

26th July 2016

Electricity Authority
PO Box 10041
Wellington 6143

By email: submissions@ea.govt.nz

RE: Transmission Pricing and Distributed Generation Policy Submissions

Pioneer Energy's submissions are included together with this cover letter to the Electricity Authority's Board. The Authority's stated objectives of these proposals is made clear, to achieve more efficient transmission pricing and remove any barriers to pricing efficiencies, however the analysis supporting these objectives is far less clear. The table below summarises our resulting views in respect of the proposals submitted:

	Transmission Pricing Methodology (Monopoly services)	Distributed Generation Pricing Principles (Competitive services)
Statutory objectives	<p>Our understanding is that we are aligned with the majority of industry stakeholders in concluding that the Authority's CBA delivers a substantially negative NPV once updated for more realistic inputs. As such, the TPM proposal does not satisfy the Authority's statutory objective (section 15).</p> <p>Separating TPM from DGPP has the effect of double accounting for transmission capacity payments. Introducing common costs to DG providers then has the effect of creating a direct market subsidy to grid supplied generation for the "last mile" of delivered energy costs. The current TPM and ACOT regime reconciled these competing services.</p>	<p>These DGPPs proposals came up in the TPM first issues paper, and now appear rushed and the statutory obligations set out in section 32(1) have not been satisfied. The TPM and DGPP regulations need to be aligned to ensure a level playing field is maintained.</p> <p>More particularly, the purpose of the pricing principles have not been adequately addressed nor has the Code change obligations set out in section 21 been followed.</p> <p>A full market review would have shown that ACOT payments, especially to the extent of avoided transmission charges, reflect market-forces and locational benefits to consumers of distributed generation.</p>
Economic rational	<p>TPM pricing is a function of normal economic sizing of infrastructure development, so must be approached from a long term perspective.</p> <p>The TPM is not about optimising investment. There will be a number of factors driving generation investment and location decisions a small component of which will be transmission. For durability and long term benefit TPM should where possible avoid regulatory wealth transfers post investment decisions.</p>	<p>The presumption that DG is inefficient and requires a subsidy is not supported by your TPM CBA - which finds the opposite.</p> <p>The DGPPs do not set the price, which is an outcome of the TPM and is thus cyclical due to economic sizing issues. The only way to avoid that issue is encourage more DG investment i.e. as Government envisaged when it regulated DGPPs in 2007.</p>
Cost benefit	<p>The static nature of the CBA and use of arbitrary input assumptions is not supported by readily available market evidence. Updating with more realistic inputs brings out a negative \$1b error in the maths</p> <p>The case for this is not helped by the disconnect between AOB, TPM and the future uncertainty of prudent discounting</p>	<p>The DGPP CBA is inconsistent with the TPM CBA resulting in a pre-conceived outcome and both suffer from incorrect input assumptions.</p> <p>Distributed generation, as a portfolio, currently delivers \$500m consumer benefit for \$52m ACOT, i.e. an estimated consumer return of 10:1 on its investment.</p>
Possible Solutions	<p>The CBA found existing DG was efficient and of benefit to consumers, therefore its position should be grandfathered.</p> <p>International better practice strongly supports measures to enable and facilitate flexibility in grid access. Flexibility provides for choice and choice exerts long term downward pressure on prices for consumer benefit</p> <p>Guidance to Transpower should make recommendations whilst allowing it to strengthen the existing TPM regime if this will avoid financial disruption and better enable workable competition. There may be future merit in an alternative LRMC type central contracting mechanism, removing any competitive inefficiency with the current Network pass-through arrangements and resolving the double accounting problems introduced by TPM.</p>	<p>DGPP cannot be resolved without first resolving the TPM and needs to consistent with Part 4 treatment of transmission alternatives in Transpower's revenue price path.</p> <p>The Authority's pursuit of its statutory objective should be encouraging Transpower through these guidelines to:</p> <ul style="list-style-type: none"> • Further enhancing the market-like nature of generation competition; • Further eliminating both explicit and implicit subsidies to grid generation; and • Further securing and maintaining a level playing field. <p>DG will be built efficiently by willing investors provided that the regulations, pricing and contracting regime is fair and equitable.</p>

These matters arising and the overall intent of these proposals is very complex, has many policy inter-dependencies and the analysis includes a number of qualitative assumptions open to considerable industry debate. We have therefore spent a lot of time and effort on comprehending the cost-benefit quantitative analyses given the substantive changes to current regulations. We consulted widely with many others in the industry and found most parties are asking the same questions and highlighting the same issues with this analysis.

Both the TPM and DGPP proposals can only be justified to the extent that they result in significant savings for consumers. The cost benefit analysis (CBA) purports to demonstrate this, but once it is corrected for basic errors and omissions, the CBA's actually show that the combination of these proposals is likely to result in a large net loss for consumers. It would also be reckless to embark on such a major upheaval to the pricing structure that would result, according to the EA's own analysis, in most distributed generators being put out of business, when the economic benefits can only be demonstrated by utilising a flawed CBA.

Overall, there are unacceptable regulatory change risks to investors, particularly given the material cost-benefit anomalies, analysis sensitivities and forecast uncertainties that are revealed. The forecast anomalies are compounded by the Authority introducing new "common costs" that will subsidise competing market generators over the "last mile" of networks, coupled with a very aggressive implementation programme that ignores your own Consultation Charter. This is all unwarranted and provides no time whatsoever for DG businesses to position and prepare themselves to mitigate such a large regulatory change directly impacting their financial viability.

Whilst we appreciate the opportunity to make these submissions, we are also bound to express the serious concerns Pioneer's Board and Shareholders have with your explicit intention to commercially disadvantage and financially disrupt an important segment of distributed generation investors, by unilaterally removing regulations and rules relied upon to protect DG investors in their unique location and market functions in the electricity supply chain. PWC has undertaken an independent financial review of future DG sector value impacts for the Independent Generators Association (IEGA). This report shows this proposal will reduce existing DG market values by at least 30% due to the TPM and by as much as 100% of shareholders equity if the DGPP rulebook is also removed. By way of comparison, your TPM proposal has provision for the mitigation of wealth transfers and financial relief through discounting provisions showing a regulatory preference for larger businesses.

I trust Pioneer's submissions will assist you fill in some of these obvious knowledge gaps and will encourage the Authority Board to urgently reflect on the broader implications of implementing Code changes that are likely to cause more than \$1bn of additional costs to consumers and \$1bn+ of DG sector wealth destruction.

Yours sincerely



Stuart Heal
Chair
Pioneer Energy Limited

Enclosed:

1. DGPP Submission
2. TPM 2nd Issues Submission
3. TPM Cost-Benefit Analysis Submission

Submission to the Electricity Authority

On

**Review of distributed generation pricing
principles (“DGPPs”): Consultation Paper
17 May 2016**

“The Authority’s proposals are in fact proposals to centrally regulate electricity market pricing and tilt the playing field further in favour of grid connected generators. Such cannot be reconciled with the Authority’s statutory objective.

The Authority’s proposal must be retracted.”

Submission made by Pioneer Energy Limited;
In collaboration with advisors Crowe Horwath & Morrison Low

26 July 2016

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GLOSSARY

ACOT	Avoided Costs of Transmission
ACOD	Avoided Costs of Distribution
Code	Part 6 of the Electricity Industry Code
CRNP	Cost Reflective Network Pricing
DGPP(s)	Distributed Generation Pricing Principles
DG(s)	Distributed Generation
GXP	Grid eXit Point
LRMC	Long Run Marginal Cost
MED	Ministry of Economic Development
NZEM	NZ Electricity Market
OGW	Oakley Greenwood
TPM	Transmission Pricing Methodology
TUOS	Transmission Use Of System
TX	Transmission

EXECUTIVE SUMMARY

The Authority's proposals are in fact proposals to centrally regulate electricity market pricing and materially tilt the playing field in favour of grid connected generators. Such cannot be reconciled with the Authority's statutory obligations (sections 15 and 32(1) of the Electricity Industry Act 2010).

That is, the combination of the Authority's common cost and DGPPs proposals is to provide a free ride for grid generation over both transmission and distribution networks. This is protectionist of the status quo in the extreme and exacerbated by looking to at the same time penalise DG with common costs. Long term benefit of consumers cannot possibly be served by protectionism of the status quo and nobbling DG; including based on incomplete theories, mixing consumer issues with supplier issues, or through pre-conceiving desired market outcomes.

Specifically, in respect of the Authority's common costs proposal, we submit that it has not been fully developed. It amounts to a proposal to give grid connected generation a free ride over distribution networks. The net result is that, if implemented, the Authority's proposals would achieve the 'polar opposite' of that required by its statutory objectives.

Further, the DGPPs rule book must be retained. That is, the DGPPs are first and foremost market competition rules and thus address the following three critical competitive market objectives:

1. Ensuring fair cost-reflective locational pricing;
2. Incentivising fair bargaining between independent market providers and two competing monopolies; and
3. Supporting the above with default terms and rulings panel escalation rules.

As such, ACOT (to the extent paid for avoided transmission charges) rescues workable locational competition from the artificial (regulatory induced) separation of transmission and energy services, including the combination of this with DG being made price-takers in the wholesale spot market.

In fact, DG services are already underpaid and the Authority should be looking to further reduce this anomaly. For example, DGs are currently paid based on an average rather than marginal basis and at \$16 per MWh compared to consumers whom receive \$34 per MWh. The net result is that DG, as a portfolio, currently delivers \$500m consumer benefit for \$52m ACOT, i.e. an estimated consumer return of 10:1 on its investment.

