

An Operational Review of Part 6 of the Code: Connection of Distributed Generation

Summary of submissions

21 August 2013

Glossary of abbreviations and terms

AC	Alternating current
Act	Electricity Industry Act 2010
AS	Australian Standard
Authority	Electricity Authority
Code	Electricity Industry Participation Code 2010
CoC	Certificate of Compliance
DC	Direct current
DG	Distributed generation
DoC	Declaration of Conformity
ESR	Electricity (Safety) Regulations 2010
ICP	Installation control point
MUoSA	Model use-of-system agreement
NZS	New Zealand Standard
PV	Photo-voltaic
RAG	Retail Advisory Group
SSDG	Small-scale distributed generation – i.e. DG with a nameplate capacity not exceeding 10 kW

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1. Introduction and purpose of this paper

1.1 Introduction

- 1.1.1 The Authority commenced an operational review of Part 6 of the Code in 2011. Part 6 provides for the connection of distributed generation (DG) to local networks. To this point, the review process has undertaken consultation with interested parties on the following papers:
- (a) *Pre-consultation: Connection of Distributed Generation*, 11 October 2011,¹ which introduced the project and sought input from interested parties to assist with development of the scope of the review
 - (b) *Consultation Paper - An Operational Review of Part 6 of the Code: Connection of Distributed Generation*, 4 September 2012,² which described a Code amendment proposal covering a range of detailed amendments to Part 6, and also discussed a number of additional questions relating to the connection of DG to networks (September 2012 consultation paper).
- 1.1.2 This summary of submissions is the third paper produced by the Part 6 review project.
- 1.1.3 The review of Part 6 has progressed alongside a separate, related work stream, undertaken by the Retail Advisory Group (RAG), which sought to investigate potential barriers facing consumers seeking to invest in small-scale distributed generation (SSDG), and develop options for dealing with these barriers.³ The RAG work stream was completed in July 2012.⁴

1.2 The purpose of this paper is to summarise submissions and provide responses

- 1.2.1 The purpose of this paper is to:

¹ Available on the Authority's website at this URL: <http://www.ea.govt.nz/our-work/consultations/retail/pre-consultation-connection-of-distributed-generation/>

² Available on the Authority's website at this URL: <http://www.ea.govt.nz/our-work/consultations/retail/operational-review-part6/>

³ Further information about the RAG's investigation is available on the Authority's website at this URL: <http://www.ea.govt.nz/our-work/consultations/advisory-group/investigating-barriers-small-scale-generation/>
Note that the RAG's work stream is now complete.

⁴ Final RAG report to the Authority is available at: <http://www.ea.govt.nz/our-work/programmes/market/distributed-generation/>

- (a) summarise the submissions received on the September 2012 consultation paper
- (b) provide the Authority's responses to those submissions.

1.3 A further consultation paper will be developed

- 1.3.1 Several responses provided in this paper require that the Authority develop a revised Code amendment proposal. A further consultation paper will be published in the near future that explains and develops the proposals that the Authority seeks to take forward in its review of Part 6.
- 1.3.2 This paper is provided for information only. No submissions are sought on its contents.

2. Background

2.1 Review of progress to date

- 2.1.1 Comprehensive background to this technical and operational review of Part 6 of the Code was provided in the September 2012 consultation paper.
- 2.1.2 To briefly recap, Part 6 was included in the Code on 1 November 2010 and is a direct replacement of the former Electricity Governance (Connection of Distributed Generation) Regulations 2007.
- 2.1.3 The purpose of Part 6 is "...to enable connection of **distributed generation** if connection is consistent with **connection and operation standards**".⁵ Part 6 includes a set of regulated terms that provide a default set of terms and conditions governing the connection and operation of DG, if the distributor and the DG owner are unable (or one or both parties are unwilling) to negotiate a connection agreement, or both parties explicitly or tacitly agree to be governed by the regulated terms.
- 2.1.4 The Authority commenced the review after becoming aware of a number of operational issues with Part 6. Some of these issues have been raised by distributors or distributed generators at various times, while others have been noted by other interested parties or by the Authority itself. Submissions on the October 2011 pre-consultation paper provided further information on the issues that needed to be covered by the review.
- 2.1.5 The September 2012 consultation paper proposed a range of Code amendments, and was structured as follows:
- (a) a new simplified connection process for standards-compliant SSDG was proposed as a new Part 1A of Schedule 6.1
 - (b) a range of detailed technical amendments were proposed throughout Part 6, including some consequential amendments to Parts 1 and 17. These proposed amendments sought to improve the clarity of Part 6, correct obvious drafting errors, address further relevant matters that were not originally provided for, and remove redundant provisions.
- 2.1.6 The September 2012 consultation paper also discussed a number of potential issues with Part 6 that the Authority considered to be out-of-scope for the review. The paper sought feedback from interested parties on these potential issues.

⁵ The bolded terms in this paragraph are defined terms in the Code.

2.2 How this paper is structured

- 2.2.1 The summary of submissions set out in this paper closely follows the structure of the September 2012 consultation paper.
- 2.2.2 Section 3 provides a summary of the submissions received that relate to:
 - (a) the Code amendment proposal to introduce a new Part 1A into Schedule 6.1 (in section 3.2)
 - (b) the Code amendment proposal covering a range of detailed technical and operational amendments to Part 6 (in section 3.3)
 - (c) the additional issues discussed in the September 2012 consultation paper (in section 3.4).
- 2.2.3 The appendices provide verbatim submissions matrices that have been compiled by splitting individual submissions into parts:
 - (a) Appendix A provides the introductory comments provided by some submitters in their covering letters
 - (b) Appendix B provides responses to submissions on the 15 questions that were asked in the September 2012 consultation paper
 - (c) Appendix C provides responses to submissions on the 68 technical Code amendment proposals included in Appendix D of the September 2012 consultation paper
 - (d) Appendix D provides responses to submissions on the out-of-scope items included in Appendix E of the September 2012 consultation paper.

3. Summary of submissions and the Authority's responses

3.1 25 interested parties provided submissions

- 3.1.1 The Authority received 25 submissions on the September 2012 consultation paper, including one confidential submission.
- 3.1.2 Matrices of submissions are provided in the appendices. Copies of the original submissions are available at: <http://www.ea.govt.nz/our-work/consultations/retail/operational-review-part6/submissions>.
- 3.1.3 The organisations and individuals that provided submissions on the September 2012 consultation paper are listed in Table 1.

Table 1: Identities of the parties that provided submissions

Traders (5)	Distributors (11)	Industry associations (2)	DG businesses and other individuals (7)
Contact	Aurora	New Zealand Wind Energy Association (NZWEA)	Alphatron
Genesis	Buller Electricity	Sustainable Electricity Association of New Zealand (SEANZ)	Barry Wood
Meridian	MainPower		Colin Davis (confidential submission)
Mighty River Power	Orion		David Clarkson
Simply Energy	Powerco		Peter Kammler
	Price Waterhouse Coopers (on behalf of 22 distributors)		Pioneer Generation
	The Lines Company		Solar City NZ
	Unison		
	Vector		
	WEL Networks		
	Wellington Electricity Lines		

3.2 The Authority proposed to introduce an alternative SSDG connection process into Schedule 6.1

Submissions provided mixed support for the proposal

- 3.2.1 The Authority proposed that a new notification process for connecting SSDG (i.e. DG with a nameplate capacity not exceeding 10 kW) should be added to Schedule 6.1 as a new Part 1A. The problem that would be addressed by this proposal was that a significant number of SSDG installations have been, and continue to be, connected to distribution networks without the local distributor's knowledge, triggering safety and power quality concerns.
- 3.2.2 For the purpose of the proposed new Part 1A, it was proposed that SSDG would be permitted to connect to a network-connected consumer installation, or to connect to a distribution network directly, without an application under Part 1 of Schedule 6.1, provided that a number of requirements were met by the distributed generator. Full details of the proposal, and a draft of the proposed Part 1A, were included in the September 2012 consultation paper.
- 3.2.3 Submissions were divided in their level of support for the proposal:
- (a) in general, traders, industry organisations, DG industry businesses and individuals supported the proposal
 - (b) some distributors supported the objectives of the proposal, but expressed a range of concerns with the proposed implementation
 - (c) some submitters, including some distributors, supported the objectives of the proposal but suggested improvements
 - (d) in contrast, some distributors did not support the proposal, citing a range of concerns.

The Authority has responded to submissions

- 3.2.4 The Authority has noted the support, expressed by several submitters including some distributors, for introducing a streamlined connection process for standards-compliant SSDG into Schedule 6.1.
- 3.2.5 The rest of this section summarises each of the key concerns raised, and the key improvements suggested, and provides the Authority's responses to each. Specific responses to individual submissions on this part of the proposal are included in Appendix B.

3.2.6 The key concerns and suggested improvements are summarised in Table 2.

Table 2: Authority's responses to key submission themes relating to the Part 1A proposal

Ref.	Submission	Authority's response
Concerns		
1	Several distributor submissions raised issues with the problem definition developed by the Authority, particularly in its linking of the problem of illegal SSDG connections (i.e. DG connected without the local distributor's approval) with the suggested cause of high transaction costs in making a connection application.	The Authority agrees with the submitted views that considered its proposal too narrowly linked the problem of illegal SSDG connections with high connection application transaction costs. However, the Authority maintains the view that high transaction costs are likely to be <i>one of the causes</i> of the problem but accepts that other factors also contribute to the continuing incidence of SSDG connected without the distributor's knowledge or approval.
2	Some distributors were also concerned that the proposed new Part 1A process would not significantly reduce transaction costs and would make it difficult for the distributor to assert a remedy on the SSDG owner/installer if the distributor discovered technical issues with the installation after being notified of its connection. (This issue is also connected in part to item ref. 6)	The Authority disagrees with the first part (transaction costs) and considers that material efficiency gains can be achieved if a nationally consistent, more streamlined process is adopted for connecting certain standards-compliant SSDG. With respect to the second part (asserting remedies), the Authority notes that a party connecting non-compliant DG is likely to be in breach of the Code and this may provide leverage to bring about a remedy. Notwithstanding these views, the Authority considers that it can develop a revised proposal

Ref.	Submission	Authority's response
		in respect of the proposed new Part 1A that will deliver efficiency gains while addressing the other concerns that have been expressed. The Authority intends to develop a revised proposal in the next Part 6 consultation paper.
3	Some distributors were concerned that no quantitative cost benefit analysis had been undertaken in the regulatory statement.	The Authority acknowledges this concern and will provide a cost benefit analysis as part of the revised proposal developed in the next Part 6 consultation paper.
4	Some distributors highlighted published material from international sources that describe network issues that have arisen in other jurisdictions where DG/SSDG has been connected to networks on a relatively large scale. The issues encountered generally relate to local voltage control and network capacity adequacy. These cases relate to experience from Australia (Queensland) and Germany, where significant investment in privately-owned small-scale solar photo-voltaic (PV) generation has resulted from Government incentive schemes.	The Authority is aware of the information referenced from international sources and appreciates the technical network issues that can arise where local networks provide connections to significant local concentrations of DG/SSDG. The Authority considers that New Zealand is well-placed to learn from international experience in this area and avoid repeating the problems experienced elsewhere. While New Zealand has not experienced concentrated levels of SSDG penetration to date, the Authority considers that prudent preparatory work should include at least the following: • distributors must anticipate demands for their services (including DG connection) and continue to develop their networks in ways that

Ref.	Submission	Authority's response
		efficiently meet consumer needs continued development of appropriate SSDG equipment and installation standards that ensure that SSDG installations can be safely and securely connected to, and inter-operated with, networks while maintaining power quality within statutory limits. The point relating to standards development is further discussed in the section commencing at paragraph 3.4.54.
5	Some distributors considered there is a connection between the Authority's current Part 6 review and the upcoming review of distribution pricing, which could impact pricing distribution services relating to DG. These submitters recommended that: - any change to Part 6 is delayed until the distribution pricing review is finalised - the review of the DG pricing principles is given a higher priority on the Authority's work plan.	The Authority acknowledges this concern and notes that the work stream tasked with reviewing distribution pricing commenced in April 2013. While there is clearly some subject matter overlap between the distribution pricing work stream and this review of Part 6, the Authority remains of the view that pricing matters should be considered as part of the distribution pricing review work stream.
Suggested improvements		
6	The distributors that generally supported the concept of a more simplified connection	The Authority notes that there is a fairly broad base of support for a more simplified connection

Ref.	Submission	Authority's response
	process suggested that some form of prior notice (or an application requiring prior approval, such as Parts 1 and 2 of Schedule 6.1 require), with a shorter approval turnaround time than currently applies under Part 1, would be strongly preferred. This would allow the distributor to flag any issues related to the local network's capability to accept injection of generation in excess of the ICP's immediate consumption needs (or other operational issues) and note the location of a new SSDG installation on the distributor's network for its own operational purposes.	process for standards-compliant SSDG installations, including from some (but not all) distributors that made submissions. Having considered the issue summarised here, the Authority considers that there is a middle ground that would balance the objective of a more streamlined application process with the expressed distributor concerns around prior notification. The Authority intends to develop a revised proposal in the next Part 6 consultation paper.
7	Some of the submitters that shared the concern outlined in item ref. 1 above considered that the Authority's proposal should include steps to educate potential SSDG investors, system providers and installers, and raise the general level of awareness relating to the pre-connection requirements of new SSDG installations under Part 6. Where submitters disagreed in full with the proposed Part 1A process, their frequent corollary view was that the Authority's proposal should only provide for education and awareness initiatives.	Items 7 and 8 relate to the same topic and are addressed together. The Authority acknowledges the views expressed that more should be done to increase stakeholder awareness of the legal prerequisites governing network-connected DG (in particular, SSDG and the requirements of Part 6). While all of the organisations and authorities identified by submitters potentially have a role to play in increasing awareness, distributors (that are responsible for providing local distribution services) and retailers (as customer-facing businesses that many SSDG investors will look to as potential purchasers of any exported energy they may
8	A wide range of views were expressed relating to the identity of suitable organisations or authorities that should be	

Ref.	Submission	Authority's response
	tasked with providing education and raising awareness of the Part 6 SSDG connection requirements and processes. These included, in no particular order: 1. SSDG system suppliers/installers 2. SEANZ 3. distributors 4. the Electrical Contractors Association of NZ 5. the Authority 6. the Electricity Engineers' Association 7. those providing electrician training programmes in accordance with NZQA frameworks 8. retailers 9. the Electrical Workers' Registration Board 10. metering equipment owners/providers 11. electrical inspectors 12. EECA	produce) are the <i>participants</i> most directly interested in the connection and operation of a SSDG installation. The Authority considers that it is strongly in the interests of distributors and retailers to develop and operate education and awareness initiatives relating to the connection and operation of SSDG installations. For its part, the Authority has previously published a factsheet⁶ and an information paper⁷ relating to Part 6 and this information is publicly available on its website. Each of the other entities listed will need to assess their own position with respect to education and awareness of SSDG connection requirements.
9	Limit the applicability of any new simplified process – as would be provided by the proposed Part 1A process – to single installations of new SSDG within a single premise (i.e. a single ICP) only. This would satisfy a concern that the proposed Part 1A process could be leveraged by a developer to	The Authority agrees that the proposed Part 1A process should apply to individual installations. The Authority intends to develop a revised proposal in the next Part 6 consultation paper.

⁶ Available at: <http://www.ea.govt.nz/consumer/factsheets/>

⁷ Available at: <http://www.ea.govt.nz/dmsdocument/8590>

Ref.	Submission	Authority's response
	fast-track (for example) a whole building sub-division, with each new premise incorporating a SSDG installation.	
10	Omit the requirement for the owner/installer to provide a single line diagram of the SSDG installation to the distributor. Assurance that an installation complies with AS4777 (which includes the requirement to produce a single line diagram) is already provided when a Certificate of Compliance (CoC) is issued for the installation.	The Authority agrees that the requirement for the SSDG owner to provide the distributor with a single line diagram is unnecessary for the reasons stated. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that does not include this requirement.
11	Omit the need for the distributor to provide a final notice of approval (assuming the distributor is happy with the documentation provided and the particulars of the installation). Silence from the distributor after having received notification would imply acceptance/approval and avoid the (albeit minor) transaction cost associated with providing such a final notice.	The Authority agrees with this suggested improvement, which would have the beneficial effect of further reducing transaction costs where the distributor is happy with the installation. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that includes this suggestion.
12	Increase the applicability of the proposed new Part 1A to 30 kW but only on a 3-phase connection basis. The argument in support of this considers that a 30 kW generator output balanced across all three phases would provide less network impact than a 10 kW generator injecting into a single phase only. The submission	The Authority understands the technical grounds underpinning this suggestion but is, nevertheless, reluctant at this time to extend the defined capacity of SSDG from 10 kW to 30 kW. 30 kW, even on a balanced 3-phase basis, still has three times the <u>capacity impact</u> on a local network. The Authority also notes (from

Ref.	Submission	Authority's response
	also noted impending developments being considered as part of the review of AS4777 that would forbid any SSDG design that provided an injection phase imbalance in excess of 5 kW.	information provided in the annual DG statistical returns) that the existing 10 kW upper limit on SSDG accommodates the vast majority of SSDG installations currently deployed in New Zealand. The Authority notes, and is comfortable with, the possible development of AS 4777 that would restrict injection phase imbalance to a maximum of 5 kW.
13	Part 1A should allow the documentation provided during the notification process to be signed by either the SSDG owner or system provider. The submitter noted that some distributors currently require that applications may only be signed by the system installer, who is usually an electrical contractor who quickly moves on to the next job. Costs and delays are created if the installer is required to return to sign off final documentation, having already issued a CoC.	The Authority agrees with the suggested improvement and considers that either the SSDG owner or installer is qualified to formally submit information to the distributor in respect of an installation application. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that includes this suggestion.
14	Amend clause 6.3 to require that distributors publish a register of approved inverters on their websites. If an inverter is proposed that is not on the register, require provision of a suitable Declaration of Conformity (DoC) to AS4777 for that inverter.	The Authority considers that this additional requirement would not be unduly onerous and would have the benefit of providing certainty to potential SSDG investors and system installers relating to inverter models that are effectively pre-approved for installation under the proposed new Part 1A process. The Authority intends to develop a revised proposal in the next Part 6 consultation

Ref.	Submission	Authority's response
		paper that includes this suggestion.
	Limit the distributor's discretion to decline an application to only the situation where the proposed inverter has not received DoC to AS4777 or the distributor reasonably considers the connection would give rise to adverse network affects. If adverse network affects are determined, work with the applicant to resolve.	It is not clear what other grounds for a declined application are of concern to the submitter. The Authority considers that no valid argument has been established to further limit the purpose of Part 6, which is to enable connection of DG if connection is consistent with connection and operation standards.
16	Waive any inspection fee where such an inspection determines that the installation is compliant with the Part 1A requirements.	The Authority considers that a distributor should have the right to determine if a new installation is consistent with its connection and operation standards and have recourse to recover a reasonable level of costs, regardless of what outcome is determined. The suggestion would also result in additional transaction costs.
17	Require details of the nature of the SSDG installation in the submitted documentation.	This comment presumably relates to the nature of the technology deployed, e.g. whether solar PV, wind, hydro etc. The Authority considers that this is information that an applicant could reasonably provide, and may provide the distributor with useful network asset management information. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that includes this suggestion.

Ref.	Submission	Authority's response
18	Include limits on the maximum timeframes available to retailers in switching the ICP to an applicable tariff option and arranging for the installation of a suitable metering installation.	This comment presumably relates to the process of agreeing to purchase generation from the SSDG that is in excess of the ICP's instantaneous demand. The Authority considers that this suggestion is not within the scope of the Part 6 review, and that some relevant Code requirements relating to metering installations are already provided in Parts 10 and 11 of the Code.
19	Allow retailers to only purchase excess SSDG electricity where the connection has been approved by the distributor.	The Authority considers that distributors and retailers are the appropriate parties to make such an agreement. If they did agree, the Use of System Agreement between the two parties would be the appropriate place to record such agreement, not Part 6. The Authority notes that the interposed model use-of-system agreement (MUoSA) September 2012, available on the Authority's website, includes such a provision at clause 14.8.
20	Allow an installation inspection to be carried out by a third-party on a full cost recovery basis from the SSDG owner/installer.	The Authority considers that the current provisions relating to installation inspections are appropriate, as they provide a right for the distributor to inspect any new installation but impose a cap on the costs they may recover from the distributed generator for such an inspection. The intention is that the distributor may carry out the inspection itself or

Ref.	Submission	Authority's response
		arrange for a contractor to complete the work. Either way, any fee is capped.
21	Differentiate the sanctions available to the distributor based on the risk posed by different levels of notice/installation non-compliance.	The Authority notes this suggestion but further notes that no specific proposal has been made by the submitter.

3.3 The Authority proposed a number of technical and operational amendments to Part 6

Submissions generally supported the proposed amendments and the approach adopted in proposing them as Code amendments

3.3.1 The September 2012 consultation paper proposed a number of detailed technical and operational amendments to Parts 1, 6 and 17 of the Code. The need for each proposed amendment was either:

- (a) raised in pre-consultation feedback;
- (b) communicated to the Authority at an earlier date; or
- (c) identified by the Authority's in its own review of Part 6.

3.3.2 The proposed technical and operational amendments were set out in Table 5 in Appendix D of the September 2012 consultation paper. Each proposed amendment included a brief rationale.

The Authority has responded to submissions

3.3.3 This rest of this section summarises each of the key submission themes and provides the Authority's responses. These are summarised in Table 3.

3.3.4 Specific responses to individual submissions on this part of the proposal are included in Appendix C.

Table 3: Authority's responses to submissions on technical and operational Code amendments

Ref.	Submission	Authority's response
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Ref.	Submission	Authority's response
1	Approach to proposing detailed amendments The Authority considered it impractical to prepare a separate regulatory statement for each of the proposed drafting amendments included in Appendix D of the September 2012 consultation paper. The approach adopted in that paper was to treat the whole set of technical and operational amendments as a package of proposed amendments and to set out a regulatory statement in respect of the full package.	
	Submitters that provided feedback on this section of the paper universally supported this approach to proposing the technical and operational amendments.	The Authority notes the support of its approach to proposing a large number of technical and operational amendments to Part 6.
2	Definition of distributed generation The proposed amendments to the definition of “distributed generation” in Part 1 were discussed in more detail in section 3.3 of the September 2012 consultation paper. The amendment proposed to exclude from the definition of distributed generation: (a) temporary generation connected by distributors (b) standby generation connected by consumers.	
	Proposal to exclude temporary generation by distributors A small number of submissions commented on this aspect of the proposal. These submissions unanimously supported the proposal.	The Authority notes the support expressed for this proposal.
	Proposal to exclude standby generation connected by consumers Again, a small number of submissions explicitly referred to this proposal. Two	The Authority notes that the September 2012 consultation paper considered that a distributor's network connection

Ref.	Submission	Authority's response
	distributors raised the concern that they wanted to be made aware of every DG installation connection to their network, even if the connection is only of very short duration (i.e. of the order of a few seconds). One distributor, while wanting to be aware of even momentarily connected DG, considered that such DG should not have to go through the full connection application process. However, the submitter considered that there needed to be a process to pick these cases up.⁸	and operation standards would provide the basis for setting out the distributor's requirements in respect of momentarily connected DG. The Authority has considered the submissions made on this point and remains of the view that distributors are able to make suitable provisions for standby generation in their network connection and operation standards. In particular: (a) a distributor is already able to set binding requirements in respect of the operating and protection arrangements for standby generation by specifying these requirements in its network connection standards (b) using network connection standards to set requirements for operating and protection arrangements would incur lower transaction costs compared to using the Part 6 processes.
3	Other technical amendments detailed in Appendix D of the September 2012 consultation paper Submissions broadly expressed support (or, at least, provided few comments to the contrary or alternative suggestions) for the 68 technical amendments to Part 6. Most considered that the proposals improved the clarity, structure and/or consistency of	

⁸ Note that the September 2012 consultation paper considered that a distributor's network connection and operation standards would provide the basis for setting out the distributor's requirements in respect of momentarily connected DG.

