electricity distributors are required under Clause 6.18.3(b) of the NER to group their customers into tariff classes for the purpose of setting the prices of standard control network services. Tariff classes are important because the efficiency bounds test and the side constraints are both applied at the tariff class level.

The following table provides a summary of the current tariff classes for each electricity distributors. It is clear from this analysis that there is a considerable variation in the extent of tariff class disaggregation across electricity distributors, particularly in respect to customers connected at the low voltage level of the electricity network.

Table 18-11 Comparison of current tariff classes by electricity distributors

Connection characteristic	Ausgrid	Endeavour Energy	Essential Energy	TasNetworks	Evoenergy	Power and Water
Low voltage (230/400 V)	Low Voltage	• Low Voltage Energy • Low Voltage Demand	• Low Voltage Energy • Low Voltage Demand	• Residential • Small Low Voltage • Large Low Voltage • Uncontrolled Energy • Controlled Energy • Irrigation	• Residential • Commercial Low Voltage	• Less than 750 MWh per annum • More than 750 MWh per annum
High Voltage (11 or 22 kV)	High Voltage	High Voltage	High Voltage	High Voltage	High Voltage	High Voltage
Sub-transmission Voltage (33, 66 or 132 kV)	• Sub-transmission Voltage • Transmission-connected	• Sub-transmission Voltage • Inter-Distributor Transfer (IDT)	Sub-transmission Voltage	Individual Tariff Calculation Class		

Connection characteristic	Ausgrid	Endeavour Energy	Essential Energy	TasNetworks	Evoenergy	Power and Water
Unmetered	Unmetered supply	Unmetered supply	Unmetered supply	Unmetered supply		

Source: AER analysis

Network tariffs

Network Use of System (NUOS) tariffs in Australia comprise the following components:

- Distribution Use of System (DUOS) component – this relates to the cost of providing standard control distribution services, plus an adjustment for the overs and unders account of the revenue cap control mechanism and any pass through amounts approved by the AER.
- Transmission Use of System (TUOS) component – this relates to the cost of providing standard control transmission services, plus an adjustment for the overs and unders account of the revenue cap control mechanism and any pass through amounts approved by the AER.
- Jurisdictional scheme amount component – this only applies where a electricity distributors is required to contribute to a Jurisdictional scheme imposed by a state or territory government, plus an adjustment for the over/ under recovery of the actual contribution amount payable.

There are a range of current network tariff structures for residential and small business customers in the NEM, as summarised below:

- It is common for residential and small business customers with accumulation metering to be assigned to a flat network tariff comprising a fixed charge and a uniform energy charge.
    - The only exceptions are Power and Water Corporation and Endeavour Energy that currently have adopted inclining block tariff structures currently in place.[93]
- A time of use energy tariff is commonly available for residential and small business customers with interval metering. These tariffs typically comprise a fixed charge and peak, shoulder and off-peak energy charges. The peak times vary considerably across electricity distributors, reflecting in part differences in load profiles.
- Some electricity distributors currently offer demand tariffs to residential and small business customers with interval metering installed, most notably Evoenergy and TasNetworks.

[93] The only exception is Endeavour Energy's current inclining block network tariff for small business customers using less than 160 MWh pa.

Key statistics for Network tariffs

The following tables shows the number of customers and Network Use of System revenue for the major flat and cost reflective tariffs for residential and small business customers by selected electricity distributors in Australia.

Table 18-12 Flat energy network tariffs for residential and small business customers by selected electricity distributor

Electricity Distributor	Network Tariff Name	Network Tariff Code	Customer Numbers in 2018-19	NUOS Revenue ($m) in 2018-19
Ausgrid	Residential non-TOU	EA010	1,115,128	623.1
	Small business non-TOU	EA050	68,250	88.5
Endeavour Energy	Residential non-TOU	N70	683,403	524.0
	General supply non-TOU	N90	81,397	155.1
Essential Energy	LV Residential anytime	BLNN2AU	683,403	541.5
	LV Small Business Anytime	BLNN1AU	81,397	179.5
TasNetworks	Residential LV	TAS31	217,966	119.6
	Uncontrolled LV heating	TAS41	209,534	53.9
	Business LV General	TAS22	29,041	37.7
Evoenergy	Residential basic	10,011	129,356	73.3
	General supply non-TOU	40,041	11,158	25.8
Power and Water	Domestic		74,518	86.1
	Commercial		13,127	54.2

Source: AER analysis

Table 18-13 Key statistics – Cost reflective network tariffs for residential and small business customers by selected electricity distributor

Electricity Distributor	Network Tariff Name		Customer Numbers in 2018-19	NUOS Revenue ($m) in 2018-19
Ausgrid	Residential TOU	EA025	354,965	238.9
	Small business TOU	EA225	75,618	134.2
Endeavour Energy	Residential TOU	N705	31401	0.02
	General Supply TOU	N84	11053	14.7
Essential Energy	Residential TOU	BLNT3AU	31401	23.1
	LV TOU < 100MWh Urban	BLNT2AU	11053	70.5

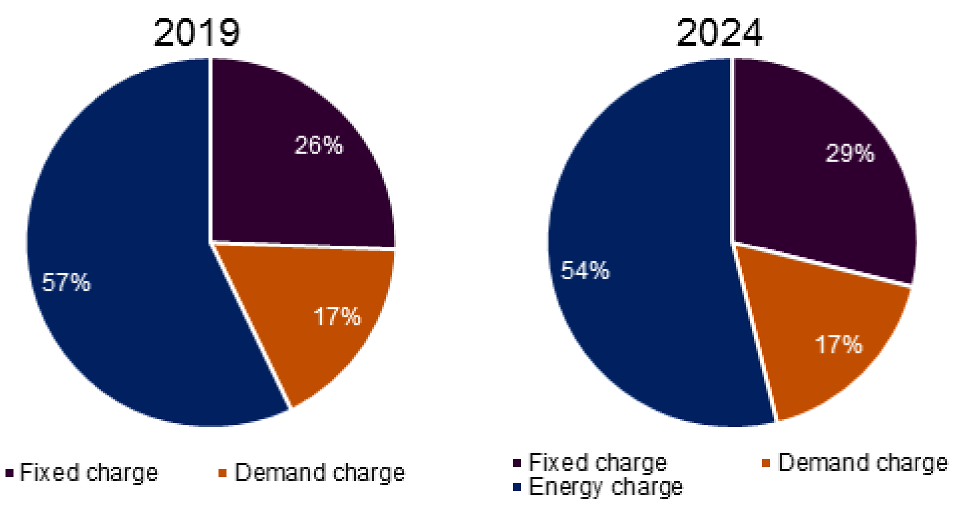
Electricity Distributor	Network Tariff Name		Customer Numbers in 2018-19	NUOS Revenue ($m) in 2018-19
TasNetworks	Residential TOU	TAS93/92	6,207	3.8
	Residential TOU demand	TAS87	219	0.2
	LV Business TOU	TAS94	4,289	33.7
Evoenergy	Residential	015, 016,025,026	40,800	32.8
	LV TOU/Demand	101, 104,106,107	4,835	81.3
Power and Water	LV Smart		0	0
	LV>750MWh		166	20.5

Source: AER analysis

Essential Energy's network use of system tariffs

The following figure shows the annual Network Use of System revenue share by charging parameter type for the main tariffs.

Figure 18-10 Essential Energy NUOS revenue share by charging parameter

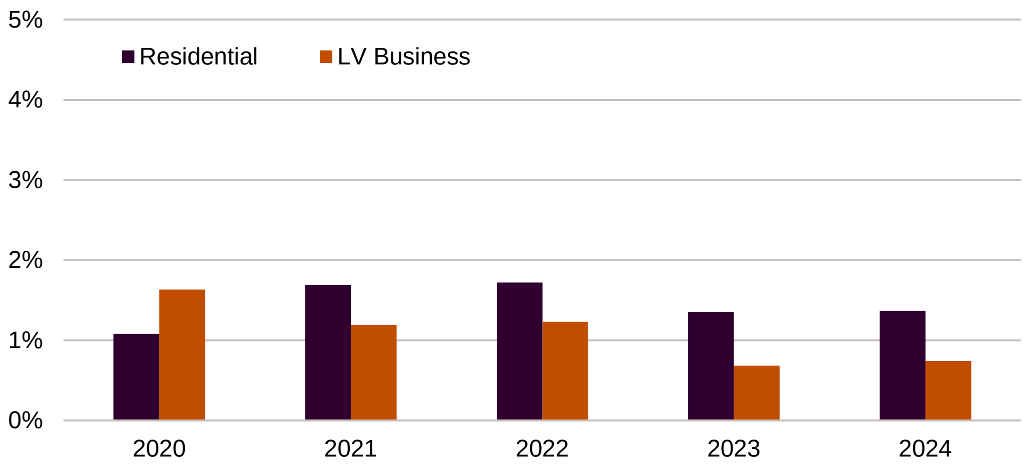


Source: AER analysis

The figure above highlights that Essential proposes to make some progress in rebalancing its network use of system tariffs in the next regulatory control period, mainly as a result of the proposed fixed charge increase and the mandated increase in the penetration of more cost reflective Time of Use tariffs over this period.

The appropriateness of the proposed pace of network tariff reform must be assessed in the context of the customer impact principle in Chapter 6 of the NER. In this regard, the AER notes that Essential expects relatively modest network price increases on average over the next regulatory control period, as shown in figure below.

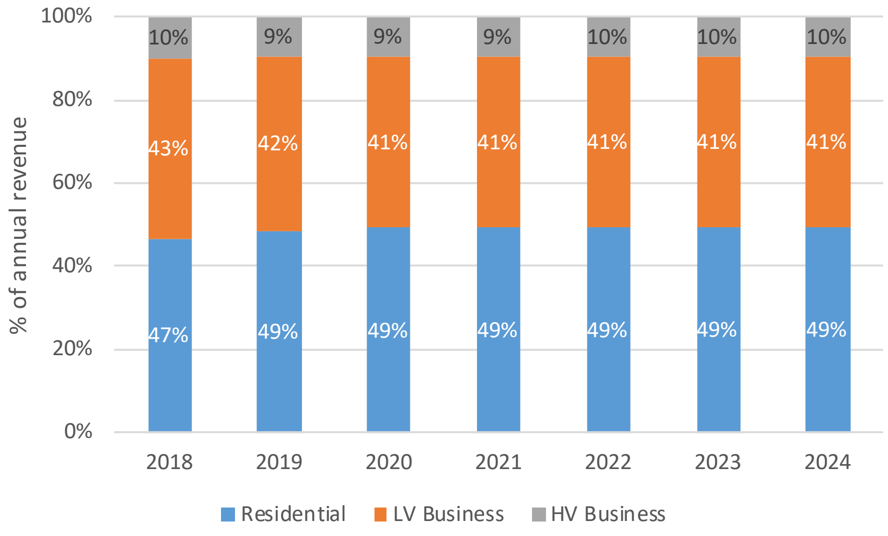
Figure 18-11 Essential Energy Indicative average network price movement



Source: AER analysis

The Figure below shows that Essential is forecasting that the residential customer will account for just over half of their annual network revenue entitlement in the next regulatory control period. The AER notes that in contrast to some other electricity distributors Endeavour Energy proposes to maintain the current NUOS revenue share by customer segment over this period.