It is also improper to separate the DGPP provisions from the TPM due to the common economic sizing pricing issues (refer: Pioneer's TPM Submission – Schedule 1) and since TPM feeds into the payments required under the DGPPs and the two need to be co-ordinated; to prevent double accounting and to ensure TPM revenue price paths are aligned with the Code.

Finally, we note that:

- The Authority has not completed the requisite market study (section 21(1) of the Electricity Industry Act 2010); and
- The Authority's analyses are not consistent with our review of European, American and Australian jurisdiction positions - which reveal in-depth investigation of relevant issues and robust support for Pioneer's understandings of relevant DGPPs as discussed above and in our detailed submissions.

The table following lines up the Authority's problem, solution and outcomes against Pioneer's views.

DGPP	EA View	Our Position
Problem definition	<ul style="list-style-type: none"> A practice has arisen whereby ACOT payments have become a subsidy supporting inefficient assets That is, ACOT should be paid for avoided cost but is paid for avoided charges 	<ul style="list-style-type: none"> ACOT for avoided charges levels the playing field for DG competition with grid generation and so is not a subsidy to DG as complained of Removing such ACOT would provide a free-ride over transmission and thereby a subsidy to big grid generation DG is by definition more efficient than grid generation from a transmission costs perspective
Solution	<ul style="list-style-type: none"> DG should pay for use of networks the same as do consumers Eliminate the ability for subsidies to be paid under the guise of ACOT 	<ul style="list-style-type: none"> Consumer issues should be addressed separately as consumer issues 95% of existing DG are not network services consumers Align the pricing principles for demand side response, hot water and DG. Maintain the DGPPs rule book for fair pricing for all Modify the DGPPs to align with any TPM changes <ul style="list-style-type: none"> Protect consumer choice of services and recognise that value is a two way street Put Transpower in the drivers seat re ACOT Avoid any double counting issue by offsetting within TPM Better to strengthen what we have and not tilt the playing field
Consequence	<ul style="list-style-type: none"> Remove \$0.5 - \$21m PV of inefficient investment \$320m potential wealth transfer Consistent with statutory objective 	<ul style="list-style-type: none"> Investigate cost of DG value destroyed Understand consequences of nobbling \$0.5b to \$1.5b of DG sector and community wealth Consumer electricity price increases of up to \$500m a year are unaccounted for in the proposal The proposal is not consistent with the Authority's statutory objective

Overall, there are unacceptable regulatory change risks to investors, particularly given the material cost-benefit anomalies, analysis sensitivities and forecast uncertainties that are revealed. The forecast anomalies are compounded by the Authority introducing new “common costs” that will subsidise competing market generators over the “last mile” of networks, coupled with a very aggressive implementation programme that ignores your own Consultation Charter.

This is all unwarranted and provides no time whatsoever for DG businesses to position and prepare themselves to mitigate such a large regulatory change directly impacting their financial viability.

1. INTRODUCTION

Overview

- 1.1 This submission responds to the following consultation paper published by the Electricity Authority (the "Authority") on 16 May 2016:

"Review of distributed generation pricing principles: Consultation Paper"

- 1.2 This submission has been prepared by Pioneer Energy Limited with the assistance of Crowe Horwath and Morrison Low. Pioneer's business is energy and its point of difference is the way it does business, the diversity of its products and energy options, partnerships and investments.
- 1.3 Pioneer's core values are the essence of its business and have always been at the heart of the Pioneer brand being trust, service, community and partnership.
- 1.4 Pioneer collaborates, networks and partners to bring the brands and expertise which will provide its customers the care, attention and energy solutions they need. Pioneer is an active investment partner in both local and renewable energy generation and customer on-site heat and power facilities. It has an enviable reputation for being able to successfully partner with its customers.
- 1.5 Pioneer is a pro-active investor in renewable generation and has grown a long retail market position to 2% market share. Our investment growth relies on shareholder confidence from stable, predictable and incremental regulatory and policy changes. These are important factors that contribute to promotion of competition.
- 1.6 We trust that this submission provides useful insights on your consultation and would be happy to answer any questions the Authority may have arising from it.

Pioneer submits;

- 1.7 That this DGPP Proposal, and the companion Transmission Pricing Methodology (TPM) 2nd Issues paper, both fail to capture the essence of current market trends and industry changes, not just here in New Zealand but also globally. There are no compelling reasons or evidence presented in either paper, at consumer benefit or industry efficiency levels, to warrant the level of regulatory change being contemplated.
- 1.8 The current proposals (whilst articulating a number of potential market development opportunities) will compel investor flight, by increasing long term investment risk in a market already struggling to attract new capital investment at the levels required to keep up with global technology change.

Long term benefit of consumers will not be served by protectionism of the establishment, nobbling DG based on incomplete theories, mixing consumer issues with supplier issues, or through pre-conceiving desired market outcomes.

- 1.9 Therefore, Pioneer submits that the Authority should pause, shift to a problem-solving and constructive working approach with participants to efficiently, thoroughly, openly and completely define and resolve relevant issues. This will build upon an electricity market beginning to show the benefits of relatively new competition regulation rather than return to the starting point of this some 10 years past.

2. SUBMISSION CONTEXT AND KEY POINTS

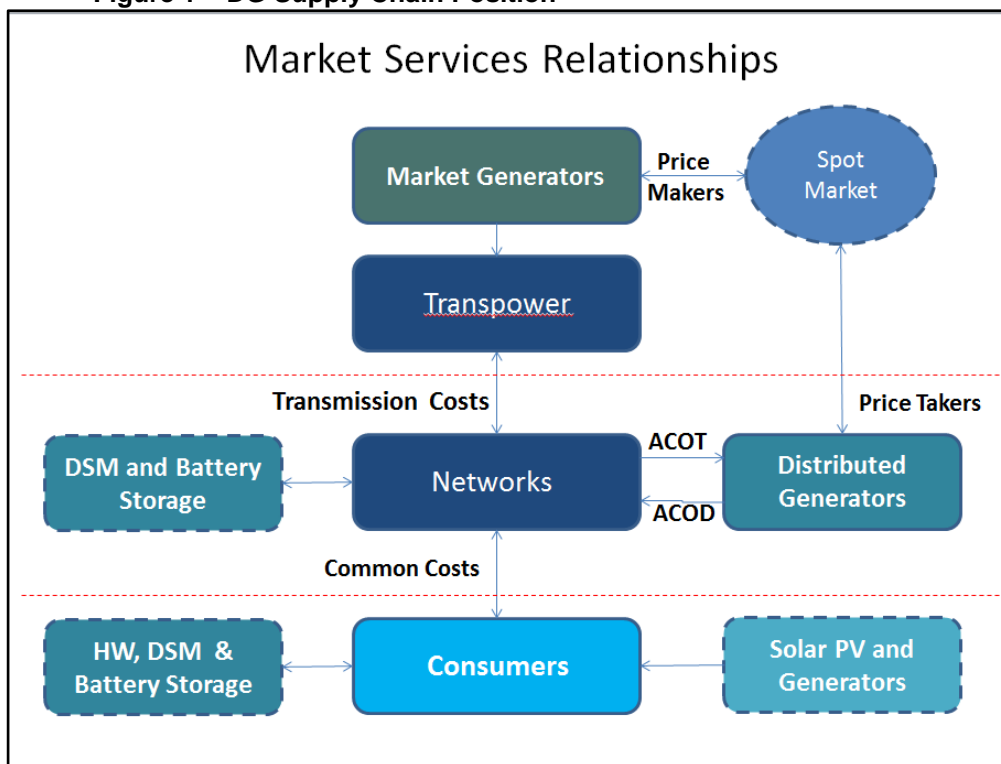
Process

2.1 We note that the Authority has not followed the requisite process for Code changes per section 21(1) of the Electricity Industry Act 2010. It has neither appointed one or more advisory boards nor completed a market study. The absence of these regulatory change procedures conveys disrespect for both the history of relevant regulatory development to date and for relevant developments elsewhere in the world. More importantly it makes it very unlikely that the Authority's proposals can be durably implemented.

Context

2.2 DG provides an important competitive service to the electricity market and consumers. Its assets are unique in that they provide both competitive energy supply and local system capacity - benefiting consumers through a number of avoided and avoidable costs, as defined in the DG Pricing Principles (DGPPs).

Figure 1 – DG Supply Chain Position



The DGPPs are first and foremost market competition rules ensuring competitive pricing for DG services vis a vis competing Transmission and Network capacity along with rewarding wider DG services that benefit consumers.

2.3 The DGPPs are first and foremost *market competition rules* ensuring competitive pricing for DG services vis a vis competing Transmission and Network capacity along with rewarding wider DG services that benefit consumers; in line with section 32(1)(a) of the Electricity Industry Act 2010. Consumers pay for a regulated and bundled Network and Transmission service from Grid-Connected Generators and/or DGs. Under the DGPPs, DG pays Networks incremental costs for any additional assets not already required by Consumers. DGs are also paid for

services provided and compensated for undue barriers to fair competition. These arrangements are clear and fundamental to the interpretation of Part 6 of the Code.

2.4 We believe the Authority has incorrectly assumed that the DGPPs requirement to pass through certain payments to DG is for avoided transmission investment costs only. The wording of the DGPP rules was closely considered and is clear. In summary, distributors must give credit for all of:

- Avoided and avoidable charges for transmission;
- Other avoided and avoidable operating costs;
- Avoided and avoidable capital investment (in transmission and/or distribution).

