



12 February 2016

Dr Ron Ben-David
Inquiry into the True Value of Distributed Generation
Essential Services Commission
Level 37/2 Lonsdale Street
Melbourne VIC 3000
Lodged online

Dear Dr Ben-David,

Inquiry into the True Value of Distributed Generation– Proposal Paper

Origin Energy (Origin) welcomes the opportunity to provide a response to the Essential Services Commission of Victoria's (the Commission) Proposal Paper for its Inquiry into the True Value of Distributed Generation.

In Origin's view, it is unnecessary for the Commission to determine a method for calculating the time and locational benefit of distributed generation for the wholesale market. With the exception of consumers on a Premium, Transitional or Standard feed-in-tariff, the benefit of installing distributed generation is increasingly in the avoided cost of purchasing energy from their retailer. From the perspective of retailers, these customers represent a reduction in energy demand; the value of the exported energy is realised by retailers in the form of avoided wholesale energy costs and market fees.

It is not clear to Origin how introducing time-of-use feed-in-tariffs will more efficiently compensate distributed generation for its energy value. The Commission presently determines a minimum energy value that retailers must offer consumers. This is based on a method that has been determined by the Commission, taking into consideration projected wholesale prices, network losses and network fees, to produce an average value of solar energy at all times of the day. The Commission's current methodology already incorporates an assessment of the time varying wholesale value of energy; the value is simply expressed as a single average figure. In Origin's view, if the Commission wants to facilitate the determination of a 'true value' for distributed generation in the wholesale market then it ought to advocate the deregulation of feed-in-tariffs rather than investigate methods to predict what the value might be. The experience of retail price deregulation in Victoria demonstrates that the market is ultimately best placed to determine the most efficient value of feed-in-tariffs.

The network benefits of distributed generation have proven difficult for Distribution Network Businesses to quantify. Any benefits for the network tend to be highly location dependent and unlikely to impact on the materiality of the value of distributed generation. The fact that systems are generally installed by dwellings for their wholesale energy value, and without network augmentation in mind, makes it more difficult to determine a method for compensating the network value. Origin believes that if any network benefits are to be quantified then it will also be necessary to assess any costs imposed on the network as a result of distributed generation.

Other than potential reductions in carbon emissions, Origin is not aware of any additional quantifiable environmental or social benefits from distributed generation. Our preference is for any carbon or environmental benefits to be realized through national policies, such as a carbon price or the Renewable Energy Target (RET). As the Commission correctly identifies, the Small Scale Renewable Energy Scheme (SRES) under the RET already quantifies the environmental contribution that these systems make through an up-front subsidy.

We address the questions set by the Commission in more detail below.

Should you have any questions or wish to discuss this information further, please contact Timothy Wilson, Regulatory Analyst, on .

Yours sincerely

A handwritten signature in blue ink, appearing to read "K. Robertson".

Keith Robertson
Manager, Wholesale and Retail Regulatory Policy

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?

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

Q3. Do you agree with how the Commission is proposing to define public benefit as it relates to distributed generation?

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?

Q5. Do you agree with the Commission's proposed approach to the inquiry? If not, why not, and what alternative approach would you propose?

Public Benefit

The Commission is correct to separate private benefit from public benefit in conducting its Inquiry into distributed generation. The initial policy design of various state-based feed-in-tariffs demonstrates the cross-subsidies and inefficiencies involved when Government policies reward a private benefit disproportionately to any public benefit. The provision of upfront subsidies and high feed-in-tariffs was an effective way of encouraging consumers to install solar PV systems for their private benefit. However, it is difficult to argue that these policies have led to overall efficient investment decisions, in the sense that they represent consumers responding to artificially low prices, with significant costs paid for either by governments or other consumers. Whilst domestic installation costs became more efficient as a result of these subsidies, the underlying cost curve for solar PV systems has continued to fall largely due to external factors, such as breakthroughs in research and development, the fluctuating exchange rate of the Australian dollar, and improved economies of scale in foreign manufacturing. Using feed-in-tariffs to encourage the installation of solar PV therefore has limited impact on the underlying costs of the technology and may result in one group of consumers cross-subsidising solar PV systems that provide a private benefit to another group of consumers. It is for these reasons that Origin does not support the use of feed-in-tariffs as a mechanism for encouraging the increased deployment of distributed generation.