Figure 18-12 Essential Energy network revenue share by customer type



Source: AER Analysis

Comparison with other electricity distributor's pricing proposals in next regulatory control period

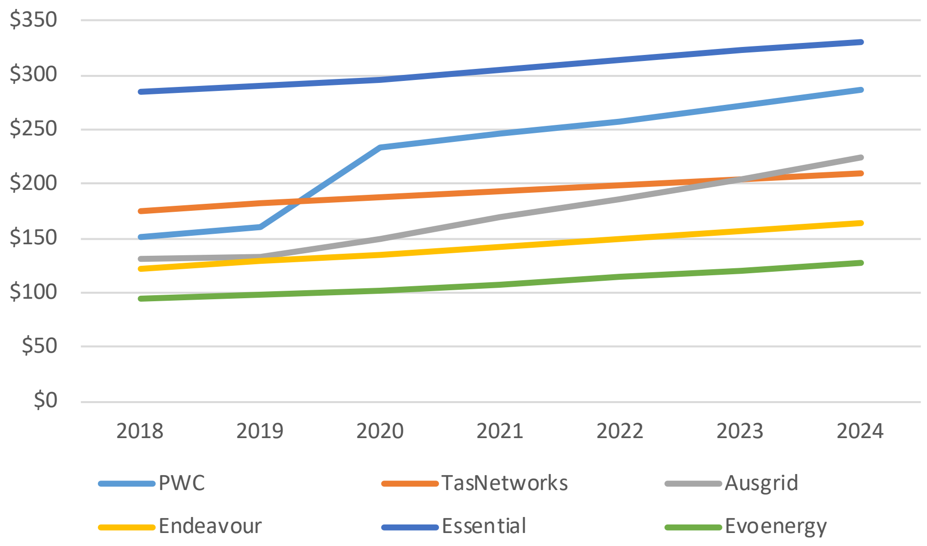
From a regulatory compliance perspective, the AER is focused on whether the network pricing approach set out in Essential's tariff structure statement proposal will contribute to the achievement of the Network Pricing Objective in Chapter 6 of the NER and in turn the broader National Electricity Objective in the NEL. Compliance with the distribution pricing principles in the NER requires that electricity distributors make progress towards long run marginal costs-based pricing and the efficient recovery of residual costs. These issues are explored below:

Progress towards efficient recovery of residual costs

The efficient recovery of residual costs requires that these costs are recovered from network customers in a manner that minimises the distortion to efficient network usage. The fixed charge is typically an efficient way to recover these costs because changes in the level of the fixed charge do not influence the investment, network connection and consumption decisions of electricity distribution customers.

The figure below provides insights into the extent that the electricity distributors propose to increase the level of the fixed charge of their residential legacy tariff in the next regulatory control period.

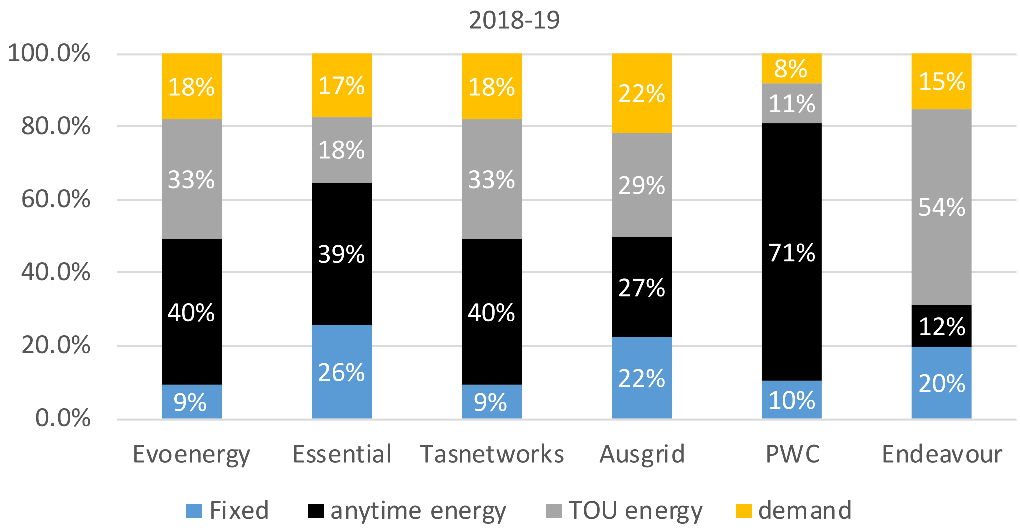
Figure 18-13 Comparison of fixed charge of anytime energy residential tariff by electricity distributor



Source: AER analysis

The above comparison reveals that Essential expects to continue to have the highest fixed charge of all the electricity distributors considered in this analysis. Ausgrid and Power and Water Corporation propose to reduce their reliance on anytime energy charges, offset by increases to more cost reflective fixed and demand charges, over the next regulatory control period. Evoenergy and Endeavour Energy propose to apply only modest increases to the fixed charge over this outlook period.

Figure 18-14 Comparison of network revenue share by charging parameter by electricity distributor



Source: AER analysis

The figure above shows that the current reliance on anytime energy charges from a NUOS revenue perspective varies markedly across individual electricity distributors. Power and Water Corporation and Endeavour Energy are estimated to have the highest reliance on anytime energy charges, whereas Ausgrid will have the lowest reliance in line with their relatively high penetration of cost reflective pricing in the residential and small business customer segment.

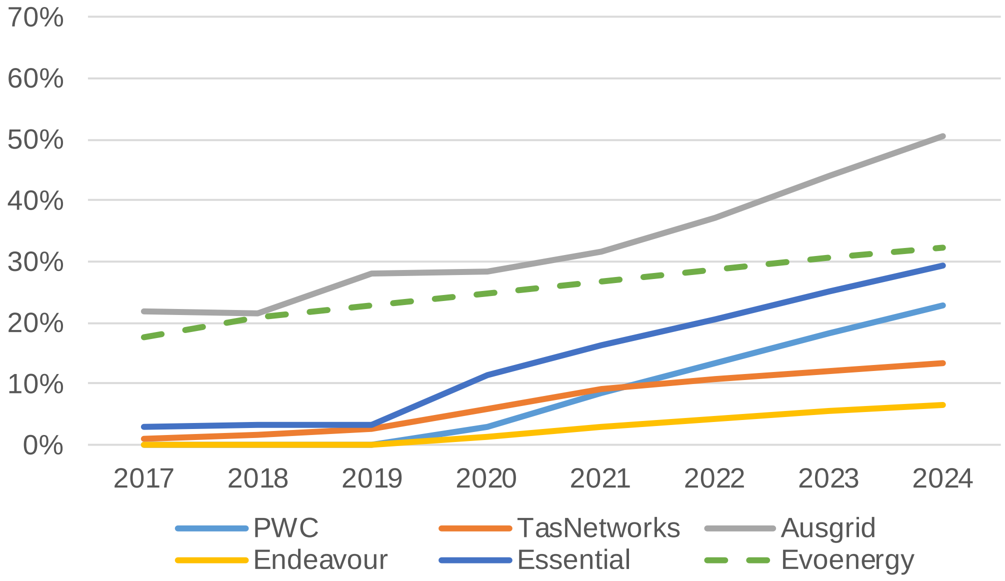
Progress towards long run marginal cost -based price signals

Consistency with this aspect to the distribution pricing principles set out in the NER can be achieved in a number of ways, such as:

- Transitioning the level of peak charging parameters to long run marginal cost estimates
- Reforming peak charging windows to more accurately reflect times of network congestion
- Increasing the number of customers on more cost reflective network tariffs.

Essential proposes to mandate demand pricing for new energised connections and existing customers that upgrade to a three phase connection during the next regulatory control period. As a result of this policy, the proportion of its residential customers on a cost reflective demand tariff is expected to grow moderately over medium term, see Figure 18-15 below.

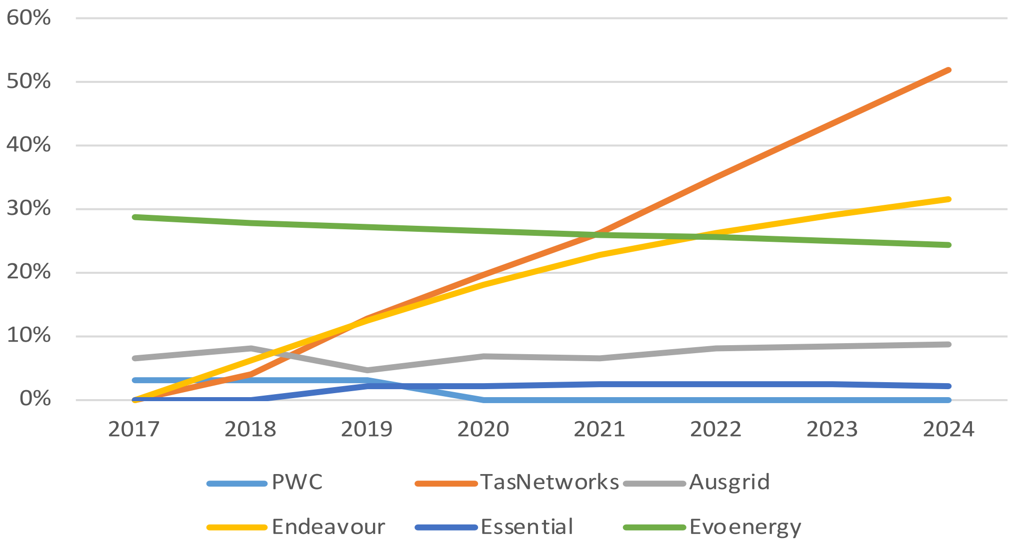
Figure 18-15 Penetration of cost reflective pricing in residential sector by electricity distributor



Source: AER analysis

The following figure provides a comparison across electricity distributors of the annual percentage of residential customers on a non-cost reflective network tariff with an interval metered installed in their premise.

Figure 18-16 Interval meter penetration associated with anytime energy tariff by electricity distributor



Source: AER analysis

The figure above highlight that Endeavour Energy and TasNetworks and Evoenergy will have a significant proportion of their residential customers with an interval meter installed assigned to a non-cost reflective network tariff by the end of the regulatory control period.

It is interesting to note that unlike other electricity distributors, Endeavour Energy and TasNetworks expect to see an increasing proportion of their residential customers with interval metering remain on the non-cost reflective network tariff over the next regulatory control period. This forecast outcome reflects that Endeavour Energy and TasNetworks proposes to allow relatively more of their interval metered customers to remain assigned to their existing anytime energy network tariff, rather than being assigned to a more cost reflective tariff.

Retail Electricity Pricing in the Essential Energy's network area

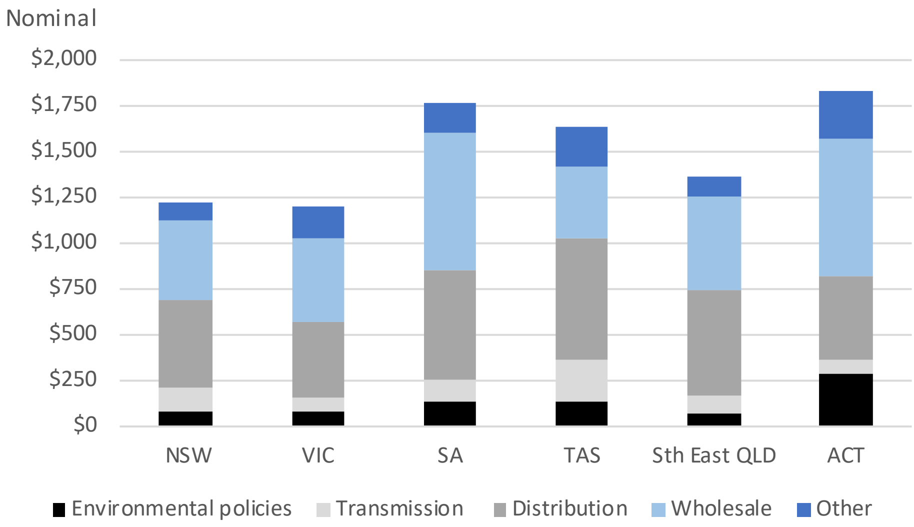
The electricity and gas retail markets in NSW are competitive, so all customers in NSW can choose their retailer and electricity and gas plans. Customers who do not choose a plan are automatically moved onto their retailer's default standing offer.

The NSW Independent Pricing and Regulatory Tribunal (IPART) review of the performance and competitiveness of the NSW electricity retail market found that competition in the retail electricity market in NSW continued to develop, with more retailers entering the market and the market share of smaller retailers increasing, more than three quarters of customers on market offers, and a substantial portion of customers switching retailers or offers.

Retail electricity prices reflect the underlying costs in the supply chain, such as the costs of providing regulated electricity network services, retail margin, electricity purchase costs and the costs relating to environmental policy.

The following figure shows an estimate of the supply chain cost components, expressed on an average cents per kWh basis, that underlie the annual retail electricity bill for a representative residential consumer by NEM region.