2.5 Our submission considers the intended purpose and objectives of the DGPPs and Code framework, as applicable under the current regulations. We find that that framework has not generally been correctly applied by the Industry. This is likely due in part to imbalanced bargaining power between monopoly distributors and DG. It is likely also in part due to the administrative burden of commercial negotiations for small generation businesses. The result is that current services provided by DG are generally underpaid relative to similar services provided by other industry participants (based on information and calculations made, from Commerce Commission Information Disclosures 2015, of relevant payments and delivered energy costs of similar capacity services):

Table 1 – Relative Capacity Prices Paid (calculated from Information Disclosures¹)

Providers (Source Data)	Consumers DSM Calculated (ComCom)	DG Providers ACOT Payments (TPM Input)	Network Providers (ComCom)	Transmission At Networks (ComCom)
Capacity Provided MW	1,200	950	6,300	6,867
Energy Supplied/Metered (GWh)	3,500	3,173	32,000	34,880
Revenues Paid/Avoided (‘000’s)	120,000	52,300	2,493,000	584,000
Average Price Paid/MWh (note 1)	34.29	16.48	77.91	16.74
Connection Assets	Bundled with Meters	Incremental Costs Paid	Network Asset Charges	TX Asset Charges

Note 1: Distribution losses are only charged on an average basis not on a marginal basis. This means that DG is consistently underpaid for its contribution.

Current services provided by DG are generally underpaid relative to similar services provided by other players.

¹ These calculations are only as accurate as the required data from Information Disclosures 2015 could allow, but are as reasonable a comparison as is required to determine relative cost and value of services, to at least confirm whether there is a prima facie case for further investigation of ACOT payments being deemed a DG subsidy by the Authority.

- 2.6 As illustrated by table 1, there is no prima facie case of a market or economic subsidy being provided to DG through ACOT. DG is the lowest paid provider of local capacity in the market.
- 2.7 A second test of efficient compensation for DG is whether DG is an efficient provider of energy and related services in a market investment context; relative to the alternative of Grid Connected Generation supply via Transmission. Figure 1 answers this question rather intuitively. DG is produced closer to demand and is generally under 10MW capacity, so not bid into the NZEM wholesale market. As an energy market price-taker it receives the prevailing half-hour spot market prices so therefore cannot survive if it is a less efficient investment than other generators in the market.

ACOT ensures there is one market price for consumers.

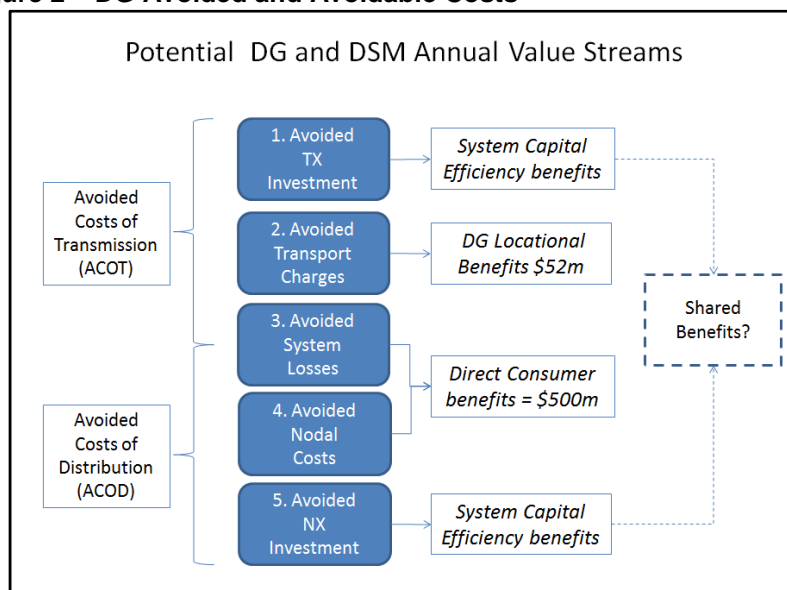
Avoided charges

- 2.8 The main reason that the DGPPs require Network pass-through of avoided transmission cost payments to DG is a simple one – because the costs of transmission services are regulated and directly passed through by Networks to consumers (so are not included in the energy supply tariff) and, as illustrated in figure 1, DG do not generally use transmission services. That is, the DGPPs deliver DG their due locational competitive advantage. So, part of the purpose of ACOT is to ensure that there is one market price for consumers - removing ACOT would create two market prices (and a transmission subsidy to grid connected generation).

Other benefits of DG

- 2.9 There are a number of other long term consumer benefits that DGs provide consumers due to their unique location in the electricity supply chain. Those consumer benefits are much greater in New Zealand than in many other countries. This is because 95% of DG sector production is renewable electricity and heat, and so is in fact more efficient than much transmission supported Market Generation. Oakley Greenwood (OGW) acknowledges this fact in its TPM proposal cost-benefit summary.
- 2.10 Figure 2 below illustrates the minimum electricity supply chain market efficiency benefits that DG provides:

Figure 2 – DG Avoided and Avoidable Costs



For an aggregate cost to consumers of approximately \$52m ACOT per annum the consumer market benefits delivered are in the region of \$500m per annum.

- 2.11 Part 1 appears to be the primary focus of the Authority's attention. Pioneer cross-references its 2nd Issues TPM submission, which shows that any pricing efficiency problem relating to transmission LRMC's are normal "economic sizing" issues, generally cyclical in nature, and that the "causers" thereof are Grid Connected Generation and Transmission economic over-building. We note that OGW's analysis, once corrected for New Zealand DG parameters, predicts a long term avoidable TX investment economic benefit to consumers that is far greater than that of the TPM present value forecasts.
- 2.12 Part 2 in Figure 2 is a locational benefit attributable to avoided transmission services. DG prices paid through the ACOT mechanism are reflective of those (we cross reference our TPM submission which shows that they are in fact less than the full amount as Transpower's RCPD charge captures only part of relevant avoided costs²) and Table 1 shows these are currently paid at \$1.40/MWh at the consumer level. For an aggregate cost to consumers of approximately \$52m ACOT per annum the consumer market benefits delivered are in the region of \$500m per annum.
- 2.13 Parts 3 & 4 are direct benefits to consumers. Pioneer's TPM submission provides indicative analysis covering how these marginal pricing and avoided losses benefits, estimated at more than \$500m per annum, are realised. DG providers currently receive no payment consideration for these benefits, which equate to an estimated \$16/MWh benefit to all consumers.
- 2.14 Part 5 benefits are created by Network load management and DG operations enabling avoided costs in new TX connection assets and the reduction in Network energy losses; which according to Commerce Commission Disclosures average 5.6% and can be as high as 9% in some networks. This is a relatively complex benefit to allocate as each Network and DG capacity relationship will be different. A guideline to value is the \$34/MWh average tariff incentive offered to consumers for capacity load switching availability. This is in excess of twice the average ACOT payment.

TPM interface

- 2.15 We note the possibility of a double payment if TPM is enacted on an anytime maximum demand basis and DGPPs ACOT credits remain separately paid. However, this can easily be resolved by netting DGPPs ACOT credits off TPM paid by distributors to Transpower.

Common costs

- 2.16 In respect of the Authority's common costs proposal, we submit that it has not been fully developed - amounting, as it does, to a proposal to give grid connected generation a free ride over distribution networks - i.e. the last mile. It is thereby a proposal to put in place a blatantly anti-competitive subsidy that will quite literally put most DG out of business. And not because that DG is less efficient compared to material alternatives. This proposal must be retracted.

² Distribution losses are only charged on an average basis not a marginal basis. This means that DG is consistently underpaid for its contribution. We reference PWC 'DG Market Value Report 2016 – Independent Generators Association submissions to TPM and DGPP proposals'

In respect of the Authority's common costs proposal, we submit that it has not been fully developed - amounting, as it does, to a proposal to give grid connected generation a free ride over distribution networks.

Misconceptions

2.17 Some utilities have expressed concern that DG adopters are undermining the financial foundation of the electric system. They argue that DG is failing to pay its fair share for its use of (and the ongoing dependence of its owners on) the electric grid. DG developers and advocates argue that the value being provided to the electric system exceeds the cost that ratepayers contribute, and so, if anything, they are being under-compensated for the services they provide. The Authority's task includes getting to and raising understanding of the full realities.

3. RESPONSES TO AUTHORITY'S 8 QUESTIONS

Q1 *Do you consider that the proposed Code amendment described in section 4.1 is preferable to the status quo and the alternatives described in section 4.6? If not please explain your preferred option(s) in terms consistent with the Authority's statutory objective.*

- 3.1 The proposed Code amendment described in section 4.1 is not preferable to the status quo and nor are any of the alternatives described at section 4.6.
- 3.2 Our preferred option is the status quo, since the status quo:
- Supports a level playing field (fair competition) on which all generators, grid and non-grid connected, can compete;
 - Delivers increasing innovation in and diversity of generation supply, simultaneously increasing customer choice as to reliability standards and overall system reliability for those that need it;
 - Drives, and will continue to drive, further take up of the most efficient generation and generation supply options, thereby minimising long term costs and maximising long term efficiency;
 - Provides recognition that the optimal supply strategy invariably involves the use of small scale local distribution solutions until sufficient accumulation of demand and future projections might warrant the next major grid connected investment;
 - In supporting fair competition, increasing reliability, increasing customer choice and delivering strong incentives for the take up of the most efficient new technologies provides the greatest likelihood of the highest long term benefits to consumers;
 - Offers consistency with regulatory principles applied in key reference international jurisdictions, including Europe, Australia and the US.

