NERA
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Case Studies of Cost Reflective Network Tariffs

Within the confines of a network revenue requirement, changes in network tariffs for one set of customers need to be offset by accompanying changes in tariffs for other customers. This 'balancing' process ensures that revenues received meet the business' requirements, and means that in the short term customers will on average be no worse or better off under cost reflective network tariffs.

The benefits of cost reflective network tariffs arise from changes to customer electricity consumption patterns – changes that act to lower network costs over the medium to long term. These cost savings can then be passed through to consumers through lower network tariffs over time.

Against this backdrop, we have been asked to investigate the implications for electricity consumers of shifting to more cost reflective network tariffs. There are two main objectives for these case studies, namely:

- to demonstrate the application of the methodologies to make tariffs more cost reflective, as set out in our study; and
- to illustrate the potential implications for residential and commercial customers of shifting to more cost reflective tariffs.

Our analysis of the implications of shifting to more cost reflective tariffs comprises the consideration of several case studies, which examine the initial distributional effects of shifting to a number of cost reflective tariff structures. In this first instance, we make two principal assumptions:

- no change in electricity consumption – ie, customers do not alter their consumption in response to the change in tariff structures; and
- revenue neutrality between current tariffs and the case study cost reflective tariff structure for consumers with an average daily load profile – this assumption ensures that distributors recover their revenue requirements.

However, to consider the impact of bills of assumed changes in demand resulting from the shift to more cost reflective tariffs, we are also intending to consider the distributional bill impacts based on assumed estimates of the responsiveness of consumption and/or demand as relevant to changes in the tariff structure.

Our approach to considering the implications of cost reflective network tariffs comprises three steps:

- Step 1: Examine the potential range of LRMCs for a given distributor using various estimation methodologies, and considering different locations within the network.

- Step 2: Develop indicative cost reflective network tariffs for residential and commercial customers using a range of distributor-specific network LRMCs.
- Step 3: Estimate the bill impact for a (relatively large) sample set of customers compared against a base case residential and commercial tariff, and for a range of LRMC estimates.

We are proposing to work closely with Ausgrid as part of Step 1 to examine:

- how the methodology adopted to estimate LRMC might affect the result obtained; and
- the extent to which LRMC estimates vary depending on the location within the network.

This will allow us to provide practical insights into the feasibility of implementing each of the methodologies for estimating LRMC, and the manner in which LRMC estimates may vary depending on the location within the network.

Having developed a number of LRMC estimates for Ausgrid in Step 1, in Step 2 we will construct a number of residential and commercial tariffs, which are both more reflective of costs than current tariffs and employ alternative approaches to the recovery of residual costs. In particular, we are proposing to investigate the following tariff structures:

- Tariff 1: a daily peak time of use charge ($/kWh) that reflects network LRMC and an optimal definition of the network peak period, with:
  - A: the residual costs being recovered via a fixed ($/customer/day) and off-peak usage charge ($/kWh);
  - B: the residual costs being recovered via an off-peak usage charge ($/kWh) only; and
  - C: the residual costs being recovered via a fixed charge ($/kWh) only;
- Tariff 2: a seasonal peak usage charge ($/kWh) that reflects network LRMC and an optimal definition of the network peak period, with:
  - A: the residual costs being recovered via a fixed ($/customer/day) and general usage charge ($/kWh);
  - B: the residual costs being recovered via a general usage charge ($/kWh) only; and
  - C: the residual costs being recovered via a fixed charge ($/customer/day) only;
- Tariff 3: a seasonal peak network capacity charge ($/kVa)[1] that reflects network LRMC with:

[1] The proposed network capacity charge will focus on the contribution of customers to network peaks, rather than the individual customer's potentially non-coincident peak demand.

  - A: the residual costs being recovered via a fixed ($/customer/day) and general usage charge ($/kWh);
  - B: the residual costs being recovered via a general usage charge ($/kWh) only; and
  - C: the residual costs being recovered via a fixed charge ($/customer/day) only.

- Tariff 4: a critical peak charge ($/kWh) for a defined period that reflects network LRMC with:
  - A: the residual costs being recovered via a fixed ($/customer/day) and general usage charge ($/kWh);
  - B: the residual costs being recovered via a general usage charge ($/kWh) only; and
  - C: the residual costs being recovered via a fixed charge ($/customer/day) only.

Table 1 summarises the tariff structures that we propose to consider in our case studies.

Table 1: Summary of Tariff Structures to be considered in Case Studies

Case Study Tariff Structures	1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C
Charging Component												
1. Flat Usage Tariff ($/kWh)							√		√	√		√
2. Peak Usage Tariff ($/kWh)	√	√	√									
3. Off-Peak Usage Tariff ($/kWh)	√		√	√	√							
4. Seasonal Peak Usage Tariff ($/kWh)				√	√	√						
5. Peak Capacity Tariff ($/kVa)							√	√	√			
6. Critical Peak Charge ($/kWh)										√	√	√
7. Fixed Tariff ($/customer/day)	√	√		√		√	√	√		√	√	

For each of the tariff structures set out in Table 1, we will ensure that the bill for an average residential or commercial customer is revenue-neutral in the first instance.

In Step 3, we will calculate the bills for a selection of customers, using a sample of residential and commercial meter data obtained from Ausgrid. This will allow us to examine how the *distribution* of customer bills is affected by a shift to each of the tariff structures set out in Table 1.

We will then also consider the change in bill assuming a change in consumption and/or demand given the shift to a more cost reflective tariff. This will allows some consideration to be given to the possible bill changes that might result from a shift to more cost reflective network tariffs.

In addition, to examine how location may affect our results, we intend to develop two cost reflective peak usage tariffs for two areas where there are different estimates of LRMC. This will allow us to consider the bill implications of a single versus locational specific cost reflective tariff for customers within each region.

In summary, these case studies will provide insights into:

- the distributional impacts of a variety of designs of a cost reflective network tariff; and
- the practical implementation of various methodologies for estimating LRMC.