Ref.	Submission	Authority's response
	Part 6.	
	A number of submissions were received on individual Appendix D items.	There were no broad themes arising from these submissions. The Authority's responses to specific submissions are set out in Appendix C.
4	Out of scope items detailed in Appendix E of the September 2012 consultation paper A small amount of feedback was received on the list of items that the Authority had explicitly excluded from the scope of this review.	
	A number of submissions from industry associations and businesses, and from individuals, provided views on policy, market and commercial matters relating to SSDG.	The September 2012 consultation paper explained that these topics had been explicitly excluded from the current review because they did not fit within the review scope and were being addressed in a separate work stream conducted by the Retail Advisory Group. The Authority retains this view.
	Other submissions considered that the review should have included matters relating to the pricing of distribution services provided to distributed generators.	The September 2012 consultation paper explained that these topics had been explicitly excluded from the current review because they were identified as a better fit within the work stream on distribution pricing, the latest phase of which was commenced in April 2013.

3.4 Submissions relating to additional issues discussed in the September 2012 consultation paper

- 3.4.1 Section 4 of the September 2012 consultation paper included consideration of a number of topics related to DG for which the Authority had received views at various times, including in response to the pre-consultation paper, but in respect of which it had not yet identified any problem.
- 3.4.2 Section 4 set out the Authority's understanding of the various issues and sought feedback from interested parties on a number of questions posed in the paper.
- 3.4.3 This section briefly recaps the issues, summarises the feedback received and provides the Authority's responses.

Workability of the regulated dispute resolution process (section 4.2)

Issue summary

- 3.4.4 In a submission received in response to the pre-consultation paper, a party with first-hand experience of the Part 6 process raised questions over the workability of the dispute resolution process. The concern related to the amount of time required to resolve a particular dispute using the Schedule 6.3 process.
- 3.4.5 The September 2012 consultation paper provided some relevant background and asked if interested parties were satisfied that the Authority and the Rulings Panel are the most appropriate bodies to resolve disputes in respect of the regulated terms, as provided for in clause 6.8(1)(a) and Schedule 6.3. Submitters who were not satisfied with the current approach were asked what alternative they would favour.

A number of views were submitted

- 3.4.6 A range of views were submitted on this topic. A frequently expressed view was that, although only a very few cases have been referred to the Authority, the current provisions are appropriate as they provide a backstop process for disputing parties that is accessible when other attempts at resolution have failed.
- 3.4.7 Some expressed the view that the Authority is the appropriate party to provide dispute resolution as it is adequately resourced in the specialist skills and knowledge to effectively and efficiently resolve disputes relating to DG. A submitter considered that it was important to signal to all parties

that the Authority and the Rulings Panel sit at the “end of the chain”, should the disputing parties fail to resolve the issue bilaterally.

- 3.4.8 Other submitters questioned whether the Authority and the Rulings Panel were the best option for dealing with disputes that may arise involving smaller distributed generators, particularly in respect of SSDG installations. A frequently expressed view was that an alternative dispute resolution agency, such as the Electricity and Gas Complaints Commissioner (EGCC) scheme, may provide a more effective and efficient dispute resolution option. The reason stated was that one of the disputing counterparties would either be a retailer or a distributor, whose dealings with consumers (who are the most likely owners of SSDG installations) are the primary focus of the EGCC scheme. Submitters considered that the EGCC scheme would be more user-friendly and accessible to smaller DG owners.
- 3.4.9 Another alternative suggested was that the dispute resolution process should provide for referral to mediation or arbitration (as is provided for in Part 12A.3 of the Code, for example). One submitter suggested that normal commercial arrangements, as agreed between the parties during contract formation, should suffice.
- 3.4.10 The most frequent observation on this topic was that there have been very few disputes relating to DG (whether small or large scale) in the period in which the former DG Regulations and current Part 6 of the Code have been in place.
- The Authority considers there is no problem*
- 3.4.11 Having considered that there are very few disputes (or even enquiries that do not lead to disputes) raised under the existing arrangements, the Authority is broadly comfortable that the existing dispute arrangements are appropriate.
- 3.4.12 With respect to applications for connection of smaller DG installations, the Authority notes that in the vast majority of cases, the person seeking to invest in an SSDG system will procure the services of a specialist service provider to design and install their system. These service providers will need to develop a good level of understanding of the Part 6 requirements, as well as effective working relationships with many distributors.
- 3.4.13 At this stage, the Authority considers that these service providers, acting on behalf of their customers, will be businesses that are capable of accessing or advising on the dispute resolution process, should a need arise. Accordingly, the Authority is not considering a change to the current dispute resolution provisions of Part 6 at this time.

Adequacy of clause 6.11 (section 4.3)

Issue summary

- 3.4.14 Clause 6.11 requires distributors to use the same effort in processing and considering connection applications from all distributed generators, regardless of whether the distributor has an interest in the applicant distributed generator. Feedback received on the pre-consultation paper indicated that some interested parties consider this provision to be inadequate. This concern appears to relate to actual experiences gained by those parties, although no further detail was provided to the Authority.
- 3.4.15 The Authority noted in the September 2012 consultation paper that an alleged breach of this clause could be referred to the Authority for consideration. The Authority sought views on specific issues that have arisen during distributors' consideration of an application from a distributed generator in which they hold an interest and, consequently, how clause 6.11 might be improved.

Submissions provided little further information

- 3.4.16 Submissions received on question 9 broadly considered there was no issue and supported retaining the current Code provision. No information was provided that sheds any further light on the issue.
- 3.4.17 One submitter considered that the provision could be made more future-proof by more explicitly setting out the process the distributor must follow in considering a connection application.

The Authority considers there is no problem

- 3.4.18 Given the lack of additional information provided in submissions, the Authority is unable to establish a problem definition. This position may be revised if more specific information relating to a problem is made available to the Authority in the future.

Prioritisation of competing DG connection applications (section 4.4)

Issue background

- 3.4.19 Clause 17 of Schedule 6.1 provides a process for dealing with two or more applications for connection of DG (of greater than 10kW nameplate capacity) received by a distributor within 10 business days of each other, if the later application would be 'affected' by the earlier application.
- 3.4.20 Clause 17 provides that the distributor may choose which application(s) it will approve and which it will decline by considering the applications as competitive bids. The distributor must consider each application in light of

the purpose of Part 6. It is feasible that the distributor itself could be one of the applicants.

- 3.4.21 Feedback received in pre-consultation submissions requested that the Authority clarify the decision-making framework with which the distributor must make a decision on competing applications under clause 17.
- 3.4.22 In question 10, the Authority sought feedback on two questions:
- (a) the priority of applications under clause 17 of Schedule 6.1
 - (b) the approach to managing congestion on distribution networks and the implications for DG that is already connected.

Submissions were divided in the views expressed

- 3.4.23 Submissions were divided between those that considered that no problem exists (or that they have had no experience of a problem) and those that considered there was a problem, in which case solutions were suggested.
- 3.4.24 In respect of considering the questions of priority of applications and competing applications, views were expressed that:
- (a) the 'first come, first served' approach was appropriate
 - (b) application timeframes should be adjusted to discourage speculative applications
 - (c) stagnant applications (i.e. those not actively progressing) should have an explicit expiry date.
- 3.4.25 In respect of considering questions around congestion management policy, views were expressed that:
- (a) it should be made more clear that the distributor has the right to set the policy in this area
 - (b) early investors in DG should be protected from later arrivals where these caused network congestion – that is, first movers should effectively be granted economic rights to existing network capacity
 - (c) distributors should carry out more work on congestion management in distribution networks.

The Authority considers there is no problem

- 3.4.26 Having considered these views, the Authority is generally satisfied that the 'first come, first served' approach provides the only practical basis for granting access to scarce resources (in this case, network export capacity). Distributed generators will likely seek certainty in two areas:

- (a) certainty of the distributor's approval to connect their DG installation to the network, including understanding all conditions that may be imposed by the distributor upfront
- (b) certainty of their ability to export generation in excess of their needs to the network at all times.

- 3.4.27 Schedule 6.1 addresses the first area by providing robust connection approval processes. However, Part 6 is not the appropriate place to address the second area. In general, an approval to connect DG cannot include an unlimited right or ability to export electricity at all times, as network export congestion and planned and unplanned outages of network equipment will impact that ability at times.
- 3.4.28 Part 6 assumes that distributors' connection and operation standards (in particular, the distributor's congestion management policy) will provide certainty over how congestion and outages will impact the distributed generator's ability to operate their DG and what export restrictions the distributor may have to impose at certain times. The role of the distributor's congestion management policy in curtailing export from a DG is clearly established in clause 11(a) of Schedule 6.2. An equivalent clause is expected to be prudently included in any negotiated connection agreement.
- 3.4.29 The Authority considers that it has little information relating to the incidence and impact of speculative DG connection applications. In general, the Authority considers that the timeout provisions relating to final applications should address speculative and stalled DG connection applications. In addition, prospective distributed generators are provided with a disincentive from making speculative DG connection applications as they are costly to the applicant to prepare and progress.
- 3.4.30 In summary, on the information available to it, the Authority considers that there is no clearly demonstrated problem in this area. This position may be revised if more specific information relating to a problem is made available in the future.

Distributors imposing conditions on applications (section 4.4)

Issue background

- 3.4.31 Clause 18 of Schedule 6.1 specifies requirements relating to the distributor's decision on an application for connection of DG. In one distributor's view, expressed in a submission on the pre-consultation paper, clause 18 does not provide sufficient certainty as to the circumstances under which a distributor can decline an application for connection.

- 3.4.32 In the submitter's experience, the current process means that the applicant commits significant time and resource at the front end of the application process (i.e. developing all the necessary conditions of connection) when it is not clear whether the applicant's DG is able to connect and operate consistently with the distributor's connection and operation standards.
- 3.4.33 In question 11, the Authority sought wider views as to whether there is a problem with the requirements of clause 18 of Schedule 6.1, relating to the distributor's imposition of conditions on an application for connection of DG.

Submitters considered there is no issue

- 3.4.34 Submissions generally considered that there were no issues or, at least, that any issues would be within the distributor's capability to manage. They considered that a competent distributor should be able to set sufficiently comprehensive connection and operation standards to guide the resolution of likely circumstances.
- 3.4.35 In general, submitters considered that the distributor should attempt to approve an application with conditions, rather than declining an application. One submitter pointed out that there is effectively little difference between these two options, as a declined application must be accompanied with information regarding the steps the applicant could take in revising their proposal and submitting a new application.
- 3.4.36 Another submitter pointed out that the dispute resolution process provides a backstop if the parties become deadlocked.

The Authority considers there is no problem

- 3.4.37 The Authority has considered the views put forward in submissions and concurs with the views summarised above.
- 3.4.38 Accordingly, the Authority considers that Part 6 in general, and clause 18 of Schedule 6.1 in particular, provides distributors with appropriate rights and obligations as drafted, including with the amendments proposed in other parts of this review. Distributors should be capable of addressing the types of issues considered here.

The level of the liability caps under regulated terms are set too high (section 4.5)

Issue background

- 3.4.39 In a submission on the pre-consultation paper, a distributor proposed that the liability limit in clause 22 of Schedule 6.2 (being \$1000 per kW of installed capacity up to a maximum of \$5 million) is too high, for both distributors and distributed generators. The distributor suggested that parties may welcome a reduction in their liability as it would reduce business risk and costs.
- 3.4.40 As an alternative, the distributor proposed that the regulated terms should include options around limits on liability and/or the ability for the parties to agree separate limits on liability relating to fraud, wilful breach and breach of confidentiality.⁹ The distributor considered that parties should be able to agree alternative limits on liability within the regulated terms, so long as there is a fall-back option in the event that the parties fail to agree.
- 3.4.41 Question 12 sought feedback on the appropriateness of the liability limits in the regulated terms included in Part 6.

Submissions pointed to an inconsistency with the MUoSA provisions

- 3.4.42 Several submitters pointed to an inconsistency between the liability limits in Schedule 6.2 and those that have recently been established in the Authority's MUoSA. They considered that the MUoSA liability limits were more appropriate.
- 3.4.43 Two submissions supported the proposal that the parties should be able to agree to alternative liability limits while remaining within the regulated terms. If no agreement is reached, Part 6 would provide a default agreement.

The Authority considers there is no problem

- 3.4.44 With respect to the submissions recommending adoption of the liability limits included in the MUoSA, the Authority notes that those limits were set in the context of a distributor and a retailer providing services to each other. A DG connection is a quite different contractual relationship, in that it provides for the electrical connection of each party's electrical equipment to the other's equipment (whether directly or via an electrical installation). The sources of potential liability of one party to the other are quite different. Accordingly, the Authority considers that the MUoSA liability limits are not an appropriate model for agreements relating to the connection of DG.
- 3.4.45 The concept of agreeing terms outside of the regulated terms while still remaining on the regulated terms has been raised in other contexts in

⁹ If clause 23 of Schedule 6.2 applies, the party at fault has unlimited liability for a breach of the regulated terms. Clause 20 specifies that damages for a breach of the regulated terms are limited to direct loss.

earlier stages of this review. Having again considered this proposal in the current context, the Authority remains of the view that this would be an unnecessary and inappropriate provision.

- 3.4.46 Regulated terms provide a default set of terms and conditions governing connection of DG to a distribution network, where the parties do not agree to a connection contract. A key benefit of this provision is its simplicity. If the parties:
- (a) agree terms that are different from the regulated terms, even if that agreement is to modify a single provision, then mutual agreement is evidently possible and a connection agreement is the appropriate vehicle to record that agreement; or
 - (b) do not agree terms for any reason, the regulated terms apply.
- 3.4.47 In the current context, if the parties find it mutually beneficial to agree to alternative liability limits while retaining the rest of the regulated terms, it is a relatively straightforward exercise to draft and execute a suitable connection agreement.
- 3.4.48 A further argument in favour of retaining unalterable default regulated terms is that they compensate for the fact that distributors and distributed generators are usually entities of considerably different size. Access to commercial and legal advice can be a significant barrier to a small DG investor. Default regulated terms seek to provide balance by guaranteeing the smaller party access to a regulated benchmark agreement.
- 3.4.49 In summary, the Authority is satisfied that the benefit derived from providing certainty under regulated terms should not be diminished by introducing variable regulated terms.
- 3.4.50 Returning to the distributor's original question relating to the appropriateness of the current liability caps in clause 22 of Schedule 6.2, the Authority notes that, aside from the MUoSA approach discussed above, there was little support expressed for any other alternative liability cap levels.
- 3.4.51 The Authority has considered the appropriateness of the current provisions by examining the impact of the current formula for small and large distributed generators. Small distributed generators typically install a few kilowatts of solar PV in a domestic setting. A 3 kW peak SSDG installation would have a capped liability limit under clause 22 of \$3,000. It is difficult to conceive of realistic levels of direct damage in excess of this level that could arise from the operation of the SSDG system. Similarly, the damage that might be caused to the SSDG for which a distributor might be liable would be limited to replacement of the inverter. From both

ends, a \$3,000 liability cap is reasonable and the distributed generator would possibly consider carrying insurance at a level reflecting the cap.

- 3.4.52 Large distributed generators in excess of, say, 1 MW capacity, would have a clause 22 liability cap of \$1 million per megawatt of capacity under regulated terms. Up to 2 MW, the liability cap levels derived from the clause 22 formula are within the upper limit suggested as being reasonable by several submitters (i.e. \$2 million). Large distributed generators would reasonably have access to appropriate commercial and legal advice and there would almost certainly be mutual benefit in the distributor and distributed generator negotiating and agreeing a connection contract (which could provide for lower liability caps than those provided under regulated terms).
- 3.4.53 In summary, having considered submitted views on this question, the Authority has determined no problem with the current liability cap provisions in clause 22 of Schedule 6.2.

Inverter protection settings are not currently standardised (section 4.6)

Issue background

- 3.4.54 The September 2012 consultation paper discussed a potential problem in respect of the electrical protection settings applied to DC – AC power inverters that frequently provide the electrical interface between SSDG and network-connected consumer installations. The Authority understands that inverters supplied for use in New Zealand may not always have appropriate protection settings:
- (a) applied at the factory
 - (b) set by importers prior to delivery of the inverter to the purchaser, or
 - (c) subsequently applied by installers.
- 3.4.55 Some distributors may rely on an inverter's compliance with the technical standard AS 4777.3 as evidence that suitable protection settings have been applied. However, the Authority noted in the September 2012 consultation paper that while AS 4777.3 provides acceptable maximum and minimum protection settings relating to voltage and frequency, these have been specified with respect to the minimum equipment performance capability that the inverter manufacturer must provide for its equipment in order to be awarded a DoC to AS 4777.3.
- 3.4.56 Questions 13 – 15 sought feedback on options to achieve greater standardisation of network-connected inverter protection settings, where appropriate.

Submissions favoured nationally consistent standards

- 3.4.57 Submissions expressed near unanimous support for nationally consistent standards relating to network-connected inverter protection settings. One submission considered that these are already adequately managed by distributors and that no intervention is justified.
- 3.4.58 In response to the question about the best approach to achieving standardised settings, views were divided amongst potential options. Some support was expressed for either regulated or voluntary approaches. Several submitters considered that a national guideline would be preferable to more prescriptive approaches.
- 3.4.59 Support was expressed for a New Zealand Standard (NZS) to provide appropriate guidance. Some submissions pointed out that the current edition of AS 4777, which has become the de facto power inverter standard widely referenced by distributors in New Zealand in their network connection standards, is presently at an advanced stage of review.
- 3.4.60 The review of AS 4777 is understood to be considering making the standard a joint AS/NZS standard and having its scope expanded to provide consistent protection setting guidelines. The review panel (the EL-042 committee that includes NZ representatives) is understood to be well informed of the network operational issues encountered from relatively high levels of solar PV SSDG penetration in Australia and elsewhere, and from relevant international standards development. Submitters with some knowledge of, or involvement in, this review urged consideration of this topic in the light of a finalised AS/NZS 4777, expected in coming months.
- 3.4.61 In response to the request to provide views of suitable protection settings, submitters provided a range of views, including providing suggested settings presumably consistent with the submitter's own standards. Some favoured simply using the maximum and minimum voltage and frequency settings set out in AS 4777.3 (that are currently included in that standard as minimum equipment performance standards).
- 3.4.62 Others considered that further work is necessary to determine these settings, with some suggesting that the review of AS 4777 would provide the appropriate forum for this.

The Authority considers there is a problem but expects that comprehensive standards will develop in time

- 3.4.63 The Authority notes that compliance with AS 4777 is currently required for compliance with AS/NZS 3000 under the Electricity (Safety) Regulations

2010 for network-connected SSDG installations.¹⁰ Thus, a relevant safety standard is already in place. The question remains as to the extent to which the current edition of this standard currently provides sufficient specification of grid protection settings.

- 3.4.64 Having reviewed the detail provided in AS 4777, it is evident that to achieve compliance, an inverter must be capable of having the following settings applied:
- (a) under-voltage: in the range 200 – 230 volts single phase or 350 – 400 volts three phase
 - (b) over-voltage: in the range 230 – 270 volts single phase or 400 – 470 volts three phase
 - (c) under-frequency: in the range 45 – 50 Hertz
 - (d) over-frequency: in the range 50 – 55 Hertz.
- 3.4.65 The standard provides that the voltage and frequency limits actually applied to the inverter “may be negotiated with the relevant electricity distributor”. If voltage or frequency falls outside of the set limits, the inverter’s disconnection device must operate within 2 seconds.¹¹
- 3.4.66 The problem with the current draft of the standard is twofold:
- (a) the specified limits represent minimum equipment performance specifications, not required operational settings
 - (b) the use of the words “may be negotiated” – which begs the question as to who may initiate negotiation and under what circumstances.
- 3.4.67 The result of the current drafting in AS 4777 is that it does not provide a national standard relating to inverter grid protection settings. Instead, the distributor must provide these settings in its connection and operations standards, which has resulted in a variety of requirements across different distribution networks. The Authority considers that this situation remains a problem in terms of safety and power quality and may provide an entry barrier to the market for SSDG installations in some instances.

¹⁰ Regulation 60(2)(f) requires that if a person installs a low voltage mains parallel generation system that is connected to the national grid so that it complies with Part 2 of AS/NZS 3000, the person must also ensure that the installation complies with AS/NZS 3010 and AS 4777.1. AS 4777.1 cites AS 4777.2 and AS 4777.3 as normative references (i.e. they form part of the specified standard). Part 2 of AS/NZS 3000 is required for electrical installations up to 80 amps single phase or 50 amps per phase for multiphase. These limits likely cover all domestic electrical installations encountered within New Zealand (which are typically fused at around 60 amps single phase).

¹¹ AS 4777.3

- 3.4.68 The Authority notes the information submitted relating to the initiative to review AS 4777, including making the standard a joint AS/NZS. The most up-to-date information available to the Authority is that while good progress was achieved up until the end of 2012, that current development of AS/NZS 4777 by the EL-042 committee has been temporarily deferred in favour of progressing other standards development priorities.
- 3.4.69 While this is an unfavourable situation in the interests of quickly resolving the problems identified in this area, the Authority considers that the best course is to wait for the anticipated new edition of AS/NZS 4777 to emerge. In the meantime, relevant interested parties in SSDG are encouraged to engage in, or remain engaged with, the EL-042 development process and to participate in the anticipated public consultation phase(s) of that initiative. New Zealand is well positioned to learn and gain from international experience in this area and development of a comprehensive, future-proofed AS/NZS 4777 is a fundamental building block to the efficient connection of SSDG.
- 3.4.70 In summary, the Authority intends to take no further action on this issue in respect of its review of Part 6 and will monitor the progress of relevant standards development.

Appendix A Introductory comments provided in submitters' covering letters

- A.1 This appendix sets out the general and introductory comments made by submitters in their covering letters.
- A.2 The Authority has not provided detailed responses to these parts of respondents' submissions. Many of the topics are addressed elsewhere in this paper.

Table 4: Introductory comments provided in submitters' covering letters

Submitter	Comment
Aurora	3. ENABLING DISTRIBUTED GENERATION Aurora has a long and significant history of enabling distributed generation. Aurora's predecessors long owned and operated significant generation schemes embedded within the distribution network, providing real and significant benefits to connected consumers, until the Electricity Industry Reform Act 1998 interfered with the property rights of electricity supply company owners, and forced structural separation of distribution from the remainder of the industry. In Dunedin, TrustPower's Waipori hydro and Mahinerangi wind schemes contributed in excess of 56MW peak injection into the Aurora network during the period 1 April 2011 to 31 March 2012. In Central Otago, during the same period, Pioneer Generation and the smaller Tallaburn Generation contributed in excess of 27MW peak injection into the Aurora network. Aurora has been an early and active supporter of Small-Scale Distributed Generation (SSDG)¹². During January and February 2001, in order to demonstrate the practicality and benefits of photovoltaic generation, electricity consumers in the Aurora distribution area were invited to enter into a competition to have their existing home fitted with a photovoltaic array and inverter. Two systems were installed – one in Dunedin and one in Alexandra. Aurora's support of SSDG was such that the 2007 introduction of the Electricity Governance (Connection of Distributed Generation) Regulations caused us some bemusement, as we did not consider that significant or unwarranted barriers to installation of SSDG existed, and certainly not to the extent as to require cumbersome and prescriptive

¹² Nameplate rating ≤ 10kW.