Generally the flatter (which it currently is) the demand curve in any market the more efficient the system investments, therefore the more inter-connectivity of supply chain price signals the better.

The purpose of the DGPPs

- 3.3 The original policy intent, developed in 2003 after two consultation rounds, was to encourage smaller scale renewable generation within the distribution networks. This policy intent was re-examined in 2009 as part of the electricity market review that gave rise to a Government Policy Statement. The pivotal parts that statement were:

“Distributed generation ... is expected to play an increasingly important role in meeting electricity demand as the cost of smaller-scale and new renewable technologies continue to decline. Distributed generation can improve security of supply by creating diversity of fuel types, locations and technologies, and, where appropriately sited, helps reduce the need for transmission and distribution upgrades. Accordingly, it is important that there are no unnecessary barriers to its development.

Access to lines

The Government proposes to introduce regulations prescribing reasonable terms and conditions on which line owners and electricity distributors must enable generators to be connected to distribution lines. The objective is to facilitate the use of distributed generation by ensuring that it does not face undue barriers in connecting to lines.”

3.4 The original policy intent was and remains valid. The obvious intent was to create parity between distributed generation and large scale grid connected generation. The ‘parity’ referenced here is competitive parity – ability to compete on a level playing field. The focus was thus on the removal of “unnecessary” and “undue” barriers.

3.5 The Authority’s Retail Advisory Group defined a relevant barrier as follows³:

“Barriers to investment or barriers to entry can take the form of structural, regulatory or strategic impediments facing the entrant. Whichever of the three forms it takes, a barrier to entering the relevant market can be defined as something that imposes a cost on the entrant that does not reflect the social cost of participating in the market; that is, the cost (in money or time or other resources) to the entrant exceeds the costs to society of the entrants actions, leading to less investment in DG than is economically efficient.”

3.6 In table 2 below we identify and evaluate various potential barriers as due or undue (level playing field feature/non-level playing field feature) and note how the DGPPs address them.

Table 2

Barrier	Level playing field feature	Non-level playing field feature	DGPPs
General economies of scale	Yes		No relief
Relative technological efficiency	Yes		No relief
Quality of fuel source	Yes		No relief
Free grid transmission for grid connected generation		Yes	Compensate DG for avoided transmission charges to bring delivered energy price to parity with grid generation
General locational advantages and disadvantages	Yes		No relief
Capturing full economic benefits		Yes	Partially compensate for avoided transmission and distribution capacity investment
Avoided system losses	Yes		No special relief (partially reflected in metering)
Weak negotiating power		Yes	Regulation and default rules
Connection costs	Yes	?	Prevent from becoming undue
Reliability of fuel source	Yes		No relief

3.5 The above is not comprehensive⁴. However, it illustrates well the DGPPs focus on levelling the playing field for DG to compete on fair market-like terms with grid-connected generation. There are thus no subsidies (providing of advantages to

³ Investigating barriers facing small-scale distributed generation, Discussion paper 7 February 2011.

⁴ For a fuller analysis refer to *Designing Distributed Generation Tariffs Well – Fair Compensation in a Time of Transition*, Authored by Carl Linvill, John Shenot and Jim Lazer of RAP Energy Solutions, November 2013. A copy is attached for ease of reference.

overcome fair market competition factors) created for DG – their technology must compete on its merits - only a further levelling of the playing field.

- 3.6 The avoided transmission charges solution provided by the current DGPPs appears to be the most controversial for the Authority. However, once it is recognised that this arises from an impediment created by regulation (i.e. it is created by the regulatory separation of the wholesale pricing of energy from the transmission of that energy to load, combined with DG being enforced price-takers) the proper question shifts from whether compensation is due (locational advantage is a central aspect of almost all market based competition in all markets) to; at what price should that compensation be paid.
- 3.7 Currently, avoided charges are paid based on the residual LRMC (so excludes the HVDC) however there are sound principled arguments for avoided transmission charges being paid based on the full amount of Transpower's charges. This would have increased such from \$52m to as much as \$200m for 2015.

The DGPPs

3.8 The DGPPs determine charges payable by a DG or a distributor as set out in Schedule 6.4 of the Code. The DGPPs provide that charges are:

- To be based on recovery of reasonable costs incurred by a distributor to connect a DG and to comply with connection and operation standards within a distribution network; and
- Must include consideration of identifiable avoided or avoidable costs.

3.9 The DGPPs elaborate that connection charges cannot exceed incremental costs (therefore excluding common costs), being costs, net of transmission and distribution costs, that an efficient distributor would be able to avoid as a result of the connection of a DG. Costs that cannot be calculated (i.e. avoidable costs) must be estimated with reference to reasonable estimates of how both the distributor's capital investment decisions "and operating costs" would differ with and without the DGs presence⁵.

3.10 In the MED paper, "*Facilitating Distributed Generation: Major Issues Raised in Submissions on the Proposed Regulation of the Interconnection of DG to Lines Networks*", December 2003 the need for the DGPPs was set out (p4): "*the importance of the avoided cost of transmission and avoided costs of distribution payment to the economics of DG was noted in several submissions.*" The MED's "*Facilitating Distributed Generation*" paper, dated September 2006, set out the "costs less benefits" approach inherent in the DGPPs (paragraph 42). The same paper proposed that costs shifted to others (specifically, transmission interconnection charges) should be excluded from avoidable costs and thus excluded from giving rise to any payment (paragraph 43). However, following further consultation, the clause to achieve this was deleted from the draft regulations⁶ and it remains absent from the current Code. The practice of netting off payments for avoided transmission charges was thereby expressly considered and expressly endorsed in the authoring of the DGPPs. The Authority's following statement⁷ is thus misleading:

"A practice has arisen whereby a majority of distributors calculate their ACOT payments according to the transmission charges they avoid."

⁵ There are various further rules to deal with particular circumstances but these noted here are sufficient for present purposes.

⁶ MED '*Discussion Paper: Summary of changes to Draft Regulations for Connection of Distributed Generation*' April 2007.

⁷ '*Transmission Pricing Methodology: Avoided cost of transmission (ACOT) payments for distributed generation*' 19 November 2013, paragraph 1.2.

3.11 The practice did not just arise. It was expected and planned to arise through the careful drafting of the regulations to facilitate it – those regulations having at one stage been drafted to specifically prevent it. It follows that ACOT for avoided charges was an approved pricing principle. It also follows that it is no accident significant DGPPs payments have been paid for avoided charges⁸.

The practice of netting off payments for avoided transmission charges was thereby expressly considered and expressly endorsed in the authoring of the DGPPs.

3.12 The full scope of DGPPs is supposed to cover the other components of Transpower charges not just ACOT (setting aside any avoided distribution costs). This is because from the distributor perspective, DGs provide an equivalent competing service to the grid, therefore deserving to be paid a similar total energy price⁹.

3.13 In summary, distributors can charge DGs the incremental costs of connection but must give credit for related:

- Avoided and avoidable charges for transmission
- Other avoided and avoidable operating costs;
- Avoided and avoidable capital investment (in transmission and/or distributors).

3.14 The Authority believes that there are two problems with the above credits, being:

- Owners of DG are not required to pay a share of common costs; and
- DGPPs rewarding owners of DG for avoided transmission charges.

3.15 The first of the above ‘problems’ is not established by the Authority’s analysis. The Authority’s argument also does not appear to have a logical basis, in light of the specific requirement in the existing DGPPs that an equivalent ‘common cost’ should be paid to DGs in recognition of an equivalent service provision as the grid. DGs are not like grid-connected generators – they do not make use of the grid to deliver electricity to consumers. So, there is no nexus established for levying a transmission charge¹⁰.

3.16 The second of the above ‘problems’ is not a problem but forms part of a necessary regulatory framework to secure delivery of the optimum investment process (i.e. encouraging DG construction to efficiently avoid and/or defer grid investment), promote competition (i.e. grid is not the best and cheapest solution every time) and to provide a level playing field (i.e. comparable payment) between alternative suppliers in the market.

3.17 We elaborate in detail regarding these propositions vis-a-vis the Authority’s statutory objective below.

⁸ In fact a fair question is why all distributors are not paying them. Further, the fact that there have not been greater sums of further DGPPs payment types to DG could have a number of reasons, from difficulty negotiating them, lack of DG portfolio value recognition, to the relative newness of the rules. Whatever these reason the relative absence of such further payment types does not negate the validity of the principles underlying their existence. If anything it suggests that further work is required to evaluate whether there are further undue barriers to their uptake that should be removed.

⁹ It is uncertain if any non-payment would be kept by distributors or passed back to consumers. The lack of clarity in the DGPPs allows for the possibility of misinterpretation (compared to the Australian National Electricity Rule which sets DG payment equal to avoided TUOS).

¹⁰ In fact, the proportion of the consumer market being serviced by DGs does not require the use of Transpower’s grid so it must be unreasonable to recover Transpower’s common costs from them (but this is an issue for setting TPM).

Statutory objective - competition

3.18 There are three fundamental and cumulative flaws in the Authority's analyses from a "competition" perspective, being:

- The Authority has failed to adequately define the market context;
- The Authority has identified 'problems' that are not problems: and
- The Authority's analyses are, therefore, both incorrect and irrelevant.

3.19 The net result is that, if implemented, the Authority's proposals would achieve the 'polar opposite' of that required by its statutory objective. In consequence those proposals cannot be durably enacted.

The net result is that, if implemented, the Authority's proposals would achieve the 'polar opposite' of that required by its statutory objective.

3.20 That is to say, in competition regulation, identification and definition of the 'market' is central to any analysis of competition. Promotion of competition is the first of three primary aspects of the Authority's statutory objective.