Figure 18-17 Annual electricity supply chain costs by NEM region - 2018



Source: AEMC 2018

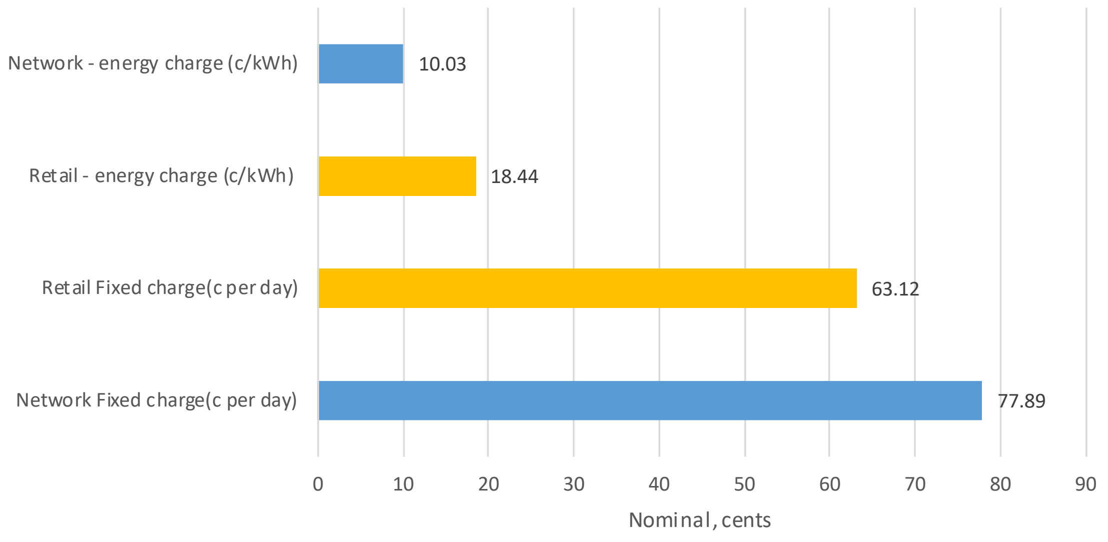
Electricity retail pricing behaviour in Essential Energy's franchise area

Origin Energy is the local area retailer for customers living in the Essential network area. Origin Energy are obliged to provide a standing offer to small customers[94] that have not signed up to a market offer.

Origin Energy currently offers a standard retail anytime energy consumption tariff for residential and small business customers using less 100 MWh per annum of electricity. Origin Energy has adopted simple two part at the retail level - fixed charge and a single anytime energy charge. This is consistent with the two part structure for the underlying network tariff – fixed charge and a single anytime energy charge, as shown in figure below.

[94] A small customer is defined in NSW as a customer that uses less than 100 MWh of electricity per annum and is supplied through a low-voltage connection to the electricity distribution network.

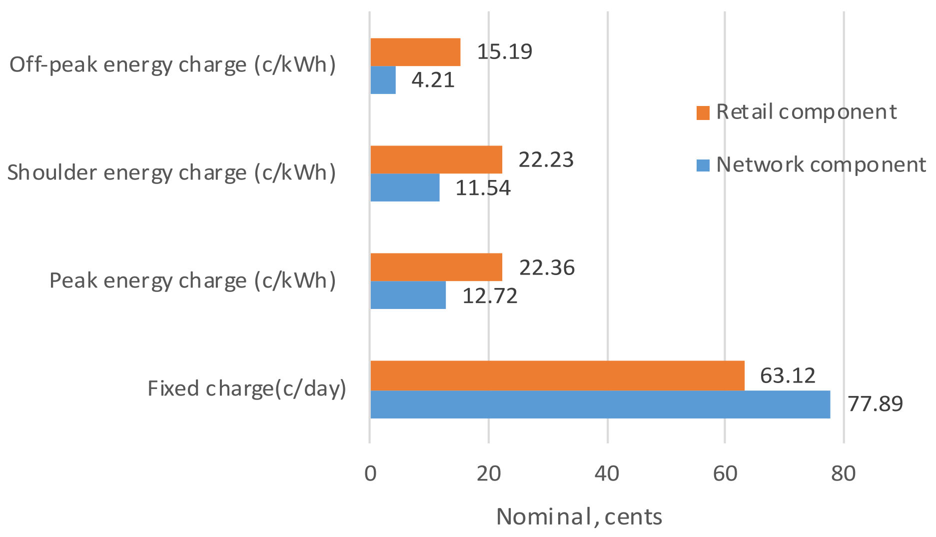
Figure 18-18 Network and retail price comparison - current anytime energy tariff



Source: AER analysis

Origin Energy currently offers a voluntary retail standing offer under a Time of Use energy structure for residential and small business customers using less than 100 MWh pa that are connected to Essential's network area. The current residential prices for this tariff are shown at the network and retail level in the figure below:

Figure 18-19 Network and retail price comparison - current Time of Use energy tariff



Source: AER analysis

B Tariff design and assignment policy principles

Under the NER, the objective of tariff reform is to introduce cost reflective pricing.[95] Tariff design and assignment policy has a role in achieving this objective by influencing:

- how efficiently the tariff structures actually target customers that are driving network costs;
- the speed with which customers take up cost reflective tariffs and which customers move to cost reflective tariffs.

In our assessment of a distributor's proposed tariff structure statements, we consider the pricing principles and the network pricing objective within the NER when determining to approve the statements.

The pricing principles include two complementary principles to economic efficiency that can be summarised as the customer impact measures. We must:

- consider customer impacts of the transition towards cost reflective pricing[96]
- contemplate whether customers are going to be able to understand the charges they are likely to see.[97]

In other words, cost reflective pricing can be departed from in circumstances where doing so will promote the achievement of these two additional principles. In this appendix, we outline our policy positions on tariff design and assignment policy. We have structured the appendix as follows:

1. In what circumstances should distributors assign, or reassign, customers to a new tariff?
2. When a distributor assigns or reassigns a customer to a new tariff, what options should the customer, or retailer as the customer's agent, have to change to optional tariffs?
3. What tariffs should a distributor offer to customers, and which customers should have access to which tariffs?
4. Should any aspects of tariff design and assignment be consistent nationally, within a state or within a city?

95 NER cl 6.18.5(a).

96 NER cl. 6.18.5(h).

97 NER cl. 6.18.5(i).

When should tariff assignment happen?

Distributors charge retailers network tariffs for each class, or type, of customer. Customers can be households, low voltage or high voltage commercial, or sub–transmission users connected to the high voltage network. Each can face a different network tariff structure and charge.

A distributor's tariff assignment policy are the rules the distributor follows to allocate network tariffs to customers. We regulate distributors' tariff assignment policies when we approve tariff structure statements, which must contain such policies.

Tariff assignment is when, in accordance with its approved tariff structure statement, the distributor decides what tariff to apply to a new customer (i.e. a new connection).[98]

In contrast, tariff reassignment is when the distributor switches an existing customer from one tariff to another tariff.

We consider that distributors should:

- assign new customers to cost reflective tariffs upon initial connection, which would include a smart meter under current contestability rules
- reassign established customers who upgrade their connections through either
    - adding embedded generation or
    - upgrading to three-phase power
- to cost reflective tariffs upon completing the connection upgrade
- reassign established customers who receive a new smart meter as part of a retailer's meter replacement programme, 12-months after receiving that smart meter.

This approach balances the need to transition towards cost reflective tariffs with the impact a change in tariff structure might have on customers' ability to control their bills and engage in the electricity market for their long-term benefit. It recognises that customer support for distributors' tariff strategies and their ability to understand these tariff strategies is an important element of fostering and maintaining users' support for tariff reform generally.[99] If distributors adopt the same (re)assignment triggers there will be a more regular and consistent pace of tariff reform across distributors and jurisdictions.

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[98] Retailers are not obliged to pass through network tariffs or network tariff structures to customers in their electricity retail bills.

[99] NER cl. 6.18.5.

New customers should face cost reflective tariffs

When new customers connect to the distribution network, the distributor should assign them a cost reflective tariff immediately. Each distributor, except TasNetworks, proposed to assign new customers to cost reflective tariffs in this manner.[100]

We consider that it is appropriate for distributors to assign new customers immediately to cost reflective tariffs for the following reasons:

- such tariffs incentivise efficient use of the network[101] and investment in energy efficiency in the construction of a new building/premise[102]
- newly connected customers are less likely to be surprised by their network charges even where they are moving premises. This is because as they either have no prior tariffs to compare with or prior tariffs were at another connection with different appliances and heating, cooling or lighting needs.

Upgrading customers should face cost reflective tariffs

Existing customers may decide to upgrade their electricity connection by:

- installing embedded generation, such as rooftop solar
- increasing the capacity of their connection, such as installing three-phase power.[103]

Distributors can reasonably expect customers that upgrade their connections to understand that the upgrade will impact their network charges. These customers, along with the businesses installing rooftop solar and three-phase power, are in a position to understand the impact of a cost reflective tariff on their network charges. Put another way, they are in a position to appreciate that their decisions will have costs for the network—tariffs should recoup those costs from those same customers.

All tariff structure statements that proposed reassignment to cost reflective tariffs included reassigning customers that upgrade their connections to cost reflective tariffs (see Table 18-14).

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100 Australian Energy Regulator, *TasNetworks Distribution and Transmission Determination 2019 to 2024*, Issues Paper, March 2018, p 38; Australian Energy Regulator, *Evoenergy Distribution Determination 2019 to 2024,* Issues Paper, March 2018, p 33; Australian Energy Regulator, *Power and Water Corporation Distribution Determination 2019 to 2024,* Issues Paper, March 2018, p 35; Australian Energy Regulator, *NSW electricity distribution determinations Ausgrid, Endeavour Energy, Essential Energy 2019 to 2024,* Issues Paper, June 2018, p. 60.

101 See D.4.1.

102 For example, in NSW new residential dwellings must obtain a BASIX certificate to demonstrate that the building complies with energy efficiency standards. Although BASIX does not target peak demand, complying with its energy targets should lead to some reduction in peak demand. NSW Government, *BASIX,* https://www.planningportal.nsw.gov.au/planning-tools/basix

103 We consider this to be a material change to connection arrangements.

Table 18-14 Distributor's proposed reassignment triggers

	New meter	Embedded generation	3-phase power	Batteries	Electric vehicles
Ausgrid	✓				
Endeavour Energy		✓	✓		
Essential Energy	✓	✓	✓	✓	✓
Evoenergy	✓				
Power and Water	✓				
TasNetworks	TasNetworks proposed opt-in tariff reassignment				

We note that the AEMC's metering rules state customers that upgrade to embedded generation or three-phase power will receive a new meter. Therefore, they are automatically captured under the 'new meter' trigger.

A 12-month delay is appropriate for meter replacements

Under the AEMC's tariff reforms, metering providers must replace faulty accumulation meters with smart meters—this is automatic without any action by customers on their behalf.

Under the NER, we consider that customers who receive a new smart meter should face cost reflective tariffs when they can understand those tariffs and influence their charges through their usage decisions.

For customers those that receive a new smart meter on account of their accumulation meter being faulty, these customers are not actively engaging with their electricity supply. Circumstances beyond their control are impacting their connection. We do not consider such customers can necessarily understand the impact of a cost reflective tariff immediately. Therefore, a distributor should only reassign these individuals after expiration of a 12-month sampling period. This delay will assist customers to better understand their load characteristics and be provided sufficient information to make an informed decision when selecting a retail pricing offer.

The 12-month grace period is to help customers to understand a full year of their consumption and demand profile (i.e. so they understand their demand characteristics in all seasons). This will help them adjust to the new cost reflective tariff to which they will be reassigned following conclusion of the grace period.

We consider that customers with new connections or have upgraded their connection are more likely to understand the impact of cost reflective network tariffs on their retail bills. This is because these customers are:

- actively engaged either by investing in upgrading their connections or through considering electricity efficiency when preparing for a new connection, and
- expecting to see a change in their retail electricity bills due to the changing or upgrading their network connection.

Even so, we consider that these customers may also benefit from a 12-month data-sampling period. We would like to hear from distributors and other stakeholders, on whether distributors should provide all customers a 12-month data-sampling period to help customers better engage with their electricity charges and usage.

Retail price regulation will influence tariff reassignment

In some jurisdictions, such as Tasmania and the Northern Territory, there is retail price regulation. Retail price regulation is a relevant consideration in our decision on acceptable reassignment practices.