Any public benefit for distributed generation should be consistent with the National Electricity Objective (NEO), which is:

to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to – price, quality, safety, reliability, and security of supply of electricity; and the reliability, safety and security of the national electricity system.

Experience with the RET, and various state-based premium feed-in-tariffs, highlights the importance of maintaining fidelity to the NEO when designing policies that impact on electricity markets. Where policies are developed that distort efficient investment decisions by consumers then they will impact on the price of supply and the long-term interests of consumers (particularly those without access to rooftop solar PV systems or other distributed generation); accordingly, policy and regulatory frameworks that are not consistent with the NEO are unlikely to be in the public benefit or helpful for determining a "true value".

The relevant principles for guiding distributed generation policy towards a "public benefit" are the COAG Energy Council's National Principles for Feed-in-Tariff Arrangements. These principles have

been agreed to by all jurisdictions, including Victoria, through the Energy Council and they are applicable across all forms of distributed generation. In particular, the fourth principle states:

FiT policy to be consistent with previous COAG agreements (particularly the Australian Energy Market Agreement and COAG complementary principles)

4. That the arrangements for micro generation consumers by SCER and jurisdictions:
 - a) should not deter competition for their business from electricity retailers in jurisdictions where there is full retail contestability and innovation in the tariff offerings available to micro generation customers;
 - b) in relation to jurisdictions in the National Electricity Market (NEM), should not interfere with the regulation of distribution tariffs or operation of the NEM under the National Electricity Law or duplicate the regulatory arrangements that are part of that Law;
 - c) should be subject to independent regulatory oversight according to clear principles; and
 - d) should be consistent with implementation of other intergovernmental agreements relating to energy, competition policy or climate change.

Origin agrees with these principles and believes they should guide the Commission and Victorian Government in the development of any distributed generation export pricing policy. As we discuss below, Origin believes that governments do not need an export pricing policy for distributed generation where effective competition exists in their retail electricity market for feed-in-tariffs. The public benefit will be best served by efficient decision making that is based on price signals from a competitive market.

“True Value” of distributed generation

A key issue for the Inquiry will be what issues fall within the ambit of the Commission’s analysis when determining “true value” with respect to distributed generation. In Origin’s view, any assessment of the “true value” of distributed generation will necessitate the Commission examining whether a regulated retailer feed-in-tariff in Victoria will better determine the energy value to the wholesale market than a regulated method.

The Commission’s terms of reference specifically rule out assessing whether the feed-in-tariff should be deregulated in Victoria. Origin appreciates that the Commission is constrained in making recommendations about whether or not the feed-in-tariff should be deregulated. Nevertheless, Origin believes that if the Commission wishes to provide full and thorough advice on obtaining the “true value” for distributed generation, then it will need to assess the merits of deregulating the feed-in-tariff and provide this advice to the Government.

Origin does not support regulated feed-in-tariffs where effective competition exists in the retail market. The Victorian Government’s deregulation of retail electricity prices represented an acknowledgement that competition was effective in the Victorian retail electricity market and that markets were better placed to more efficiently and accurately set prices than regulators. Given the level of competition that exists in the retail electricity market, mandating a minimum feed-in-tariff only acts to stifle competition in the feed-in-tariff market. This is demonstrated by comparing the spread of offers in Victoria with South East Queensland, which has deregulated feed-in-tariffs. In Victoria, the feed-in-tariffs coalesce around the mandated minimum feed-in-tariff rate, with most customers receiving a rate that is close to the mandated minimum determined by the Commission. The South East Queensland market, in contrast, has a much broader spread of offers; 10 retailers offer customers a voluntary feed-in-tariff rate of between 4 and 11 cents kWh, with the largest three tier one retailers offering customers a rate

of between 6 and 8 cents a kWh. Regulated feed-in-tariffs may therefore create a sub-optimal price ceiling for some customers seeking to export electricity to the grid.

Some customers may place a high store of value on the level of a feed-in-tariff, while others with distributed generation may emphasise a preference for other features of energy products (such as a discount or fixed pricing for their energy supply). As such, customer valuation of the level of a feed-in-tariff will vary according to these preferences. Regulating a minimum feed-in-tariff constrains the ability of retailers to respond by creating products that meet customer preferences.