Submitter	Comment
	regulation. In this context, Aurora supports the Authority's desire to reduce transaction costs for generators (and for distributors); however we have significant concerns that the Authority's proposed simplified process does not materially reduce transaction costs, and has the potential to compromise safety and the ability of distributors to effectively manage their networks. 4. THE AUTHORITY'S PROPOSAL 4.1 Transaction Cost Reduction The Authority considers that transaction costs associated with connecting SSDG are a possible cause of unreported SSDG connections and proposes in, 3.2.2 (p12), in an effort to reduce transaction costs, that SSDG may be connected to a distributor's network without application, subject to a number of conditions. Aurora submits that the Authority's proposed process simply shifts the transaction costs from pre-connection to post-connection, and that the only genuine transaction cost reduction arises from the proposal to reduce the maximum application fee that a distributor may specify under Schedule 6.5. Assuming that a connection application is not otherwise required (3.2.2 (a), p12), the Authority proposes that a distributed generator may connect SSDG to a distribution network, either directly or behind load, without application provided that: “(b) the SSDG is designed and installed in accordance with AS 4777.1; (c) the SSDG incorporates an inverter that has been tested and issued a Declaration of Conformity (DoC) with AS 4777.2 by a laboratory with accreditation issued or recognised by International Accreditation New Zealand; and (d) the SSDG has been inspected and issued a certificate of compliance (CoC) under the Electricity (Safety) Regulations 2010.” Where a distributed generator connects SSDG without an application, the distributed generator must notify the distributor of the connection within 5 working days and the notification must include: “(a) an electrical single line diagram of the SSDG clearly demonstrating conformance with AS 4777.1;

Submitter	Comment
	(b) a copy of the AS 4777.2 DoC certificate in respect of the inverter; (c) a table showing the DG's conformance with the protection settings specified in the distributor's connection and operation standards for SSDG systems; (d) a copy of the CoC for the SSDG issued under the Electricity (Safety) Regulations 2010; and (e) any fee specified by the distributor up to the limit in Schedule 6.5. With regard to the Authority's "right-to-connect" proposal for SSDG, we offer the following observations: We are not convinced that an AS4777.1 compliant single line diagram is strictly necessary. The Code should specify that installation be in accordance with AS4777.1 and the installer's Certificate of Compliance (CoC) should attest to that. In our view, this is much the same as the requirement for installations to comply with AS/NZS 300013 and against which an electrician will issue a CoC. For new and altered installations, Aurora does not require the electrician to provide a single line diagram of the work proposed. Aurora agrees that it is important that grid-connected inverters conform to AS 4777.2. The inverter must also comply with AS4777.3, as this specifies critical protection requirements. We note that compliance with AS 4777.3 is an omission in the Authority's proposal. Aurora considers, however, that providing copies of DoCs is an activity that is unnecessary in many cases, particularly where the inverter has been widely used for connections to a distributor's network, and only leads to increased transaction costs. We are of the view that if the application process was retained, transaction costs could be minimised by: Requiring distributors to list "approved" inverter model on their websites. Requiring applicants to provide copies of DoCs only for new or "unapproved" inverters. We further consider that the requirement that the DoC be issued by "a laboratory with accreditation issued or recognised by International Accreditation New Zealand" is unnecessarily narrow and may add to the scale of transaction costs. International Accreditation New Zealand (IANZ) is simply an accreditation body owned by the Crown; however

¹³ AS/NZS 3000:2007 Electrical Installations (known as the Australia / New Zealand Wiring Rules).

Submitter	Comment
	there are a number of other accreditation bodies that could issue DoCs. In Aurora's view the requirement should be that the DoC is issued by a laboratory with accreditation issued or recognised by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ). Aurora considers that the requirement to provide a schedule of protection settings does little to provide comfort that the distributor's connection and operation standards for SSDG systems have been complied with. This is a matter that is best dealt with as part of the post-installation inspection. Aurora agrees with the requirement that a copy of the CoC is provided by the installer upon completion. Aurora is comfortable with the reduction in the maximum specified fee for processing applications / notifications. 4.2 Consistency with Statutory Objective Aurora considers that the Authority has not undertaken sufficient analysis for the non-reporting of SSDG connections. It is regrettable that, when assessing problems like this, there is generally a significant absence of empirically confirmed causal factors upon which a response may be crafted. In the case of non-reporting of SSDG connections, the Authority has presented a hypothesis that it is the scale (as opposed to the mere occurrence) of transactions costs associated connecting SSDG that is a significant driver of non-reporting. There are alternative hypotheses that are at least as compelling. For example, it may be considered that behavioural factors dominate, and that the main driver for non-reporting is because there is a relatively low probability of an un-approved connection being detected (at least in the short to medium-term). Aurora is firmly of the view that regulatory intervention is only justified when there is a reasonable degree of certainty that the problem and its causal factors are understood. We do not believe that the Authority has made its case in this regard, and that the requirements of Code Amendment Principle 2 have not been met. We further observe that the quantitative assessment required by Code Amendment Principle 3 has not been attempted. 4.3 Effect of Transaction Costs Overstated The Authority notes, in paragraph 3.1.18 that: Where unnecessarily high transaction costs have the effect of inhibiting

Submitter	Comment
	investment in generation alternatives, such as SSDG, this raises a problem in respect of competition in the market for the provision of new generation capacity. We consider that the Authority is overstating the nature and characteristics of the SSDG “market”, as well as the effect of transaction costs on competition within that market. All of the SSDG installations connected to the Aurora network have been connected behind residential load, where the highest value to the distributed generator is to avoid the retail cost of energy supply. Where SSDG is of sufficient size that energy export occurs, the distributed generator is generally a price-taker, and can expect to receive no more for that energy than the purchasing retailer could alternatively acquire through the wholesale market. In this context, and in pragmatic rather than academic terms, we consider it is unlikely that owners of SSDG consider that they competitors in a market for the provision of generation capacity. Assuming for the moment, however, that owners of SSDG truly are competitors for the provision of generation capacity, the transaction costs associated with notifying connections are generally competitively neutral, at least at a regional level. Assuming that each distributor maintains a consistent connection policy, each distributed generator connecting to the distributor’s network faces the same costs. Where locational differences do occur (that is, varying requirements by different distributors result in different locational costs), these tend to be insignificant. The combined cost of completing an application form, providing details of the proposed SSDG installation, and paying an application fee not exceeding \$200 is far outweighed by the capital and installation costs of the generation plant. We concede, however, that competition for the installation of SSDG is affected if installers avoid transaction costs by not making applications to connect. It would appear to us that there are few real sanctions that can be brought to bear if an unreported SSDG connection occurs, particularly if the installation complies with the Electricity (Safety) Regulations 2010. 4.4 Education We agree with the Authority’s view, in 3.1.30, that education activities and information dissemination can assist in improving compliance. Distributors are already required by the Code to provide a wide range of information regarding the connection process for distributed generation

Submitter	Comment
	on their websites. Aurora considers that distributed generation industry associations have a role to play in education; however the problem that we see is that membership of those specific industry organisations is not widespread, comes at a cost, and installers (who generally drive the connection process on behalf of the distributed generator) may not see much value from joining those organisations. This is probably compounded by the fact that SSDG installation is relatively straight-forward for a competent electrician. If we take SEANZ as an example, since it has been widely cited within the consultation paper, we note that a search of its online directory yielded only one “hit” for installers that have arranged connections to the Aurora network. We consider that an association like the Electricity Contractors Association of New Zealand (ECANZ) that has a broader appeal for a wider range of installers, may provide better traction. Finally, with regard to using industry associations for promoting compliance, we consider that installers that are prepared to avoid the fairly modest transaction costs associated with submitting a SSDG application are likely to also avoid the costs of association membership. 4.5 Network Planning The requirement to make application to the distributor, in advance of installation, facilitates better network planning. Clustering of SSDG is likely to result in localised network congestion and, in some cases, may cause harmonic distortion to exceed acceptable limits and start to interfere with, and damage, consumers’ sensitive electronic equipment. While ubiquitous SSDG is some way off, there is evidence that clustering is starting to occur in parts of the Aurora network. Aurora submits that the “right to connect” approach being considered by the Authority will remove distributors’ opportunity to impose reasonable conditions and constraints in order to deal with adverse network affects that clustered SSDG is likely to cause. Once “right to connect” has been adopted, it will be virtually impossible to re-introduce an application process – the Genie will have been let out of the bottle! Aurora considers that the most appropriate course of action is to retain the application process, and focus on reducing transaction costs within that particular constraint. 5. ALTERNATIVE PROPOSAL Aurora proposes the following alternative process, in order to assist with

Submitter	Comment						
	the reduction of transaction costs associated with SSDG connections: The process for obtaining approval to connect specified in Schedule 1 is maintained; however, the timeframe for considering and approving an application is reduced to 10 working days (20 with extension). Clause 6.3 of the Code is amended to require that distributors maintain a website register of approved inverters. Where a non-approved inverter is proposed, the distributor may require that the distributed generator provide a Declaration of Conformity (DoC) issued by a laboratory with accreditation issued or recognised by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ). Alternatively, the distributor may, at its election, research the compliance of the proposed inverter itself. A connection application may only be declined by a distributor where the inverter does not have a DoC meeting the requirements of (3) above and/or the distributor, acting reasonably, believes that connection of the SSDG is likely to cause adverse network effects. Where the distributor, acting reasonably, believes that connection of the SSDG is likely to cause adverse network effects, the distributor must work with the distributed generator to develop a network solution that will allow the connection to proceed; however, the distributor is not required to implement such a solution at its cost. The distributed generator must, following installation, provide the distributor with a copy of the Certificate of Compliance stating that the installation of the SSDG complies with AS/NZS3000 and AS4777.1 The distributor may inspect, and observe the testing and commissioning of the SSDG before, or at the time of, connection. The maximum fees, exclusive of GST, that may be charged by distributors in respect of SSDG connections are: <table data-bbox="448 1608 1310 1771"> <tr> <td>Applications using approved inverters</td><td>\$50.00</td></tr> <tr> <td>Applications incorporating unapproved inverters</td><td>\$100.00</td></tr> <tr> <td>Inspection</td><td>\$60.00</td></tr> </table> SUMMARY In summary, Aurora is supportive of initiatives that improve the likelihood that SSDG connections will be reported and which reduce the transaction costs of distributed generators, their installers, and electricity	Applications using approved inverters	\$50.00	Applications incorporating unapproved inverters	\$100.00	Inspection	\$60.00
Applications using approved inverters	\$50.00						
Applications incorporating unapproved inverters	\$100.00						
Inspection	\$60.00						

Submitter	Comment
	distributors. We consider, however, that the following points should be considered further by the Authority before making a decision: Any initiative proposed must not compromise the safety of electrical workers, and should not adversely impact on distributors' ability to manage network issues in an orderly and preventative manner. The 2008 GPS on Electricity Governance required, in respect of Distributed Generation, that there be no unnecessary barriers to its development, not that there be no barriers at all. There is insufficient evidence that the scale of transaction costs is the reason that some installers and distributed generators choose to evade the reporting requirements of the Code. This, combined with the absence of the quantitative assessment required by Code Amendment Principle 3, leads us to consider that regulatory intervention is unwarranted. The market effects of transaction costs associated with SSDG applications have been overstated and that, from a distributed generator's perspective, transaction costs are largely competitively neutral. With the exception of a reduced maximum application fee, the Authority's proposal does not reduce transactions costs. At best, it shifts them in time – at worst, some transaction costs are actually increased through unnecessary reporting requirements. We consider that our alternative proposal would assist to reduce the transaction costs associated with SSDG connection, while retaining the ability of distributors to manage network safely and effectively.
Barry Wood	I am in the process of having a 3kw Grid Connect Solar Power system installed. I would like to make a submission to you on this matter. With the cost of such systems becoming more affordable I think it is time to encourage house holds to install such systems. It not only produces a greener product but if taken up by a reasonable number of homes will reduce the need to use power generating methods which are less friendly on our environment. I would like the Electrical Authority to ensure that retailers of power are legally required to buy such solar, wind or other green forms of power generation at a fair price.

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	Also I believe the government needs to encourage such forms of power generation as well with rebates such as operate in other parts of the world.
Buller	The EA has previously undertaken consultation to identify issues with Part 6 that should be considered within the scope of this current review. Based on responses received, the EA has decided to review and amend a number of operational and technical aspects of Part 6. The key matter the Consultation Paper deals with is the introduction of a more streamlined approach to connection of small-scale distributed generation (SSDG). We comment on our concerns in regard to this matter below. However, one matter that is not addressed and should be part of the review is situations where Part 6 should not apply and so parties must negotiate a connection agreement. Buller Electricity believes that for several EDB's, situations will arise where they are unable to connect DG without specific technical requirements being met and or specific liability provisions being included in a connection agreement. Such a situation may occur where the maximum injection from the DG is large relative to the minimum load on a feeder the DG wishes to connect to. Given the necessarily generic nature of Part 6, it will be difficult (if not impossible) to develop provisions applicable in all circumstances. BEL does not suggest any limitations as these may vary with networks. However, common sense would suggest that situations where the maximum potential injection is greater than the minimum load on a network or GXP are two scenarios that merit consideration. It is important to remember that the primary focus for the electricity network function within EDBs is to provide a secure and reliable service to electricity consumers. Any situations where the connection of DG may impose significant risk to the ability of an EDB to provide this service must be grounds for requiring the owner of DG to enter into a connection agreement. With respect to the connection of SSDG, BEL generally supports the approach proposed. BEL believes that it is essential that the owners of SSDG plant inform the EDB prior to connection of their plant. As it currently stands, there is significant potential for safety and power quality concerns to arise from the connection of SSDG. There are a number of situations where prior notification will make the

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	connection process easier for both parties, including where: ☐ There is already significant DG connected to the feeder, limiting the ability to connect further SSDG; ☐ Specific technical (connection) or operational requirements, over and above those specified in standards that might apply, that need to be met; and ☐ Incremental charges for connection may be greater than what might ordinarily be expected. Prior notification by a SSDG proponent of their intent to install SSDG will avoid the risk of disputes arising and minimise both the costs and the time delays associated with such disputes. Most importantly, it will avoid the owner of SSDG inadvertently creating safety or power quality issues for the EDB.
Colin Davis	<i>[Authority note: This submission attached a copy of a confidential complaint made previously by the submitter to the Commerce Commission. The submitter requested that his submission be treated in confidence. Accordingly, it has not been included in this table.]</i>
Contact	Contact believes the proposed approach by the Authority is a sensible one. Like the Authority, Contact is concerned at the health and safety implications that result from small-scale Distributed Generation (SSDG) connecting to networks without the distributor being aware of the connection (in breach of Part 6 requirements). We are therefore supportive of both the new Part 1A, which provides for a simpler notification process, and the lowering of transaction costs in order to encourage owners of SSDG to notify distributors of the presence of SSDG. Finally, we note the paper identified a lack of awareness of the code requirements by some SSDG industry service providers and investors. Therefore in our view the changes proposed must go hand-in-hand with an education and awareness campaign, driven by the Authority, to increase awareness of the processes in Part 6 for the connection of SSDG.
David	If NZ is going to make the transition from fossil fuel derived electricity to solar derived electricity, the Commission will have to institute a NZ wide

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Clarkson	feed-in-tariff (FIT) system as outlined in paper on website below - http://www.renewableenergyworld.com/rea/news/print/article/2009/09/feed-in-tariffs-go-global-policy-in-practice The cost of photovoltaic (PV) panels has plummeted, falling about 60% in the last 18 months. Along with this the efficiencies have increased (Andy Kenworthy, P 18, Element magazine, NZ Herald, 24th Sept 2012). All that is now required is a sympathetic FIT system and the ongoing electricity needs for NZ will be solved - using Germany which has a FIT programme as an example, on one occasion recently almost 50% of Germany's electricity needs were met by solar energy (Lorna Howarth, Resurgence magazine, Issue 274, Sept/Oct 2012) - and NZ has higher sunlight hours than Germany !! I urge you to fully investigate a sympathetic National FIT programme for NZ as part of this Operational Review of Part 6 of the Code to deal with electricity return to the grid from solar generation. It makes both economic and environmental sense.
Genesis	Support review: encourage increased focus on issues relating to small scale distributed generation Genesis Energy supports the Authority's operational review of Part 6 of the Electricity Industry Participation Code ("the Code"). In particular, we support the Authority's proposal to simplify the connection process for small scale distributed generation ("SSDG"). This proposal will reduce compliance costs for consumers and overall barriers to the future uptake of SSDG. Genesis Energy encourages the Authority to consider how the Part 6 review could be further targeted at addressing specific issues relevant to this type of distributed generation. We expand on this point further in our responses to the Authority's consultation questions in Appendix A.
MainPower	General Comments MainPower agrees with the EA on the purpose of the review in order to facilitate DG uptake, and increase clarity in the connection requirements. Due to the length of the consultation in the backdrop of other consultations that are occurring concurrently, we are only providing responses to questions from the consultation paper. We wish to draw the EA's attention to information provided by Alan

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	Louis from Ergon Energy based in Queensland, Australia¹⁴ on the experience of Ergon Energy with having a large number of solar DG installed on its distribution network in rural Queensland. In the two weeks leading to the Queensland government deadline in reducing the solar bonus scheme net feed-in tariff scheme on 10 July 2012, it received 32,000 solar DG applications, with another 32,000 applications in the seven months prior to June 2012. Louis indicated that while the AS4777 standard states the requirements for meeting broad power quality, safety and operational requirements, it is inadequate in the sense that there are no specific power quality requirements. As a result a distributor such as Ergon Energy is compelled to develop benchmarks in assessing DG applications, which is similar in nature to the regulatory cost The Lines Company (TLC) has been bearing in assessing DG applications referred to in paragraph 4.4.17 to 4.4.20. Need for National Standards on DG Operation Settings This leads to our key position in demanding nationally consistent inverter settings and specific power quality requirement in place. It is a positive development to see the EA tabling the need for nationally consistent inverter settings in question 13 of the consultation. We contend that from the experience indicated by Ergon Energy in Australia, this should be expanded to include specific power quality requirements, such as voltage and frequency limits, which goes a step further than the existing AS4777 standard. We believe the lack of such nationally consistent settings is a contributor to distributor conditions on an application for connection of DG in question 11. We believe that by having such a standard, this will also provide the following advantages in addition: Removing the need to derive the specific power quality requirements by the distributor. This will be particularly useful for SSDG which are being connected via the fast-tracked notification process consulted in question 2. Pooling the industry knowledge together to derive the requirements. This will provide a standardised setting that will be more acceptable to all stakeholders and provides consistency across distributors boundaries. SSDG Notification

¹⁴ Louis, Alan, "Integrating Grid-Connected Photovoltaic on the Distribution Network", *Australian Power Technologies Transmission & Distribution*, Issue 5 - 2012, pg 56-58.
http://www.flipemag.com.au/APT/eMagT%26D_issue5_2012/

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	We agree with the general principles behind introducing a fast-tracked notification process. However, we have reservations over the implementation while nationally consistent inverter settings and power quality requirements are absent. MainPower will have to derive the settings consistent with its own connection and operation standards, which will add cost to requirements. In addition, we have noticed that the distributed generator is not required to provide details of the distributed generation in its notice to the distributor, which would be required otherwise if it opts for the full application process contained in Part 1 Clause 2(3). Vector Limited's notification process requires such information to be disclosed by the distributed generation owners¹⁵. We believe this will assist both distributed generation owners and distributors in processing each DG being notified. In order to facilitate this, we suggest Clause 9B(1) in Part 1A be amended to such effect: "...the distributed generator must provide the distributor with notice of its intention. The notice may include the following: [details to be copied in verbatim from Part 1 Clause 2(3)]"
Meridian	Meridian considers that safety should be of paramount importance in considering an appropriate connection process for distributed generation (DG). We agree with the Authority's statement that situations where distributors are unaware of the presence of DG pose serious safety concerns. As such, we consider that achieving full compliance in the notification of DG should be a central objective of any proposal. Meridian considers the proposed lower cost connection process for small-scale DG installations, combined with educational and awareness initiatives, will assist with encouraging greater notification of DG connections and is likely to promote the Authority's statutory objective. We emphasise that a bottom line of any streamlined process needs to be compliance with the stated safety standards and regulations. However, we do not consider that the addition of a streamlined process, on its own, is likely to result in full compliance with DG notification requirements. We therefore suggest that the Authority considers:

- ¹⁵ Vector Limited, "Notification of Connection – Distributed Generation ([≤10kW](http://www.vector.co.nz/electricity/distributed-generation))", <http://www.vector.co.nz/electricity/distributed-generation>

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	Reducing the prescribed maximum fees set out in Schedule 6.5 of the Code in order to encourage notification; and Investigating how it might ensure greater enforcement of the existing obligations to notify DG connections. Achieving <i>full</i> compliance in the notification of DG installations will assist with mitigating safety risks associated with the connection of DG.
MRP	We agree that with the proposed amendments, as a simplified process is beneficial to the Consumer. However, a simplified application process is only a part of the Distributed Generation process as a whole. A Consumer wishing to connect Distributed Generation is likely to liaise with a Retailer, a Distributor and at least one external service provider. There is the opportunity for a Consumer to be given varying information by different parties, and this may affect their compliance and that of others. It is vital that there is transparency and universal understanding across the industry to alleviate safety and compliance concerns. We believe the Authority should consider preparing a set of Guidelines (similar to that prepared for the Part 10: proposed guidelines for livening and energisation consultation paper, released 2 October 2012) addressing the process from end to end. The Electricity Industry Participation Code (Code) is a complex document, and it is important that all affected parties can access the required information in a comprehensible way. Guidelines will clearly outline which parties are responsible for different parts of the process, and provide the Code references for more information. This would benefit all involved participants.
NZWEA	NZWEA focuses on generation above 100kw. Our responses to the questions are therefore not focused on small scale distributed generation. A number of windfarms are connected to the local distribution network. Connection rules and the performance of lines companies are therefore important to the wind industry. We are also aware of a number of small windfarm proposals around New Zealand that, if developed, will connect to local networks. The wind industry has had some positive and not so positive experiences in seeking to connect windfarms to distribution networks. We strongly support a process whereby a generator can use a disputes resolution process and would not support removal of that process as

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	has been suggested by some submitters in the pre-consultation.
Orion	Our submission is in two parts: • Comments on key aspects of the paper, and • Responses to the paper's specific questions. Note that in the time available we have not been able to review all of the "proposals" and "items" in the Appendices to the paper, and thus have not included detailed comments on them as suggested by the very lengthy response templates. However we have touched on some of them in the body of this submission. Part 1A amendment The paper proposes that certain types of SSDG be able to connect without the application currently required under Part 1 of Schedule 6.1. This includes connecting SSDG to an existing installation or (as we interpret para 3.2.2) creating a new connection. Orion does not support this proposal. We appreciate that a key rationale for this change is that some DG is currently connected without application, and the proposed change may reduce the chances of that happening. However we do not think that the proposed solution will necessarily solve the problem as we suspect most cases of this currently are based on ignorance of the process, not the complexity or cost of it. We are also particularly concerned at the implication that a <i>new</i> connection to our network might be made without application. Aside from cutting across one of our key business controls, we suspect this might be at odds with our obligations around establishing ICPs under the Code. 6 We are not aware of any instances of non-compliant SSDG being connected on our network, and furthermore we have established, through our arrangements with retailers, processes that mean they should not connect the metering at such sites without sighting our approval. In our experience this process works well. 7 The paper links the change to the supposed transaction costs of the application process, yet these are not quantified and nor are they put in the context of the overall DG investment being made. The paper also does not in our view acknowledge adequately that transaction costs do not just apply to the applicant. Distributors will clearly have to develop new processes to deal with the proposed change, and that will not be free.

