Network tariffs and long run marginal cost

What is long run marginal cost?

Network tariffs must be based on the long run marginal cost (LRMC) of a distributor providing a service.[1]

LRMC is a distributor's forward-looking costs that are responsive to changes in electricity demand.[2] Forward-looking costs could include:

- investment in additional network capacity to meet growing peak demand
- replacement of fixed assets at the end of their economic life where demand is a consideration.

LRMC and tariff structure statements

Under the National Electricity Rules (NER), a distributor's tariff structure statement (TSS) must comply with a number of pricing principles.[3] One of the required pricing principles is that each tariff must be based on LRMC.[4] Additionally, we encourage distributors to include how they calculate LRMC in their TSS to provide transparency to stakeholders – that is, calculations that include distributors' expenditure and demand forecasts.

What about costs that are not forward looking?

Costs that are not forward looking or responsive to changes in energy demand are referred to as residual costs. These are the costs 'left over' after recovering LRMC. The NER requires 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.[5]

What drives long run marginal cost?

LRMC has typically been driven by network investment in response to growth in electricity demand, for instance, increased network investment to support the rapid uptake of air conditioners.

It is unclear what future drivers of LRMC might look like, because the nature of electricity demand is always evolving. Distributed energy resources (DER), such as solar PV and electric vehicles, are changing the way customers interact with the electricity network and pose new electricity hosting challenges for distributors.

---

[1] NER, cl. 6.18.5(f).
[2] Also see NER, cl. 10 Glossary for a definition of LRMC.
[3] NER, cl. 6.18.1A(b).
[4] NER, cl. 6.18.5(f).
[5] NER, cl. 6.18.5(g)(3).

For instance, networks may not currently be equipped to host excess supply of solar power (or minimum demand for energy) during the day, brought on by the increased penetration of solar panels. If left unmanaged, excess energy on the grid can lead to network-wide blackouts or require distributors to remotely switch off solar panels. So distributors now have to consider the impact of minimum demand, or excess energy, as well as demand peaks when calculating drivers of LRMC.

Methods of calculating long run marginal cost

Current methods of calculating long run marginal cost

LRMC can be calculated and applied in various ways. Distributors have been given flexibility to implement LRMC to best suit their network and consumer characteristics. However, the NER provides a number of factors the distributors have to consider when calculating and applying LRMC including:

- the costs and benefits associated with calculating, implementing and applying that method as proposed
- the additional costs likely to be associated with meeting demand from retail customers that are assigned to that tariff at times of greatest utilisation of the relevant part of the distribution network
- the location of retail customers that are assigned to that tariff and the extent to which costs vary between different locations in the distribution network. [6]

Most distributors use the average incremental cost (AIC) method, or some variation of it, to calculate LRMC. Other methods include the Turvey approach and the marginal incremental cost (MIC) method.

A general perception is that the AIC method is less costly to implement than some other methods, but produces less accurate estimates. We have encouraged and will continue to encourage distributors to consider whether the benefits of more accurate estimates of LRMC outweigh the costs of deriving them,[7] and to work towards improving how LRMC is calculated.

Possible future methods of calculating LRMC

We encourage distributors to continue to refine their methods for estimating LRMC in the third TSS round so that network tariffs more accurately reflect distributors' forward-looking costs. We acknowledge that LRMC calculation can differ between distributors. The best method for LRMC calculation will depend on the circumstances of each distributor and the changing nature of drivers of LRMC in different areas of the network.

---

[6] NER, cl. 6.18.5(f)
[7] 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.

Distributors could further refine the AIC method, adopt a more sophisticated method or use a mix of different LRMC estimation methods.

We also encourage distributors to continue to explore replacement expenditure in LRMC calculation. We consider that LRMC should include replacement capital expenditure and associated operating expenditure, as long as it meets the definition of 'marginal cost.'

We invite stakeholders to share their views on LRMC calculation in the next round of TSS.