In the Northern Territory, the Government caps and subsidises flat retail electricity tariffs. The retailer faces cost reflective tariffs from the distributor but converts these to a flat tariff for customers under the regulatory arrangements in the Territory. This situation supports the more aggressive approach to tariff (re)assignment proposed by Power and Water Corporation. That's because there is no customer impacts or change to customer understanding that need to be considered following reassignment.

Should customers choose their network tariffs?

In our 2017 Tariff Structure Statements final decision, we indicated that distributors should propose default assignment to cost reflective tariffs in 2019.[104]

Each distributor, except TasNetworks, proposed default assignment to cost reflective tariffs in their tariff structure statements we received in the first half of 2018.[105]

With default assignment to cost reflective tariffs, distributors need to consider whether to offer customers optional tariffs. Broadly, we see three possibilities (all derived from tariff structure statements proposals we received in 2018):

- opt-out to anytime tariffs – where customers can opt-out to anytime network tariffs from the default tariff the distributor assigned them

[104] Australian Energy Regulator, *Tariff structure statements Ausgrid, Endeavour and Essential Energy,* Final Decision, February 2017, pp. 60–61.

[105] We note that Ausgrid's proposed to assign customers with usage under 2MWh to inclining block anytime energy tariffs.

- prescribed tariff assignment – where customers must remain on the default network tariff the distributor assigned them. This is also known as mandatory tariff assignment
- choice of cost reflective tariffs – where customers can choose between a suite of alternative cost reflective tariffs (but not including anytime tariffs) instead of being prescribed to a default network tariff.

We are comfortable that distributors should offer customers a choice of cost-reflective tariffs because:

- allowing customers to choose between a suite of tariffs enables them to match their behaviour to price signals, offers them the ability to choose the tariff they understand best—and presumably will therefore respond to—and mitigates any potential adverse cost impacts from the move to cost reflective tariffs. This engenders greater customer acceptance of change.
- anytime tariffs are not cost-reflective and should not be available to customers that have been (re)assigned (as we discussed above).

Anytime tariffs are not cost reflective

Opt-out to anytime tariffs are popular with customers and retailers.[106] They give the retailer the ability to face flat energy charges. These charges are easy for customers to understand.[107] However, they do not reflect the cost drivers of the distribution business. That is, they charge customers the same amount per unit of electricity transported during peak and off-peak periods. This signals too much usage during the peak, and insufficient amounts in off-peak, potentially requiring unnecessary investment that can drive up network costs long term. That's not in the long term interest of customers.

The capacity of the distribution network is a significant driver of network costs. Therefore, the main determinant of how much cost customers are imposing on the network is how much they demand when the network, in their geographic area, is approaching its capacity constraints. Demand tariffs and time of use tariffs target time periods where capacity constraints are more likely to occur.

We consider that distributors should no longer offer customers who are on a cost reflective tariff the ability to opt-out to anytime energy network tariffs. The risks of allowing continued access to anytime tariffs – inefficient use of, or investment in, the network – outweigh the benefits of customers understanding these simple tariff

106 Anytime tariffs, are any form of tariff where the network charge is not dependent on the time of usage or demand, common forms include flat tariffs, inclining block tariffs and declining block tariffs.

107 NER cll. 6.18.5(h) and 6.18.5(i).

structures.[108] After all, this represents nothing more than continuation of the status quo, acknowledged by policy makers as inappropriate. We note retailers can continue to offer anytime energy retail tariffs when facing cost reflective network tariffs but that is a choice for them in their ongoing management of market contracts and spot prices.

Some State and Territory Governments have imposed retail regulation that requires retailers to offer anytime tariffs. In these States and Territories, removing anytime network tariffs means retailers will see a mismatch between their revenues (achieved from customers on flat *retail* tariffs) and their costs (paying a distributor's cost reflective *network* tariffs for those same customers). All else equal, if retailers are unable to convince customers on flat *retail* tariffs to change their consumption habits, the cost reflective *network* tariffs will not drive lower network costs.

At the same time, the mismatch between revenue and costs could lead state and territory regulators to permit retailers a higher retail margin to compensate retailers for this additional risk.[109] That would actually leave all customers worse off over time. Where there is a significant risk of this happening, we consider that we have little option but to continue to allow customers to opt-out to flat network tariffs while retail price regulation applies.

The ACCC supported prescribed tariffs

The ACCC's Retail Electricity Pricing Inquiry advocated prescribed tariff assignment, ending opt-in and opt-out tariff assignment (including cost reflective choice). To mitigate the potential negative impacts, the ACCC recommended governments provide transitional assistance, including:

- a compulsory data sampling period for customers following smart meter installation
    - this is the approach we have recommended in section 18.4.1.2
- a requirement for retailers to offer flat energy retail tariffs to customers that distributors charge more cost reflective network tariffs to
- additional targeted assistance for vulnerable customers.[110]

These ACCC suggestions should be considered as a package of recommended changes to the existing NEL and NER requirements.

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108 That is, the costs of the lost opportunity for cost reflectivity (NER cl. 6.18.5(a)) outweigh the benefits of customer acceptance and understanding (NER cl. 6.18.5(i)).

109 The mismatch could also lead retailers to come up with other options to encourage customers to change their consumption. However, to date we have not seen such innovations.

110 Australian Competition and Consumer Commission, Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry Final Report, June 2018, p. xix.

In contrast, our current task is to apply the prevailing network regulatory framework (in chapter 6 of the NER) within which we are reviewing the current tariff structure statement proposals.

For example, in most parts of the NEM there is no requirement for retailers to offer flat retail energy tariffs, and we are not aware of any additional targeted assistance for vulnerable customers beyond hardship assistance plans and jurisdictional concessions. This means we cannot impose these requirements on retailers through our approval of distribution network service providers' tariff structure statements. We consider that without implementation of the complementary measures the ACCC recommended in its inquiry, prescribed tariff assignment has shortcomings.

As noted above, in our review we are looking at what distributors can do on their own. Firstly, removing customer's choice through prescribed tariff assignment risks the loss of customer support. This could occur if retailers do not offer customers a flat energy tariff or innovative tariff designs that end-users can understand and feel comfortable with. In its work for the ACCC, the CSIRO found that most retailers pass on the structure of cost reflective network tariffs to end-users; this would mean these customers have very little choice of retail tariffs available to them.[111]

Secondly, prescribed tariff assignment leads to a one-size fits all approach. This means that the prescribed tariff would need to be understood by all customers for them to be able to manage the impacts

Prescribed tariff assignment on the other hand may lead to a lowest common denominator approach to tariff reform, potentially slowing the transition to cost reflective tariffs.

In spite of our concerns, we consider that coupled with complementary measures, prescribed tariff assignment can be an effective means to progress tariff reform. In the Northern Territory, Power and Water Corporation proposed a prescribed assignment policy for residential customers.[112] However, as noted earlier, the Northern Territory Government regulates and subsidises retail electricity prices.[113] This means that the move to prescribed assignment is highly unlikely to come at the cost of customer support for reform, to reduce customer choice or increase retail prices.

Customers should have choice in cost reflective tariffs

[111] Australian Competition and Consumer Commission, *Restoring electricity affordability and Australia's competitive advantage*, Retail Electricity Pricing Inquiry Final Report, June 2018, p. 178.

[112] Power and Water Corporation, *Tariff Structure Statement,* Proposal, 16 March 2018, p. 18.

[113] Electricity Pricing Order under section 44(8) of the *Electricity Reform Act (NT)* in accordance with 13A(d) of the *Electricity Reform (Administration) Regulations,* 6 June 2017.

Default assignment to cost reflective tariffs (with optional alternative cost reflective tariffs available) will lead to a fast adoption of cost reflective tariffs. Indeed, it may lead to a faster adoption of cost reflective tariffs than prescribed tariff assignment, as:

- the default tariff under this approach may be more cost reflective than the prescribed tariff
- it allows for more cost reflective optional tariffs–such as critical peak pricing or rebates–that could build customer acceptance and encourage retail offerings that support a wider rollout of these more cost reflective tariff structures.

We note that the ACCC expressed concerns about an opt-out to cost reflective tariff approach. Stating:

> An alternative form of phased approach would be to introduce cost reflective tariffs at both the retail and network level to all customers on a trial basis so that they can gauge their appropriateness. Customers could then be given the opportunity to move to a less cost reflective retail and network tariff structure without penalty if desired (a delayed opt-out approach)…. The ACCC considers that such an approach would not be ideal as it would delay the benefits from greater cost reflectivity, but it may be a workable option if used only for a short time period.[114]

The ACCC's statement reflects the fact that its recommendation is part of a package of reforms.

We consider that by allowing customers to have a choice between different cost reflective tariffs improves their support for reform. Cost reflective tariff choice would create the opportunity for customers to select:

- tariffs they can understand
- transitional tariffs that reduce the immediate impact of tariff reassignment, allowing vulnerable households to adjust to new tariff structures
- innovative retail offers such as peak demand reduction rebates or retailer owned demand management technologies.

This approach has been utilised by Evoenergy since December 2017.[115] Essential also proposed this approach for customers with new technology.[116]

These methods best balances the need for cost reflective tariffs and engendering customer support for tariff reform through managing impacts and customers' ability to understand tariffs under the existing regulatory framework.

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[114] Australian Competition and Consumer Commission, Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry Final Report, June 2018, pp. 185–186.

[115] ActewAGL, *Revised Tariff Structure Statement,* Overview Paper, 4 October 2016, p. 18.

[116] Essential Energy, *2019-24 Tariff Structure Statement,* Proposal, April 2018, p. 25.

What tariffs should distributors offer?

In this section, we consider what tariffs distributors should offer to customers. We make this recommendation in the context of our finding in D.2, that distributors should offer customers a portfolio of cost reflective tariffs. We will focus on tariffs for residential and small business customers, unless otherwise indicated.

We recommend that distributors offer customers:

- time of use energy tariffs – these tariffs are as cost reflective as any other more average tariff with a pre-defined peak period and are well understood by customers
- demand tariffs – these tariffs are as cost reflective as any other more averaged tariff with a pre-defined peak period and reinforces with customers that demand is an important cost driver.
    - We consider that distributors:
        - with a dominant peak season should aim to offer seasonal monthly demand tariffs accompanied with flat energy charges
        - without a dominant season should aim to offer monthly demand tariffs with time of use energy charges
- highly cost reflective tariffs for large business customers – large business customers are well informed and spend large amounts of money on electricity, therefore distributors can assume that they understand highly cost reflective tariffs
- flat tariffs for customers with accumulation meters – the technological limitations of accumulation meters require anytime flat tariffs, whose benefits are simplicity and are slightly more cost reflective than inclining block tariffs.

We will also support distributors offering residential and small business customers:

- optional location based critical peak prices – these are the most cost reflective tariffs, however can be difficult to understand. Allowing customers (or their retailers) to opt-in to these tariffs will permit customers that can understand these tariffs to use and benefit from them
- optional transitional tariffs – transitional tariffs can reduce the impacts of being assigned to cost reflective tariffs. They may be valuable to some vulnerable customers who need time to adjust how and when they use electricity.

In this section, we:

- discuss what makes a tariff cost reflective
- assess time of use energy tariffs
- assess demand tariffs
- consider the role for transitional tariffs

- identify opportunities for a greater role for more highly cost reflective tariffs
- identify opportunities for introducing innovative network tariffs
- consider what tariffs distributors should offer customers with accumulation meters
- identify appropriate tariff structures for large business customers.

Efficient tariffs align with cost drivers

An efficient tariff sends a signal to the customer on what the customer's electricity demand costs the distributor. Under long-run marginal cost pricing, the signal should reflect the costs of the customer sustaining its behaviour over the long run. For example, when a customer buys a larger air conditioning system its electricity usage and demand will increase during hot days, the distributor's tariffs should equal the costs of using that air conditioner on hot days to the customer.

We have heard from stakeholders that demand issues require a demand charge and energy issues require an energy charge. This position has an appealing simplicity. Unfortunately, it does not reflect reality.