3.21 Competition occurs in markets. Markets are defined for the purpose of assisting in the analysis of competition and market power. Section 3(1A) of the Commerce Act defines a market as:

"... a market in New Zealand for goods and services as well as other goods and services that, as a matter of fact and commercial sense, is substitutable for them."

3.22 When the Commerce Commission defines relevant markets, case law has identified that it may need to consider five distinct characteristics or dimensions¹¹:

- *"the goods or services supplied and purchased (the product dimension);*
- *the level in the production or distribution chain (the functional dimension);*
- *the geographic area from which the goods or services are obtained, or within which the goods or services are supplied (the geographic dimension);*
- *the temporal dimension; and*
- *the customer dimension."*

3.23 The Commerce Commission records in its "Investigation Report – Electricity Investigation" 22 May 2009, paragraph 133:

"Market definition is not an end in itself, but is a tool to assist with the analysis of the conduct at issue. In this instance, the Commission is seeking to define markets in a way that facilitates an assessment of: the existence and extent of market power; whether any firm has taken advantage of market power for a proscribed anti-competitive purpose; and whether any agreements have had the purpose, effect or likely effect of substantially lessening competition."

¹¹ *Telecom Corp of NZ Ltd v Commerce Commission* (1991) 4 TCLR 473, 501-502.

- 3.24 The Authority uses the word 'market' 28 times in its Consultation Paper. But, nowhere in this document does it address definition of the market it is proposing to alter regulatory arrangements for. In our view this represents a fundamental flaw in process and means that the Authority should be obliged to backtrack, fill the gap in and revise its analyses - then re-consult.

The Authority uses the word 'market' 28 times in its Consultation Paper. But, nowhere in this document does it address any definition of the market

- 3.25 Paragraph 11.11 of the Authority's earlier "Transmission Pricing Methodology Working Paper, ACOT payments for Distributed Generation", dated 19 November 2013 did state:

"Wholesale and retail markets for electricity are considered to be national markets. Hence, there are not separate regional generation markets, and DG competes in the same markets as grid connected generation. It would therefore be inefficient to provide ACOT payments to DGs solely for any competition benefits that would result."

- 3.26 There are multiple problems with the above statement:

- Firstly, it does not give recognition to the existence of the different sectors within the electricity market: the generation sector operates in a national fully competitive market but Transmission is the dominant supplier in the transmission sector with which DGs compete for energy delivery business in regional markets. In regional markets TPM grants an incentive based economic regulation to Transpower while the DGPPs give recognition to the transmission-equivalent competing service provided by DGs and set ACOT payment/charges on this basis. As discussed above, DGPPs represent a necessary component of a regulatory framework designed to promote competitive supply from non-grid sources and secure realisation of optimum capacity staging.
- Secondly, the conclusion does not follow from the Authority's logic, partly due to the oversight identified above and partly due the following misconceptions:
 - When distributed and grid connected generation compete in the same national market, they should do so on a level playing field, by facing the true and efficient costs of the inputs they use. Grid connected generation, therefore, needs to pay CRNP (generator) transmission charges for their use of the grid. DG does not use the grid so there is no (generator) transmission charge for DG. The payment of ACOT to DGs is thus not related to whether they use the grid or not, but to their ability to help distributor/customers meeting energy needs without the use of the grid, thus avoiding the (demand) transmission charge.
 - Transmission charges for Transpower, which is an effective monopoly, should be set to reflect the cost of its own network, preferably on CRNP, to send out efficient price signals. These should not be used as an instrument to manipulate the balance of competition between suppliers in the generation sector as this would produce unpredictable and probably uneconomic outcomes.
 - There are competition benefits flowing from ensuring a level playing field in the transmission sector, given the monopoly position of Transpower and its central system planning process. The DGPPs,

specifically the full scope of ACOT payments, recognise the important roles of DGs in providing a substitute supply for the grid and in optimum staging of grid capacity. That is, without incremental capacity additions with DGs (together with demand management) Transpower would have to build complete network upgrades that last for the next 20 years just to satisfy the next 1 unit of excess demand¹². Is anyone seriously wishing to argue that DG and demand side response such as ripple control have been anything but good for consumers? The related issue of experiencing surplus capacity after a major upgrade has been examined in our TPM submission which we cross reference.

3.27 Further, the Commerce Commission report referenced as authority for the Authority's view of the electricity market does not support the Authority's proposition. It concludes regarding the wholesale electricity market as follows:

"Conclusion on Market Definition

198. The Commission concludes that the markets relevant to the breach analyses undertaken in this investigation are:

- *the national wholesale market for the supply and purchase of electricity; and*
- *the national market for the supply and purchase of hedge contracts, or forward contracts, for wholesale electricity."*

3.28 That report noted it was not concerned with transmission services:

"163. The transmission and distribution functions are not directly relevant to the matters currently being considered, although it has already been noted that transmission constraints may impact on wholesale prices."

3.29 The acknowledgement of constraints here implicitly recognises market differences at nodal junctions. More particularly, its conclusion regarding the retail electricity market is as follows:

"197. For the purpose of this Report, and the outcome of the breach analyses relating to retail markets, the Commission has not considered it necessary to define a relevant retail market or markets."

3.30 Before this, the Commerce Commission had noted:

"195. Depending on the facts at the time and the question at hand, the Commission has previously defined the related customer and geographic dimensions of the retail market in one of two ways:

- *separate markets for the regional sale of electricity to domestic retail customers (including small commercial customers), and the national sale of electricity to large commercial / industrial customers that have individual contracts with electricity retailers; or*
- *a national market for retail customers, while noting that in some circumstances it may be appropriate to adopt narrower regional markets."*

¹² The equivalent demand side response is night only loads. If these loads weren't night only, daytime loads would be higher and this would increase nodal prices. This effect is potentially enormous as this happens every day. For example Orion has around 50,000 customers on night rates that turn on about 70MW of night load. Absent this type of response the need for grid generation and transmission would be significantly brought forward.

- 3.31 The Commerce Commission's views on definition of the electricity market support the proposition that defining markets must be approached carefully. They also support defining them for purposes of the task at hand. They provide no support for a blind assumption (which is what the Authority appears to have made) that retail electricity markets are a single national market. More importantly, they provide support for investigating how transmission and distribution costs feed into electricity and electricity delivery services.
- 3.32 The Authority's task at hand seems to require analysis of the DGPPs to ascertain whether they provide an inappropriate competitive advantage to certain DG over other DG and/or over grid connected generation; vis-a-vis supply of electricity to distribution network connected consumers (and perhaps to others). As indicated above, as long as grid connected generation is only required to pay a fair CRNP transmission charge for its use of the network, they cannot be seen as being disadvantaged. In contrast, the DGPPs address the value of transmission-equivalent services provided to consumers by DGs and establishment of a neutral role for the grid in the competitive national generation market. The purpose is to establish a level playing field/competitive arrangement between grid transmission and local non-transmission solutions.

The Commerce Commission's views provide support for investigating how transmission and distribution costs feed into electricity and electricity delivery services.

- 3.33 Instead, the Authority has incorrectly analysed the DGPPs as a transmission and distribution costing issue. It has thereby analysed electricity generation market pricing issues (which the DGPPs are concerned with) using monopoly transmission and distribution costing concepts such as "service based and cost reflective". For example, paragraph 3.1.1(a):

"The DGPPs mean distributors are less able to adopt service-based and cost-reflective pricing."

- 3.34 In consequence, the Authority's proposals are in fact proposals to centrally regulate electricity market pricing and to tilt the playing field further in favour of grid connected generators. Such cannot be reconciled with the Authority's statutory objective.

In consequence, the Authority's proposals are in fact proposals to centrally regulate electricity market pricing and tilt the playing field in further in favour of grid connected generators. Such cannot be reconciled with the Authority's statutory objective.

ACOT 'problem' is not a problem

- 3.35 Viewed within the correct market context, the Authority's role is regulation of electricity industry competition (without sacrifice of efficiency and quality) for the long term benefit of consumers.
- 3.36 The primary services players in the electricity industry compete to supply are energy and distribution; the latter including transmission.
- 3.37 Distribution and transmission are regulated as separate natural monopoly businesses.
- 3.38 Supply of energy is competitive. There are many and expanding modes of generation, many different qualities of energy (from flat to peak and intermittent

generation, storable and rapid start-up, higher up-front capital cost/lower marginal cost, and lower up-front cost/higher marginal cost formats) and many different owners of generation plant. There are also all manner of consumers. These are all signs of a developing and well functioning competitive market.

These are all signs of a developing and well functioning competitive market.

3.39 Prices in the wholesale market for electricity are set independently of transmission prices, but both are fully allocated to a GXP. As such, it can be said that the cost of electricity delivered over the grid to a GXP ("Price GXP") is the sum of the energy price plus the transmission price allocation for that quantity of energy. ACOT (to the extent calculated and paid as an avoided transmission charge) ensures that DGs receive "Price GXP" – the same price, in effect, as does transmission connected generation (after accounting for their additional transmission costs (charged separately).

3.40 The Authority posits that ACOT (to the extent paid for avoided transmission charges) is a subsidy that distorts competition, adds to consumer prices and should be removed. This fails to recognise that developments of DG together with demand side response initiatives) have made significant contributions to reducing or deferring major transmission investments. In totality, the resulting capacity staging process has delivered cost savings to the system and in turn lower prices for consumers.

