



# MARCHMENT HILL CONSULTING

Friday, 12 February 2016

Dr Ron Ben-David  
Chairperson  
Essential Services Commission Level 37,  
2 Lonsdale Street Melbourne,  
Victoria 3000

Submitted via email at [energy.submissions@esc.vic.gov.au](mailto:energy.submissions@esc.vic.gov.au)

Dear Dr Ben-David,

## **RE: Submission to True Value of Distributed Generation Inquiry**

Marchment Hill Consulting (MHC) welcomes the opportunity to respond to the *Proposed Approach Paper - INQUIRY INTO THE TRUE VALUE OF DISTRIBUTED GENERATION*.

MHC is a management consulting firm determined to make a difference by serving the needs of the energy and water industries. Established by a group of professionals with a desire to build a high quality, focused and content-rich consulting practice to serve our clients, our firm brings extensive experience of industry challenges. Our senior consultants bring together expertise gained in the energy and water sectors and deliver demonstrable value by combining:

- The quality of our insight
- The internal support we generate for change, and
- Our focus on implementation to deliver measurable value for our clients

MHC agrees that capturing the true value of distributed generation to all stakeholders is an important initiative to support the efficient deployment and use of distributed generation to serve the long-term interests of customers.

However, MHC notes that it is also important the process and progress of similar initiatives, such as the introduction of cost-reflective network pricing and the AEMC's consultation into local generation network credits are considered in the Commission's inquiry to ensure there is no overlap in efforts and outcomes.

Yours Sincerely,

Ryan Wavish  
Managing Consultant  
Marchment Hill Consulting

## COMMISSION'S APPROACH

**Q1. Do you agree with how the Commission is proposing to define true value? If not, why not? Are there other definitions the Commission could use?**

MHC broadly agrees with the Commission's proposed definition for true value. The split between Network and Energy value is sound, however, there may be certain issues where a value would affect both categories. For example, network losses is by definition a 'Network' value, but it has flow-on effects to generation and as a result the consumer, which means it also has an 'Energy' value. Unless there are clear benefits in separating these two categories, the Commission may consider removing this categorisation and focusing on the different value streams (Economic, Environmental and Societal) and not incorporating the added complexity of Network vs. Energy value. In our work for the Clean Energy Council (CEC), the Energy Networks Association (ENA) and the Australian Renewable Energy Agency (ARENA) identifying and assessing the impacts (benefits and costs), opportunities and issues arising from the integrating distributed generation into the grid, MHC has working knowledge of a number of proposed approaches to assess the 'true' value of distributed generation<sup>1,2,3,4,5</sup>.

There are overlap and differences between these approaches both in the impacts identified and the methodology proposed to calculate these impacts. However, a best-practice view is starting to emerge, which involves an approach:

- that takes geographical and network specific conditions into consideration;
- is applicable to all different types of distributed generation; and
- is applicable to all stakeholders (including customers, distributed generation (DG) owners, network service providers, generators and regulators).

This, combined with capturing both the costs and benefits of distributed generation, should be the overarching principles in developing a framework to determine the true value of distributed generation.

**Q2. Do you agree with the Commission's view that this Inquiry is focussed on identifying the public benefit of distributed generation? If not, why not?**

MHC agrees that the focus should be on Public benefits as defined in the Commission's report and that Private benefits should be excluded as these are captured by the individual DG investor regardless.

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<sup>1</sup> Synapse Energy Economics, Benefit-Cost Analysis for Distributed Energy Resources, September 2014

<sup>2</sup> Travis Bradford and Anne Hoskins, Valuing Distributed Energy: Economic and Regulatory Challenges - Working paper for Princeton Roundtable, April 2013

<sup>3</sup> The Electric Power Research Institute, The Integrated Grid - a Benefit-Cost Framework, February 2015

<sup>4</sup> Clean Energy Council, Evaluation Methodology of the Value of Small Scale Embedded Generation and Storage to Networks, April 2015

<sup>5</sup> Rocky Mountain Institute. eLAB - A Review of Solar PV Benefit and Cost Studies, September 2013

**Q4. Is the Commission’s understanding of how the costs, to network businesses and consumers, of connecting distributed generation are calculated and recovered correct? If not, why not?**

MHC agrees with the Commission’s understanding. There is a potential cross-subsidy under the current NER as networks are not allowed to recover augmentation costs directly from owners of small residential PV systems (Basic connections) via their connection charges. Where augmentation costs may occur because of high levels of solar PV penetration on a network, these costs are recovered from the entire customer base.

An appropriately designed valuation framework could capture these costs as well as the benefits of DG to determine the net benefit of individual installations.

#### **DEFINITION OF DISTRIBUTED GENERATION**

**Q6. Do you agree with how the Commission is proposing to define distributed generation? If not, why not?**

MHC agrees with the Commission’s proposed definition of distributed generation as generation of any fuel type, including battery storage, with a capacity below 5MW.