Distribution businesses can indeed face two types of issues:

- demand issues are situations where capacity is driving network costs. Distributors typically experience demand issues when people get home from work on the hottest days and turn on their air conditioners or on coldest days turn on their electric heating, while transport systems and businesses are still operating at or near full capacity
- energy issues are situations where electricity usage is driving network costs. This includes any costs created by insufficient electricity usage.

Customer demand and energy usage are closely related. A customer that sustains a demand of 1kW of electricity for one hour will use 1kWh of electricity.

At a residential and small business level, distributors see demand constraints based on coincident demand. That is the total demand from customers within the feeder zone.

Distributors have proposed two approaches to increase the cost reflectivity of their residential and small business tariffs:

- demand tariffs where distributors charge customers based on their maximum 30 minute demand during peak hours each month
- time of use tariffs where distributors charge customers based on their total electricity consumed during peak and off-peak hours.

Based on our analysis of data provided by NSW distributors, we consider that there is no clear cost reflective advantage of adopting demand tariffs over time of use tariffs. The method and results of our analysis are summarised in the box below.

Box A Cost reflectivity of demand and time of use tariffs

The NSW distributors provided us with one-year of smart meter data for a sample of their customers (ranging from 240 to 5,000 individual customers). Using this smart meter data, we calculated each individual customer's demand during the top 80 30-minute periods (that is the 40 hours of greatest system demand) (a proxy for an efficient tariff)[117]

We calculated how much energy usage or demand would be charged under different tariff structure options:

- flat energy charges
- time of use tariffs – both annual and seasonal
- demand tariffs – including permutations of demand charges calculated daily, monthly, annually and top 5 demands per month on anytime, peak and seasonal peak bases, with flat and time of use energy charges.

We estimated how well the components of the tariffs can predict customers' usage during the peak, using linear regression of tariff components and analysing the predicted R2 of the regressions. We found that:

- seasonal tariffs outperform annual tariffs
- time of use tariffs and demand tariffs perform similarly
- demand tariffs with energy charges outperform demand tariffs without energy charges (time of use energy charges typically complement demand charges better than flat energy charges)
- monthly demand charges outperform daily demand charges.

Time of use tariffs are easy to understand

Time of use energy tariffs apply different charges to electricity consumption, in kWh, at different times of the day, week, and year. Distributors split days into two or three periods:

- peak – timed to correspond with the parts of the day most likely to see demand approach system or zonal capacity constraints;
- off-peak – timed to correspond with the parts of the day least likely to see demand approach system or zonal capacity constraints, and in some cases;

[117] In 2013, the Productivity Commission estimated that 25% of retail electricity bills in NSW reflect the cost of system capacity that is used for less than 40 hours a year. Productivity Commission, *Electricity Network Regulatory Frameworks*, 9 April 2013, p. 337.

- shoulder – timed to correspond with the parts of the day with either a small chance of approaching a system capacity constraint or likely to see a demand approach capacity constraints in some small substation zones.

Distributors often remove peak charges from days unlikely to see system or zonal peaks, such as:

- weekends – where business demand is reduced;
- public holidays – where business demand is reduced;
- low demand seasons – where due to reduced air conditioning or heating use by customers reduces the probability of a demand approaching capacity constraints.

Customers are familiar with distributors charging them based on how much electricity they consume. Distributors charge customers with accumulation meters based on their energy consumption, and time of use energy tariffs are well established. In general, we consider that customers will be able to understand time of use energy tariffs. We also note that time of use energy tariffs can be relatively efficient, in that peak consumption is correlated with user demand during coincidental peaks.[118]

The residential time of use energy tariff designs proposed by distributors are summarised in Table 18-15 below.

Table 18-15 Proposed residential time of use energy tariff designs

Distributor	Description	Ratio of peak to off-peak (2023-24)
TasNetworks	7am to 10am and 4pm to 9pm peak on weekdays year-round with all other times off-peak.	4.9
Evoenergy	7am to 9am and 5pm to 8pm peak everyday year-round, 9am to 10pm shoulder period (excluding peak period) with 10pm to 7am off-peak.	3.2
Ausgrid	2pm to 8pm weekday peak from November to March, 5pm to 9pm weekday peak from June to August, of 7am to 10pm weekday shoulder period (excluding peak period) year-round, with all other times off-peak.	9.5
Essential Energy	5pm to 8pm weekday peak year-round, shoulder period of 7am to 10pm weekdays (excluding peak period) year-round, with all other times off-peak.	3.3

We consider that the different proposals are likely to exhibit different levels of cost reflectivity and customer understanding, based on their designs. We consider:

[118] This is based on our analysis of NSW distributors' interval meter data. We found that Ausgrid's proposed seasonal time of use energy tariffs were the most cost reflective of all tariffs proposed by NSW distributors for residential customers.

- more cost reflective tariffs will have more targeted peak periods. The Ausgrid proposal does this by tailoring the peak period in summer and winter, and not including peak charges during the milder spring and autumn periods
- easier to understand tariffs are simple for customers to remember. The Essential proposal does this by having a single peak period year-round, which makes it easy for customers to remember when peak charges apply and change their behaviour accordingly.

We consider that these differences are acceptable. They largely reflect:

- the difficulties in constructing a cost reflective tariff (e.g. Essential's system covers a wide range of climates and different substation zones will approach capacity constraints at different times of the year); and
- current levels of customer acceptance of time of use tariffs (e.g. Ausgrid currently has 330,000 customers with on time of use energy tariffs).[119]

However, we recommend that as customer acceptance of time of use energy tariffs increases distributors should increasingly include highly targeted peak windows.

Highly targeted peaks should be narrow and seasonal. LRMC prices are the probability of the constraint occurring within a peak/shoulder/off-peak period, divided by the total number of hours in that peak/shoulder/off-peak period. Narrow, more targeted, peak periods will require distributors to increase the peak period charges and decrease shoulder and off-peak charges (increasing the ratio of peak to off-peak charges). This will send stronger and more efficient conservation signals to customers, which should lead to efficient reductions in capital expenditure over the long term.

We consider time of use energy tariffs are sufficiently cost reflective to be approved as default tariffs.

Demand tariffs can be cost reflective

Demand tariffs charge customers based on the maximum point in time demand (typically over a 30-minute period) in kW or kVa, typically on a daily or monthly basis. Demand tariffs help cost recovery be in proportion to the network capacity customers' use. The demand charge can be:

- anytime demand – where the charge is the maximum 30-minute demand at any point in the day or month
- peak demand – where the charge is the maximum 30-minute demand during a pre-defined peak period during the day or month[120]

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[119] Ausgrid, *Tariff Structure Statement*, Proposal, April 2018, p. 8.

- time of use demand – where the charge is the maximum 30-minute demand during each of the pre-defined peak, off-peak and shoulder periods, during the day or month.[121]

The ACCC's Retail Electricity Pricing Inquiry found that 'demand tariffs represent a good balance of cost reflectivity, simplicity and price stability':

- simplicity –the 'two-part tariff' structure (demand and energy usage) is broadly similar to current tariff structures
- cost reflectivity –while the individual's peak demand may not coincide with the network peak it emphasises to customers the relationship between network cost and demand, rather than with usage
- price stability –demand charges would lead to more stable customer bills than more cost reflective options, such as critical peak pricing.[122]

We will accept distributor's proposals to assign residential and small business customers to demand charges by default due to their level of cost reflectivity.

The residential demand tariff designs proposed by distributors are summarised in Table 18-16.

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120 Evoenergy proposed a peak demand charge for customers with smart meters. Source: Evoenergy, *Regulatory proposal for the ACT electricity distribution network 2019–24 – Attachment 17: Proposed Tariff Structure Statement,* January 2018, pp. 1–2.

121 Essential Energy proposed a time of use demand charge for large business customers. Source: Essential Energy, *2019-24 Tariff Structure Statement*, Proposal, April 2018 pp. 31–33.

122 Australian Competition and Consumer Commission, Restoring electricity affordability and Australia's competitive advantage, Retail Electricity Pricing Inquiry Final Report, June 2018, p. 182.

Table 18-16 Proposed demand charges

	Demand charge	Other charges
Endeavour Energy	Maximum monthly demand between 4pm and 8pm on weekdays, with a higher demand charge from November to March.	Fixed charge and a flat energy charge.
Essential Energy	Maximum monthly demand between 7am and 10pm on weekdays.	Fixed charge and a time of use energy charge.
Evoenergy	Maximum daily demand between 5pm and 8pm every day.	Fixed charge and a time of use energy charge.
Power and Water	Maximum monthly demand between midday and 9pm from October to March.	Fixed charge and a flat energy charge.
TasNetworks	Maximum daily peak and off-peak demand, with the peak between 7am to 10am and 4pm to 9pm weekdays.	Fixed charge.

Note: We have not included Ausgrid's demand charge for residential customers, as it was not well defined.

In our 2017 final decisions on tariff structure statements, we expressed concern with residential demand charges based on a customer's demand over a month or longer. We noted that it is not an individual customer's monthly peak demand that drives network costs, but to the extent which that customer's demand contributes to network congestion near capacity constraints.[123] As above, the ACCC also made this observation.

The NSW distributors provided us with interval meter data. Using this data, we tested the correlation between individual customers demand during the top 40 hours each year, and compared it to the same customers:

- monthly maximum 30-minutes demand (within the distributor's proposed peak charging window) as proposed by Endeavour Energy, Essential, and Power and Water Corporation;
- daily maximum 30-minutes demand (within the distributor's peak charging window), as proposed by Evoenergy and TasNetworks; and
- annual maximum 30-minutes demand (within the distributor's peak charging window) as proposed by Ausgrid.

[123] Australian Energy Regulator, *NSW electricity distribution determinations Ausgrid, Endeavour Energy, Essential Energy 2019 to 2024,* Issues Paper, June 2018, p. 140.

We found that monthly maximum demand was the best performing demand charge. We also found:

- demand tariffs perform better with embedded energy charges
- seasonal demand tariffs are more cost reflective where a large majority of regions in the network area peak in the same season.

We consider that there are benefits of both forms of energy charges distributors have proposed to use within their demand tariffs:

- flat energy charges – are easier for customers to understand, which may lead to greater customer acceptance of demand charges, while maintaining a peak conservation signal through the demand parameter
- time of use energy charges – send stronger conservation signals and will recover a greater proportion of residual costs during peak periods, reducing customers' ability to avoid paying for residual costs through embedded generation. We have found that demand tariffs with time of use energy tariffs can better reflect customers' demand during system peaks.

Our analysis finds that demand tariffs without energy charges do a worse job of reflecting customers' demand during system peaks than flat tariffs.

We consider that combining seasonal monthly demand charges, with seasonal time of use energy charges is overly complicated. These tariffs may not be well understood by customers. Therefore, we consider, at this stage of tariff reform, the most appropriate demand tariffs are:

- seasonal monthly demand tariffs with flat energy charges where a distributor has a dominant season; and
- monthly demand tariffs with time of use energy charges where a distributor does not have a dominant season.

We consider demand tariffs are sufficiently cost reflective to be approved as default tariffs.

Distributors should design transitional tariffs for vulnerable customers

Ausgrid and Endeavour Energy have both proposed transitional tariffs. Distributors design transitional tariffs to smooth the impact of moving from flat tariffs to more cost reflective tariffs over a longer time-period. Distributors should design transitional tariffs to assist vulnerable customers that may need time to adjust to cost reflective pricing.

We consider that distributors should offer transitional tariffs on an optional basis, if they consider the impacts of cost reflective tariffs too great in the short-term. Transitional tariffs:

- reduce the efficiency of price signals to customers
- potentially lead to annual changes in price levels for retailers to explain

- are typically more expensive for around half of all customers.

Default tariff assignment should be to cost-reflective tariffs.

Location based pricing has significant advantages

In the current environment, we consider that time of use energy tariffs and demand tariffs best balance cost reflectivity[124] and customers' ability to understand tariffs[125] for the broad range of customers facing default tariff assignment. However, there are ways to make tariffs more cost reflective, including:

- narrow the peak - in 2013, the Productivity Commission found that in NSW peak demand events occur for less than 40 hours per year and are the key driver for network costs.[126] By comparison, Endeavour Energy's proposed demand charge would cover over 1,000 hours a year,[127] and Ausgrid's seasonal peak time of use energy tariff would cover over 800 hours a year[128]
- vary by location – distribution networks are made up of many feeder and substation zones. Each zone has its own capacity (or rating), with different load profiles and climates. Therefore, varying tariffs by location can better target the times and locations to signal conservation, indeed in areas with high excess capacity it may be more efficient to encourage usage.

