Submission on Advancing New Zealand's energy transition.

Author

Marc Gulliksen is the principal consultant of Perception Consulting. He has 13 years' experience in electricity distribution, especially future network planning and customer projects.

32. Are there other regulatory or practical barriers to efficient network investment by electricity distributors that should be thought about for the future?

Two concerns that may contribute to inefficient design are cost of smarter engineering and cost of supplying increased demand which is un-anticipated.

The cost of smarter engineering

Connecting new customers onto an existing network without network upgrades often requires a deep understanding of the risks and detailed engineering analysis. This analysis could include.

- Network studies for shifting load to less constrained areas.
- LV load modelling. Including smart meter data, load flow studies
- Flexibility options
- Equipment rating re-assessments (eg. Cyclic rating studies)
- Refined assessments of the customers demand request and including diversity.

Performing these engineering assessments is made more challenging due to the time pressure with customer connections. Data quality assessments and decision processes are also required. To work efficiently the complex studies should be done upfront on a network wide basis.

When the new load is connected, the risk is then carried by the network, who will be required to upgrade at its own cost if the assessment is incorrect. Under the current environment, when no network investment is required, the majority cost of this analysis, and the increased risk, is not recovered from the connecting customer and is 'worn' by the distribution business and other customers.

Un-anticipated demand versus network readiness.

The first mover disadvantage is a result of directly applying the non-linear capacity/cost behaviour of adding non-anticipated demand to existing infrastructure. In many of these cases, capacity can only be increased by replacing in-service infrastructure.

However, if load increases are a well understood element of a larger trend in the changing energy landscape, there is great potential to lower the total cost of energy electrification. The more cost-efficient way to network capacity is to upgrade and renewal, and to enable modular and interoperable design. This is allowing additional network capacity to be 'built in' to a distribution businesses design philosophy.

37. Are there different cost allocation models addressing first mover disadvantage (when connecting to distribution networks) which the Electricity Authority should explore, potentially in conjunction with the Commerce Commission?

38. Should the Electricity Authority look at more prescriptive regulation of electricity distributors' pricing? What key things would need to be looked at and included in more prescriptive pricing regulation?

Use of capped upfront connection costs.

Many lines companies are already using fixed costs for smaller scale connections and where they meet specific criteria.

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- Gives customers price security.
- Simplifies the connection process. Because the price is fixed, less time is spent on cost estimating a quoting. Network companies
- Allows cost recovery even when network investment is not required. This will incentivise smarter and more efficient engineering solutions. (See 'the cost of smarter engineering' above)

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- The lack of cost reflective pricing does not encourage overall efficiency. Variables that effect cost are
    - *Network location:* Due to the physical limitations of network assets the and the distance from existing infrastructure, the cost to connect is highly dependent on location.
    - *Maximum requested demand.* As pointed out in the submission, there are often large step changes in cost when network upgrades are required (especially for large connections). These steps are from local constraints and can not be generalized in cost reflective way.
- Risk that a distribution business carries the cost of some very costly outliers. This risk is increased for larger connections.
- Less transparency of connection costs.