#### **WHAT VALUES CAN BE ATTRIBUTED TO DISTRIBUTED GENERATION**

**Q8. Are there other public benefits that the electricity generated by a distributed generator provides? How can these identified benefits be quantified?**

MHC agrees that the ‘energy’ benefits from distributed generation can be broadly based on:

- The wholesale electricity price, with electricity generated at peak times more valuable. This benefit is hence time-based.
- Losses, with electricity generated closer to the source of consumption resulting in a lower losses than centralised generation. Transmission and distribution loss factors are published annually by AEMO, which in turn is factored into electricity wholesale prices. As a starting point, these loss factors could be leveraged to calculate the benefit of reduced line losses.

Developing a time-of-use (ToU) feed-in-tariff (FiT) would make sense as it would incentivise investment in distributed generation in a way that delivers greater societal benefit. This could take the form of west-facing solar PV to reduce peak demand rather than maximise generation, or the installation of energy storage to export during peak times.

MHC notes that a similar effect may be achieved through the implementation of truly cost-reflective network pricing (CRNP) (based on network location-specific long-run marginal cost (LRMC)), which would incentivise customers to reduce or offset as much of their own demand during peak periods as possible. A customer investing in energy storage would under such a scenario likely see more value in offsetting their own consumption rather than exporting to the grid, which then raises the question if the price signal from both a ToU FiT and CRNP would be required to achieve the desired

outcome. Further research and modelling would be recommended in this area to understand the implications of these two price signals operating simultaneously.

**Q9. Are there any environmental or other public benefits that a distributed generator provides to the distribution network? How can these identified benefits be quantified?**

MHC broadly agrees with the network benefits presented in the Commission's report. The key thing to consider in relation to impacts on the distribution network is that they are highly locational and dependant on the type of network in question (urban, rural, SWER etc.). In developing the methodology, these network characteristics would need to be captured. Ideally, the impact would be assessed on a feeder-by-feeder basis, but at a minimum it should be determined on feeder category-basis. The CSIRO's recent work in this space<sup>6</sup> may be leveraged as a starting point.

**KEY ISSUES FOR THE INQUIRY**

**Q12. Do you agree with the Commission's proposal to develop a methodology for calculating the time-of-use benefit of the electricity produced by a distributed generator? If not, why not?**

MHC broadly agrees with the proposal to develop a methodology to determine time-of-use benefits from distributed generation. However, as highlighted previously, MHC considers that additional research and modelling should be undertaken to understand the implications a ToU FiT in an environment where there are location-specific CRNP.

**Q13. Which of the two time-of-use options presented do you favour?**

As it is likely not practical to pass on the wholesale price directly to the DG owner, option 2 is preferable: *"Identifying the time periods when the value of the electricity generated, to the wholesale electricity market, is highest"*

**Q15. Are there other methodologies for calculating the locational benefit of distributed generation?**

The Commissions approach for calculating line losses based on location is sound. However, if the intention is to capture network cost and benefits as well, a more granular approach would be recommended based on e.g. the feeder type, length, customer mix and load.

**Q17. Are there other methodologies that the Commission could consider for calculating the carbon benefit of distributed generation technologies that are not covered by the RET?**

The work being undertaken by the US Environmental Protection Agency (EPA) determining the social cost of carbon and the UK Department of Energy and Climate Change (DECC) may be reviewed as a starting point to guide the development of a similar approach for Australia.<sup>7,8</sup>

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<sup>6</sup> CSIRO, *National Feeder Taxonomy*, June 2013

<sup>7</sup> <http://www3.epa.gov/climatechange/EPAactivities/economics/scc.html>

<sup>8</sup> <https://www.gov.uk/government/collections/carbon-valuation--2>

**Q18. Do you agree with the Commission’s proposal to undertake further analysis into the economic benefit of distributed generation to distribution networks? If not, why not?**

MHC agrees that further analysis is required to determine the true value (costs and benefits) of distributed generation to distribution networks as it is currently not clear how this would be incorporated into the proposed methodology.

MHC notes that the Australian Energy Market Commission (AEMC) is currently undertaking a consultation on a rule change request for distribution network service providers to calculate the long-term economic benefits that embedded generators provide to distribution and transmission networks, and pay embedded generators a local generation network credit (LGNC) that reflects those estimated long-term benefits.<sup>9</sup>

Additionally, a project funded by ARENA is currently trialling virtual net metering technologies to investigate the viability and benefits of local network charges and local electricity trading.<sup>10</sup>

It is important the process and progress of both of these initiatives are considered in the Commission’s inquiry to ensure there is no overlap in efforts and outcomes.

**Q19. Do you agree with the proposal to focus this analysis on the three pieces of analysis highlighted? If not, why not?**

MHC agrees that a good starting point would be to focus on the three documents highlighted:

- The 2016 - 2020 Regulatory Determinations and Tariff Structure Statements published by the Victorian distribution businesses.
- The methodology being developed to support the LGNC rule change.
- The EY analysis into the value of small-scale generation to networks.

The key consideration will be to assess and determine how the valuation methodology and proposed ToU FiT interact with and complement similar initiatives undertaken by the AEMC and the implementation of CRNP.

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<sup>9</sup> <http://www.aemc.gov.au/Rule-Changes/Local-Generation-Network-Credits#>

<sup>10</sup> <http://arena.gov.au/project/investigating-local-network-charges-and-local-electricity-trading/>