The NER's pricing principles include a principle that distributors must base tariffs based on long run marginal cost, including consideration of:

- times of greatest utilisation of the relevant part of the distribution network[129]
- the extent to which costs vary between different locations.[130]

Therefore, if distributors were to propose critical peak pricing or prices that vary by location, there is scope for us to approve a tariff structure of this kind.

The need for innovative tariffs depends on retailers

There exists numerous alternative tariff designs that distributor could propose designed to increase cost reflectivity, while managing customer's ability to understand tariffs. Two of these approaches are:

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124 NER, cll. 6.18.5(e)(f) and (g).

125 NER, cl. 6.18.5(i).

126 Productivity Commission, *Electricity Network Regulatory Frameworks,* 9 April 2013, p. 16.

127 Assuming 260 working days a year and Endeavour Energy's proposed demand charges would apply for 4-hours a day on working days.

128 Assuming 90 working days between November and March, and 65 working days between June and August (inclusive) and Ausgrid's proposed peak time of use energy charges would apply for 6-hours in the summer period and 4-hours in the winter period.

129 NER cl. 6.18.5(f)(2).

130 NER cl. 6.18.5(f)(3).

- demand subscription tariffs where customers select the maximum level of demand they will use during peak hours, but face extra charges for exceeding this limit, similar to a mobile phone plan.[131] Energex and Ergon Energy are both offering energy subscription 'lifestyle' tariffs, where customers subscribe to a maximum quantity of energy consumption during peak hours[132]
- peak rebate tariffs where, instead of facing higher tariffs during a critical peak, distributors rewards customers for reducing their demand during times of network congestion. Customers may respond more positively to being rewarded for reducing usage during the peak and paying higher charges on average days than charged high prices during a peak and lower charges on average days. Powershop's 'Curb Your Power' program is a peak rebate tariff structure provided by a retailer.[133]

We consider that there can be strong benefits from innovative tariff designs if they result in greater efficiency, while managing customers' understanding and the impacts of reform. However, in a first-best situation retailers would develop the innovative tariffs based on more standard network tariff structures as a way to reduce the risks of prescribed tariffs, for example:

- where distributors charge a demand tariff, retailers could develop demand subscription tariffs. In this approach, the distributor charges the retailer a demand tariff, and the retailer offers customers demand subscription packages, similar to mobile phone offers. The retailer could charge penalties for greater demand than the package
- where distributors charge a critical peak prices, retailers could develop peak rebates. In this approach, the distributor charges the retailer a critical peak price, and the retailer charges all customers a premium assuming normal demand during the critical peaks. Customers that reduce their usage during the critical peak would receive discounts, rewards or cash.

However, at present most retailers are passing through network tariff structures without innovating. We would consider innovative network tariff solution, just like any other tariff, as part of proposed tariff structure statement in the future.

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[131] Brown, T., Faruqui, A., Lessem, N.,, *Electricity Distribution Network Tariffs – Principles and analysis of options prepared for The Victorian Distribution Businesses,* Brattle Group, April 2018, p. 48.

[132] Energex, *Annual Pricing Proposal – Distribution services for 1 July 2018 to 30 June 2019,* March 2018, pp. 55–56; Ergon Energy, *Annual Pricing Proposal – Distribution services for 1 July 2018 to 30 June 2019,* April 2018, pp. 56–57.

[133] Powershop, *Curb Your Power,* accessed 3 August 2018, https://www.powershop.com.au/demand-response-curb-your-power/

Accumulation meters require anytime charges

Most residential customers still have accumulation meters. As the name suggests, accumulation meters add up/accumulate the amount of electricity used by a consumer during a set period. For households, this is quarterly. They cannot record disaggregated usage within that period, such as half hourly, which is the chief advantage of interval or smart meters. As such, distributors cannot charge these customers any form of cost reflective tariff that requires knowledge of when the customer is using the network.

This requires an anytime charge, where the cost of using electricity does not change based on the time of the day, day of the week or month of the year. The tariff designs proposed by distributors for customers with accumulation meters are summarised in Table 18-17 below.

Table 18-17 Anytime charges for accumulation meters

Distributor	Residential customers	Business customers
Ausgrid	Flat tariffs (with inclining block tariffs for customers with usage less than 2MWh per year)	Flat tariffs (with inclining block tariffs for customers with usage less than 2MWh per year)
Endeavour Energy	Flat tariff	Inclining block tariff
Essential Energy	Flat tariff	Flat tariff
Evoenergy	Flat tariff (with inclining block tariffs for some customers)	Inclining block tariff
Power and Water	Flat tariff	Flat tariff
TasNetworks	Flat tariff	Flat tariff

We consider that flat tariffs are superior to inclining block tariffs. The costs of providing network services do not increase in line with the quantity of electricity consumed (in kWh) over a year. Inclining block tariffs offer no improvements in cost reflectivity, and are more difficult to understand. So we consider that distributors should charge customers on accumulation meters flat tariffs.

Large business should face highly cost reflective tariffs

Until this point, we have focused on tariff designs for residential and small business customers. The same NER pricing objective and principles apply to large businesses. However, we consider that we can expect large business customers to understand much more complex tariff designs. Large business customers will spend a large amount of money each year on electricity. This necessitates large customers investing in understanding their bills. This means that large business customers should face more cost reflective tariffs than small business and residential customers.

Most of the proposed large business tariffs use similar features to residential charges. However, we have not discussed two charges included in the tariff structure statement proposals so far:

- capacity charges – a form of demand charge that looks at either a customer's maximum demand over a long period, such as 12-months, or on a customer's negotiated maximum capacity
- excess kVAr charges – a charge to customers for the inefficiency of their power factor to compensate the distributor for transporting reactive power.

The default tariff designs proposed by distributors for large customers are summarised in Table 18-18 below.

Table 18-18 Proposed large customer tariffs

	Low voltage	High voltage	Sub-transmission
Ausgrid	Annual capacity tariff with time of use energy	Annual capacity tariff with time of use energy	Annual capacity tariff with time of use energy
Endeavour Energy	Peak demand tariff with flat energy	Peak demand tariff with flat energy	Peak demand tariff with flat energy
Essential Energy	Time of use demand tariff with time of use energy	Time of use demand charge with time of use energy	Time of use demand charge with time of use energy
Evoenergy	Peak demand tariff with flat energy	Peak demand tariff with time of use energy and annual capacity charge	Not applicable
Power and Water	Peak demand tariff with flat energy and kVAr charges	Peak demand tariff with flat energy and kVAr charges	Not applicable
TasNetworks	Time of use demand tariff no energy charges	Capacity tariff with time of use energy	Not applicable

We are comfortable approving most of these tariff structures for large business customers. However, we consider it is important that tariff structures become more cost reflective over time.

We encourage distributors to propose more cost reflective tariff designs, such as location based critical peak pricing, on an optional basis for large customers. These customers should be able to understand these tariffs and may find such tariffs beneficial.

Additionally, most distributors provide individually calculated tariffs for some high voltage and sub-transmission customers. We consider that distributors should provide, in their tariff structure statements, how they will calculate those individually calculated tariffs. This additional transparency provides:

- existing and potential high voltage and sub-transmission customers greater certainty in their tariffs; and
- protection for other customers from the potential for negotiated individually calculated tariff customers being systematically lower than the published large business charges.

Distributors should provide us with how they have calculated individual tariffs as part of their annual pricing proposals, so that we can confirm they are consistent with the methodology in the tariff structure statements.

Is consistency important between distributors?

Under the NER there is no explicit requirement for consistency between distributors. However, the NER have a consistent set of pricing principles. To comply successfully with all the pricing principles there may need to be some commonality for a variety of reasons:

- cost reflectivity - the cost drivers for most distribution businesses are generally the same, therefore to design a tariff that is cost reflective it is likely that the tariffs may need to be similar
- ability of customers to understand electricity charges - most customers only spend a small proportion of their time considering how their retailer calculates their electricity bill. Having consistent tariff designs, if that flows through to retail tariff design, may make it easier for Governments, distributors and retailers to help customers understand their bills.

In the three sections above, the NER and the current state of tariff reform, have led us to propose a baseline set of tariff designs and assignment policies that distributors should aim to achieve (or explain any deviations).

We consider that if distributors apply our positions, outlined above, in their revised tariff structure statements, distributors will achieve a high level of consistency. This is not the aim of sections above, but a natural consequence of it.

Overall, we consider that consistency between distributors is a positive to the extent that it makes tariffs cost reflective and makes it easier for customers to understand their electricity charges.

C Long run marginal cost

In this appendix, we set out our framework for assessing the method(s) a distributor used to derive its long run marginal cost (LRMC) estimates for its proposed tariff structure statement.

Background

When tariffs accurately reflect the marginal, or forward-looking, cost of increasing (or decreasing) demand, consumers can make informed choices about their electricity usage. Under such tariffs, customers would increase their use of the network only when they value it more than the costs. This in turn signals to distributors to invest in additional capacity to the extent that customers value it.[134]

LRMC is equivalent to such forward looking costs—more specifically, as measured over a period of time sufficient for all factors of production to be varied.[135] LRMC could also be described as a distributor's forward looking costs that are responsive to changes in electricity demand. This could include investment in additional network capacity to service growing peak demand.[136] As we discuss below, this could also include replacement of fixed assets at the end of their economic life where changes in demand is a consideration.

The estimation of LRMC involves three key steps, which are to:

- choose the overall approaches or estimation method(s)
- define what costs are considered ‘marginal’ vs. what costs are considered ‘residual’
- define what timeframe is considered the ‘long run’.

As we discuss below, this provides the framework for our approach to assessing a distributor's LRMC estimation methods.

Note on LRMC, residual costs and approach to tariff setting

The rules require network tariffs to be based on LRMC.[137] However, not all of a distributor's costs are forward looking and responsive to changes in electricity demand. For example, distributors may need to replace network assets when they are old and/or have deteriorating condition. Hence, if network tariffs only reflected LRMC,

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134 Alternatively, customers may reduce their use of the network if the benefit they derive is less than the costs. This in turn signals to distributors the potential to reduce capacity in the network.

135 NER, chapter 10 Glossary.

136 Peak demand can be due to increased economic activity or seasonal factors such spikes in air-conditioner use on hot summer evenings.

137 NER, cl. 6.18.5(f).

distributors would not recover all their costs. Costs not covered by a distributor's LRMC are called 'residual costs'. The rules require network tariffs to recover residual costs in a way that minimises distortions to the price signals for efficient usage that would result from tariffs reflecting only LRMC.[138] This appendix sets out our assessment framework. It does not assess the approach the distributor proposed to use to set tariff levels in pricing proposals—including how it considered LRMC estimates to set such tariffs and how it allocates residual costs.[139] We consider this aspect in section 18.4.1.1and 18.4.2.1.

Assessment approach

This is the second tariff structure statement round for the electricity distribution businesses undergoing a distribution determination.[140] In this round, we are assessing the extent to which a distributor made improvements to its methods for estimating LRMC compared to the first tariff structure statement round. In particular, we assessed whether a distributor:

- investigated the inclusion of replacement capex (repex) in their LRMC calculations[141]
- used a minimum of 10 years of forecast data in the calculation of LRMC[142]
- continued to refine their methods for estimating LRMC so their tariffs better reflect efficient costs.[143]

These are the improvements we encouraged distributors to explore in our final decisions for the first tariff structure statement round, which we completed in 2016–17. The above criteria establish our approach for assessing LRMC estimation methods in this second tariff structure statement round.

Importantly, we consider these criteria allow us to assess the extent to which a distributor has progressed tariff reform as envisioned in the rules, particularly the requirement that a distributor's method(s) of calculating LRMC has regard to:[144]

- the costs and benefits of implementing the method(s) of calculating LRMC

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[138] NER, cl. 6.18.5(g)(3).

[139] NER, cl 6.18.1A(a)(5).

[140] The exception is Power and Water Corporation, which was not required to submit a TSS in the first round. However, our final decisions from the first TSS round have been available to Power and Water Corporation to guide in developing its first TSS.

