Workshop: Network Tariff Analysis Tool

CEEM UNSW, supported by the Energy Consumers Association, is developing a network tariff analysis tool to assist effective evidence-based advocacy around network tariff design and regulation.

Aims and Structure of the Workshop:

This workshop aims to facilitate (i) stakeholder input to the tool and (ii) demonstration of the tool to improve stakeholder capacity to use the tool and to build knowledge about tariff design and regulation. The workshop is also expected to provide an opportunity for increased engagement in and collaboration on consumer-focussed tariff advocacy.

The workshop will include:
1. A presentation outlining network tariff design issues and preliminary results of tariff analysis
2. A demonstration of the preliminary tariff analysis tool
3. An opportunity to provide critical review, feedback on functionality and usability of the tool

On the basis of this workshop and further consultation, the tool will be improved and further developed.

Background

Recent regulatory reform efforts in the Australian National Electricity Market (NEM) have included a number of rule changes aiming to contain electricity price rises driven by network investment, particularly in distribution. A particular focus has been the adverse economic efficiency outcomes of current network tariff arrangements, particularly for residential and small business consumers. These tariffs, shaped by typically limited metering capabilities and equity considerations, have generally involved a major volumetric consumption tariff component that doesn't reflect the role of consumer contributions to network peak demand in overall DNSP expenditure requirements. As part of this reform, a distribution network pricing rule change has been implemented, effective for the current regulatory period.

The new rule requires that network tariffs should be more 'cost reflective', motivated by the idea that efficient prices will improve load factors, reduce network congestion and lower average costs for consumers. DNSPs are given considerable discretion over the specific implementation of the rule, which provides broad pricing principles only. The rule states that network tariffs should be based on the long-run marginal costs (LRMC) of providing the service, and that the revenue to the network should reflect the efficient costs of providing the services to each consumer class. However, DNSPs determine how to calculate their LRMCs, and how residual costs should be collected. In addition, as DNSP tariff structures must balance efficient pricing considerations with fairness and the ability of consumers to understand and respond to the tariffs, there is considerable DNSP discretion in tariff design and scope for a variety of tariff designs to emerge. A number of tariffs have been put forward by different DNSPs of varied structure and complexity. This makes it challenging to determine their impact on different consumer groups, and how well they might provide efficient price signals and address present cross subsidy issues.

Indeed, preliminary analysis indicates that many of the tariff proposals now being put forward by DNSPs under the new rule may not provide appropriate price signals to consumers regarding their investment and behaviour, and disadvantage particular consumer groups. For instance, in the majority of cases, the fixed daily charge component of network tariffs is being increased, resulting in high, unavoidable costs, particularly for low energy

consuming (often vulnerable) customers. Special tariffs are also being proposed for certain classes of customers (e.g. Solar PV System owners), while in some areas, customers are being transferred to new tariffs under opt-out arrangements, leaving them vulnerable to potentially disadvantageous new tariffs. In addition, there are concerns that the tariffs do not necessarily target peak network loads (either local or region wide), and therefore may not provide an appropriate price signal of the associated network costs of consuming energy at different times and locations. Poorly designed tariffs that do not appropriately align benefits and costs will lead to inefficient investment in networks and on the demand side, and hence not be in the best interests of consumers. Specifically, they might well act to reduce incentives to deploy solar PV, energy efficiency, and load management systems that can reduce network expenditure while also delivering wider economic and environmental benefits.

Advocacy groups have expressed concern that many of the new tariffs appear to be better designed to protect the revenue of DNSPs in a context of falling demand and uptake of demand-side technologies, rather than to encourage efficient use of the network and future investment. This is of particular concern as these disruptive distributed energy technologies have the potential to provide competition for network services in the interests of consumers, enabling new participants, opportunities for innovation, and reduced emissions. It is possible for groups or individuals to make submissions to the regulator during the review period. However, given significant information asymmetry between network service providers and other stakeholders, including both consumers and regulators; advocacy groups lack the resources to put forward robust, evidence-based analysis of the impact of proposed tariffs on different electricity consumer groups and the incentives they might provide to customers.

Preliminary Tariff Analysis Tool

An analysis tool is under development by CEEM, UNSW to assist stakeholders including consumer advocates and researchers to investigate how different tariff structures impact on the expected bills of different types of residential consumers, while also estimating how well the tariffs align these customer bills with their impact on longer-term network costs. A preliminary version of the tool has been developed, based on a database of load profiles, customer attributes and tariff options. The tool builds on research and analysis currently being done by CEEM and APVI, to support submissions to network pricing and tariff structure proposals. The aim is for the tool to be now further developed in collaboration with stakeholders.

The preliminary tariff analysis tool (Figure 1) uses load and survey data from over 4000 homes, collected under the Smart Grid Smart City program, to:
- Under existing and proposed tariffs, calculate and compare for different user groups, the distribution of:
    - electricity bills,
    - annual demand
    - seasonal variations
- Select consumer groups on the basis of annual demand, peak load, income level, dwelling type, household size, air conditioning type or if they use gas or have a solar PV system.
- Assess price signals from different tariffs: i.e. how well bills are correlated with variables such annual demand and peak load under different tariff designs.
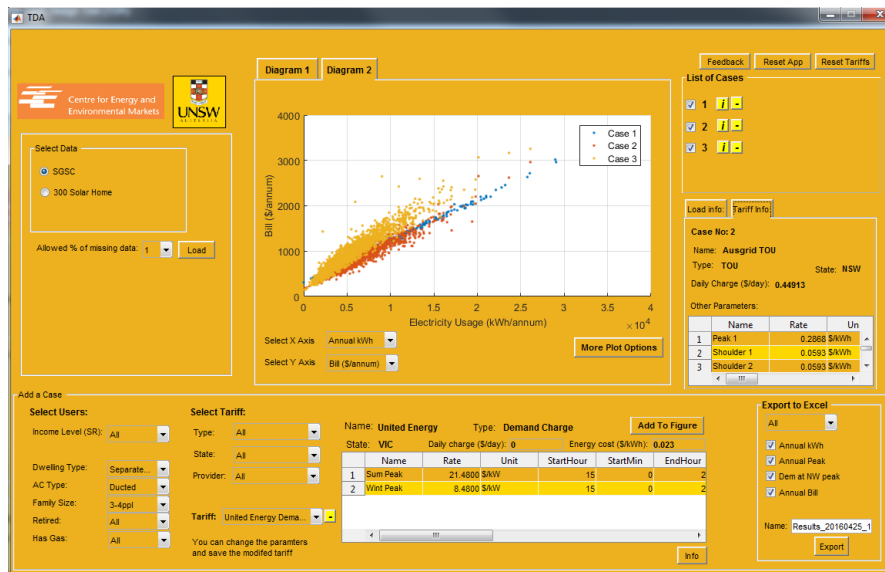- Compare outcomes for different consumer groups, and under different tariffs.

Figure 1: Preliminary Tariff Analysis Tool

The aim is that the tool will make detailed and robust analysis of tariff impacts relatively quick and simple, allowing evidence-based submissions to the regulator during pricing proposal review processes, more effective engagement with DNSPs and retailers, input to other relevant regulatory processes, and better consumer advice. The tool will be made freely available and is designed so that interested stakeholders can download and run it on their own computer hardware.