3.41 At paragraph 4.4.8 the Authority states:

"The proposed Code amendment would support the competition limb of the Authority's statutory objective. It will reduce the likelihood of distributed generation receiving an artificial advantage relative to grid-connected generation. That is, subsidy-driven sources of competition, which typically harm economic efficiency, would be reduced."

3.42 The grid should operate as a common carrier. Again, there is no legitimate role for setting transmission prices to influence competition in the national competitive generation market. We understand that the Authority views "competition" here as "workable competition", noting in its document "Interpretation of the Authority's statutory objective" 14 February 2011, at paragraph A.15:

"Under workable competition, for example, sellers compete on price, quality, location and/or service, or by differentiating their goods or services from their rivals, or through their sales and marketing effort, or via a combination of those activities."

3.43 The Authority elaborates at paragraph A.19:

"The Authority interprets competition in the electricity industry to mean workable competition in regard to buying and selling electricity and where possible in electricity-related services, such as ancillary services, and transmission and distribution services."

3.44 We are confused as regards the Authority's conclusion regarding ACOT. That is, ACOT (to the extent paid for avoided transmission charges) rescues workable locational competition from the artificial (regulatory induced) separation of transmission and energy services. Removal of ACOT (to the extent paid for avoided transmission charges) would reinstate that artificiality and, in doing so, subsidise grid-connected generation. Linking this with the common cost proposal

this has the effect of eliminating natural market competition and replacing it with centralised monopoly planning.

That is, ACOT (to the extent paid for avoided transmission charges) rescues workable locational competition from the artificial (regulatory induced) separation of transmission and energy services.

3.45 Such a proposal could not in our view be durably implemented since:

- The Authority, rightly, appears to have no legitimate principle on which to base any interference with market based locational competition as established by current arrangements;
- The Authority appears to unreasonably abandon the existing regulatory (and conceptual) framework that recognises the role of DGs in optimum transmission capacity staging and provides financial recovery to them - by incorrectly focusing on demand and supply balance at a particular instant rather than the full path of system development;
- The Authority's proposal appears anti-competitive; and
- The Authority's proposal does not appear reconcilable with its statutory objective, its interpretation of its statutory objective or with its Code amendment charter.

3.46 The Authority argues in relation to DGPPs and, impliedly, ACOT (to the extent paid for avoided transmission charges) that:

"4.1.5 One aim of the distribution pricing principles is that distribution prices should signal the economic costs of providing distribution services. Prices should not involve subsidies. That is, prices should be equal to or greater than incremental cost, and less than or equal to standalone cost. Prices should be set having regard to available capacity on the network, and should signal the impact of additional consumption on the cost of investment in the network."

3.47 However, ACOT (to the extent paid for avoided transmission charges) is not about individual DG distribution costs. To this extent, it is about transmission-equivalent value and about the locational competitive advantage of DG vis a vis grid connected generation. It is about the principle of setting equivalent value/prices for equivalent services so as to promote level playing field competition, technological development and diversity in efficient energy generation.

3.48 The Authority's thinking appears to over-weight a concern with the current situation of surplus transmission capacity and thereby reaches an unwarranted conclusion that DGs do not help to avoid and defer future transmission investment costs. This would not be the case if a broader perspective is taken of system development and optimum capacity augmentation. In any scenarios without DGPPs (past or future), Transpower would likely be on its own already at the next cycle of capacity expansion and its costs of early lumpy capital expenditures being passed into higher consumer prices. The DGPPs are meant to compensate local generation for being part of the deferral process and should not be reset when the avoided cost they deliver drops following a major system expansion.

3.49 It follows that the Authority's above proposition is misconceived - that the Authority is not pursuing its statutory objective because it is proposing the elimination of competitive advantage, and is, by default, proposing to delete the important role contributed by DG to the transmission system planning process.

3.50 The Authority argues in respect of dynamic efficiency effects:

“The proposal would not reduce dynamic efficiency

...

(b) Where an ACOT payment exceeds the transmission-related benefit provided by distributed generation (as can occur under the current DGPPs), this effectively represents a windfall transfer of value. It is unclear why perpetuating such a transfer would promote dynamic efficiency. Further, it is reasonable to expect prospective distributed generation investors to have evaluated their investments based on genuine transmission benefits, rather than relying on windfall transfers (such as ACOT payments). Investors should not necessarily expect windfall transfers to be sustained over the longer term.

The Authority released a proposal on the TPM in October 2012 that had significant implications for the size of ACOT payments. In addition, a review Consultation Paper of the DGPPs appeared in the Authority’s 2013/14 work program as a pending project. On this basis, investors should have been aware, at least from 2012 that ACOT payments were coming under review and might not be sustained at existing levels over the longer term.”

3.51 The above arguments read as a defense to grandfathering for investors in DG - for being led ‘down the garden path’ in following successive Government agenda to pursue DG investment and to diversify New Zealand’s electricity industry. But, again, the Authority is incorrect. ACOT is not a “windfall” gain. It is the recognition of very real advantages provided by local small scale solutions that support the overall electricity energy sector development process.

3.52 Had the DGPPs been designed to set payment to DGs exactly equal to the avoided cost of grid expansion, such payments would be very large for the first few units of excess demand on a local network. The use of the regulated transmission charges as their basis is supported by the principle of service equivalence with such charges providing an averaged proxy for the value of the benefits received by Transpower throughout its planning process.

ACOT is not a “windfall” gain. It is a gain made from a very real competitive locational advantage.

3.53 The Authority continues:

“(c) The level and basis of ACOT payments has not been a ‘settled’ area of policy. The arrangements between distributors and distributed generation owners have been affected by several regulatory changes. For example, the introduction and repeal of the Electricity Governance (Connection of Distributed Generation) Regulations 2007, the introduction of Part 6 of the Code, and the introduction and changes to price-quality regulation under the Commerce Act. Similarly, transmission pricing structures (which have affected some forms of ACOT payment) have been under almost continuous change or review for more than two decades. In this context, the proposed Code amendment would be a further step in an area that has already been subject to extensive review and change. However, the Authority expects this change to promote stability because it is clearly based upon its statutory objective.”

3.54 However, the Code did settle the ACOT area of policy as market driven and in such a way as to be entirely consistent with the Authority’s statutory objective. The arguments for and against ACOT (to the extent paid for avoided transmission

charges) were fully explored before the decision was made to facilitate them with regulatory backing. It follows that the Authority's proposal cannot but create significant regulatory instability to the long term detriment of consumers.

3.55 The Authority's final comment on the topic of dynamic efficiency is as follows:

"(d) Dynamic efficiency and investor confidence will continue to be enhanced by the Authority actively pursuing the promotion of its statutory objective."

3.56 Whilst the above is true, the Authority cannot be pursuing its statutory objective when it pursues anti-competitive and interventionist regulatory policies to quash conceptually sound competitive market dynamics designed and integrated into the existing market.

3.57 The unintended consequences could include upwards of \$500m of lost consumer benefits as per figure 2.

Common cost allocation 'problem' not a problem

3.58 The Authority argues that there are two problems with pricing arrangements for DG in Part 6 of the Code, and in particular the DGPPs in Schedule 6.4. The first of those¹³ is that DGs are not required to pay a share of the common costs of providing distribution services.

3.59 On the principle of service based pricing, on the generation side, DGs do not use the grid network to deliver electricity to consumers therefore they should not pay for its common costs. Further, it should be noted that at any given time, on the demand side, only a proportion (albeit a majority one) of consumers receive energy via the grid, therefore such costs should not be recovered from the remaining consumers. As such, payment of avoided TUOS to DGs in, as for example in Australia, should include the transmission common cost component.

3.60 The Authority makes the somewhat odd observation that relevant costs are "borne by other network users – in particular, consumers." 'Odd', because so long as businesses are profitable, all business costs are ultimately borne by consumers (consumers here including industrial, commercial and domestic). This 'oddity' is then followed up by the following inconclusive theorising:

- *"... this means owners of distributed generation are not required to pay a share of common network costs. At least, they are not required to pay such costs in their capacity as owners of distributed generation as defined under the Code."*
- *"While it may be efficient for owners of distributed generation not to pay costs in some situations, it is unclear why this would be efficient in all cases."*
- *"The Authority has not established whether owners of distributed generation are always more or less price-responsive than other customers, as that will depend on individual circumstances. However, it would likely be efficient for distributed generation owners to bear at least some share of common costs."*
- *"However, it seems unlikely that this type of situation applies universally to distributed generation."*

3.61 We understand that the Authority's proposition here is that DG is only required to pay a share of common costs in, if it has such, its capacity as a consumer. This is

¹³ The second is ACOT and was discussed above.

then somehow, potentially, inefficient, and, therefore, the DGPPs should be repealed. This is the Authority's basis for there being 'problem one' with the DGPPs and, presumably, 'reason one' for the Authority's proposal to repeal the DGPPs.

- 3.62 However, if DGs were to be allocated a share of common costs, presumably, grid connected generation can somehow and potentially also introduce inefficiency in the same way as the Authority considers DG somehow and potentially can. Grid connected generation should thus also be allocable with its share. And, if there is likely no difference between DG and grid connected generation in these regards, then all common costs should and will (through market pricing) remain ultimately borne by customers. The Authority's analysis here is surely incomplete.

The Authority's analysis here is surely incomplete.

- 3.63 In summary, the Authority's own analysis does not establish its own 'problem one' as a problem at all¹⁴. Process-wise there is a statement of a potential problem, incomplete analysis and no evidence. Such neither constitutes better regulatory practice nor clears the hurdle to repeal a hard won section of the existing Code.