[141] For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, pp. 92–94.

[142] For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 94.

[143] For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 90.

[144] NER, cl 6.18.5(f).

- the additional costs of meeting demand from customers at times of greatest utilisation of the relevant part of the distribution network
- the location of customers and the extent to which costs vary between different locations in the distribution network.[145]

Broadly speaking, we would consider a distributor's LRMC estimation method contributes to compliance with the distribution pricing principles and to the achievement of the network pricing objective:

- made the improvements discussed above to their LRMC estimation methods.
- explained its proposed approach within the context of the current stage of tariff reform and the Rules.

We discuss each of our criteria in more detail below.

Inclusion of repex in LRMC estimates

In our final decision for the first tariff structure statement round, we encouraged distributors to investigate including repex in their LRMC estimates.

Assessment criteria:

We consider whether repex (or any other types of capex) that a distributor includes in its LRMC estimates should meet the definition of 'marginal cost'—that is, the cost of an incremental change in demand.

Where a distributor has not included repex in their LRMC estimates, it must demonstrate why it does not have any forecast repex that can be considered as a 'marginal cost'.

In our final decision for the first tariff structure statement round, we noted the rules define LRMC as the cost of an incremental change in demand over a period of time in which all factors of production can be varied.[146] In the long run, the level of capacity in a distribution network is a variable factor of production. When assets come to the end of their useful life, distributors have a choice of maintaining their current level of capacity, increasing capacity or decreasing capacity, depending on demand and use of the network. Distributors should not adopt a default position of maintaining existing capacity levels, especially where existing networks have spare capacity and where

145 As we discuss in sections 0 and 0, we consider the location-based aspect of measuring LRMC is not a primary consideration at this stage of tariff reform, although it could become a more prominent consideration in future TSS rounds.

146 NER, chapter 10—Glossary.

there are changing patterns of use. We considered LRMC estimates should include replacement capital expenditure and associated operating expenditure. This would promote network capacity in the long run at levels consumers' value.[147]

We also noted not all types of repex should be included in LRMC estimates.[148] Marginal cost refers to the cost of an incremental change in demand.[149] Not all repex is associated with an incremental change in demand. For example, we consider repex driven purely by asset condition would not be included in LRMC estimates.

If a distributor includes repex that is consistent with the definition of marginal cost, the next step is assessing whether it has incorporated such expenditure appropriately into its LRMC estimation method. We assess a distributor's incorporation of repex into its estimation method on a case by case basis. This is because we acknowledge LRMC estimates have not traditionally included repex in the context of Australian network regulation. We consider this second tariff structure statement round provides distributors (and other stakeholders, including the AER) with the opportunity to explore and test this aspect of LRMC estimation. Indeed, distributors have proposed several viable methods for incorporating repex into their LRMC estimates in this second tariff structure statement round.[150]

Definition of 'long run'

In our final decision for the first tariff structure statement round, we noted distributors have typically used timeframes of between 10 and 40 years to estimate long run marginal costs. We considered this timeframe captures the essence of 'long run'.[151]

Assessment criteria:

We consider distributors should use a minimum forecast horizon of ten years as inputs into their estimation methods to adequately capture the 'long run'. This is consistent with what we said in approving the first tariff structure statement round.

147 For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, pp. 92–93.

148 For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, pp. 92–93.

149 NER, chapter 10 (definition of long run marginal cost).

150 See attachment 19 of our respective draft decisions for those distributors with distribution determinations for the 2019–24 regulatory control period (Evoenergy, TasNetworks, Power and Water, Ausgrid, Endeavour Energy and Essential Energy).

151 For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 94.

The rules define long run marginal costs as the cost of an incremental change in demand over a period of time in which all factors of production can be varied.[152]

In the long run, the level of capacity in a distribution network is variable. Accordingly, the 'long run' would match the life of the assets. Some distribution network assets have very long lives (in excess of 60 years). However, it would be impractical to produce accurate forecasts over such a long horizon. The longer the estimation period, the more difficult it becomes to estimate and forecast long run costs.[153]

We think there is no ideal, or correct, timescale on which to base these estimates and we accept a range of timeframes would be compliant with the rules.

However, the timescale must be long enough to allow a significant number of factors of production to change—and a key factor of production is the level of capacity in the network. We consider a minimum forecast horizon of ten years captures the essence of 'long run'.

LRMC estimation methods

This section discusses our approach to assessing the extent to which distributors have made improvements to the LRMC estimations methods. This entails assessing whether the distributors:

- made improvements to their application of the Average Incremental Cost approach;[154] and/or
- explored the use of other estimation methods, such as the Turvey approach.

[152] NER, chapter 10.

[153] For example, assumptions about future growth at zone substation and/or terminal stations become more difficult to forecast with a longer planning horizon.

[154] All distributors used the Average Incremental Cost approach to estimate LRMC in the first TSS round.

Assessment criteria:

In this second tariff structure statement round, we take a practical approach to assessing whether a distributor has made sufficient improvements to its LRMC estimation method(s).

We will be mindful of the costs and benefits to industry of using more accurate estimation methods in this early phase of tariff reform and will assess each proposal on a case by case basis.

As a base, we would consider a distributor has adequately improved its estimation method if it has properly incorporated repex. We consider doing so demonstrates improved application of an LRMC estimation compared to the first tariff structure statement round.

In the first tariff structure statement round, all distributors in the NEM used the Average Incremental Cost approach to estimate LRMC, which we accepted. We encouraged distributors to continue improving their estimation methods so their tariffs better reflect efficient costs. This may entail modifying the Average Incremental Cost approach, or utilising more sophisticated approaches, such as the Turvey approach if they consider it appropriate.[155]

A general perception is the Average Incremental Cost approach is less costly to implement than the Turvey approach, but produces less accurate estimates of LRMC.

Conversely, the Turvey approach is more costly to implement than the Average Incremental Cost approach, but is perceived or is in principle capable of producing estimates that better represent LRMC.[156]

A key question in our assessment (and for distributors in making their tariff structure statement) is whether the benefits of more accurate estimates of LRMC outweigh the costs of deriving them.[157] This cost-benefit equation will depend on the circumstance of each business.

[155] For example, see AER, *Final decision: Tariff structure statements: Ausgrid, Endeavour and Essential Energy*, February 2017, p. 90.

[156] For a discussion on the relative merits of these approaches, see NERA, *Economic Concepts for Pricing Electricity Network Services: A Report for the Australian Energy Market Commission*, 21 July 2014, pp. 14–16.

[157] NER, cl 6.18.5(f)(1).

We therefore assess the extent to which a distributor has made improvements to its estimation method on a case by case basis. The aspects of a distributor's circumstance that are relevant for our assessment include:

- **Penetration of interval meters**—There is currently low penetration of interval or more advanced (smart) meters in most jurisdictions. This implies distributors can assign a relatively low proportion of customers to cost reflective tariffs (which should signal LRMC).[158] The principal benefit of cost reflective pricing is that customers' use of the network reflects the value they derive from such use. This would then provide the signal to distributors to efficiently invest in the network.[159]

  However, this link between cost reflective pricing, customer usage and network investment would require a 'critical mass' of customers that can receive LRMC signals and then respond to such signals.

- **Postage stamp pricing**— Distributors charge customers the same tariffs across their networks (except for a small number of bespoke tariffs offered to the distributor's largest customers). However, the marginal costs of distribution vary by location, based on the rate of change in demand and level of congestion within the substation or feeder zone (as well as temporal factors).[160] Accordingly, basing tariffs on an estimate of average LRMC or a part of the network's LRMC sends inefficient price signals to most, if not all, customers.[161]

  Postage stamp pricing is less costly and simpler to administer for distributors and retailers than locational pricing.[162] It is also arguably more equitable for many end customers. It is therefore unclear the extent to which the industry would, or could, move away from postage stamp pricing in future tariff structure statements. We are not expecting any substantive move by distributors to move towards location-based pricing in this round of tariff structure statements.

- **Transition to marginal cost pricing**—For many distributors, the levels of their cost reflective tariffs differ from their LRMC estimates. This is a legacy of previous practices, when the requirement to consider LRMC was much lower than the

158 Such as demand charges or time of use charges.

159 A misconception is that cost reflective pricing will automatically lead to lower network investment and ultimately lower prices. Cost reflective pricing could lead to (efficient) higher investment and prices if customers value additional use of the network.

160 The NER recognises the potential differences in LRMC between different locations in the network—NER, cl 6.18.5(f)(3).

161 Endeavour Energy developed separate LRMC estimates for substation zones that have growing demand and substation zones with falling demand. Endeavour Energy proposed to base tariffs on the LRMC for substation zones that have growing demand.

162 There are several degrees to locational pricing. At a higher level, locational pricing could equate to pricing by "regions" of a network, where a region may encompass zone substations that are inter-related by customer or growth characteristics, for example. At a lower level, locational pricing could equate to pricing by zone substation or even by feeder.

current version of the rules.[163] Distributors are transitioning their tariffs toward their LRMC estimates having regard to customer impacts.[164]

Future directions

As with the first tariff structure statement round, we encourage distributors to continue to refine their methods for estimating LRMC in the third tariff structure statement round.

This may mean further refining the Average Incremental Cost method, or adopting more sophisticated estimation methods, such as the Turvey method, if distributors consider it can be justified on cost-benefit grounds. Distributors may also adopt multiple estimation methods, as we discuss below.

We further encourage distributors to continue exploring the types of repex—and other expenditure types—that can properly be considered as 'marginal cost' and hence included in LRMC estimates. As a corollary, we also encourage businesses to continue exploring how they incorporate repex and other expenditure types into their estimation methods. As we discussed above, distributors proposed alternative methods for incorporating repex into their LRMC estimates in this second tariff structure statement round. We consider the industry can use the learnings from this second tariff structure statement round to potentially consolidate the methods for including repex in LRMC estimates for subsequent tariff structure statement rounds.

As required by the NER, we will be mindful of the costs and benefits of improving LRMC estimation methods in our assessment of future tariff structure statements.[165] In the sections above, we acknowledged several factors in the current stage of tariff reform that may limit the benefits of using more sophisticated estimation methods such as the Turvey method.

However, we are also mindful of the changes occurring in the energy industry that could remove, or at least lower, such barriers in future tariff structure statement rounds. Factors to consider for the third tariff structure statement round include ongoing progress regarding:

- **Penetration of interval or more advanced meters**—As discussed in the sections above, there is currently relatively low penetration of interval meters in most jurisdictions. This limits the extent to which distributors can send LRMC signals to customers.

  However, the AEMC's metering rule change took effect from 1 December 2017.

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163 Prior to the AEMC's rule change in 2014, the rules stated distributors "must take into account" LRMC when setting prices (NER version 62, cl 6.18.5(b)(1)). The current rules state tariffs "must be based" on LRMC (NER version 111, cl 6.18.5(f)).

164 NER, cl 6.18.5(h).

165 NER, cl 6.18.5(f)(1).

This should promote increasing penetration of interval meters in the NEM.[166] Distributors should monitor the rate of interval meter penetration and consider the extent to which it can accelerate tariff reform in the third tariff structure statement round. This includes considering the benefits to distributors and its customers of deriving (and signalling) more accurate estimates of LRMC.

- **Postage stamp pricing**—as we discussed above, postage stamp pricing applies to a large majority of distributors' customers for administrative and equity reasons.

  The higher costs of more accurate methods to estimation LRMC may be justifiable where a distributor proposes tariffs that send locational signals of congestion. In future tariff structure statement rounds, a distributor may experiment with using such methods if it proposes to trial tariffs in particular areas of its network, for example.[167]

  Also, having regard to location when estimating LRMC does not require a distributor to actually apply location-based pricing. In this second tariff structure statement round, for example, Endeavour Energy produced two separate LRMC estimates: one for areas of stable or decreasing demand, and another for areas of increasing demand. However, Endeavour Energy still proposed to apply postage stamp pricing for the 2019–24 regulatory control period.[168]

  Having LRMC estimates by location also has benefits beyond pure tariff setting. This is because it would help to identify locations where the benefits of demand management outweigh the costs. Location-based LRMC estimates would assist in the assessment of project costs with and without demand management in constrained areas of the network.