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	8 We note there would still be costs faced by the SSDG in relation to design, installation, inspection and certification (3.2.2 (b) and (d). By comparison Orion's SSDG application form would, we estimate, take only a few minutes to complete and send. Moreover we generally approve applications for SSDG within two working days (if it is AS4777 compliant and electrical COC is guaranteed). In short we do not consider that the transactions costs associated with the application process are material. 9 We further note that, in most SSDG cases, a system provider is likely to be involved in the process, and will quite likely be the party engaging with the distributor. It is also likely that the provider will have multiple interactions with a distributor. As such transactions costs, at the margin, should be very low, and in addition the provider will have the ability to establish relationships and <i>voluntary</i> arrangements with distributors to, for example, streamline the application process <i>by agreement</i>. There is no need for the Code to make this a general requirement on distributors irrespective of the quality of the applicant. We note that most distributors already have broadly analogous arrangements in other areas whereby, for example, contractors go through a process to be authorised to work on the network. The paper's mention of Vector's "simplified approval process" (para 3.1.25) is instructive here: the paper presents this as a reason why mandating via the Code is Ok, when actually it is an example of the value of voluntary arrangements. We also note that what Vector is doing is still an approval process (albeit streamlined), not a notification process. 10 If the applying party is not already aware of the requirements for DG, then having to go through an application process is a good way to help ensure the applicant develops the necessary understanding. This is good for everyone. 11 Perhaps most importantly, the proposed change fails to recognise developments in the deployment of SSDG that make it even more problematic to move to a no application process. This is that there are some subdivision developments where it is conceivable that most or even all properties will have SSDG (particularly PV). Orion has already had such an experience, although thankfully we have been in a position to engage with the developer. 12 While it is probably true that most distribution networks as built can support the occasional SSDG installation with no issues, this becomes less true as SSDG becomes more concentrated. Where potentially whole subdivisions could have SSDG at every installation, there could well be issues with power quality (in particular voltage) and export

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	capacity at particular times (sunny, summer, holiday days when loads are very low and PV output very high). Distributors must have the ability to involve themselves at the design stage and <i>before</i> the decisions are made, not afterwards. This is for the good of all network users, including those with the SSDG. Clearly it would be unfortunate if a distributor had to tell people they could not have or operate the DG <i>after</i> they have made the investment.¹ 13 Moreover technology and associated issues can run ahead of standards and it is a sensible safety net for distributors to be able to respond to such issues in a timely fashion as part of the approval process rather than having to wait for standards to catch up. 14 In conclusion in relation to part 1A, Orion's view is that the paper does not demonstrate, within the "CRE" framework, that the proposed amendment will provide any material benefit in terms competition and efficiency, yet it clearly poses real risks for reliability, quality and safety. Other technical and operational amendments 15 In the time available we have not been able to review all of the other technical and operational amendments in detail, but most would appear to make the Code clearer and more consistent. (It could be argued that the Code in most of these areas, while not perfect, works well enough, and that this is therefore not really a high priority workstream.) 16 However: • Much of the discussion around prioritisation in section 4.4 of the paper ignores the fact that this is an issue <i>because</i> the incremental cost approach to DG pricing creates an inefficient incentive to be first to get the "free" capacity. Moreover, the implication in para 4.4.12 that the two options presented for congestion management are indeed options, and therefore exclusive, is incorrect. As happens on the national grid, the fact that the distribution network <i>normally</i> has sufficient capacity to support full injection by all plant on a circuit does not mean that it <i>always</i> will do. Congestion management will inevitably be required from time to time, and this will not necessarily have anything to do with when applications were received. Approval of connection, with or without payment for additional network capacity, does not imply a right to that capacity. • With respect to section 4.6 of the paper, we have documents from other parties related to DG developments in NZ and overseas which the Authority may find valuable in considering the proposed amendments. Although the full content is confidential, and not included here, the

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	documents can be summarised as follows: (a) Densely deployed PV SSDG can and does (in Australia and Germany at least) create voltage issues (in particular voltages well in excess of those allowed in AS4777) (b) The sensitivity of inverters to voltage can in turn create stability issues via tripping (c) When significant amounts of PV are deployed, overall system stability can be compromised (eg Germany) (d) There may be scope to change inverter settings to improve “ride through” and therefore stability. Due to the possible wider system stability issues, the system operator, as well as the local distributor may have an interest in these settings We would be happy to discuss these documents and related matters with the Authority, and/or put the Authority in touch with the authors; and • We note the changing environment for AUFLS. The under and over frequency settings for SSDG need to be compatible with AUFLS changes and giving distributors a chance to request settings not covered in AS4777 is useful. Out of scope matters 17 We tend to agree with the Authority’s classification of the out of scope matters. However there is a potential issue of sequencing here. For example, it is fairly obvious that the low fixed charge (LFC) regulations contribute to the over rewarding of DG and, other things equal, will be causing over-investment in SSDG currently. We can see no reason why this very obvious flaw cannot be fixed quite simply, and without completely reviewing the LFC regulations, by not <i>requiring</i> distributors and retailers to offer LFC compliant pricing where the connection otherwise qualifies but has DG, just as they are not required to offer such pricing for holiday homes. We believe it is inevitable that this sort of change will happen in future, and the longer it is left unaddressed the greater the potential number of disappointed small scale distributed generators there will be when it does. 18 Likewise the review of distribution pricing more generally could well impact on the economics of DG, with similar opportunities for eventual investor disappointment. All distribution pricing inevitably involves some level of averaging based on models of typical consumers and load

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	profiles. Installation of DG will almost certainly move an installation well away from the average profile without (at least with PV SSDG) decreasing the cost of network provision. Any material deployment of SSDG will inevitably lead to changes in distribution pricing which more accurately reflect the economics.
Peter Kammler	All presently used generation technology is mature. Efficiency gains will be marginal at best. Any new power generation has to be more expensive than earlier installations: Due to inflation. Due to the law of "diminishing returns from finite resources"¹⁶. The relentlessly rising power prices of the last 20 years are testament to this. Photo-voltaic (PV) is able to change that. In the near future, PV will be the only viable competition to new conventional generation because it is neither subject to the law of "diminishing returns from finite resources", nor has it reached maturity. The latter makes further significant cost reductions likely, in addition to the cost reductions that have already occurred. The economic viability of small grid-connected photo-voltaic systems depends on several factors, such as installation cost, opportunity cost of money, cost of retail electricity, and the feed-in tariff. All of these factors, except the installation cost, are uncertain over time. Due to these uncertainties, the uptake of PV is minimal, even when the present situation may warrant the installation. To remove the most important uncertainty, the government should regulate the feed-in tariff. A recent letter I received from energy minister, the Hon Phil Heatley, states that government has no plans to intervene, and rather leave the feed-in tariff for the "market" to decide. We all are aware of the term "market failure". One reason for market failure, among others, is that market power is not evenly balanced between participants. Clearly, domestic electricity consumers are at the bottom of market power. (The

¹⁶ The Law of diminishing returns from finite resources also applies to hydro stations. The water, of course, is not finite but hydro sites are. The first power station was built where the least amount of concrete would dam the most water. Every following hydro power station then needed more capital than the previous one (per installed kWh capacity) because hydro stations are built on a declining merit order. The same applies to gas, coal and geothermal power. The more one wants to produce, the deeper one has to dig.

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	much hyped switching of suppliers simply means that a consumer switches to a less expensive supplier only to be faced with a price hike soon after. I gave up after the third time). Also, it should be remembered that "commercial" behaviour of a company includes suppressing a competitor (in this case PV), which is exactly what already happens because the feed-in tariff is left for the power companies to determine. Government interferes in the market every day for political ends: The emissions trading scheme, the subsidy from car owners to public transport, the excise tax on tobacco, and minimum insulation standard in houses are only a few examples. If Government will not intervene on feed-in tariffs because of an alleged non-interference principle, it rings rather hollow. Other countries such as Germany, Japan and parts of Australia are regulating the feed-in tariff, and the NZ government (in the form of the Electricity Commission) should do the same, even if only to a lesser degree. It can either set the price outright, subject to reviews. (As PV gets less expensive, existing PV should retain the previously set tariff, while new PV would be governed by a downward revised tariff. This would avoid the mistakes made in Germany). It can set parameters which govern the feed-in tariff. The most appropriate parameter is the retail price of electricity. Grid-connected photo-voltaic systems (PV) have certain advantages. PV reduces the need for upgrades of long distance transmission lines because PV is usually decentralised, installed at the point of use. PV reduces line losses because the electricity fed into the grid is used by the nearest consumer, thus reducing the amperage in transmission and distribution lines. PV is well matched to the 24-hour demand curve. PV reduces carbon release into the atmosphere because it replaces generation with the highest marginal cost, which is from fossil fuels. PV meshes well with our hydro-dominated generation. The turbines and generators in our hydro systems are (over-)sized for twice the average throughput. Therefore, up to 40% of our existing hydro capacity can be added in the form of uncertain generation (i.e. wind and PV) before we have to install additional thermal backup for PV. The lakes act as buffer

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	when wind, PV, and tidal power generation fluctuate. PV also complements the hydro-pattern: Low rainfall but high PV output in summer, the opposite in winter. In view of the cited advantages above, the predatory response of the established generator/retailers, and the EC's own mission statement above, I submit that: The feed-in tariff be regulated, preferably that it is set at the same level as the electricity retail price for any given supplier. That net metering be applied. Failing net metering, that net billing should be applied, measured over the whole year (not just one month). That electricity fed into the grid, which exceeds consumption during the billing period, be bought by the supplier at the weighted average wholesale price over the billing period.
Powerco	Support for the problem definition Powerco is pleased to see that the Authority has acknowledged the reoccurring finding of the October 2011 pre consultation paper¹⁷ and is consulting on the issue of small scale distributed generation (SSDG) connected to a network without distributor awareness. Breaching of the mandatory Part 6 requirements of the Electricity Industry Participation Code 2010 (Code) was consistently raised by submitters as it increases potential safety and reliability issues. The Authority's problem definition correctly identifies the related consequences of SSDG that is connected without notifying the distributor. While the consultation paper provides an indication of the potential scale of the problem in 2011, we consider it to be significantly larger now due to the exponential growth in SSDG connections. Analysis of possible causes and proposed solutions Powerco does not consider connection transaction costs a barrier to distributed generators notifying distributors. Currently Powerco does not charge an application fee but still experiences the issue of non-notification like other distributors that do charge a fee. Additionally, connection transaction costs amounting to several hundred dollars is an insignificant amount to parties installing distributed generation that

¹⁷ Electricity Authority consultation paper: *Pre-consultation: Connection of distributed generation*

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	generally costs in excess of \$10,000. As a result of this we do not support the addition of a new Part 1A to Schedule 6.1 of Part 6 of the Code as it adds further complexity to the Code and will not materially contribute to delivering the desired outcomes of the Authority's work. The Authority has not provided any evidence in the consultation paper to support the hypothesis that transaction costs are a barrier and in their own words only believe that it is 'likely'¹⁸ that some DG investors would follow the prescribed process if compliance transaction costs were reduced. Therefore it is questionable if the cost benefit analysis justifies the introduction of a new part into the Code. Powerco's experience with SSDG industry service providers, suppliers and distributed generation owners is that it is awareness and ease of process that are the two factors that contribute most heavily to non-compliance. Like Vector, Powerco has evolved a streamlined two step process that simplifies connection of SSDG. Indications are that this has a positive impact on the notification process uptake regardless of any connection transaction costs. Powerco supports the Authority pursuing initiatives that promote market facilitation measures further as we consider that this will have the greatest impact on the defined problem and provide the greatest benefits. We also agree that it would not just require the Authority's support but that of all the key participants in the industry. Powerco preference for proposed alternative option Powerco considers that unless clear evidence can be produced to demonstrate the scale of un-notified SSDG installations as a result of connection transaction costs, then one of the alternative means of achieving the objectives proposed by the Authority should be considered as the preferred option. Considering the three alternatives that the Authority reviewed, Powerco supports alternative A, retaining the status quo but implementing an awareness campaign. This would remove the need to add additional complexity into Schedule 6.1 in the form of Part 1A for little or no return. Other technical and operational amendment proposals In general, Powerco supports the proposed amendments that have

¹⁸ Clause 3.1.12, Electricity Authority Consultation Paper- An Operational Review of Part 6 of the Code: Connection of Distributed Generation

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	been grouped as a package of technical and operational amendments. The grouping approach is efficient and logical as they share high level objectives and cost/benefit analysis. As stated in the consultation the proposed amendments can be considered as a 'tidying' exercise and we don't consider that they materially contribute to the promotion of the Authority's objective. Powerco does not support the proposed three month implementation period to prepare for the proposed changes as any regulatory changes would necessitate changes to our approved standards that would require a minimum of six months. Conclusion Powerco supports the Authority's work on Part 6 and any work that simplifies and creates efficiency within the industry in line with the Authority's statutory objective. However, we consider that the solution proposed in the consultation paper of introducing a additional part into the Code to address the issue of non-notification is not the most effective and is counter intuitive to trying to improve efficiency.
PwC	Small Scale Distributed Generation The pre-consultation revealed concerns that SSDG are not always aware of the Part 6 requirements and consequently are connecting to distribution networks without having followed the connections process set out in Part 6. This poses significant safety and power quality concerns as distributors are unaware of the presence of this DG connected on their networks. The EA believes the possible causes for this problem are: • A lack of compliance by SSDG owners as Part 6 is seen as a barrier to connecting DG • A lack of awareness of the Code. We respond to the EA's proposal to address each of these issues, below. Proposal to address non-compliance The EA has proposed that there is a net benefit if SSDG correctly notify DG connections consistent with the Code. We agree. To facilitate this, a new streamlined SSDG connection process is proposed that will allow SSDG (defined as DG with a nameplate rating less than 10kW) to connect to the distribution network without application to the distributor so long as it meets certain connection standards. These conditions

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	include¹⁹: • The SSDG is designed and installed in accordance with the industry standard AS4777.1 “grid connection of energy systems via inverters” and the protection settings set out in a distributor’s connections and operations standard • The SSDG incorporates an inverter that has been tested and issued a Declaration of Conformation (DoC) with AS 4777.1 by a laboratory with accreditation issued or recognised by International Accreditation New Zealand • The SSDG has been inspected and issued a certificate of compliance (CoC) under the Electricity (Safety) Regulations 2010 The following process applies: <i>the SSDG must notify the distributor within 5 business days of the connection and must provide relevant documents demonstrating compliance with AS4777 and distributor protection settings. A copy of the CoC and payment of distributor fees must also be provided.</i> The distributor then has 10 business days to inspect the SSDG and verify it meets the requirements for connection. If any non-compliance is raised by the distributor, the SSDG has 10 days to rectify this before the distributor is permitted to disconnect the SSDG. The distributor must provide notice of final approval of the SSDG within 10 business days of the date that the distributor is satisfied that the DG connection is compliant. The Code specifies maximum fees that the distributor may charge, of \$100 for review of the initial notification, \$100 for processing information related to remediation of a deficiency, and \$60 for inspection of the SSDG (if required). These maximum fees are half of that currently set out under the normal DG connection process (under Part 1 of schedule 6.1) in recognition of the need to reduce transaction costs. We are broadly supportive of adopting more standardised processes for connecting SSDG where these meet acceptable connection criteria. This is superior to the alternative of not being notified of these connections at all. The key concern we have is that the current notification process starts after the SSDG is connected to the network. We believe that post-

¹⁹ Consultation Paper – Paragraph 3.2.2

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	connection notification will create higher transaction costs for both SSDGs and distributors relative to a pre-connection notification process. That is, we believe it is advantageous for both distributors and SSDGs to resolve any connection issues prior to connection. We therefore submit that notification of plans to connect SSDG should take place prior to connection and that distributors should have a set timeframe to review and approve connections (i.e. 10-20 business days) after which time the SSDG can connect. We do not view this as an application per se, but rather a last right to review a SSDG's plans before it connects. If the proposed connection does not meet the pre-conditions to connect (e.g. does not conform with AS 4777 or the distributor's standards) then these connection issues can be resolved before the SSDG connects rather than after, when the SSDG will incur unnecessary expense rectifying these issues post connection. Additionally, SSDG owners face some risk in notifying distributors post-connection in regards to the charges they might face. Distributors are currently permitted to charge up to incremental cost (net of any avoided costs) under schedule 6.4. If notification is made prior to connection then distributors can inform SSDG owners of the charges they will face, prior to them committing to install the DG. Part 1A also requires distributors to approve a notification. This seems redundant where a distributor has chosen not to inspect the SSDG installation (under 9D of Schedule 6.1) or has not raised any non-compliance issues (under clause 9E). We believe default approval should apply on the expiry of the specified time-limits in the situation where the distributor does not inspect the SSDG, raise any compliance issues, or elect to formally approve the connection. This will reduce the transaction costs for distributors where there are no concerns with the SSDG connection. Another concern we have with the proposed approach is that distributors are not given the opportunity to specify other criteria that may be specific to their network or the local circuits to which the SSDG is connecting. Under the current proposal SSDG only needs to comply with AS 4777 and the protection settings specified in the distributor's connection and operations standards. While AS 4777 may cover many of the concerns distributors may have, we consider the current pre-conditions should be expanded to include any other reasonable connection and operations requirements (not just protection settings) that a distributor pre-specifies in its standards. The distributor may also wish to limit the number of SSDG that connects to certain local distribution areas or circuits. The current proposal does

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	not provide a mechanism for distributors to address this though. For instance, if a particular circuit is overloaded already, then a distributor may wish to limit the number of SSDG connections on that circuit. This issue equally applies to large DG too. For instance, large DG may be inappropriate on some small distribution networks or on certain circuits. While a distributor can invest in higher capacity, and potentially seek a contribution from the DG, we consider that distributors should have discretion to decline the connection of SSDG (or any DG for that matter) where the network is restricted. In conclusion, we recommend that an SSDG must notify its plans to connect prior to connection (i.e. 10-20 business days prior). Distributors should then be given the opportunity to address any issues within a set timeframe prior to connection of the DG. As part of this, distributors should be given the right to pre-specify other conditions (in addition to protections settings) that SSDG must meet or reject a connection where the network is constrained. If the distributor elects not to inspect the SSDG, has not raised any concerns, or elects not to make a formal approval within the specified time limits then the SSDG may connect as planned. Proposal to improve awareness The EA believes that the lack of awareness of Part 6 needs to be addressed through greater education and information dissemination. Submissions are invited on possible roles for different industry participants to facilitate this. We consider that all parties will need to increase their efforts to raise awareness of Part 6. However, one of the key issues for distributors is that it is difficult to identify potential SSDG (which is part of the problem the EA is seeking to address). Distributors can take steps to educate their staff and contractors that work on their network to identify new SSDG and refer these parties to the Part 6 processes. However, we consider a better approach would be for the EA to act in a coordination role to facilitate wider awareness amongst retailers and installers of SSDG equipment. Good industry practice guidance could be provided to these parties that they need to inform their customers of their obligations under the Code. Implementation The EA proposes that the new part 1A will take effect 3 months after the Code amendment has been gazetted. This is seen as sufficient time for EDBs to create business processes, modify existing application forms and guidance material, and publish any new documentation on

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	websites. We note that over the next 6-9 months EDBs will be busy complying with the Commerce Commission's new information disclosure determination (IDD), which place a number of significant new obligations on EDBs. We also note that the EA is proposing to review DG pricing shortly, which may affect other aspects of a distributor's DG connections policy. Any changes arising from this DG pricing review need to be understood first, before EDBs revise their DG policies. In order to alleviate the expected work load and to align any changes to a distributors DG connection policies with the DG pricing review we suggest that the proposed Code amendment take effect in late 2013. Technical changes Changes to the definition of DG The EA proposes to exclude from the definition of a 'distributed generation' under Part 6 of the Code any: Temporary generation installed by a distributor for the purpose of backup or emergency supply or to alleviate overloading on certain parts of the network Standby generation connected by a consumer for the purpose of providing temporary supply to the consumer's premises during times when they become isolated from the distribution network. We support these proposed amendments to this definition. However, the amendment for standby generation is defined by excluding generation plant that needs to momentarily synchronise with the network to avoid interruptions to consumer supply. While this is likely to define standby generation, we recommend that the definition specifically mentions standby generation as an example. Other changes A number of other technical and operational changes are proposed in Appendix C of the Consultation Paper (as discussed in appendix D). We are comfortable with the majority of these changes. However, there are several amendments which we believe need to be revised. Our detailed comments are provided in Appendix A of this submission. One of these amendments seeks to resolve a gap in the current Part 6 that relates to the application process and regulated terms only being applicable to new DG connections. Distributed generators that are already connected are not currently covered by Part 6. The EA has

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	proposed to address this gap by introducing DG that is already connected to the Code. Specifically, the proposed Code amendment will include situations where a distributed generator that is already connected intends: • to continue an existing connection and the connection contract for that DG is in force or has expired • to continue an existing connection that has not previously been connected under a connection contract • to increase the nameplate capacity of an existing connection of distributed generation. We consider these changes will improve the practical application of Part 6. In particular, the proposed amendments will provide for the roll-over of existing contracts, legitimise DG that is currently not contracted to the distributor, and allow for increases in DG capacity. While these modifications are useful, we consider that they should be expanded to include distributed generators that intend to make any significant modification to their existing DG connections, not just in relation to an increase in nameplate capacity. That is, a distributed generator under the current requirements could change the type of generation unit (e.g. from an inverter to non-inverter generation) or reduce the nameplate capacity without having to reapply under the Code. We consider these situations, or any other significant change outside of the current connection terms and conditions, should be captured by Part 6. Accordingly, we propose that the current proposal that distributed generators that intend to increase the nameplate capacity of their DG should be expanded to include any material modification to the DG connection. Other Issues Section 4 of the Consultation Paper discusses a number of issues which the EA has not proposed amendments for, but which it seeks further feedback on. These are issues raised in pre-consultation but which the EA has been unable to find evidence to define a substantive problem. These key issues and our response to each are set out as follows: The efficacy of the current dispute resolution mechanism: We do not consider there are any material problems in relation to the dispute resolution mechanism. However, we support The Lines Company's submission that a distributor's connection and operations standards should not be subject to dispute resolution.