Another reason for examining the mandatory minimum feed-in-tariff is because the Commission has been tasked with assessing the “true value” of all distributed generation. The Commission has correctly pointed out that this is not restricted to solar PV nor does it exclude fossil fuel forms of distributed generation (such as natural gas, which is particularly relevant to cogeneration). Yet the policy framework that the Commission must consider includes a mandated minimum feed-in-tariff for small renewable energy generators—this excludes non-renewable energy sources that are as economically valuable from the perspective of the wholesale market as renewable energy sources.

DEFINITION OF DISTRIBUTED GENERATION

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

Q7. Are there other definitions of distributed generation the Commission could consider?

Origin does not agree with the Commission’s definition of distributed generation as including generation less than 5 MW in capacity. The Commission states that systems less than 5MW capacity “are not able to negotiate a price for their output because they are effectively price takers.” In other words, the Commission believes that generation less than 5MW in size ought to obtain the benefit of a regulated price determined by the Commission.

Origin disagrees with this position. Installation of a system more than 100kW represents a significant investment on behalf of a consumer and suggests that they are backed by sufficient resources to negotiate a market price. Indeed, the current threshold for receiving a regulated minimum feed-in-tariff in Victoria is generation capacity of less than 100kW of energy.¹ Under the RET’s Small Scale Renewable Energy Scheme (SRES), solar systems must be no more than 100kW and with a total annual output of less than 250MWh to obtain small-scale technology certificates; wind systems must be less than 10kW and hydro systems less than 6.4kW. In Origin’s view, the 100kW threshold for solar systems is a broadly appropriate definition of “distributed generation” for the purposes of an Inquiry into its true value.

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?

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?

Q8. Are there other public benefits that the electricity generated by a distributed generator provides?

¹ Section 40F, *Electricity Industry Act 2000*.

How can these identified benefits be quantified?

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?

Origin is not aware of any additional public or social benefits to distributed generation other than the established environmental benefits. As the Essential Services Commission of South Australia (ESCOSA) has stated with respect to determining a mandated minimum feed-in-tariff, “it is difficult to determine the indirect benefits that may be attributed to solar PV. Isolating the impacts of PV generation on wholesale spot prices, avoided risk management costs and reduced network loss factors from *other drivers* is not feasible.”² We agree with ESCOSA that quantifying the non-economic benefit of these impacts is not likely to yield a particular price or value.

REGULATORY FRAMEWORK

Q10. Are there other aspects of the current regulatory framework outlined in this paper that the Commission should consider when evaluating the adequacy of the current Victorian policy and regulatory frameworks governing the remuneration of distributed generation

Q11. What is the impact of the current regulatory framework on the valuation of distributed generation in Victoria? In particular, what has been the scale and scope of support provided to distributed generators by: avoided TUOS payments, avoided DUOS payments, Network Support Payments, the Distribution Network Pricing and Assessment Framework, and the RIT-D?

With respect to the Victorian regulatory arrangements, Origin refers to our above discussion of the merits of deregulating the mandated minimum feed-in-tariff.

In terms of regulatory arrangements through the National Electricity Rules, Origin believes that network regulatory arrangements are best dealt with at a national level. The fourth principle of the Energy Council’s National Principles for Feed-in-Tariff Arrangements states that “jurisdictions... should not interfere with the regulation of distribution tariffs or operation of the NEM under the National Electricity Law or duplicate the regulatory arrangements that are part of that Law.” We agree with this principle and believe that derogations or additional regulatory interventions by state jurisdictions ought to be avoided because they generally burden market participants with additional costs for little discernible benefit.

If the Commission believes that there is a shortcoming in the way in which the National Electricity Rules determine the network value of distributed generation then Origin believes that the Commission should propose a rule change to the Australian Energy Markets Commission. That way the rule change is assessed on the basis of its impact on the NEM and how it will contribute to meeting the NEO.

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?

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

² ESCOSA, *Variation to the 2012 Determination of the Solar Feed-in-tariff premium: Variation of Price Determination, Statement of Reasons*, June 2013, p. 26. Emphasis added.

Q14. Are there other time-of-use options that the Commission could consider?

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

Q16. Do you agree with the Commission's view that the environmental benefit of distributed generation may be sufficiently reflected in the payments available under the RET? If not, can you provide evidence to detail what environmental benefits of distributed generation are not already captured by the RET scheme and how they can be valued?

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?

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?

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

Q20. Is there other analysis that might be helpful to the Commission in considering the economic benefit of distributed generation to distribution networks?