  We consider this is consistent with the rules requirement that LRMC estimates have regard to the extent to which costs differ between locations (without actually applying locational pricing).[169] It also provided Endeavour Energy with further information regarding the appropriate LRMC estimate on which to base its prices.[170]

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166 The AEMC metering Rules do not apply in the Northern Territory. We consider Power and Water's metering proposal in AER, *Draft Decision: Power and Water Corporation Distribution Determination 2019 to 2024: Attachment 16: Alternative control services*, September 2018.

167 We note distributors may also send temporal and/or location-based signals of network costs through non-tariff means, such as rebates or demand management initiatives.

168 Endeavour Energy based its prices on the latter estimates because Endeavour Energy considered the impact of inefficient signals in growing areas is greater than in areas of declining demand under postage stamp pricing. See Endeavour Energy, *TSS 0.04 Tariff Structure Explanatory Statement*, April 2018, p. 87.

169 NER, cl 6.18.5(f)(3).

170 NER, cl 6.18.5(f).

On this last point, we note distributors are not restricted to a single method when estimating LRMC. Just as distributors utilise a combination of different methods to derive their expenditure forecasts, they can use a combination of estimation methods to derive LRMC estimates.

Distributors may use different estimation methods to account for different types of marginal costs. Ausgrid did so in this second tariff structure statement round to measure the different contributions to LRMC of augmentation capex and replacement capex.[171] Distributors may use different estimation methods, where one method acts as the 'primary' estimation method, while a second method acts as a 'sanity check'. Or, distributors may use different estimation methods to derive a range for LRMC, rather than point estimates, as Ausgrid did in this second tariff structure statement round.[172]

On a final note, we propose consulting with distributors more regularly outside of the distribution determination process on progressing LRMC estimation methods. This is consistent with a suggestion from Energy Networks Australia in the first tariff structure statement round who stated the industry should devote resources to improve the estimation of LRMC.[173] We consider progressing estimation methods for LRMC is an area that could benefit from collaboration and knowledge-sharing between distributors and other stakeholders. This could spread the costs of developing more accurate estimation methods, while maximising the benefits of efficient price signals.

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171 Ausgrid, *Attachment 10.04 – Deloitte – LRMC Methodology Report*, December 2017, pp. 11–16.

172 The Independent Pricing and Regulatory Tribunal of NSW did similarly for Sydney Water Corporation: IPART, *Final Report: Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020*, June 2016, pp. 288–289.

173 ENA, *Submission: Australian Energy Regulator draft decision on tariff structure statement proposals*, 7 October 2016, p. 3.

D Assigning retail customers to tariff classes

This appendix sets out our draft determination on the policies and procedures governing assignment or reassignment of Essential's retail customers for direct control services.[174] Our draft determination is based on Essential's proposed procedures for assigning and reassigning retail customers to tariff classes. We have included modifications for clarity and consistency with the NER.

Essential's revised tariff structure statement should include either the following draft determination or an updated procedure for assigning and reassigning retail customers to tariff classes with an explanation of differences from the draft determination.

Procedures for assigning and reassigning retail customers to tariff classes

1. The procedure outlined in this section applies to direct control services.

Assignment of existing customers to tariff classes at the commencement of the regulatory control period

2. Essential Energy's customers will be taken to be assigned to the tariff class which was charging that retail customer immediately prior to 1 July 2019, if:
    - They were a customer prior to 1 July 2019, and
    - Continue to be a customer as at 1 July 2019.

Assignment of new customers to a tariff class during the regulatory control period

3. New connection or a change of occupancy will trigger assignment.
4. For new connections, Essential Energy will use the estimated information collected from the retailer's B2B service order, in conjunction with the system of assessment as described above, to assign the new customer to the appropriate network charge.
5. New residential and small business customers connecting to the network, will be assigned to the default cost reflective network charge relevant to their metering technology.
6. Change of occupancy will lead to assignment to the default cost reflective network charge where the appropriate metering technology is available at the premises. If the premises do not have a smart or interval meter, the customer will be assigned the network charge that previously existed at the premises. Where a network price change is required in connection with a change of occupancy, the retailer must

[174] NER, cl. 6.12.1(17).

request a network charge reassignment in accordance with section on Network charge reassignment procedure below.

7. These customers will have the choice to opt out to an alternative cost reflective network charge if they satisfy the necessary eligibility requirements.

Reassignment of existing customers to another existing or a new tariff class during the regulatory control period

8. Reassignment can be triggered when an existing customer’s load, connection and/or metering characteristics have changed such that it is no longer appropriate for that customer to be assigned to the network charge to which the customer is currently assigned. Existing residential and small business customers who:
   - upgrade their connection, through installing three-phase power or embedded generation, will be assigned to the default cost reflective network charge relevant to their metering technology.
   - change their meter characteristics with the installation of a smart metering, with no other change to their connection, will be assigned to the default cost reflective network charge relevant to their metering technology, 12-months after the connection of a smart meter.
9. Reassignment can be triggered by Essential Energy or a customer's retailer.
10. Customers may notify their retailer or Essential Energy if they identify that their current assignment is no longer appropriate.
11. If notified by a customer directly, Essential Energy is obliged to investigate, and where it finds the assignment is no longer appropriate, to initiate reassignment. In these instances Essential Energy is obliged to provide all notifications otherwise only sent to the customer's retailer, to both the customer's retailer and the customer directly.
12. In general, customers and customer's retailers may make one application for reassignment in any 12-month period per connection point. Essential Energy will consider exceptions on a case-by-case basis.
13. Whether the customer’s retailer or Essential Energy initiates a network charge reassignment, Essential Energy will use the system of assessment described above to reassign the customer to the appropriate network charge.
14. The network charge change being applied from the last actual meter read date. For Smart Meters where daily reads occur, the last meter read date will be taken as the last invoiced meter read date (therefore end of month).

Reassignment triggered by the customer or customer's retailer

15. Customers and the customer's retailer should monitor the suitability of the network charge applied. Where a customer or customer's retailer identifies the existing tariff is not suitable, they must advise Essential Energy of the need for reassignment. Additionally, where it identifies a need for reassignment, Essential Energy can initiate reassignment.

16. Where the customer's retailer requests a network charge reassignment (on its own initiative or at the customer's request):

    - the customer’s retailer applies in writing by submitting the Supply Service Works Service Order (SSW-SO) for Network Charge Change via the Energy Market B2B processes; or
    - if the request requires a metering configuration or update the customer’s retailer would need to raise the appropriate B2B service order (Metering Service Works Service Order MSW-SO).

Reassignment triggered by Essential Energy

- Where Essential Energy initiates the network charge reassignment, it will provide a notice to the customer’s retailer prior to the actual network charge reassignment. Essential Energy will also advise the customer prior to the assignment if they are a business customer.
- The obligation to notify a customer's retailer does not apply if the customer has agreed with its retailer and Essential Energy that its network charges are to be billed by Essential Energy directly to the retail customer, in which case Essential Energy must notify the customer directly.

Obsolete network charge

17. An obsolete network charge is a network charge that may apply to existing Essential Energy customers but is not available to new customers. Customers who choose to transfer off an obsolete network charge will lose all rights to all obsolete network charge on that premise, therefore the entire site will be required to move onto a currently available network charge. Exceptions apply when customers connect to additional services. Refer to Essential Energy’s Network Price List and Explanatory Notes which is available on www.essentialenergy.com.au for further details in relation to obsolete network charge.
18. Customers may not go back onto an obsolete network charge once they have transferred off it.

Energy Saver (Controlled load)

19. Where a customer wishes to change from Energy Saver 1 to Energy Saver 2 (or vice-versa) the customer must notify its retailer.
20. To change Energy Saver tariff, the customer’s retailer is required to submit the relevant Metering Service Works (Meter reconfiguration) B2B service order to trigger the necessary meter / relay re-configuration. Once the meter / relay re-configuration has taken place, Essential Energy will perform the appropriate network charge reassignment without requiring the retailer to submit a SSW-SO.
21. The network charge will be changed as at the date of the Meter reconfiguration (therefore Frequency Injection Relay channel change).

Notifications

22. Essential Energy will notify the customer's retailer in writing of the network charge to which the customer will be assigned or reassigned prior to the network charge assignment or reassignment occurring:

    - in the event Essential Energy initiates the network charge reassignment, Essential Energy will notify the customer's retailer in writing prior to the actual network charge reassignment occurring; and
    - in the event the customer's retailer initiates the network charge reassignment, Essential Energy will notify the retailer in writing of the success or otherwise of the application. Where the application is not successful or where Essential Energy has decided to assign a network charge other than that proposed by the retailer, Essential Energy will advise the retailer of the reasons for the decision.
    - The obligation to notify a customer's retailer does not apply if the customer has agreed with its retailer and Essential Energy that its network charges are to be billed by Essential Energy directly to the retail customer, in which case Essential Energy must notify the customer directly.

23. As part of its notification procedures, Essential Energy will advise the retailer that they can request further information from Essential Energy and that they may object to the network charge reassignment decision made by Essential Energy. Essential Energy will encourage retailers to request further information or clarification of its network charge reassignment decision before an objection is lodged.

24. If, in response to a notice issued in accordance with paragraph 23 above, Essential Energy receives a request for further information from a customer's retailer or customer, then it must provide such information. If any of the information requested is confidential then it is not required to provide that information to the retail customer.

25. The customer's retailer is wholly responsible for conveying the correct information to Essential Energy and communicating any further requests and decisions made by Essential Energy to the customer.

Objections

26. Essential Energy must allow retailers to object to a network charge reassignment decision made by Essential Energy. The objection procedure allows retailer's to formally request a review of the network charge reassignment decision.

27. The following steps will be applied as part of the objection procedure:

    (a) Retailers must submit an objection in writing using Essential Energy's Network Charge Reassignment Objection form. Supporting evidence or documentation related to the decision being reviewed must be provided by the retailer. Retailers should make reference to their customer's load, connection and metering characteristics as part of the network charge reassignment objection.

The completed form and supporting information and documentation will be emailed to networktariffchange@essentialenergy.com.au.

(b) Essential Energy's Network Pricing Manager must review the objection, including any documentation provided. In reviewing the objection, the Network Pricing Manager must assess if the original decision complied with its published Policy for Network Charge Assignment and Reassignment, Essential Energy's regulatory obligations and must take into consideration any supporting evidence and documentation provided.

(c) Within 20 days of receiving the completed Network Charge Reassignment Objection form, Essential Energy must notify the customer's retailer, and where appropriate the customer, in writing of the outcome of the Network Pricing Manager's review and reasons for accepting or rejecting the objection. If Essential Energy believes the objection review process will take longer than 20 business days, Essential Energy must advise the retailer, and where appropriate the customer, accordingly.

28. If an objection to an assignment or reassignment is upheld:

(a) If the completed objection form is received within 20 business days from the date the retailer was advised of the original network charge reassignment decision, Essential Energy must apply the changes from the last actual meter read date prior to the original network charge reassignment application.

(b) If the completed objection form is received after 20 business days from the date the retailer was advised of the original network charge reassignment decision, Essential Energy must apply the changes from the last actual read date prior to the date the completed objection form is received.

(c) if Essential Energy requests further information from the retailer pertaining to the objection application, and such information is not provided within 20 business days from the date requested, Essential Energy must apply the changes following a subsequently successful objection from the last actual read date prior to the date the additional requested information is received.

29. Any adjustment to network charges billed to retailers, or directly to customers, because of upholding an objection to an assignment or reassignment, Essential Energy must do as part of the normal billing process, including of any compensation relating to the time value of money.

30. If an objection to a tariff class assignment or reassignment is upheld, then any adjustment which needs to be made to tariff levels will be done by Essential Energy as part of the next annual review of prices.

31. If any objection is not satisfactorily resolved under Essential Energy's internal review procedure within a reasonable timeframe, then to the extent that the matter relates to a small retail customer and resolution of such disputes are within the jurisdiction of the Energy and Water Ombudsman NSW (EWON) the retail customer is entitled to escalate the matter to the EWON.

32. If the objection is not resolved to the satisfaction of the retail customer under Essential Energy's internal review procedure or EWON processes, then the retail customer is entitled to seek a decision of the AER via the dispute resolution process available under Part 10 of the NEL.