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	Arm's length rules: Section 6.11 sets out that a distributor must use the same reasonable efforts in processing and considering applications and notices under schedule 6.1, regardless of whether the distributor is also a distributed generator. We consider the current wording of section 6.11 is appropriate to ensure distributors treat all applications on a reasonable arm's length basis. Competing DG applications: The Consultation Paper sets out a number of issues that could potentially arise where a distributor has to prioritise competing applications. The key issues raised include: <i>Prioritisation of applications when the distributor is an applicant.</i> In our view, the situation where a distributor would need to prioritise applications is likely to be very rare (i.e. receiving more than one DG application in the same part of the network within ten days of each other). We do not believe the problem is material. <i>Management of local network capacity constraints.</i> While this could be an issue going forward, if uptake in mass-market SSDG becomes economic (e.g. solar panels), we do not consider this material enough of an issue to develop new regulatory approaches for. We note that if the network is constrained the distributor may resolve this issue by investing in further network capacity, partially funded through pricing or capital contributions. The increase in capacity and willingness of a distributed generator to pay their share of these costs may resolve any prioritisation issues that arise. Right to decline application: The Lines Company has raised an issue with clause 18 of schedule 6.1²⁰, which does not provide sufficient certainty as to whether a distributor can decline an application. That is, clause 18(2) suggests that a distributor must approve an application subject to reasonable conditions. We agree with The Lines Company's view. If a distributed generator clearly can not comply even with reasonable conditions, as based on an assessment of the information provided in the application, then there needs to be a mechanism in clause 18 to decline its application. The Level of Liability: We agree with Vector's pre-consultation submission that the current liability limit of \$1000/kW of installed capacity up to a maximum of \$5m is too high²¹. Furthermore, they are inconsistent with the liability limits provided in clause 26.6 of the Model use of System Agreement (MUoSA), which limits liability to \$10,000 per

²⁰ Consultation Paper – Paragraph 4.4.17

²¹ Consultation Paper – Paragraph 4.5.2

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	ICP up to \$2m for general consumption connections. The scope of liability is also different. The MUoSA refers to “direct damage to physical property” but in section 20(2) of schedule 6.2 it refers to “direct loss”. With the differences between DG and consumer connections likely to break down overtime with the uptake of micro-generation technology (i.e. solar panels), we consider that alignment of scope and limits of liability across the MUoSA and Part 6 would be sensible. Standardised Inverter Settings: The Consultation Paper discusses the merits of defining standard protection settings for inverters that interface between DG and consumer installations to a distribution network. The EA seeks feedback on whether it would be useful for the EA to develop a guideline, or a voluntary or regulated standard for inverter protection settings. We consider that distributors should be given sufficient discretion to set their own protection settings. Guidance is already provided in the form of AS 4777.3. Nevertheless, we are not uncomfortable with the EA developing voluntary guidelines or a standard which might encourage distributors to seek greater standardisation of inverted protection settings across the industry. We do not support a regulated approach though.
Simply Energy	We have provided input to each of the issues raised in the paper along with an executive summary of the key issues that we encounter as a market practitioner for independent generators providing innovative products and services to the market. Workability of the regulated dispute resolution process Use of, or more specifically the ability to threaten to use, the regulated dispute resolution process has proved to be an extremely practical mechanism in the process of obtaining a connection for distributed generation. We believe the small number of disputes that have been referred to the EA is testament to the effectiveness of the existing mechanism and it would be a significant backwards step to limit access to the EA or Rulings Panel under the regulations. We have been involved in several negotiations where we have represented small generators seeking a connection contract with a local network. Relative to a local network, small generators typically have limited financial resources and access to information on the network and therefore suffer from information asymmetry. The Electricity Authority and Rulings panel are highly appropriate for resolving disputes because:

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	By utilising the existing breach process the dispute resolution mechanism is extremely cost efficient; economic enforceability is extremely important to small generators. Typically disputes are related to connection pricing and pass through of transmission costs/ benefits. The EA is intimately involved with the transmission pricing methodology and distribution pricing frameworks redressing the information asymmetry. The EA has a broader regulatory role and interest in the supply of electricity for the long term benefit of consumers means that network companies are less likely to seek outcomes that are 'unreasonable' that may risk triggering the introduction of further regulation. Small generators are concerned that there is no clear time frame for resolving disputes. However this concern is secondary to having regulated access to the EA and Rulings Panel for dispute resolution. Competing DG Applications There are a finite number of technically and economically viable generation development sites in New Zealand. Over time we expect to see increased competition for the right to develop these sites and an increase in the number of binding capacity constraints within local networks. Consequently we believe the regulations do not adequately address the priority of competing DG claims and would like to see: Increased transparency into the timing and lodging of initial and final applications and reasons for rejection e.g. through maintenance of a central registry of applications. A shortened period of time (say 5 business days) for a second final application to be considered a competitive bid; this would increase the difficulty in preparing and submitting a final application on a speculative basis but preserve the ability of a genuine developer to lodge an application that they had been working on for some time. During periods of congestion, priority in dispatch allocated to the generators in order of application for final application. Liability Caps We broadly support the ability of parties to the regulated terms being able to vary parameters within the agreement without causing the agreement to be considered outside of the regulated terms, subject to default terms in the event that the parties cannot agree. Therefore we support the changes that provide for varying the level of

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	liability while staying within the regulated terms.
SEANZ	it could be beneficial for the Authority to maintain a contact database of interested parties (including parties that have responded by making submissions previously) that is shared by the various work groups and to pro-actively e-mail interested parties when various topics are open for submission. This will help avoiding consultation from going under the radar.
The Lines Company	5. TLC is aware that PwC is making a submission as part of this consultation. TLC supports the PwC submission and the views expressed in this submission should be read as points made in addition to those in the PwC submission. The connection of distributed generation should be viewed holistically 6. TLC believes that the issues surrounding the connection of distributed generation in New Zealand are complex, and therefore warrant careful consideration by the Authority. TLC emphasises that issues relating to the connection of distributed generation cannot be viewed in isolation from their broader effects on distribution networks as a whole and their connection to transmission networks. For example, failure to manage distributed generation effectively could have the following adverse effects: (a) Reduction in the quality and safety of the distribution network; (b) Decreased efficiency in the transmission and distribution of electricity; and (c) Difficulties managing power factors at grid exit points (including active and reactive power flows). There is a tension between the Transmission Pricing Methodology (including proposed changes), which results in charges varying in accordance with power factors, and promotion of distributed generation that impacts on power factors. 7. It is also paramount to ensure that all distributed generation occurs in a safe manner and without adverse impacts on existing consumers. 8. Accordingly, although TLC is committed to connection of distributed generation where feasible, there are a range of technical issues to be considered that have an impact on the distribution network as a whole, which must be resolved before connection is approved. In TLC's experience such difficult issues are not well understood by those wishing to connect and are not adequately provided for under the

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	existing regime, which appears to operate on the assumption that distributed generation will only impact on the part of the network to which it is connected. Processes for the connection of larger scale distributed generation 9. These issues are most apparent for larger scale distributed generation. Although TLC is comfortable with most aspects of the Authority's proposed reforms, it believes that the proposals do not go far enough in addressing the following issues: (a) The inability of connection and operation standards to provide for issues specific to each proposed connection; and (b) The uncertainty regarding the distributor's ability to decline an application where it can be shown that the distributed generator has failed to conform with connection and operation standards, instead of imposing conditions. 10. TLC's underlying concern is that the process for connection of larger distributed generation remains uncertain, and relies on a simplistic assumption that connection and operation standards should resolve all issues. While the connection and operation standards cater for high-level concepts common to all connections, they do not provide the ability for distributors to define the specific technical solutions required for each unique connection. So, although the connection and operation standards can set out requirements that all distributed generation must meet the means by which these requirements are met will be specific to each connection. 11. TLC is firmly of the view that the onus should be on the distributed generator to develop the required solution in each case, using the information that the distributor is obligated to provide. Our experience to date is that confusion and delay has occurred due to an expectation by distributed generators that distributors will make their proposal work for them. 12. TLC suggests that the addition of a power for the distributor to, where reasonably required, require the distributed generator to engage an independent registered engineer to review the technical aspects of the distributed generator's application would be valuable. Where the review revealed a technical issue, for example, varying voltage levels at grid exit points or the need for power factor correction equipment, the onus should be with the connecting party to resolve the issue in its proposed design prior to its application being approved. 13. This reflects TLC's position that the security and safety of

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	distributors' networks should be paramount, and that the approval process should be structured in a way that does not require the distributor to: (a) Dedicate significant resources to help design a technical solution for a connecting party; and (b) Approve connection until the distributed generator can demonstrate the proposed connection's compliance with the distributor's connection and operations standards. 14. In other words, the onus should be on the applicant to prove its application is consistent with the distributor's connection and operations standards, and to bear the cost of doing so. 15. It follows that distributors should have an express right under the Code to decline an application on the basis that the applicant has failed to demonstrate its application is consistent with the distributor's connection and operations standards, or at the very least it should be clarified that there is no obligation to formulate conditions so that the application can be approved. Currently, the relevant provisions in the Code, when read in light of the purpose statement, imply that a distributor should err on the side of approving with conditions rather than declining. In practice these conditions could be material and extensive and be not well understood by the distributed generator, inevitably leading to disputes. 16. In summary, TLC seeks amendments to the Code to better balance the following objectives: (a) Distributors should be obligated to approve connection only when satisfied that it is safe to do so and that there will be no adverse affects on the network and other customers; and (b) Distributed generators should be obligated to undertake sufficient design work so that the application can be readily assessed against the above criteria. Connection and regulation of small-scale distributed generation 17. TLC is generally comfortable with the Authority's proposals for the connection of Small Scale Distributed Generation ("SSDG"). TLC agrees that SSDG should be able to connect to the network provided the distributed generator complies with the relevant standards referred to in the Code. It is unreasonable to expect distributors to regulate or vet such connections, and we would therefore support any measures to strengthen the applicable standards and to incentivise adherence to

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	those standards (e.g. penalties for connecting non-compliant SSDG). 18. In short, the objective should be to promote the connection of safe and reliable equipment only. Failure to do so is likely to result in further cost and inefficiency, due to increased faults and prolonged maintenance procedures required to work around any equipment that creates uncertainty regarding electricity flows. 19. From TLC's perspective, it is important that distributors retain the discretion (but not obligation) to inspect SSDG installations and require changes (under threat of disconnection) where necessary in order to maintain the integrity of its distribution network. Further, by way of clarification, a distributor should only be required to issue a notice of final approval (under proposed clause 9F of Schedule 6.1) where it has decided to inspect SSDG and as a consequence has sought changes to the SSDG concerned in order to remedy a deficiency. 20. Finally, TLC believes that appropriate education and awareness initiatives on the standards for SSDG installations are crucial to ensuring the safety and integrity of distribution networks nation-wide. Accordingly, TLC considers that central government agencies would be best equipped to provide such programs such as Energy Safety within the Ministry of Business, Innovation and Employment or the Authority itself.
Unison	Possible causes and problem definition (3.1.11-3.1.21) Unison believes that the possible causes identified by the Authority of SSDG being connected without notification to distributors are not adequately substantiated. The Authority proposes solutions to remedy the problems identified, however, if the causes of the problem are not substantiated there is a significant risk of an ineffective solution. Unison speculates that one possible cause may be a conscious effort to avoid compliance due to a desire of SSDG owners to be self-sufficient. Undertaking motivational research of SSDG owners may identify further causes, ranging from those driven by environmental benefits and sustainability to those with possible mistrust of corporations (eg distributors) and avoiding to engage with them. Unison has had anecdotal feedback from SSDG owners in the past who wish to 'disconnect from the grid'. In addition, Unison has modest DG connection costs (\$250) in relation to the cost of installing an SSDG system (eg solar capability), and we estimate that there are still many SSDG installations not notified to us. Thus transaction cost is unlikely to be the sole cause. Other factors such as those outlined in 3.1.19 and

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	3.1.20 may well support the theory that SSDG owners want to avoid dealing with corporations, subvert compliance and avoid costs. Unison is in agreement with the problems that SSDG not being notified creates, however, we believe the solutions proposed by the Authority are unlikely to resolve these problems. Authority's Proposal (3.2) Unison has concerns with the Authority's proposal to include a post installation notification approach to SSDG as it impacts on the ability of our network to plan and manage the impacts of DG. For example, voltage issues (fluctuations between high voltage during daytime where there is the greatest amount of solar generation but only modest load versus morning and evening peaks when there is little or no solar generation and high load resulting in low voltage), including potential regulatory non-compliance (voltages outside the stipulated range; 230 V +/- 6%). Unison's concern over post installation notification is highlighted by two recent discoveries of un-notified SSDG connected to our network where the metering was not compliant with (in breach of) Part 10.3(e) of the Code: <i>10.3(e) "if electricity may flow in either direction through a metering installation the quantity flowing in 1 direction must be measured separately from the quantity flowing in the reverse direction."</i> In these cases pre-existing single element metering was still in place with no separate metering of injected electricity. One of the customers delighted in relaying to our customer service representative that "the meter was spinning backwards". In addition to the safety hazard these un-notified installations present, they also represent reconciliation issues with revenue losses for Unison through our variable line charge, and presumably also losses for the electricity retailers for these ICP's. While Unison is generally supportive of a more efficient and simplified process, the new proposal creates a safety risk with the delayed notification of connection (an unidentified hazard) and a lack of assurance around compliant installation. Unison believes the current connect or not connect process is preferable to the new connect then disconnect proposal. From a customer point of view, assistance at the start (current process) is likely to be preferable to policing at the end (disconnecting if non-compliant). Importance of education and awareness among SSDG owners Unison believes the most important part of the proposal is greater awareness among SSDG owners for notification and increasing their

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	motivation to comply. Highlighting safety risks in particular may be a good incentive. Effective communication should be multi-pronged to take advantage of the various contact points in the process of installing SSDG. For example: energy efficiency information sources (including EECA), SSDG retailers, suppliers and installers, electricity retailers and distributors. The EECA are likely to be best placed to give an overarching framework and message for others involved in the process to draw from. Connection of temporary generation by distributors (3.3.7-3.3.15) Unison agrees with the Authority's evaluation and proposed changes. The use of standby generation by distributors is a standard part of Network operational management and should not be subject to Part 6 Code provisions. Connection of standby generation by consumers (3.3.16-3.3.22) The Authority concluded that the connection of standby generation by consumers is outside the scope of Part 6 and therefore not within the definition of 'distributed generation'. Unison has concerns around this, in particular the potential for significant safety and network protection issues where standby generation could be connected to the network for even a brief period. While it is acknowledged that these matters can be included as part of Network Connection Standards, the complex nature of generation is such that the real likelihood exists of the party seeking to install and operate standby backup generation without understanding the implications of the Network Connection Standards and therefore not complying with these. The advantage of using Part 6 of the Code is that generation sites are identified, and connection, safety and operating arrangements reviewed and maintained. This information can then be reliably incorporated in safety and operating procedures and management plans. Unison would be concerned if there was no obligation on notification of standby generation with the potential to inject to the network. Competing DG connection applications (4.4) Unison agrees with the Authority's points in 4.4.9 and 4.4.10 that no property rights are created (unless contracted for outside of regulated terms), and that the approval to connect DG does not provide the distributed generator with the right to inject electricity to full nameplate capacity at all times. Regarding congestion management (4.4.12), Unison agrees that the two generic approaches reflect feasible methods by a distributor. We believe

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	that a distributor could apply both these approaches depending on conditions. For example, where detrimental operating issues can reasonably be foreseen as being likely to occur due to congestion, then the approach to limit may be prudent. In other circumstances where constraints may be temporary and manageable, then curtailment could be appropriate. These different approaches could be applied as relevant to different network areas or at different periods during a network's development and growth. Where distributed generators seek assurance regarding the approach (ie for business case viability) they could seek to contract outside of the regulated terms.
Vector	Overview of responses to proposals This consultation attempts to deal with the issue of small-scale distributed generation (SSDG) being connected to a distributor's network without the distributor being aware of the connection. The Authority proposes to address this issue through a new Part 1A under Part 6 of the Electricity Industry Participation Code 2010 (the Code), which aims to simplify the notification process by lowering transaction costs and increasing awareness of the Code requirements. Other proposals include amendments to, and clarification of, identified errors and ambiguities. Vector supports the overall aim to improve and simplify the process for SSDG to connect to distribution networks. However, we are unconvinced that on its own this will resolve the problem identified by the Authority. Vector already provides a streamlined process for the connection of SSDG and charges a nil fee for the connection process. Despite this, we understand there are still instances where SSDG operators do not notify Vector of a connection. Vector recommends that further measures be introduced to promote education and awareness of the notification and connection requirements in order to resolve the problem identified by the Authority. As further detailed below in Vector's response to the consultation questions, the simplified process should be limited to a single installation of SSDG within a single customer installation. For planned installations of SSDG in close geographical proximity to other installations, the current process within Part 6 should be used as the network impacts of the combined installations will need to be assessed. Vector's responses to selected questions asked and issues raised by the consultation paper are set out in Appendix One.

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	Pricing principles need to be considered earlier than envisaged In our pre-consultation submission,²² Vector provided some detailed analysis identifying the inefficiencies caused by the DG pricing principles: • Distributors are required to set prices for DG operators at no more than incremental costs, which is inconsistent with pricing principles applied to end-consumers; • It is unclear if the incremental costs charged are assessed over the short- or long-term; and • Allocating avoided transmission benefits to DG increases overall transmission costs to consumers. The Authority has advised that these issues are “best addressed in the distribution pricing review project”.²³ We also note the current 2013/14 Appropriations and Work Priorities Consultation includes a review of Part 6 pricing principles as a “second priority project for completion in 2013/14”, with Code amendments not to be made until 2014/15. We assume that the Authority’s intention is to use this project to review the issues Vector has identified with the Part 6 pricing principles. Vector welcomes the Authority’s willingness to review the pricing principles. However, we are disappointed that the Authority has given the review such a low priority. If the analysis put forward in Vector’s previous submission is correct, the current requirements for the allocation of costs and benefits to DG operators is likely to create considerable inefficiencies in the market and leave consumers worse off. It is surprising that the Authority has prioritised the technical and relatively minor amendments proposed in this consultation paper over the consideration of desirable amendments to the pricing principles, outlined above. Vector recommends that the Authority improve the priority status accorded to the review of the Part 6 pricing principles and seek to address them as soon as possible. A potential Code amendment in 2014/15 is not soon enough. A combined and comprehensive review would be preferable

²² Vector Limited, Submission on Distributed Generation Pre-Consultation, 11 November 2011, pp. 2-6.

²³ Consultation paper, pp. 110-112.

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	It is also unclear why the Authority has chosen to operate several separate reviews of different parts of the DG rules. The piecemeal approach the Authority intends to take is unlikely to lead to a consistent set of rules for DG or ensure the Authority's statutory objective will be met in the most effective and effective manner. Vector recommends that the Authority combine the different Part 6 review workstreams into one coherent project.
WEL Networks	WEL has reviewed the Consultation Paper and taken as a whole WEL does not support the Authority's' proposed Code changes as: • they will do little to reduce illegal Small Scale Distributed Generation ('SSDG') connections; • the imposition of a post-notification process creates avoidable health, safety, property and equipment risks with no benefit over alternatives the Authority has not yet considered; and • the Authority would benefit from further engagement, consideration of and development of alternative solutions and the experiences of the front line staff involved in the current application processes. There are significant technical issues and impacts on networks and a suitable technical working group should be put together to review the technical ramifications of the proposals; The remainder of this submission expands on each of these points. The proposed changes will have little effect on illegal SSDG connections The Authority has correctly identified at least one alternative being further education of installers of SSDG. WEL agrees further education and awareness is required. WEL is well placed to contribute to education and awareness programmes but would be concerned with the economic efficiency, given the relatively low numbers of SSDG to spread the costs across. Charging compliant SSDG owners or other consumers for this education programme is problematic and also not consistent with the Authority's distribution pricing principles. WEL would also draw the Authority's attention to the pricing constraints faced by other non-exempt lines businesses under Part 4A of the Commerce Act that would require Commerce Commission agreement. The Authority is well placed to assist the non-exempt distribution companies, if it felt the incurring of additional costs, was in the long-term interest of all consumers. The Authority has made no attempt to quantify the costs and benefits

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	yet has drawn the conclusion that the proposed solution provides material benefit. WEL disputes that transaction costs are high (including the length of time taken to process applications) and relative to the overall investment cost in a SSDG system, are not significant e.g. the current price to install a 2kW PV system is between \$8000 and \$10,000. The fundamental issue with SSDG at this time is that it remains uneconomic and is likely to remain so in the short term as distributor and traders correct their pricing e.g. 1:1 payment for exported DG is not sustainable in the long-term. The Authority should be aware that Advanced Metering Infrastructure ('AMI') has the potential to solve the problem. Tamper, flow direction and power quality measurement will detect illegal connections and assist identify issues with legitimate installations. In time, WEL expects its smart network and AMI will resolve the issue of illegal connection. WEL believes it is premature come to a conclusion that an economic based solution is required. WEL concludes the Authority has mistakenly misconstrued economic principles to support its hypothesis that the lowering of the transaction cost will solve the problem of illegal SSDG connections. A post-notification process creates avoidable risks WEL supports the principle of lowering transaction costs despite its reservation that transactions costs are high or the proposed changes would in fact help reduce illegal SSDG connections. The Authority has not considered alternative application process designs. WEL argues many of the simplification features proposed can be incorporated into a pre-connection notification and approval process. A process involving the early involvement of a distribution company is essential to: • fully inform potential investors in SSDG of any limitations or issues with their particular circumstances and connection point avoiding potentially costly mistakes; • allow communication of the incremental costs of connection (if any); and • poses less risk to health, safety, property and equipment than the Authority's' current proposal. The Authority's proposal assumes the physical condition and capacity of the distribution network are not important. WEL networks have on average have been designed to allow for 2kW per home. A 10kW installation represents a higher degree of risk to the network than the

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	average new connection. The industry should also take note of the very real difficulties accommodating SSDG in Queensland. Having a post-notification process simply poses avoidable risks for no benefit. The Authority would benefit from further engagement, consideration of and development of alternatives solutions and the experiences of the front line staff involved in the current application processes prior undertaking operational reviews and proposing Code amendment WEL learnt of the Consultation Paper from the Authority's weekly Market Brief published on the 24th of October 2012. Upon learning of the paper WEL's Chief Executive, Dr Elder, canvassed the Electricity Networks Association Board meeting; which is comprised of distribution companies' senior executives, on their knowledge of the existence of the document and the issues covered. The responses received by Dr Elder confirmed the Consultation Paper was receiving little attention at senior levels and WEL concludes from this observation that the Authority has not adequately engaged distribution company participants in its process to date²⁴. The Authority's process which has included a pre-consultation or canvassing of issues and now consultation on proposed Code amendments has missed an important and critical middle step of seeking participant's views on issues and exploring the options available to resolve them. WEL believes the process to date has been inadequate and is prematurely drawing conclusions about the solutions required. WEL believes the Authority would benefit from further engagement with distribution companies, the consideration of alternatives as discussed in this submission and the experiences of front line staff involved in the existing application purpose. WEL recommends that the Authority set aside its current consultation process while it further engages the distribution industry over a workable pre-connection application process and further investigates the feasibility of aspects of the streamlining and simplification processes suggested. WEL supports a more collaborative approach and would make appropriate resources available.
WELL	Background Part 6 of the Electricity Industry Participation Code 2010 (Code) relates

²⁴ WEL understands Vector will be providing a detailed response.