Retailer feed-in-tariff

Origin is not aware of any locational benefits for the wholesale market of distributed generation. The wholesale market settles on a system-wide basis at the regional reference node. It is not determined by the distance or location of where the wholesale energy is purchased. Retailers avoid costs in wholesale market settlement when their customers export solar electricity and compensate customers generating this power through feed-in tariffs. These avoided costs generally include:

- the cost of purchasing wholesale energy from the market;
- transmission and distribution losses; and
- certain NEM and ancillary service fees.

Importantly, the Commission must have regard to the first two avoided costs under section 40FBB(3) of the *Electricity Industry Act 2000* when determining the mandatory feed-in-tariff in Victoria, and it includes the third factor in its method.³

In a competitive retail electricity market, such as Victoria, avoided wholesale energy costs constitute the majority of the feed-in-tariff paid to customers exporting solar electricity into the grid. This is reflected in the Commission's method for determining the minimum feed-in-tariff, where the projected wholesale price of solar energy makes up most of the total avoided cost of PV.⁴

In Origin's view, it is unnecessary for the Commission to propose a method for calculating the time-of-use benefit of the electricity produced by distributed generation. As the Independent Pricing and Regulatory Tribunal (IPART) has stated, "the availability and rate of solar feed-in-tariffs is likely to be a **secondary consideration** for many PV customers. In general, most of the electricity generated by a PV unit is used to meet the customer's own energy needs at the time of generation and the amount

³ ESCV, Minimum electricity feed-in-tariff to apply from 1 January 2016 to 31 December 2016, August 2015, p. 15.

⁴ Ibid, p. 16.

exported is relatively small.”⁵ Regardless of whether the feed-in-tariff is a single value across all times (as is presently the case) or a multi-value time-of-use feed-in-tariff, customers are likely to derive a greater benefit from using the energy they generate and avoiding the relatively higher cost of purchasing it from a retailer; in that sense, customers already receive a ‘time-of-use’ benefit for not using energy at times their system is generating it. Accordingly, the underlying price signal to consumers is not likely to be impacted by changing the feed-in-tariff from a flat rate to a multi-rate time-of-use tariff.

With the advent of battery storage and Solar Power Purchasing Agreements (SPPAs), the role of feed-in-tariffs may not change greatly in relation to the value of energy exported to the grid. For example, customers installing batteries in conjunction with solar PV systems may divert excess output to their battery for use during the night, rather than export this electricity to the grid. Where this occurs, customers are clearly assigning a higher value to avoided cost of consumption than any income earned from exporting electricity to the grid. In practical terms, customers using battery storage technologies in this way are simply smaller customers than prior to the installation of embedded generation and storage (from the perspective of the distribution network and wholesale market).

In the case of SPPAs, customers also seek to avoid exporting electricity since the opportunity cost of doing so exceeds the return associated with exporting solar electricity. This is because the economics of SPPAs are premised on the customer paying a lower rate for the energy they use directly from the solar PV system than they otherwise would if they purchased it directly from the grid.

Origin believes the current structure of feed-in-tariffs paid in Victoria meets the objective of being simple for customers to understand and can be administered on a cost effective basis through existing billing systems used nationally by electricity retailers. Material change to the structure of feed-in-tariffs would require substantial changes to retailer billing and IT systems, changes to information provided to customers and training for front-line staff responding to customer inquiries. This cost would likely be for a marginal (if any) public or private benefit to customers given their behaviour is unlikely to change as a consequence of a different tariff structure. A deviation from the current approach would also reduce the relatively harmonised structure applied across National Electricity Market regions today and would increase administrative costs for retailers operating in Victoria.

As discussed above, Origin believes that the competitive market is best placed to determine the value of distributed generation for the wholesale market rather than a method determined by a regulator. Almost 14% of Victorian dwellings have a solar system installed.⁶ In a competitive retail electricity market like Victoria, retailers have an incentive to attract solar PV customers with reasonable feed-in-tariffs offers, and will face pressures to innovate where customers value different offers. A deregulated feed-in-tariff is the best way to provide retailers with an incentive to offer customers the “true value” of distributed generation. If there is an opportunity for a retailer to win distributed generation customers through a time-of-use tariff then under a deregulated system this should be allowed to occur.