Authority's analysis is off-point

- 3.64 If one fixes the gross profit percentage of the most efficient generator at the same level as that of the least efficient, then all supplier surpluses can be transferred to the benefit of consumers. If one then uses static state analyses to calculate the costs and benefits of such a regulatory policy, one will inevitably come up with wealth transfers from suppliers to consumers. If one then treats wealth transfers as irrelevant and assumes away the costs – investor flight, abandoned plant, higher cost of capital, lack of investment, increasingly antiquated over-priced technology, stranded assets, reduced market competition - you can probably calculate a net benefit.
- 3.65 One can argue extent, but directionally this is where the Authority's current DGPPs proposals are headed. In a very real sense what the Authority is proposing is in fact worse, as it is proposing 'profit clipping' for only some generators, being DG. Unsurprisingly, perhaps, the large grid connected generators and other large industry players may not be seeing an issue here – but then they have no reason to look for one. However, the Authority has a statutory objective and what the Authority is proposing cannot possibly be reconciled with that statutory objective.

Summary – Statutory objective - Competition

- 3.66 The Authority's proposals are anti-competitive and cannot be reconciled with its statutory objective to promote competition. The Authority's proposals are not legal and its analysis incomplete.

Statutory objective – reliability

- 3.67 There is no debate that change is coming for the electricity sector. The existing establishment can change incrementally to the coming new order or it can use the weight of scale and influence to gain subsidies at others expense and to prolong false security. The result will be sharper and more painful change when such becomes inevitable – any desperate 'hanging on' to the past only exacerbating consumer distrust and appetite for change.

¹⁴ We acknowledge that there may well be a problem with distribution service charging arrangements for consumers that remain attached to distribution networks but who seldom use those networks. However, repealing the DGPPs would be expected to have no impact on that problem, since the DGPPs are 'distributed generation' (i.e. energy supplier) pricing principles – not distribution network service pricing principles for consumers.

- 3.68 More directly, reliability of supply cannot but be helped by diversity of supply. Conversely, having all power at the end of a long cord cannot but increase the risk of catastrophic failure – whether due to weather, to sabotage, to natural disaster, to oversight, or to plain old bad luck.
- 3.69 In any event, a simple diagram quickly establishes that a loop circuit¹⁵, with all generation within each connected load site, will provide the most theoretically efficient N-1 reliability engineering arrangement (especially when combined with demand side response technology). Further, the technology is already here to ensure that DG adds to rather than disrupts reliability.
- 3.70 The Authority needs to have courage. New Zealand now has an established capacity and international credibility for realism and dealing with the problems that the world of commerce throws up - including for doing so on market terms. That capacity has arguably served New Zealand better in the last 8 years, since the GFC, than has any other commercial capacity. That capacity can serve New Zealand well again here. Reliability of electricity supply cannot but benefit from planned and realistic change in response to emerging market pressure – when compared to sharp and imposed ‘crisis like’ change (the typical formula, we note, for political change vis a vis challenging situations - I.e. Auckland housing).

Summary – Statutory objective - Reliability

- 3.71 Engineering-wise, DG offers significant and established reliability of supply benefits and the technologies to ensure that they continue to do so are readily available. Beyond this, clear and full market competition signals are the best hope of comparatively incremental and orderly transition to a new order making the most of both innovation and the established asset base. Such competitive market driven change is the very purpose of the current regulatory settings including the DGPPs.

Statutory Objective – Efficiency

- 3.72 The Authority’s *‘Transmission Pricing Methodology: ACOT payments for Distributed Generation’*, Working Paper, 19 November 2013 found that:

- Of 29 Distributors, 23 have an ACOT payment policy and 6 do not¹⁶;
- 18 (of the 23) ACOT payment policies provide for payments to DG for avoided transmission charges;
- 5 (of the 23) ACOT payment policies provide for payments based on avoided costs of distribution, though these result in very minor amounts being paid;
- Impliedly ACOT payment policies tend to provide for one type of payment and not the other; and
- Impliedly no ACOT payments are made for avoided transmission investment¹⁷.

- 3.73 Essentially, the Authority has no issue with the 5 of 23 other than noting that there is little being paid - and that this coincides with the Authority’s assessment of what should be the case. The Authority does advise an issue with the 18 of 23. Its issue

¹⁵ We acknowledge that wind, because of its unpredictability, might be excluded from ACOT payments. We also acknowledge that for a new generator to spend incremental dollars to connect to distribution networks instead of adjacent transmission assets purely to get ACOT is also everything else being equal, likely not optimal. However, such outlier examples should be specifically addressed and they do not provide a sound basis for general pricing principles or general policy setting from either an economic or an engineering perspective.

¹⁶ The Authority should be ensuring that all Distributors have relevant policies as avoided transmission charges at the least should be available to all DG.

¹⁷ The Authority should be ensuring that there are no undue barriers to Transpower seeking out and implementing alternatives to expensive grid upgrades. This work should include creating counter incentives to the grid upgrade option being the natural choice for a regulated transmission services monopoly.

is that it considers that payments for avoided charges are a subsidy. This being the case, the Authority was never going to find these payments efficient. Game over. So why the need for 66 pages of Working Paper, over two years to the current consultation paper and a further 88 pages to say the same thing¹⁸. We can only wonder and repeat the following example:

Identical generators, one on the grid (A), one on the load (B):

- “A” cost of delivered energy = $e' + T = 12.5\text{cents}$
- “B” cost of delivered energy = $e' = 9\text{cents}$
- “B” has a locational advantage of 3.5cents due to needing no transmission
- Removing payments for avoided transmission charges would represent a subsidy to “A”
- The fact that transmission is passed through separately is a regulatory anomaly in the pricing of the delivery of A's energy
- Add in a common cost penalty for “B” and not only are the competitive dynamics quashed – they are reversed.

3.74 So, payments for avoided transmission charges are about level playing field competition in the competitive, non-monopoly, generation side of the market. The Authority has no place meddling with such on economic efficiency grounds. As the Authority's own *“Interpretation of the Authority's statutory objective”* states (paragraphs A.22 and A23):

“From an aggregate consumer perspective, workable competition delivers benefits to consumers by placing pressure on firms to set their prices close to their marginal cost of supply. Prices above this marginal cost of supply cause consumers to forgo goods and services that they value more highly than it costs to supply them. That is an allocatively inefficient outcome, as consumer surplus is forgone. Similarly, prices below the marginal cost of supply cause consumers to acquire goods and services that they value less than it cost to supply them. That is also allocatively inefficient, because the resources used to supply those goods could have been used to supply other goods that consumers value more highly. Hence, the stronger the competitive pressure in a market, the greater the allocative efficiency of the market.

Workable competition also delivers productive and dynamic efficiencies, which also have aggregate consumer benefits.”

3.75 The aggregate marginal cost of supplying electricity to a distribution network over the grid includes transmission costs. It is thus allocatively and dynamically inefficient for this marginal cost to be subsidised by removal of payments for avoided transmission charges to DGs.

Summary – Statutory Objective - Efficiency

3.76 Payments to DGs for avoided transmission charges are competition related and must be properly evaluated as such. When this is done, the Authority's proposals are transparent for what they are – proposals to grant a subsidy to grid connected generation and to actively penalise DG.

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¹⁸ Particularly given the common costs matter is a non-issue vis a vis distributed generators.

proposals to grant a subsidy to grid connected generation and to actively penalise DG.

Long term benefit of consumers

- 3.77 The world over, electricity market regulators are promoting the extensive benefits of diversity. The Authority advises New Zealand may be different from everybody else. The fact that the combined solar and battery price path is towards sub 20cents per unit of electricity within three to five years whereas the price path for the 'established system' is over 30cents in the same time frame – unexplained. The fact that prior to the DGPPs (where the Authority proposes to return the market) the electricity market was dysfunctional – unexplained. The value of the fact that new technology will offer future residential consumers the ability to choose their own preferred level of security of supply – unexplored. The fact that in the long term new technology might mean that transmission and distribution businesses no longer need to be regulated monopolies – unexplored.
- 3.78 What the Authority has explained is that under current arrangements people taking up new technology will give rise to higher costs to those who do not (implicitly assuming the former exceed population growth). This is a natural consequence of regulated pricing of, and cost recovery in, monopoly transmission and distribution services.
- 3.79 We support the proposition that consumers should pay a minimum amount for connection, whether they remain connected or not. In our view, there is a regulated asset that consumers have benefited from and they have no right to simply abandon their share in it. This logic applies whether a consumer remains connected (but, perhaps, seldom uses) or instead disconnects altogether. It would, of course, be different if the asset base was unregulated, had taken the risks that go with this and had earned competitive commercial returns. But that is not the case and all consumers should rightly bear a proportionate share of any expected stranding of regulated assets.
- 3.80 Through any process of asset stranding, though, there should be strong scrutiny of transmission and distribution investment to ensure that avoidance is not a better option. Investment tests, especially alternative options aspects of these, may need to be enhanced.

Through any process of asset stranding, though, there should be strong scrutiny of transmission and distribution investment to ensure that avoidance is not a better option. Investment tests, especially alternative options aspects of these, may need to be enhanced.

- 3.81 Importantly, for present purposes, the above 'consumer connection issue' has nothing to do with the appropriate pricing principles to be applied to DG suppliers. It is a consumer issue and should be dealt with as such.
- 3.82 Rather, the Authority's concern here should be with whether:
- DGs are competitive, taking into account all market factors – and they are;
 - DGs improve the reliability of the total system – and they must (given they pay for the costs of connection to the required quality standard);
 - DGs efficiently exploit market advantage – and they do – such is about far more than deferred transmission and distribution investment - though given pending technological advancements one might legitimately investigate why

there have been no material deferral of grid and distribution investment¹⁹ (particularly when considered at a DG portfolio level).