Submitter	Comment
	to the connection of distributed generators to electricity distribution networks. The current process for the connection of Small-Scale Distributed Generation (SSDG) is set out in Part 1 of Schedule 6.1 of the Code. The initial part of the process includes: • An SSDG must apply for approval from the distributor prior to connection to the network and the application must include information on the SSDG system including the technical specifications; and • The distributor has 30 working days to approve or decline the application (an extension may be granted by mutual consent); and • The SSDG must give notices of intention to proceed within 10 working days of receiving approval. In October 2011 the Authority undertook a pre-consultation process to seek views on how the process for the connection of distributed generation could be improved. Based on the pre-consultation process the Authority has identified that around 17% of SSDG's may not be following the current connection approvals process set out in Part 1 of Part 6 of the Code. As a result distributors may not be aware of SSDGs on their networks and this creates potential safety and power quality concerns. To address this concern, the Authority is proposing to replace the current approval process for SSDGs with a new <i>ex post</i> notification process. New <i>ex post</i> notification process for connection of SSDGs In summary, the Authority's proposed new notification process for the connection of SSDGs involves: • SSDGs that meet a set of pre-conditions would be able to connect to a distribution network without receiving prior approval from the distributor; • The SSDG would notify the distributor within 5 working days of connection to the network and provide the required documentation; and • The distributor would have the opportunity to test and inspect the SSDG and subsequently disconnect the SSDG if the required standards are not met. The pre-conditions for connection by a SSDG without prior approval

Submitter	Comment
	would include: • The SSDG is designed and installed in accordance with AS 4777.1; • The SSDG incorporates an inverter that has been tested and issued a declaration of conformity with AS 4777.2 by laboratory accreditation or recognised by International Accreditation NZ; and • The SSDG has been inspected and issued a certificate of compliance under the <i>Electricity (Safety) Regulations 2010</i> (Regulations). Importantly, this proposed process involves SSDGs first notifying distributors 5 working days after connection to the network whereas the current arrangements require notification and approval prior to connection. WELL does not support the Authority's proposed <i>ex post</i> notification process. The connection of SSDGs without prior notification to the distributor raises significant safety issues for personnel working on the distribution network. The Authority should not underestimate this issue. WELL considers that specifying the required standards does not provide sufficient guarantee that the standards will be followed and is therefore not an appropriate substitute for an <i>ex ante</i> approval process. Without prior notification before an SSDG connects to the network, distributors cannot be confident that the SSDG has met the required technical specifications (specifically, the pre-conditions listed above). In particular, it is essential that the SSDG incorporates an inverter that conforms to the required standard (AS 4777.2). The inverter ensures that when supply is cut off from a part of the network, the SSDG cannot export supply into that part of the network. If the SSDG has not installed the inverter then personnel could unknowingly be working on live lines. The consequences of this could be a fatal injury and in WELL's view this is an unacceptable risk. There is also a risk that, if an SSDG is found to be non-compliant with the technical standards after connection occurs, distributors would have limited jurisdiction to disconnect a non-compliant SSDG within the customer's premises. Disconnection would likely occur at the property boundary (point of connection) and would cause the consumer a total loss of supply which would likely lead to a customer complaint process. For this reason the Authority must retain a pre-connection notification process for the connection of SSDGs. Alternative process for connection of SSDGs As an alternative to the Authority's proposed <i>ex post</i> notification

Submitter	Comment
	process, the Authority could amend the current process in Part 1 of Schedule 6.1 of the Code to: Require SSDGs that meet the proposed pre-conditions (as listed above) notify the distributor and provide the relevant documentation at least 5 working days before connection; Within the five working days, the distributor can assess the documentation and confirm that the SSDGs proposal meets the technical specifications before connection occurs; The distributor can refuse the connection before connection occurs if the pre-conditions are not met; and The distributor may subsequently inspect the SSDG and disconnect at the network point of supply if the standards are not met. This alternative process would reduce the time and number of transactions required before an SSDG could connect to the network while still ensuring that distributors have the opportunity to confirm that the technical specifications will be met before the SSDG actually connects to the network. This alternative process is designed primarily to ensure the safety of personnel working on the network.

Appendix B Responses to questions asked in the consultation paper

- B.1 This Appendix provides in tabular form the Authority's responses to submissions that were made relating to the 10 questions that were asked in the September 2012 consultation paper. In general, a brief style of response has been provided.
- B.2 Important note: Many of the submission points included in this table have been responded to elsewhere in the paper. The responses included in this table may or may not provide an appropriate cross reference. We request that readers consider the paper as a whole in terms of providing responses to submitted points.

Table 5: Authority's responses to answers provided to the questions asked in the consultation paper

Question 1

Do you agree the proposed Code amendment to introduce a lower cost connection process promotes the Authority's statutory objective? If not, please explain why not.

Submitter	Comment	Authority's response
Alphatron	Yes	Support noted.
Aurora	Any Code amendment likely to introduce lower costs is likely to meet the Authority's statutory objective; however, we consider that the Authority's specific proposal to develop a new Part 1A of Schedule 6.1 appears to reach for a solution to a problem that is not adequately understood, and in our opinion, runs contrary to the Code Amendment Principles. See section 4.2, above.	Support for reduced transaction costs noted. Issue with problem definition addressed in discussion in body of this paper. The Code Amendment Principles recognise that quantitative analysis will not always be possible. However, the Authority intends to develop a

Submitter	Comment	Authority's response
		revised proposal in the next Part 6 consultation paper that will look to provide quantitative analysis.
Genesis	Yes.	Support noted.
MainPower	We in general agree that the proposed amendment promotes the EA's statutory objectives. However, we have a reservation in tabling part 1A process at this stage. Please refer to our comment on question 2.	Support noted. Issue with problem definition discussed in body of this paper.
Meridian	Meridian considers that safety should be of paramount importance in considering an appropriate connection process for DG. We agree with the Authority's statement that situations where distributors are unaware of the presence of DG pose serious safety concerns. As such, we consider that achieving full compliance in the notification of DG should be a central objective of any proposal. Meridian considers the proposed lower cost connection process combined with educational and awareness initiatives will assist with encouraging greater notification of DG connections and is likely to promote the Authority's statutory objective. We emphasise that a bottom line of any streamlined process needs to be compliance with the stated safety standards and regulations.	Support noted.

Submitter	Comment	Authority's response
	However, we do not consider that the addition of a streamlined process, on its own, is likely to result in full compliance with DG notification requirements. We therefore suggest that the Authority considers: Reducing the prescribed maximum fees set out in Schedule 6.5 of the Code; and Investigating how it might ensure greater enforcement of the existing obligations to notify DG connections. Achieving full compliance in the notification of DG installations will assist with mitigating safety risks associated with the connection of DG.	Suggestions noted. A revised proposal is to be developed having considered all submissions. Code breaches are investigated as the Authority becomes aware of breaches. Noted.
Orion	No. We believe the change will compromise safety, and potentially quality and reliability.	View noted. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider these issues.
Pioneer Generation	Yes	Support noted.
Powerco	No. In Powerco's case, the application process for DG under 10kW has already evolved into a streamlined, two step	Issues raised and Powerco's approach are noted.

Submitter	Comment	Authority's response
	process where the applicant, usually a seller/installer, sends us the application including AS4777 compliance documentation for the inverter. If the details are complete we then advise the applicant of such, and enter the proposal into our DG Register as an application. When the installation is ready to commission, the applicant advises us and we update the status to operational. In many cases, the DG is connected and operational before we receive final notification and certification. This is not an issue to us provided the advice arrives within a short time of commissioning. Powerco does not charge any application fee or carry out inspections for DG under 10kW. However, the uptake of these systems is progressing at such a pace that the administration cost of processing applications is becoming significant, and it is likely that the regulated fee will be introduced to recoup some of that cost. Powerco maintains a register of all DG on its network, and shows each installation on network drawings and SCADA systems. ICPs are also updated in the registry where DG is export capable. These processes all require input from different parts of the business, at cost. That cost, in terms of employee time and operational process equates to about \$260 per application. We believe that the "connection cost" (in terms of application fees of one or two hundred dollars) has no bearing on the customer's appetite for proceeding with an installation when the total hardware and installation costs are in the region of	The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider these issues as part of providing a streamlined nationally consistent connection process.

Submitter	Comment	Authority's response
	ten to fifteen thousand dollars.	
SEANZ	Yes	Support noted.
Solar City	Agree	Support noted.
TLC	TLC is generally comfortable with the Authority's proposed amendments to the Code, which should lower the cost of connection. TLC supports the connection of distributed generation to its network where it complies with the relevant standards. We also support the objective of establishing a low cost process to encourage notification of small scale connection to distributors.	Support noted.
Unison	Unison agrees with developing a more efficient and simplified process as it would improve the customer connection experience as well as potentially save costs for Unison. However, we do not believe the proposed Code amendment addresses the wilful avoidance of SSDG notification which we believe is a primary driver of un-notified SSDG. Regarding the maximum cost levels proposed we believe the \$60 inspection cost is too low as this is the most costly part (labour plus travel costs). The current fee structure is cost-	Support for reduced transaction costs noted. Issue with problem definition discussed in the body of this paper. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider these issues as part of providing a streamlined nationally consistent connection process.

Submitter	Comment	Authority's response
	effective. Unison also has concerns over the proposed retrospective notification aspect of the amendment (as noted in the accompanying letter). This will impact on our network engineers' ability to plan and manage potential network issues (voltage, power quality, overloading) arising from significant uptake of DG. This also raises concerns regarding safety hazards, revenue loss and customer experience.	
Vector	Vector considers that the Code change should simplify the process and supports it on that basis. However, we consider that the proposals are unlikely to resolve the issue of under notification of connections. Vector currently does not charge anything (\$0 fee) for processing application for DG of less than 10kW. Despite this, our experience demonstrates that the current \$0 fee application still does not encourage some DG owners to notify Vector of the connected DG. Vector also considers that the simplified process should only apply to a single installation of small scale distributed generation within single customer installation limited to current per phase e.g. $\leq 16A$. For planned installations of SSDG in close geographical proximity to other installations the current process may need to be used as the impact on the network of the co-located installations will need to be	Support for simplified process noted. Issue with problem definition discussed in the body of this paper. Suggestion noted. The revised proposal should address these concerns.

Submitter	Comment	Authority's response
	assessed.	

Question 2

What improvements should the Authority consider to the proposed Part 1A process?

Submitter	Comment	Authority's response
Alphatron	Some further improvements are possible to further simplify the connection while improving safety and quality of systems. Providing a copy of a CoC signed by the installer and inspector should be sufficient evidence that an installation complies with regulation. The Electricity Safety regulations require grid connected PV installations to comply with AS4777 and AS/NZS 5033. Through AS4777, inverters and grid-protection devices are required to comply with the relevant sections of this set of standards (AS4777 certification). Through AS/NZS 5033, PV modules are required to be certified to class A of IEC 61730 part 1 and 2 (61730 certification). Further equipment and component certifications may be required in future (such as compliance mark for PV cable in the new version of 5033). Without these certifications, a CoC cannot be issued, so if a CoC has been issued, this automatically means that all components have the required certificates and installation complies with the requirements of the relevant standards. Enforcement of issuing CoC for prescribed work is not the task of Distributors. Currently, there is no indication at all that the CoC process is not working properly and if it is (not working properly), this should be addressed by the relevant authorities rather than by creating a second compliance regime in parallel to the	The points raised have been considered in developing the revised Part 1A proposal. Of note is that the points raised refer only to solar PV, whereas Part 1A would apply to any generation technology that is inverter-connected.

Submitter	Comment	Authority's response
	regime already in place. Asking DG owners to supply distributors with selected additional information creates some serious potential problems: Responsibility and requirements for compliance become unclear. By only asking for selected information such as the AS4777 certification, it could be interpreted that e.g. the module IEC61730 Class A certification is not required (currently, the use of non compliant modules is a bigger safety concern than non-compliant inverters). A system that receives approval from the Distributor to connect may in the proposed process incorrectly be interpreted as being compliant. The process of providing selected specified information to the Distributor instead of a single certification of compliance creates a rigid regime that will be incomplete from the date it is introduced. In reality standards are continually updated. An example is the requirement for modules to meet the requirements of Class A IEC 61730 part 1 and 2 as per the amendment to AS/NZS 5033 2009. Providing a single line diagram and a copy of the inverter AS4777 certification does not provide any additional information to the Distributor about the system as this information is already covered by the CoC. This means that the process is simply creating additional paperwork and also runs the risk of being interpreted by the installer that responsibility for compliance can be passed on to the	

Submitter	Comment	Authority's response
	Distributor. Providing trip level settings should not be part of individual connection applications. Permissible trip level settings are defined in AS4777, compliance with the requirements of AS4777 should suffice. As per the requirements of AS4777, these settings are not user adjustable without higher level password protection. In practical situations, it is either the manufacturer or the importer who program these settings, usually by selecting a country code which sets the manufacturer default values for that country. These settings are rarely changed in the field and if they are, the AS4777 certification would not necessarily apply anymore. The current version of 4777 defines a range of permissible voltage and frequency trip levels, the next revision is expected to give a set of recommended settings. There is no indication at all that specific trip levels are of any concern at the moment, certainly not for AS4777 certified inverters. In fact, SEANZ conducted an informal investigation among selected Distributors in 2008 to see if any country wide recommendations could be established. No particular concerns about the adequacy of the 4777 range were voiced and no reasons why trip levels should be different for any particular distributor were identified.	Protection trip settings are critical to the proper functioning of both the SSDG and the network. Voltage has mainly a local impact. Frequency has an island-wide impact. AS 4777 as it stands provides only a maximum operating range of voltage and frequency settings – it is a minimum equipment performance standard, not a network standard (since it does not determine what settings within the range should be applied). Country settings in NZ's situation are spurious – there has never been "NZ approved" country settings for inverters and there is some evidence that manufacturers simply treat NZ as if it were a part of Australia. Protection settings-related issues have occurred.

Submitter	Comment	Authority's response
	If specific trip levels are a concern to any of the distributors, they should be encouraged to become members of SEANZ and participate in the AS4777 standards development Requiring individual trip levels to be part of the application process has a number of undesirable consequences: Distributors may each ask for (slightly) different trip levels without there being a technical reason for these levels to be different. This is highly impractical situation because of the way trip levels are set in the equipment (i.e. by the manufacturer or importer). Making slight adjustments for each Distributor is a significant cost burden. The goal should be nation-wide standardisation, not diversification of requirements. Providing trip settings does not provide the distributor with any further critical information if they already have the information that the grid-protection device is AS4777 compliant. It therefore is an unnecessary paperwork burden for both the Distributor and the DG owner The power limit for simplified procedure should be increased to 30 kW. The next revision of 4777 is expected to include a requirement that the DG may not create an imbalance greater than 5 kW on a 3-phase network. This means that any installation over 5 kW will be a 3-phase system. 30kW in 3-	It is for NZ network operators to specify these settings and there may be situations where voltage trip settings should be situation specific (frequency should be island-wide – or NZ-wide – standard settings). The comment that the revised version of AS 4777.3 is to include recommended settings is noted and addressed in the body of the paper in section 3.4. Agreed. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider these issues as part of providing a streamlined nationally consistent connection process. Disagree. See comments in section 3.2.6 item 12.

Submitter	Comment	Authority's response
	phase is unlikely to affect any Distributor assets. In this regard, it should also be noted that DG of this small size are generally installed in installations that have a capacity that is at worst equal but more commonly several times higher than the capacity of the DG. This assessment is supported by the fact that current regulation already allows simplified procedures for 10kW without requiring this to be balanced over 3-phase, so 30 kW balanced over 3-phase has a lower impact than the current 10kW. Forms should be signed by DG owner or his agent. Currently, some distributors require the application/notification documents to be signed by the installer. This can have practical complications as the installer is generally an electrical contractor. They sign their CoC and move on to the next job. The documentation and information required for the connection are generally collected by the DG owner or his agent (usually the system supplier). Having to go back to the electrical contractor is impractical and can cause additional delays. It does not add any further assurance as the contractor has already provided a signed CoC.	Agreed. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider these issues as part of providing a streamlined nationally consistent connection process.
Aurora	See section 5, above. 5. ALTERNATIVE PROPOSAL Aurora proposes the following alternative process, in order to assist with the reduction of transaction costs associated with	These points will be considered in developing a revised proposal.

Submitter	Comment	Authority's response
	SSDG connections: The process for obtaining approval to connect specified in Schedule 1 is maintained; however, the timeframe for considering and approving an application is reduced to 10 working days (20 with extension). Clause 6.3 of the Code is amended to require that distributors maintain a website register of approved inverters. Where a non-approved inverter is proposed, the distributor may require that the distributed generator provide a Declaration of Conformity (DoC) issued by a laboratory with accreditation issued or recognised by the Joint Accreditation System of Australia and New Zealand (JAS-ANZ). Alternatively, the distributor may, at its election, research the compliance of the proposed inverter itself. A connection application may only be declined by a distributor where the inverter does not have a DoC meeting the requirements of (3) above and/or the distributor, acting reasonably, believes that connection of the SSDG is likely to cause adverse network effects. Where the distributor, acting reasonably, believes that connection of the SSDG is likely to cause adverse network effects, the distributor must work with the distributed generator to develop a network solution that will allow the connection to proceed; however, the distributor is not required	

Submitter	Comment	Authority's response
	to implement such a solution at its cost. The distributed generator must, following installation, provide the distributor with a copy of the Certificate of Compliance stating that the installation of the SSDG complies with AS/NZS3000 and AS4777.1 The distributor may inspect, and observe the testing and commissioning of the SSDG before, or at the time of, connection. The maximum fees, exclusive of GST, that may be charged by distributors in respect of SSDG connections are: Applications using approved inverters \$50.00 Applications incorporating unapproved inverters \$100.00 Inspection \$60.00	
Genesis	We consider that it would be unfair and arbitrary to require owners of SSDG to pay the cost of unnecessary inspections. We recommend that distributors should be required to waive the customer fee for a site inspection, if this inspection confirms that the owner of SSDG has provided accurate documentation supporting their application.	Disagree. To be consistent with other inspection fees in Part 6, the fee should apply regardless of the outcome of the inspection.

Submitter	Comment	Authority's response
MainPower	The idea of a simplified notification process is commendable as most SSDGs have simplified requirements that do not warrant a fullscale connection process. We also believe this will address our earlier concern expressed However, we are uncertain about the effects of multiple SSDGs installed on the same feeder. Secondly it is possible that the distribution transformers installed on feeders may be at tap settings that result in either the DG power causing overvoltage at the feeder connected, or the DG may not be capable of realising the fullest extent of its export potentials provided it stays within the voltage limits specified by the distributor. We believe this could be resolved by providing a nationally consistent protection settings and specific power quality requirements as disclosed in the general comments section. Part 1A should not be introduced until such parameters are agreed upon industry wide. We strongly recommend the EA consult the experiences gained from high DG penetration in Australia, as disclosed by Louis²⁵. At the operational level, we have noticed distributed generators are not required to disclose details of the DG in its notification to the distributor. This was discussed in the	Support for Part 1A process noted. Concern about multiple SSDG installations noted. Distributors will need to research potential issues and develop solutions. Improved inverter standards are an important part of this. Standardised protection settings are discussed in section 3.4. Point noted. International studies and experiences gained from high DG penetration are discussed in section 3.2.6 Point noted. The Part 1A proposal has been modified to provide for this.

²⁵Louis, Alan "Integrating", sections "Passive Anti-Islanding Protection" and "Government Policies and Australian Standards".

Submitter	Comment	Authority's response
	general comment section above and we suggest Clause 9B(1) be amended as suggested. There is also a need for correction to Clause 9E(6). The wording "under subclause (6)..." should instead be "subclause (5)".	Agreed.
Meridian	See above.	
Orion	We see no need to change the process at all.	View noted. In the absence of greater detail no further action has been taken. There will be further opportunity to provide additional detail in response to the next Part 6 consultation paper.
Powerco	Powerco does not believe that the proposed Part 1A process will have any effect on uptake levels. Part 1A just seems to add another (unnecessary) layer to the Code. It is very confusing, in that 2 (1) (a) states that "a distributed generator must apply (--) if it intends to connect distributed generation." This would appear to nullify any following clauses included the proposed Part 1A to allow connection without application.	View noted. A revised problem definition will be developed as part of a revised proposal. Clause 2(1) is subject to clause 2A, which provides for the Part 1A process for compliant installations.
SEANZ	SEANZ believes further changes can be made to simplify and improve the connection while improving safety and quality of	See responses to Alpatron submission points,

Submitter	Comment	Authority's response
	systems : The provision of a copy of a CoC signed by the installer and inspector should be sufficient evidence that an installation complies with regulations. The Electricity Safety regulations require grid connected PV installations to comply with AS4777 and AS/NZS 5033. Through AS4777, inverters and grid-protection devices are required to comply with the relevant sections of this set of standards (AS4777 certification). Through AS/NZS 5033, PV modules are required to be certified to class A of IEC 61730 part 1 and 2 (61730 certification). Further equipment and component certifications may be required in future (such as compliance mark for PV cable in the new version of 5033). Without these certifications, a CoC cannot be issued. Therefore if a CoC has been issued, the components have the required certificates, and installation complies with the requirements of the relevant standards. Enforcement of issuing a CoC for prescribed work is not the task of Distributors. Currently, there is no indication that the CoC process is not working properly . If it is not, then this should be addressed by the relevant authorities rather than by creating a second compliance regime in parallel to the regime already in place. Asking DG owners to supply distributors with selected additional information creates some serious potential problems: Responsibility and requirements for compliance become	which duplicate these points.

Submitter	Comment	Authority's response
	unclear. By only asking for selected information such as the AS4777 certification, it could be interpreted that e.g. the module IEC61730 Class A certification is not required (currently, the use of non compliant modules is a bigger safety concern than non-compliant inverters). A system that receives approval from the Distributor to connect may in the proposed process incorrectly be interpreted as being compliant. The process of providing selected specified information to the Distributor instead of a single certification of compliance creates a rigid regime that will be incomplete from the date it is introduced. In reality standards are continually updated. An example is the requirement for modules to meet the requirements of Class A IEC 61730 part 1 and 2 as per the amendment to AS/NZS 5033 2009 Providing a single line diagram and a copy of the inverter AS4777 certification does not provide any additional information to the Distributor about the system as this information is already covered by the CoC. This means that the process is simply creating additional paperwork and also runs the risk of being interpreted by the installer that responsibility for compliance can be passed on to the Distributor. Providing trip level settings should not be part of individual connection applications.	