Network benefits

With respect to the impact of distributed generation on networks, the Independent Pricing and Regulatory Tribunal (IPART) found that benefits arising from distributed generation for the distribution network in New South Wales were likely to be highly location and time specific.⁷ Solar PV exports do

⁵ IPART, *The subsidy-free value of electricity from small-scale solar PV units from 1 July 2014*, June 2014, p.5. Emphasis in original.

⁶ Australian PV Institute. Accessed 1 February 2016: <http://pv-map.apvi.org.au/historical#4/-26.67/134.12>

⁷ IPART, *Solar feed-in-tariffs: setting a fair and reasonable value for electricity generated by small scale solar PV units in NSW*, March 2012, p.67.

not correlate with the same time as peak demand on the distribution network, meaning that maximum system capacity is not reduced as consequence of residential solar installations.⁸

As the Commission notes, the benefit of exported solar electricity to electricity distributors varies depending on where embedded generation is located in a distribution network. The complexity associated with determining locational benefits and costs to distributors at a street or even zone substation level is high. If such analysis revealed that net benefits for the network were negative, should customers exporting electricity be charged for their dispatch? The current regulatory framework captures the benefits and cost of embedded generation in allowed regulatory revenues and therefore network tariffs. To the extent the Commission consider that the existing framework does not adequately allocate cost and benefits then these issues need to be addressed through the NER. We would be concerned should the Commission by-pass the NER to resolve a perceived inefficiency in how costs and benefits are both determined and allocated.

The Commission identifies the Local Generation Network Credits (LGNC) rule change before the AEMC. Origin does not support the proposed rule change as it:

- It would likely result in an increase in electricity costs for customers which would outweigh the benefits that may accrue to participating generators.
- Networks have not indicated that there is a benefit they can quantify from most small scale embedded generators.
- It would duplicate existing incentives and support provided to embedded generation.
- It will involve a high level of complexity and administrative cost relative to the benefit.
- There is limited potential to reduce network augmentation costs given modest network augmentation plans and the limited impact an LGNC would have on most embedded generation investment decisions.

Origin notes that the demand forecasts used by distribution network service providers (DNSPs) incorporate expected increases in embedded generation, validated by the Australian Energy Regulator (AER), when assessing pricing proposals submitted by DNSPs. The inclusion of small embedded generation in DNSP's demand forecasts impacts upon the DNSP's augmentation planning and hence the revenue allowance approved by the AER. Accordingly, the avoided cost of constructing network infrastructure is likely to be largely factored into network revenue determinations. Because of this, the LGNC proposed rule change has the potential to increase the cost of delivered electricity to customers without embedded generation at sites unable to access a LGNC. This is because the reduction in capital expenditure requirements brought about by new embedded generation has already been accounted for through load forecasts applied to the revenue requirement of a DNSP.

Carbon benefit

Origin supports the pricing of environmental externalities, such as carbon, through national policies that apply across each state and territory. To ensure that environmental policies are efficient and effective, state jurisdictions must be sensitive to how they interact with Commonwealth energy and climate change policies. Additional state policies that seek to price environmental benefits will simply drive up costs for consumers, who are already paying for this subsidy through their energy bills, and may adversely impact on a state's relative economic competitiveness. Accordingly, Origin does not support state jurisdictions determining a method for calculating a carbon benefit for technologies that are not covered by the national Renewable Energy Target (RET).

As the Commission acknowledges, the environmental benefits of installing small-scale solar PV systems are accounted for through the assignment of Small Scale Technology Certificates (STC) as

⁸ Ibid, p. 69.

part of the Commonwealth's Small-scale Renewable Energy Scheme (SRES). Section 3 of the *Renewable Energy (Electricity) Act 2000* (Commonwealth), which establishes the SRES, states that an objective of the scheme is "to reduce emissions of greenhouse gases in the electricity sector... through the issuing of certificates for the generation of electricity using eligible renewable energy sources". Consumers realise this benefit through the payment of an upfront subsidy that reduces the cost (and payback period) of the renewable energy system. The SRES subsidy is calculated based on the size of the system and the amount of energy it will generate over its lifetime. Accordingly, the environmental benefit of the energy generation is calculated through the SRES. In the absence of this subsidy, system costs would be notably more expensive, and we anticipate that this would lead to lower installation of distributed generation by consumers. Origin is therefore of the view that environmental externalities are captured nationally by the SRES for renewable energy distributed generation systems.