- 3.83 In contrast, the Authority has no proper concern with protecting existing generators from competition on a level playing field.

Summary – Statutory objective – Long term benefit of consumers

- 3.84 Rational intelligence has been called²⁰ “an agent’s ability to achieve goals or succeed in a wide range of environments.” Long term benefit of consumers will be maximised by intelligent regulation – regulation that supports the ability of the total system to adapt to coming technologies, reduce marginal cost and improve allocative efficiency.

In contrast, the Authority has no proper concern with protecting existing generators from competition on a level playing field.

- 3.85 Long term benefit of consumers will not be served by turning the clock back ten years to a time when the regulatory environment was demonstrably, and widely accepted to be, sub-optimal.
- 3.86 Long term benefit of consumers will not be served by nobbling DG based on incomplete theories, mixing consumer pricing issues with supplier issues, or through pre-conceiving desired market outcomes. The Authority’s proposal must be retracted.

Long term benefit of consumers will not be served by nobbling DG based on incomplete theories, mixing consumer issues with supplier issues, or through pre-conceiving desired market outcomes. The Authority’s proposal must be retracted.

Q2 Do you consider that the proposed Code amendment described in section 4.1 complies with section 32(1) of the Act, and with the Code amendment principles, and should therefore proceed?

- 3.87 The proposed Code amendment described in section 4.1 does not comply with section 32(1) or with the Code amendment principles - as they fail principle 1(Lawful) and must thus be rejected by the Authority’s Board at the first step in the application of the Code amendment principles.

Q3 Do you have any comments on the drafting of the Code amendment described in section 4.1?

- 3.88 Should one or other of the Authority’s proposals proceed, then grandfathering should apply to eliminate all wealth transfer casualties. This is because the Authority’s proposals represent turning the clock back ten years or more, reducing competition and subsidising grid connected generation – in other words, they would amount to a complete reversal and repeal of the current regulatory direction.

¹⁹ There is no benefit to a regulated monopoly to be any smaller than it absolutely has to be, so the counter force is clearly strong. What new roles can regulated monopolies take on in order to fill the coming reduction in market share for their legacy businesses?

²⁰ <http://theconversation.com/to-create-a-super-intelligent-machine-start-with-an-equation-20756>

Q4 Do you consider that the proposed Code amendment should come into force at a single date, or should it be phased in?

- 3.89 We consider that the Code amendment should not come into force at all. Should it come into force, it should only come into force following alignment with, including at the same time as, any changes to TPM.
- 3.90 Should one or other of the Authority's proposals proceed, then grandfathering should apply to eliminate all wealth transfer casualties. This is because the Authority's proposals represent turning the clock back ten years or more, reducing competition and subsidising grid connected generation – in other words, they would amount to a complete reversal and repeal of the current regulatory direction.

Q5 Is the proposed phasing for the Code amendment appropriate?

- 3.91 We consider that the amendment should not come into force at all. Should it come into force, it should take account of and be phased in with any changes to TPM. The potential 'double payment' issue that could arise from DGPPs credits and TPM based on any time maximum demand can be readily solved by instituting a netting off.

Q6 If the proposal were to proceed, do you consider that there would be any barriers that might prevent agreements being reached between Transpower and distributed generation owners to efficiently reduce or defer transmission network costs? If so, what are these barriers? Please consider both existing and proposed new distributed generation

- 3.92 Absent Part 6 of the Code, Transpower would have the following constraints in paying the majority (18 of 231) of currently paid avoided charge amounts:
- no revenue budget – Transpower only recovers the cost of its own assets through the individual 5-year price path;
 - no mechanism – customers served by non-grid solutions cannot be levied a charge by Transpower;
 - limited incentive – Transpower generally has preference and is commercially incentivised to crowd out DG supply following its recent major grid expansion.
- 3.93 Only in a very few supply situations would Transpower have use for DGs to supplement its local network capacity.
- 3.94 The other 5 of 23 payments would, if history tells us anything, become far more difficult to negotiate and in many cases may lose their value to additional costs. The DGPPs were put in place to solve the barriers that would arise and the Authority should revisit the history that led up to the DGPPs being included in the Code.
- 3.95 Together with cost reflective network pricing (CRNP), local DG supply can present efficient options to reduce or defer transmission network costs. Part 6 was designed to promote this investment staging path and transfer the equivalent financial value of these benefits to DGs. Transpower may have a perverse incentive to over-invest if it can crowd out pre-existing DG facilities. Other than that, a surplus capacity situation can be seen as a natural transitory outcome of the optimum investment process that should not trigger any change to the existing regulation. The current regulated process is considered more adequate: control by Commerce Commission on how Transpower invests in the transmission network and recovers its own cost; and distribution companies recover the Part 6 cost directly from consumers.

3.96 The Authority has not made its case for removal of the DGPPs in these respects, whether for new or existing DG. The removal of DGPPs, if proceeding, should only apply to new DG facilities and not retrospectively to pre-existing investments as they were part of optimum supply augmentation strategy.

Q7 If the proposal were to proceed, do you consider that there would be any barriers that might prevent agreements being reached between distributors and distributed generation owners to efficiently reduce or defer distribution network costs? If so, what are these barriers? Please consider both existing and proposed new distributed generation

3.97 Except for behind network generation plant, most DG make use of the local distribution network to deliver electricity to consumers. In certain situations where the operation of DG can help reduce or defer distribution network costs e.g. by being located in the proximity of major customers thus freeing up use on other parts of the network. There is presently no regulatory requirement for distributors to assess the value of these savings and transfer them to DGs.

3.98 While the DGPPs require consideration of both avoided transmission and distribution costs, ACOT to date mainly covers avoided TUOS. More detailed mechanisms may be prescribed for the distribution network to solve the barriers that would arise and the Authority should review the need for change based on the history and rationale that led up to the DGPPs being included in the Code.

Q8 If the proposal were to proceed, do you consider that those distributors that were no longer able to recover the cost of making ACOT payments would cease making such payments?

3.99 Yes, because according to the Authority's own work, the majority of ACOT payments are for avoided charges, which are price adjustments required to place distributed and grid generation on a level playing field. Such are not a deferred investment service benefitting distributors. The DGPP in Part 6 does not explicitly define or restrict payments to ACOT i.e. its "full scope" includes not only the avoided transmission network costs but also other avoidable costs (transmission O&M, distribution costs). This interpretation has been made incorrectly by the Authority and many Distribution Networks. We refer to the Australian market practices where the full payments of avoided TUOS (including Locational, Non-Locational and Common Service Price components) are regulated requiring distribution network service providers to pay them to DG suppliers and recovering them in tariff calculation. This means Australian DGs would not be financially affected if TUOS were restructured, say by reducing the locational price (the CRNP part) while increasing the other price components.

3.100 In brief, DG will bring benefits to local networks that are hard to calculate and even harder for the DG owner to negotiate with the network owner. Asking DG to negotiate with Transpower and/or Distributors is a bit like asking a farmer with three cows to negotiate with Fonterra – there are obvious reasons why this didn't work in the past and there is no reason to believe that now will be any different. Anyhow, these benefits include lower losses, keeping the lights on when there is a partial network failure, delaying network expenditure and so on. Some of these benefits will be large - for example a 2 hour outage prevented by DG that keeps 10MW of load on is worth (assuming a value of lost load of \$20/kWh) 10,000kW * 2 hours * \$20=\$400,000 per event.

4. REVIEW OF INTERNATIONAL LITERATURE

4.1 We have found the following international resources helpful in researching our submission and invite the Authority to consider their detailed analysis of relevant pricing principles:

- USA Market: RAP Energy Solutions '*Designing Distributed Generation Tariffs Well – fair competition in a Time of Transition*', authored by Carl Levill, John Shenot and Jim Lazar, November 2013 – recommending that regulators:
 - Recognise that value is a two way street;
 - DG should be compensated at levels that reflect all components of relevant value over the long term;
 - Select and implement valuation methodologies;
 - Remember that cross-subsidies may flow to or from DG;
 - Don't extrapolate from anomalous situations;
 - Infant industry subsidies are a long tradition;
 - Remember the interconnection rules and other terms of service matter;
 - Tariffs should be no more complicated than necessary;
 - Support innovative business models and delivery mechanisms for DG;
 - Keep the discussion of incentives separate from rate design;
 - Keep any discussion of addressing the throughput incentive separate; and
 - Consider mechanisms for benefitting 'have not' consumers.
- Future Electric Utility Pricing report '*Distribution System Pricing with Distributed Energy Resources*', authored by Ryan Hledik and Jim Lazar, Report No 4 May 2016 – recommending rapid innovation in pricing principles through pilot schemes under the following broad headings:
 - Gathering stakeholder input;
 - Conducting market research;
 - Quantifying the cost and value of distribution services that would occur in an environment of high distributed energy resource adoption;
 - Implementation of pricing pilots;
 - Assessing power supply impacts; and
 - Determining if certain broad categories of distribution services or ancillary services can be most economically provided through the use of distributed energy resources.
- Ofgem paper (European market) '*Making the electricity system more flexible and delivering the benefits for consumers*', 30 September 2015 addressing actions to take advantage of the opportunities presented by new technologies.
- The (Australian Market) '*Australian Energy Market Agreement*' and the '*National Electricity Rules Version 82*'.

4.2 These papers and documents present consistent, economically principled, approaches to facilitating the efficient pricing and future development of DG for the greatest long-term benefit of consumers.