Submitter	Comment	Authority's response
	Permissible trip level settings are defined in AS4777, compliance with the requirements of AS4777 should suffice. As per the requirements of AS4777, these settings are not user adjustable without higher level password protection. In practical situations, it is either the manufacturer or the importer who program these settings, usually by selecting a country code which sets the manufacturer default values for that country. These settings are rarely changed in the field and if they are, the AS4777 certification would not necessarily apply anymore. The current version of 4777 defines a range of permissible voltage and frequency trip levels, the next revision is expected to give a set of recommended settings. There is no indication at all that specific trip levels are of any concern at the moment, certainly not for AS4777 certified inverters. In fact, SEANZ conducted an informal investigation among selected Distributors in 2008 to see if any country wide recommendations could be established. No particular concerns about the adequacy of the 4777 range were voiced and no reasons why trip levels should be different for any particular distributor were identified. If specific trip levels are a concern to any of the distributors, they should be encouraged to become members of SEANZ and participate in the AS4777 standards development Requiring individual trip levels to be part of the application process has a number of undesirable consequences:	

Submitter	Comment	Authority's response
	Distributors may each ask for (slightly) different trip levels without there being a technical reason for these levels to be different. This is highly impractical situation because of the way trip levels are set in the equipment (i.e. by the manufacturer or importer). Making slight adjustments for each Distributor is a significant cost burden. The goal should be nation-wide standardisation, not diversification of requirements. Providing trip settings does not provide the distributor with any further critical information if they already have the information that the grid-protection device is AS4777 compliant. It therefore is an unnecessary paperwork burden for both the Distributor and the DG owner The power limit for simplified procedure should be increased to 30 kW. The next revision of 4777 is expected to include a requirement that the DG may not create an imbalance greater than 5 kW on a 3-phase network. This means that any installation over 5 kW will be a 3-phase system. 30kW in 3-phase is unlikely to affect any Distributor assets. In this regard, it should also be noted that DG of this small size are generally installed in installations that have a capacity that is at worst equal but more commonly several times higher than the capacity of the DG. This assessment is supported by the fact that current regulation already allows simplified	

Submitter	Comment	Authority's response
	procedures for 10kW without requiring this to be balanced over 3-phase, so 30 kW balanced over 3-phase has a lower impact than the current 10kW. Forms should be signed by DG owner or his agent. Currently, some distributors require the application/notification documents to be signed by the installer. This can have practical complications as the installer is generally an electrical contractor. They sign their CoC and move on to the next job. The documentation and information required for the connection are generally collected by the DG owner or his agent (usually the system supplier). Having to go back to the electrical contractor is impractical and can cause additional delays. It does not add any further assurance as the contractor has already provided a signed CoC.	
Solar City	The retailer and party who fits the meter for the retailer form a significant part of the connection process. At this time our clients often have to wait for 70 days from first application to be able to turn on the distributed generation that they have paid for. This typically consists of: • 20 days for initial application • 20 days for approval notification response • 30 days for fitting of meter by retailer. This does significantly affect the efficiency of the process and	Metering is regulated under a separate Part of the Code and has recently been extensively reviewed. The timeframes in items 1 and 2 are addressed by the Part 1A proposal. With respect to fitting meters, parties installing DG will need to anticipate lead times for metering (different providers will have different lead

Submitter	Comment	Authority's response
	incurs a cost of lost revenue on the owner of the distributed generation. Suggested improvements: Obligation for retailers to operate in a timely fashion to switch distributed generator owner to a tariff that allows export of DG Obligation for retailers to fit meter within 10 days that is capable of metering of distributed generation export. The installation of such a meter should be: • on request by customer who has an intention to install DG • without need to site documentation that the installation has been completed and approved by the distributor Obligation of retailers to only purchase energy from a DG installation that has been approved by the distributor and is listed on the register	times) and plan accordingly. Retail tariffs are not regulated as retailing exists within a contestable market. See response to metering point above. This is provided for in the MUoSA (interposed cl. 14.8), which is acknowledged as a voluntary model agreement representing best commercial practice between distributors and retailers. The Authority considers that a voluntary approach is appropriate at this time and is monitoring the uptake of UoSAs based on the MUoSA.
TLC	While TLC supports the connection of small scale distributed generation ("SSDG") which complies with the Code, it is unreasonable to expect distributors to regulate or vet such	Points noted.

Submitter	Comment	Authority's response
	connections. Therefore TLC supports the implementation of measures to strengthen the applicable standards and to incentivise adherence to those standards (eg penalties for connecting non-compliant SSDG). This should promote the connection of safe and reliable equipment only, thereby preventing further costs and inefficiency due to increased faults and prolonged maintenance procedures required to work around any equipment that creates uncertainty regarding electricity flows. TLC therefore agrees with the proposal that distributors have the power (but not obligation) to inspect SSDG installations and require changes (under threat of disconnection) where necessary in order to maintain the integrity of their distribution network. Further, the proposal should be clarified by expressly providing that distributors are only required to issue a notice of final approval (under proposed clause 9F of Schedule 6.1) where they have decided to inspect SSDG and as a consequence have sought changes to the SSDG concerned in order to remedy a deficiency.	Inspection provisions will be provided in the proposal. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will allow for connection without a notice of final approval, under certain conditions.
Unison	No further suggestions.	Noted.

Submitter	Comment	Authority's response
Vector	Clause 9E should include for inspection to be carried out by a third party and allow for the recovery of the full inspection costs. The following are areas that would benefit from clarification: 9E (5) b ii – this should be changed from year to months (i.e. 1 year should be 12 months). 9E (6) – it is unclear: • if the approval provided by a distributor under 9E (6) is the same as the 9F Notice of Approval?; or • if a 9E (6) approval is additional to a 9F approval, is the ten business days requirement in both clauses concurrent or consecutive? Vector notes that the process in clause 9E does not differentiate between degrees of non-compliance. We suggest setting different requirements based on the risk posed by the non-compliance, for example: • Low – technical breaches involving labelling, minor compliance that do not threaten the safety of individuals or network integrity – 30 days. • Medium – significant issues that are not immediate safety	The basis for fixed costs is not being considered as part of this review and is therefore considered out of scope. 9D already provides for inspection by the distributor, which could subcontract this function. Agreed. Yes it is the same as the notice of approval. A revised proposal is to be developed, which should address this concern. Disagree. The Authority does not consider that degrees of non-compliance would assist in this instance. A revised proposal is to be developed where the onus will likely be on the distributor to act quickly upon receipt of the connection application if it determines non-compliance.

Submitter	Comment	Authority's response
	or network issues - 10 days. • High – issues that involve protection and control, threats to the safety of premise and individual, risk of fire - immediate disconnection; i.e. a clause clarifying that distributors are able to require immediate disconnection when DG is deemed to be unsafe, notwithstanding anything to the contrary in Part 6. Sub-clause 9E(6) refers to subclause (6). This is an error and should refer to subclause (5). The timeframe under 9E(6) refers to a date on which is “reasonably satisfied”, this is rather subjective. Further, for clarity this clause should include a process step for the distributed generator to notify the distributor of their efforts to remedy the deficiencies. Clause 9F refers to “notice of final approval”, “notice” and “notice of approval”. We recommend a consistent term is used. The sub-clause 9F(2)(b) timeframe refers to “date on which it is reasonably satisfied” seems to be a subjective test and therefore does not promote clarity within the Code. The Authority is likely to receive detailed drafting comments on the new Part 1A from various parties. Vector strongly recommends the Authority conduct a further consultation on the new Part 1A before it is finalised in order to confirm it is	Agreed. Disagree. The Authority considers the proposed additional step is unnecessary. A revised proposal has been developed which addresses this point. View noted. The Authority considers this is necessary to have a degree of subjectivity to achieve flexibility. Detailed drafting comments will be sought in the next consultation paper.

Submitter	Comment	Authority's response
	workable.	

Question 3

***Which organisations should undertake education and awareness initiatives relating to the connection of DG?
If so, what specific initiatives do you think should be considered?***

Submitter	Comment	Authority's response
Alphatron	The first port of call for people planning to install DG is generally a system provider. This means that SEANZ should play an important role in education of installers and in informing the general public (both of which it already does with the means available to it). As the interests around DG are much wider than the interests of SEANZ members, funds should be made available for SEANZ to implement suitable initiatives. In addition to education and awareness initiatives through SEANZ, the distributors should also have the relevant procedures on their websites.	Views relating to awareness and education have been considered and discussed in the body of this paper.
Aurora	Aurora considers that wider industry organisations than those specifically focussed on SSDG should be involved. We have suggested the Electrical Contractors Association of New	Views relating to awareness and education have been considered and discussed in the body of this paper.

	Zealand as one specific example.	
Genesis	We strongly support the Authority investing in initiatives to increase awareness about the process for connecting SSDG. We consider that any initiatives should be: • led, in their development, by a single central body to ensure consistency in the information made available; and, • targeted at front line service providers, like installation companies (rather than the public at large) with the expectation that these organisations will disseminate this information to interested parties. Specific options could include informative guidelines or workshops for front line service providers.	Views relating to awareness and education have been considered and discussed in the body of this paper.
MainPower	In our opinion, the industry representatives such as the EEA (Electricity Engineers Association), or the EA itself, will be the most appropriate party to undertake such measures. The EA already spending time educating residential consumers to become aware of the benefits of switching retailers. Since the sector of the population that require the most information regarding DG are often the same residential consumers, it is sensible for the EA to provide education. Alternatively, the industry representatives have the most technical knowhow to educate the residential consumers to make an informed decision. It is also easier for the industry to pool together to promote DG at an industry wide level than for each distributor or DG manufacturers to provide potentially	Views relating to awareness and education have been considered and discussed in the body of this paper.

	different information.	
Meridian	Meridian considers that education on the DG connection requirements should form part of electrician training programmes.	Views relating to awareness and education have been considered and discussed in the body of this paper.
Orion	The Authority is well placed to do this. System suppliers are probably the best target audience as we believe they will be well placed to influence behavior of the investing parties. Orion would be happy to participate in such initiatives.	Views relating to awareness and education have been considered and discussed in the body of this paper.
Pioneer Generation	Should be a joint initiative between generator / retailers and lines companies and should emphasise the importance of proper tradesmen like installations and encourage the use of reputable produces that are appropriately tested and certified	Views relating to awareness and education have been considered and discussed in the body of this paper.
Powerco	The Skills Organisation (formerly ETITO) currently has a draft Renewable Energy Systems qualification document with NZQA. This should be an avenue to look at using to create awareness of the regulations. The connection of SSDG equipment to the customer's low voltage distribution system is prescribed electrical work, and must be carried out by a registered person, so perhaps the Electrical Workers Registration board should have some involvement and advocacy. Electricity retailers should also take some responsibility for communicating the requirements as they have a closer link	Views relating to awareness and education have been considered and discussed in the body of this paper.

	with customers.	
Solar City	Who: Disributors Retailers Metering companies Electrical inspectors DG installers DG retailers What: Online booklet on connection process	Views relating to awareness and education have been considered and discussed in the body of this paper.
TLC	TLC believes that appropriate education and awareness initiatives on the standards for SSDG installations are crucial to ensuring the safety and integrity of distribution networks nation-wide. TLC submits that the Electricity Authority and/or Energy Safety within the Ministry of Business, Innovation and Employment are the most appropriate bodies to undertake education and awareness programmes regarding the connection of distributed generation. TLC envisages such awareness programs could include pamphlets providing	Views relating to awareness and education have been considered and discussed in the body of this paper.

	general information on appliance safety.	
Unison	EECA under its mandate, objectives and funding for energy efficiency and sustainability should take a lead in this area and engage with SSDG industry players (suppliers, installers, advocacy groups) as well as provide consumer information including compliance requirements both directly to consumers and for use by industry players.	Views relating to awareness and education have been considered and discussed in the body of this paper.
Vector	This should be a combined effort involving multiple industry parties. The Authority, retailers, distributors and sellers of DG equipment all have a role to play in making information available. It would be particularly helpful if sellers of DG equipment provided information about the Application/ Notification when they sell each unit.	Views relating to awareness and education have been considered and discussed in the body of this paper.

Question 4

Do you consider a three month implementation period gives distributors a reasonable time period in which to prepare for the proposed changes?

Submitter	Comment	Authority's response
Alphatron	Yes	Support noted.
Aurora	Yes.	Support noted.
Genesis	No comment.	
MainPower	We agree with the implementation period, subject to the condition that a nationally consistent inverter settings, protection settings, and specific power quality requirements are already in place. Otherwise, it is impractical to introduce the change.	Conditional support noted. However, the Authority considers it impractical to set nationally consistent inverter settings, protection settings, and specific power quality requirements at this stage.
Meridian	Distributors will be best placed to comment on the appropriateness of this timeframe.	Noted.
Orion	We do not consider that the process should be changed. However, if it is changed, three months is not sufficient. A minimum of six months would be required.	Support for 6 months noted.

Pioneer Generation	Yes	Support noted.
Powerco	No, any regulatory changes (EIPC) would necessitate changes in our approved standards. Six months minimum would be required for documentation, review and approval.	Support for 6 months noted.
SEANZ	Yes	Support noted.
Unison	No comment	
Vector	Vector considers that three months is reasonable but an additional month should be provided where the application is made less than three months prior to the Christmas/New Year holiday period.	Support for 3+1 months noted.

Question 5

Do you agree that the proposed technical and operational Code amendments promote the Authority's objective? Feedback on the individual proposals from Table 5 in Appendix D should be included using Table 3 in Appendix A.

Submitter	Comment	Authority's response
Alphatron	To a certain extent they do. What is missing is strong regulation of the commercial (buy back) arrangements. Referring this to a separate workgroup is not a good strategy as the problems cannot be solved if they are treated in isolation. As recognised by the Authority, connection of potentially non-compliant systems without notification to the distributors is an existing problem. The assessment by the Authority that the costs involved with the network connection application are the reason for this situation is only partially true. A far more likely reason is that power retailers are not prepared to negotiate DG friendly contracts. Especially in a residential situation where the power profile during the day (when occupants are at work) means that there is considerable export, even though the owner may be a net consumer, the DG owner does not get a fair deal if billing is not 1 for 1. As most people believe that their meter will run backwards if they do not have an export meter (regardless if it really does), they may opt not to	Market arrangements relating to energy sale and purchase from DG are not within the scope of this technical review – they have been separately consulted on by the Retail Advisory Group as part of that group's review of market barriers facing SSDG. See http://www.ea.govt.nz/our-work/programmes/market/distributed-generation/

	apply for connection and keep their system under the radar. The commercial arrangements are an integral part of the problem as well as the solution to ensuring connected systems are safe and do not interfere with the network and should therefore not be treated in isolation. Also, by not regulating buy back arrangements, retailers are likely to use their monopoly to keep DG by consumers from becoming a major contributor in the electricity generation market and therefore the potential that DG has to introduce real competition is not realised. The first signs of this can already be seen by Meridian reducing their 1 for 1 offer and capping the new offer to a low maximum kWh export. The entrenched market powers will resist DG as it is a threat to their revenue stream. Regulation is required to ensure that the benefits of additional private investment in sustainable generation as well as the competition that it brings are not unnecessarily restricted by those entrenched market powers. One such measure could be to allow small DG to use the grid as “temporary energy storage”: what they export they may “re-import” without incurring additional charges from the power retailers (after all the retailers do not own or operate the grid). This simple measure helped Denmark to reach its solar target 8 years early as it makes DG feasible for the working class who are currently excluded from participating due to their residential power profile. http://www.the9billion.com/2012/09/24/denmark-reaches-	
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	2020-solar-energy-goal-8-years-early/	
Aurora	See section 8, below.	-
Genesis	Yes. On the whole, the amendments appear to improve the clarity and completeness of Part 6 of the Code. This will have efficiency benefits for both distributed generators and distributors.	Support noted.
MainPower	We have not reviewed the proposed amendments in detail. From what we have read the amendments are in general proposed in order to make the provisions related to DG more consistent with other parts of the Code, and to line up with other Code Amendments already enacted. We agree that the transaction costs for all stakeholders will decrease. However, with reference to Louis we question whether such amendment will help fully achieve the EA objective of improving the reliability of the supply without a nationally consistent inverter settings and specific power quality requirement in place.	Support noted. This topic is responded to in detail within the body of this paper.
Meridian	The proposed technical and operational amendments appear reasonable. In particular, we support the proposals to exclude temporary generation and standby generation from the Part 6 requirements.	Support noted.

Orion	Given that the Authority's objective is expressed in terms of consumers, not generators, we thought the paper would focus on the possible implications for safety and reliability, rather than generator ease of access. Increased penetration of SSDG may, just may, help place downward pressure on energy prices, but it will almost certainly place upward pressure on delivery prices, and definitely has the potential to create issues for other consumers.	Points noted. All aspects of the electricity supply chain are ultimately for the benefit of consumers – this includes allowing for DG to connect to networks, providing diversity and contestability of supply and a variety of alternative supply sources for many consumers.
Pioneer Generation	Yes, a simplified version should be made available for those proposing to install DG that can be easily understood.	We presume this relates to information and awareness of the Part 6 DG connection requirements. There are several sources for this type of information already in existence. See for example the SEANZ and EECA websites. The Authority also published a fact sheet and a set of guidelines.
Powerco	No, not in any material sense. They may support the alignment of Part 6 with the Code but not materially promote the objectives.	Noted.
SEANZ	Yes, however, what is missing is regulation of the commercial (buy back) arrangements. Referring this to a separate workgroup is not a good strategy as the problems cannot be solved if they are treated in isolation. As already recognised by the Authority, connection of	Market arrangements relating to energy sale and purchase from DG are not within the scope of this technical review – they have been separately consulted upon.

	potentially non-compliant systems without notification to the distributors is an existing problem. The assessment by the Authority that the costs involved with the network connection application are the reason for this situation is an assumption. A far more likely reason is that power retailers are not prepared to negotiate 1 for 1 contracts. In this case it is seen as a better option to “run the meter backwards” hence effectively getting a perceived retail rate offset benefit. People think that their meter will run backwards if they export their power and do not have a separate export meter (regardless if it really does), hence may opt not to apply for connection. The commercial arrangements are an integral part of the problem as well as the solution to ensuring connected systems are safe and do not interfere with the network and should therefore not be treated in isolation. Also, by not regulating buy back arrangements, retailers can use their monopoly to keep DG by consumers from becoming a major contributor in the electricity generation market and therefore the potential that DG has to introduce real competition is not realised. The first signs of this can already be seen by Meridian reducing their 1 for 1 offer and capping the new offer of export to 100 kWh per year (after which buy back drops to a low level), which in a residential situation means that systems of more than 2 kW become uneconomical. The entrenched market powers will resist DG as it is a threat to their revenue stream. Regulation is required to ensure that the benefits of additional private investment in sustainable	
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	generation as well as the competition that it brings are not unnecessarily restricted by those entrenched market powers.	
TLC	Overall TLC believes that the Authority's proposed amendments will improve the clarity of the Part 6 regime. As requested, where TLC has specific concerns it has provided comments in its table response to Appendix D.	Support noted.
Unison	Overall, these technical and operational Code amendments support the Authority's objectives and there are many good changes that bring clarity to both the intent of the provisions and the obligations on the parties. Unison only has concerns with proposal reference 7(b) – the connection of standby generation by consumers (as outlined in the accompanying letter). We disagree that generation that is momentarily synchronised should be excluded from the provisions of Part 6, based on the safety and operational reasons we have outlined above.	Support noted. The Authority considers that distributors' network connection standards are the appropriate place for distributors to provide their requirements relating to momentarily connected generation, not Part 6.
Vector	Vector recommends the following additional change: Schedule 6.2, clause 12 subclause 3: Envisaging a possible future with a large number of SSDG on each network - Vector queries how practical it will be to "advise the distributed generator(s) of the expected duration of the outage". Vector recommends a "reasonable endeavours" test be applied to this obligation.	The Authority considers that the quoted requirement is already subject to reasonable endeavours.

Question 6

Do you have any new proposed amendments to Part 6 of the Code that you consider would be of long-term benefit to consumers? Please describe the proposal and its intended purpose.

Submitter	Comment	Authority's response
Alphatron	See above.	
Aurora	Not at this time.	Noted.
Genesis	No. However, as noted in our cover letter, we consider that the Authority's proposals could go further in addressing specific issues relevant to the connection of SSDG.	Noted.
MainPower	We do not have any more new proposals.	Noted.
Meridian	We have no further amendments to propose.	Noted.
Orion	No, but see our comments about "out of scope" matters.	Noted.
Powerco	No. The proposed technical and operational amendments will tidy up Part 6 making it clearer and providing enough of a framework for distributors to manage their internal process in.	Noted.
Simply	We agree with Vector that subclause 6.7(2) should be deleted	The Authority considers that where 2 parties

Energy	and support the ability of the parties to modify the regulated terms by mutual consent while still remaining with the regulated terms especially in respect of the application of pricing principals and dispute resolution.	agree to their own terms, which may or may not be based on the regulated terms, that they have thereby demonstrated an ability to come to a mutually satisfactory arrangement and thus regulated terms are unnecessary in this case.
SEANZ	The points in 2, 3, 4 and 5 address our proposals re amendments.	Noted.
Solar City	Suggested improvements: Obligation for retailers to operate in a timely fashion to switch distributed generator owner to a tariff that allows export of DG Obligation for retailers to fit meter within 10 days that is capable of metering of distributed generation export. The installation of such a meter should be: on request by customer who has an intention to install DG without need to site documentation that the installation has been completed and approved by the distributor Obligation of retailers to only purchase energy from a DG installation that has been approved by the distributor and is listed on the register. Benefits to customers: Enable timely operation of DG. Avoiding period of 70 days	These points are not within the scope of this review.

	from payment for DG plant to operation of DG plant. Enable customers to invest in DG with certainty of the time frame for operation of the plant.	
TLC	TLC appreciates the opportunity to present its proposed amendments to the Authority. TLC seeks the following amendments to the Code (in addition to those already discussed elsewhere in this submission). TLC believes that the proposed process for connection of larger distributed generation relies on an assumption that connection and operation standards should resolve all issues. While the connection and operation standards cater for high-level concepts common to all connections, they do not provide the ability for distributors to define the specific technical solutions required for each unique connection. TLC submits that the onus should be on the distributed generator to develop the required solution in each case, using the information that the distributor is obligated to provide. Our experience to date is that confusion and delay has occurred due to an expectation by distributed generators that distributors will make their proposal work for them.	Disagree. The Authority considers that the connection and operation standards are just one aspect of the connection process. The Authority considers that the roles of connection and operation standards and detailed investigative studies are sufficiently clear in the process set out in Part 2 of Schedule 6.1. The Authority agrees with the second sentence. The process steps set out in Part 2 of Schedule 6.1 require that both parties undertake investigations at various stages. A successful outcome will require cooperation between the parties and, in some places, negotiation as to which party is best placed to carry out a specific aspect of the

	TLC submits that the distributor, as part of the application process, should have the power to require the applicant to obtain the services of a CPD (Continuing Professional Development) engineer to review the technical aspects of the distributed generator's application, where reasonably required. This would ensure that the application appropriately met the connection and operation standards of the distributor. TLC submits that clause 18 should be amended to provide distributors with the express right to decline an application on the basis that the applicant has failed to demonstrate its application is consistent with the distributor's connection and operations standards. At the very least clause 18 should be clarified so that it is clear there is no obligation for the distributor to formulate conditions so that the application can be approved. Currently, when clause 18(2) is read in light of the purpose statement and the overall Scheme of Part 6, the implication is that a distributor should err on the side of approving with conditions rather than declining. In practice these conditions can be material and extensive and be misunderstood by the distributed generator, inevitably leading to delay and disputes. Similarly, without an express right to decline, there is a risk that a distributed generator will dispute a decision to decline on the	investigations. Clause 12(e) provides for the distributor to advise the distributed generator who is best placed to carry out the detailed investigation. In many cases, we would expect that the distributor will have the most detailed knowledge of their own network and will be best placed to most efficiently complete the required investigation. Disagree. Clause 18 allows the distributor to decline an application. The distributor's right to decline an application is conditional on the distributor providing details as to why it was declined, and steps that can be taken to ensure connection. This balances the ability for the distributor to control connections on its network with the distributed generator's desire to connect. In practice, these two outcomes are similar. To be in a position to decline an application, the distributor will have had to have identified the reasons. These reasons can also be seen as conditions that must be overcome in order to have the application approved
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	basis that the application should have been approved with conditions. This uncertainty should be resolved.	
Unison	No.	Noted.
Vector	Vector agrees with the view of Orion (as summarised in paragraph 3.3.19 of the consultation paper) that distributors need to be informed of all DG capable of being synchronised with the network, even if only for brief periods. However, this does not mean that all synchronised DG must go through the connection process. Vector agrees that DG that is only “momentarily synchronised” with the distribution network should not need to go through the Part 6 process. However, we are concerned that the term “momentarily synchronised” is undefined and could lead to plants that synchronise for relatively long periods being excluded from Part 6. Vector recommends “momentarily synchronised” is defined as a connection of no more than 100ms. Also, the Code should ensure that the customer’s protection remains operative. This could include a requirement for regular testing, especially if the customer has a storage	Noted. This view is consistent with the Authority’s proposal. The Authority considers that “momentarily synchronised” should use its plain English definition without additional specification. It would thus retain the same flexibility that is afforded to the term “momentary fluctuations” in s.28 and s.29 of the Electrical (Safety) Regulations 2010 (ESRs). The suggested 100 ms is considered to be far too short a period of time. Several seconds of parallel operation should be tolerable without posing concerns to the integrity of the network. This requirement would reasonably be included in the distributor’s network connection and operation standards.

	medium such as batteries. Finally, we consider that the usability of the Code would be improved by clarification of certain words in Part 6 such as “advise”, “provide approval”, “provide notice of approval” - e.g. under clause 9E (2) it is not clear if “advise” means any form of communication (i.e. phone, email, or text) or whether only written communication is acceptable.	The form of communication is left up to the party undertaking the communication.
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Question 7

Are you satisfied that the Authority and the Rulings Panel are the most appropriate bodies to resolve disputes in respect of the regulated terms, as provided for in clause 6.8(1)(a) and Schedule 6.3? If not, what alternative would you favour?

Submitter	Comment	Authority's response
Alphatron	Yes	Support noted. Topic discussed in the body of this paper.
Aurora	We do not view the current arrangements as inappropriate; however a more commonplace approach would be referral to mediation and arbitration.	Support and comment noted. Topic discussed in the body of this paper.
Genesis	We consider that the Authority and Rulings Panel are the appropriate bodies to perform this function in the context of commercial applications for distributed generation (i.e. above 10 kW). However, this type of dispute resolution process may not be suitable for owners of SSDG, who use this generation for household consumption. We suggest that the Electricity and Gas Complaints Commission may be a more user-friendly and accessible organisation to deal with these types of distributed generators.	Support noted. Topic discussed in the body of this paper.
MainPower	We are unable to form an in-depth comment due to the lack of DG connected to our network. However, it may be worthwhile to explore if the Electricity Gas Complaints Commission	Topic discussed in the body of this paper.

	(EGCC) should take a role in managing any disputes related to regulated terms for SSDG. Many SSDG owners serve as customers simultaneously on the distributor network, and any customer-related disputes are managed internally, then escalated to the EGCC. We believe a customer with a load and SSDG may find it is confusing to have the dispute related to load supply heard by the EGCC, while the dispute related to DG would be heard by the EA and the Rulings Panel.	
Meridian	Meridian agrees that the Authority and the Rulings Panel are appropriate bodies to settle a dispute in the event that all other options have been exhausted. Meridian would, however, support the provision of alternative dispute resolution methods in the Code to ensure that the most appropriate process is available for any particular situation. We consider that a mediation process, similar to that provided for in Part 12A.3 of the Code, may be an appropriate option for dispute resolution in the context of DG connections. Ideally, counterparties would be provided the opportunity to agree on which dispute resolution process is appropriate to their situation (noting that a regulated fallback process would likely be required).	Support noted. Topic discussed in the body of this paper. Suggestion noted. Topic discussed in the body of this paper.
NZWEA	We think it very important that there is a disputes resolution process. The wind industry experience with lines companies is variable, ranging from engaged to scarcely interested in connecting local generation. The variability seems to depend on the culture of the lines company and the interests of	Support for a disputes resolution process noted. Topic discussed in the body of this paper.

	individuals. Whilst we acknowledge that it is best to mediate issues having the backstop of a dispute resolution process is important.	
Orion	We do not know if disputes are common. However, provided the Rulings Panel is resourced and qualified for the task we have no objection to it remaining the relevant body for disputes under the regulated terms.	Support noted. Topic discussed in the body of this paper.
Powerco	Yes	Support noted. Topic discussed in the body of this paper.
Simply Energy	The Electricity Authority and Rulings panel are highly appropriate for resolving disputes because: • By utilising the existing breach process the dispute resolution mechanism is extremely cost efficient; economic enforceability is extremely important to small generators. • Typically disputes are related to connection pricing and pass through of transmission costs/ benefits. The EA is intimately involved with the transmission pricing methodology and distribution pricing frameworks redressing the information asymmetry. • The EA has a broader regulatory role and interest in the supply of electricity for the long term benefit of consumers means that network companies are less likely to seek outcomes that are 'unreasonable' that may risk triggering	Support noted. Topic discussed in the body of this paper.

	the introduction of further regulation.	
SEANZ	Yes	Support noted. Topic discussed in the body of this paper.
TLC	TLC is not aware that an alternative or more appropriate body currently exists.	Support noted. Topic discussed in the body of this paper.
Unison	Unison has no direct experience with the regulated dispute resolution process. Our experience with other regulator based dispute resolution processes (eg the Electricity and Gas Complaints Commission) is that it is important there is sufficient expertise applied in considering the substantive matters of the dispute. A hasty or poorly informed consideration can lead to frivolous or vexatious complaints being considered and significant time and cost (and uncertain outcomes either in EGCC or subsequent processes such as the Disputes Tribunal). Unison notes that the process should be accessible and affordable to all parties and provide a timely resolution. The current process would seem to be accessible however we cannot comment on timeliness. Unison agrees that where parties mutually agree to an alternative process, this is then a more appropriate means of resolution. Where parties have mutually agreed to an alternative resolution process, the option of reverting to the regulated process (rulings panel) and/or a breach should only be available under a narrow set of circumstances.	Support noted. Topic discussed in the body of this paper.

Vector	Regulated terms are a contract between the distributor and the distributed generator and normal legal procedures should apply to resolve contract disputes.	Support for normal legal procedures noted. Topic discussed in the body of this paper.
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Question 8

What options should be considered by the Authority for improving the existing dispute resolution process?

Submitter	Comment	Authority's response
Aurora	It may be possible to craft a disputes resolution process, with respect to mediation and arbitration, along the lines of those contained in Model Use-of-System Agreements.	Suggestion noted. The Authority does not consider these changes are necessary at this time.
Genesis	See response to Q7.	Noted.
MainPower	Please refer to our comment on question 7, we believe the EA should explore the possibility that the EGCC could play a role in settling disputes related to SSDG connection.	Noted. Topic discussed in the body of this paper.
Meridian	See above.	Noted.
NZWEA	Simply having the process available is important. The process ought to encourage mediation but it should be recognised that in some situations reference to the Authority may be an important trigger to help achieve a resolution.	Noted. Topic discussed in the body of this paper.
Orion	No comment.	
Powerco	No comment	

SEANZ	No comment	
TLC	TLC believes the Authority should consider including a provision in the Code that allows the parties to agree alternative dispute resolution processes. TLC also submits that conditions which ensure compliance with a distributor's connection and operations standards should not be capable of being subjected to dispute resolution processes. While TLC recognises the Authority's intention is to prevent the imposition of unreasonable connection conditions by distributors, TLC believes that such conditions are non-contentious and fundamental to the connection of distributed generation. Therefore, by their very nature such conditions are unlikely to be unreasonable and the proper subject of dispute resolution processes. It should also encourage distributors to approve applications with conditions attached instead of declining to avoid dispute about the conditions. If the Authority remains of the view that all conditions should be subject to the dispute procedure, then TLC believes that this reinforces the need for the Code to expressly provide that a distributor is not obligated to formulate conditions so that an application can be approved. TLC's experience with these conditions is that they are often material, extensive and misunderstood by the connecting	There's nothing that prevents two disputing parties from agreeing an alternative dispute resolution mechanism (refer clause 6.8(2)(c)). The Authority considers that it is inappropriate to provide unfettered rights for distributors to set conditions governing connection of DG. If TLC's conditions are non-contentious as they state, there should be no concern relating to a right to raise a dispute. The Authority has considered this additional information but stands by its original view. If the conditions are not contentious, there

	party, inevitably leading to unnecessary delay and dispute. As outlined above, the requirement for the use of a registered engineer by the connecting party at the outset would also help mitigate TLC's concern in this regard.	should be no concern in respect of an applicant's access to dispute resolution. Vexatious use of the dispute resolution process by either party would carry risk for that party. If the conditions set out by the distributor are "...often material, extensive and misunderstood by the connecting party, inevitably leading to unnecessary delay and dispute" then the distributor would appear to have an issue with respect to customer service (the applicant is, after all, a potential customer) and clear communication.
Unison	No comment	

Question 9

What amendments to clause 6.11, if any, do you propose in order to promote the long-term benefit of consumers?

Submitter	Comment	Authority's response
Aurora	Nil. We believe that the requirement to act at arm's length is clear.	Noted.
Genesis	We are not aware of any issues with the current application of clause 6.11. However, we consider that this clause may not be robust enough to manage against future changes in the market for distributed generation. For example, there is a risk that distributors may take a more direct interest in this market and will have greater incentives to prioritise their own interests when processing applications. The Code should more clearly define the process distributors must follow when considering applications in which they hold an interest.	Noted. As this comment points out, there are few if any issues at this time. Specifying a more detailed process would remove flexibility from the current provisions and run the risk of not providing for likely situations. The current approach provides the outcomes required and uses the disputes process to address issues.
MainPower	We believe there is no need to amend the clause. It already provides protection to the consumers' interests.	Noted.
Meridian	Meridian is not proposing any amendments.	Noted.

NZWEA	As per our answers to Q7 and Q8. It is important that there is a disputes resolution process that developers can access and that disputes of this kind can be referred to the Authority.	Noted. The disputes resolution process would be available to developers.
Orion	We note that “generators” are not “consumers” even if DG is often installed at sites where consumption occurs.	Noted.
Powerco	None, the arrangements are currently adequate.	Noted.
Simply Energy	Increased transparency into the timing and lodging of initial and final applications and reasons for rejection e.g. through maintenance of a central registry of applications.	Noted. The Authority does not see a need for a central registry of applications at this time.
SEANZ	SEANZ does not have a view on this. Individual members may wish to comment based on their individual experiences.	Noted.
Unison	As a distributor we believe the current arms-length provisions in the Electricity Industry Reform Act and the Code are sufficient.	Noted.

Question 10

In your view, is there a problem with the priority of applications under clause 17 of Schedule 6.1 or the approach to managing congestion on distribution networks? If so, what is/are the problem(s), the options, and your preferred solution to promote the long-term benefit of consumers?

Submitter	Comment	Authority's response
Aurora	No. Not at this time.	Noted.
Genesis	Not at present. However, as noted in our response to Q9 (above), it is possible that problems may emerge as a result of future changes in the market. The scenario outlined in the paper in paragraph 4.4.5 (b) is one example of how the current process under clause 17 could be misused by distributors to unfairly prioritise applications. This supports the case for more transparent rules to apply to the manner in which distributors must manage priority and congestion. We would be interested in the Authority carrying out further work on both of the solutions described in paragraph 4.4.12 of the paper.	Noted. Noted. This is discussed in the body of this paper in section 3.4.19 This can be the subject of a future review, as issues arise.
MainPower	We agree this problem exists, particularly we could have more than two simultaneous applications as such if the DG uptake continues to rise as predicted. Rather than considering the two (or multiple bids) as	Noted. This view would tend to support the "first come, first served" approach. This is discussed in the body of this paper in section 3.4.19

	“competitive bids to use the same part of the distribution network”, they should be assessed individually on the effect of its connection on the feeder performance.	
Meridian	With respect to the management of congestion on a distribution network, Meridian supports the approach as described in paragraph 4.1.12 (b) of the consultation paper i.e. applications for the connection of DG are considered in order of receipt (or via some other prioritising mechanism) and only approved where sufficient distribution network capacity exists (or can be added, probably at the expense of the distributed generator). Any reduction in available distribution network capacity following construction and connection of a DG installation (as a result of the connection of new DG) is likely to change the economics of a DG investment. Such impacts may be difficult to foresee at the time the investment decision is made, even with knowledge of a distributor’s congestion management policy. As such, the risk of new DG impacting the network capacity available to existing DG is likely to create additional investment risk, and may discourage DG investment and connection. We therefore support a first-come, first-served approach whereby the connection of DG is only approved when there is sufficient network capacity to allow an installation to inject electricity without normally needing to be curtailed or constrained off. We consider the Code should be amended to	Support for a “first come, first served” approach noted. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider this issue as part of providing a streamlined nationally consistent connection process

	specify such an approach.	
NZWEA	Good sites for generation are in short supply. Competing applications could potentially be an issue where for example one party has spent some considerable time preparing an application and another party simply puts in a “place holder” to maintain their position in a constrained network. We acknowledge that this situation could put the lines company in a difficult position although we are not aware of this situation actually occurring. In these situations there is no easy solution to dealing with competing interest etc. The term “final application” may be important in managing any place - holding type of activity.	Points noted.
Orion	We are not aware of any cases so it is hard to judge. The “problem” is to a large extent created by the DG pricing principle that gives first movers an inefficient cost advantage. We note that if the same approach was applied to load, the cost of entire upgrade projects could be laid at the door (or more accurately the wallet) of small consumers, while everyone that joined before them got free access.	Points noted. This is the counterpoint to the views expressed by Meridian above. These views separately emphasise efficient price signalling and cost recovery that will need to be addressed in the distribution pricing work stream.
Pioneer Generation	Yes there are potential problems in this area. Where an incumbent / predominant DG has embedded generation in a network that is lightly loaded to the extent where the DG is purchasing transmission capacity to inject in to the national grid, there needs to be a fair and equitable method of apportioning transmission costs. Otherwise the incumbent	Point noted. This raises another pricing-related matter that will need to be addressed in the distribution pricing work stream.

	generator will be paying for other small DG injection costs.	
Powerco	No, if an application complies there is no problem and will be processed equally regardless. It is going to take significantly greater growth in SSDG than forecast to create levels of congestion on the network that prioritisation is going to become an issue.	Noted.
Simply Energy	We think • In respect of 17 (1) (b) the period of time should be reduced to 5 business days for a second final application to be considered a competitive bid; this would increase the difficulty in preparing and submitting a final application on a speculative basis but preserve the ability of a genuine developer to lodge an application that they had been working on for some time. • During periods of congestion, priority in dispatch allocated to the generators in order of application for final application.	Noted. The Authority considers there are no grounds for change. Refer to topic discussion in the body of this paper. View noted. This is one method of allocating export capacity. The Authority does not consider it would be feasible to manage congestion using a 'dispatch' model at this time.
SEANZ	SEANZ does not have a view on this. Individual members may wish to comment based on their individual experiences.	Noted.
TLC	TLC appreciates the Authority's attempt to address the various issues that arise where multiple connection applications are	

	made in relation to one part of the distributor's network. In such a situation a number of different concerns arise. While the Authority correctly notes competing applications and congestion management as valid concerns, TLC wishes to emphasise that unique co-ordination and facilitation issues will arise where the network's capacity restraints mean that neither applicant can be connected without capital expenditure, but both can be accommodated if the network is upgraded. In that scenario, the applications are not in fact competing applications. In such a situation the issue for TLC becomes efficiently co-ordinating and facilitating the required capital expenditure, while ensuring that one applicant does not avoid the costs of the capital expenditure while gaining the benefits of connection to the network by deferring its application and/or connection until after the first connection is made (following upgrades to the lines). For this reason, TLC recommends the Authority consider amendments to the Code that provide the distributor with the power/discretion in such scenarios to allocate costs efficiently between applicants and/or impose appropriate conditions on each applicant so that one or more applicants does not avoid the costs of the proposed development, or unfairly benefit.	In the scenario described, both applicants would benefit from the same upgrade. Agreed. The wide variety of possibilities and infrequent likelihood of issues does not lend itself to expending the considerable efforts that would be required to draft suitable provisions.
Unison	No	Noted.

Vector	Yes. These clauses do not clearly specify the process that must apply. Vector considers that the most straightforward approach is to treat the first final application received as the priority. Subsequent final applications may be considered only if they will not affect the first final application. There is also potential for confusion and dispute regarding the management of congestion on distributors' networks. If multiple DGs are connected to the same part of a network, there is no clear priority of curtailment/temporary interruption of these DGs. The regulated terms should clarify that distributors are able to set policies for identifying DG to be curtailed in their Congestion Management Policy. Vector recommends there be early expiry of applications that are not uplifted but used to reserve capacity on the network - e.g., an application for generation that takes the network close to a fault level limit. Subsequent applications then incur additional costs to reduce fault levels to allow connection, but these costs will be inefficient if the first investment does not go ahead. If the first applicant does not uplift and connect generation within a specified timeframe, the distributor should have the right to cancel the application.	Disagree. Clause 17 specifies the priority in which applications must be considered. Noted. This view would tend to support the "first come, first served" approach. This is in fact the intent of the requirement that the distributor develops and publishes a congestion management policy. Discussed in body of paper in section 3.4.24.
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Question 11

In your view, is there a problem with the requirements of clause 18 of Schedule 6.1 relating to the distributor's imposition of conditions on an application for connection of DG? If so, what is/are the problem(s), the options and your preferred solution to promote the long-term benefit of consumers?

Submitter	Comment	Authority's response
Aurora	No.	Noted.
Genesis	No, we agree with The Lines Company interpretation of this clause. We consider that distributors should be required to impose conditions on applications for DG, rather than declining these in the first instance.	View noted.
MainPower	We agree that this could pose a problem primarily on the side of deriving technical standards to access whether a DG is compliant with Part 6 and the distributor's connection and operation standards. MainPower's preferred long term solution is that nationally consistent inverter settings and specific power quality requirement are provided for. This is discussed in the general comments section above.	Point noted. Point noted. Discussed in body of paper in section 3.4.63
Meridian	As above, Meridian considers that approval of an application for DG should be dependent on there being sufficient distribution network capacity available (or the ability for it to be	View noted. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider this issue

	added, probably at the expense of the distributed generator) to allow an installation to inject electricity without normally needing to be curtailed or constrained off (taking into account DG installations already connected).	as part of providing a streamlined nationally consistent connection process
NZWEA	We would be concerned if a lines company were able to unilaterally rule out the connection of certain types of generation or generation in particular locations. There are examples of wind generation projects going through extensive design processes with the lines company resulting in win-win situations, including improved power quality for local consumers. Our understanding is that in some of these examples there was skepticism that the project could be made to work. An ability for lines companies to turn down a potential project early in the process would not result in win-win situations and could well result in projects not going ahead that would benefit consumers. Again the dispute resolution process is important in worst – case scenarios.	Views noted.
Orion	It appears there is some potential ambiguity, but we are not sure if this is a material problem in practice?	Noted.
Powerco	No, Powerco does not consider there to be an issue.	Noted.
SEANZ	SEANZ does not have a view on this. Individual members may wish to comment based on their individual experiences.	Noted.

Solar City	In the situation where the size of generation is limited to 10kW it appears to be unlikely that special conditions would need to be imposed and it is therefore unclear why this is onerous on the distributor. We believe there is opportunity for variation in “the distributors connection and operational standards” between distributors which has the potential to impose cost and uncertainty to customers investing in DG. Operational standards should be consistent nationally, and where possible aligned with international standards to reduce compliance cost for technology Note: it is our view that the operational standards pose conditions on an application.	The issue relates to clause 18 of Schedule 6.1, which is relevant only to generators > 10 kW. Distributor connection and operation standards are understood to be broadly consistent on a national basis and are often based on relevant international standards. However, the distributor has contractual and legal obligations to provide specific services to customers and it is important that local variations are able to be reflected in their standards. View noted.
TLC	TLC has concerns that Clause 18 does not provide the distributor with the express power to decline an application where the distributor's connection and operations standards cannot be met and/or does not include an express provision that the distributor is not obligated to formulate conditions to allow the application to be approved. Instead, Clause 18(2) of Schedule 6.1, read in light of the purpose and overall scheme of Part 6, implies that the distributor should approve applications subject to conditions rather than decline an application. In TLC's experience, this means significant time and resource	Noted that these are the views that led to the issue being discussed in the consultation paper. See response in section 3.4.31 of the body of this paper.

	is committed at the front end of the application process (ie developing all the necessary additional conditions of connection) when it is not clear whether the applicant is able to connect consistently with the connection and operation standards. In order to address these issues TLC, recommends (as discussed above) that an express power to decline an application is provided in clause 18, where an applicant has failed to demonstrate its application is consistent with the distributor's connection operations and standards. At the very least, the Authority should clarify that the distributor is under no obligation to formulate conditions to allow the application to be approved.	
Unison	No	Noted.
Vector	Whether the distributor approves an application and prepares conditions, or declines an application and provides detailed reasons and steps that the applicant can take to ensure connection if the distributed generator makes a new application, in accordance with 18(4)(a) of Schedule 6.1, makes little difference for the distributor.	Noted.

Question 12

Do you consider the liability limits under the regulated terms best promote the long-term benefit of consumers? If not, what limits would be more suitable?

Submitter	Comment	Authority's response
Aurora	We note that limits are significantly higher than those specified in Model Use-of-System Agreements, and would consider that the liability limits under the regulated terms should be lowered to be broadly consistent with the MoUSA.	Support for aligning with MUoSA terms and conditions is noted. This is discussed in 3.4.44 above.
Genesis	We do not think that owners of SSDG should be limited in their ability to claim damages against a distributor based on installed capacity. In the case of DG installed for household consumption, there may not be any correlation between the capacity of DG and damage incurred. We recommend that the limits provided in clause 22(a) of Part 6 are more suitable in these circumstances.	View noted. This is discussed in 3.4.44 above.
MainPower	The Model Use of System Agreement (UoSA), which was recently finalised, requires liability to retailer to be capped at \$10,000.00 per ICP or a maximum of \$2 million dollars ²⁶ . The per ICP liability figure is independent of the load size. It appears to be inconsistent that a distributed generator, which is effectively represented by an ICP as well, can have a liability	Support for aligning with MUoSA terms and conditions is noted. This is discussed in 3.4.44 above.

²⁶ Clause 18.6 of Model Use-of-System Agreement (Conveyance), Final Draft – September 2012

	capped relative to its nameplate rating. Therefore, in order to maintain consistency in terms of liability, we propose that each distributed generator should have a liability of \$10,000.00	
Meridian	Meridian considers the existing liability limits to be appropriate.	Noted.
Orion	No comment.	
Powerco	No comment	
Simply Energy	We broadly support the ability of parties to the regulated terms being able to vary parameters within the agreement without causing the agreement to be considered outside of the regulated terms, subject to default terms in the event that the parties cannot agree. Therefore we support the changes that provide for varying the level of liability while staying within the regulated terms.	One practical issue with varying terms and still being considered as being within the regulated terms is that significant variations could be made, rendering a significantly different agreement than the regulated terms provide. The regulated terms are explicitly those set out in schedule 6.2. Anything else is a negotiated agreement. View noted.
SEANZ	SEANZ notes that in its submission on the pre-consultation paper, Vector proposed that the liability limit in clause 22 of Schedule 6.2 of \$1000 per kW of installed capacity up to a maximum of \$5 million is too high, for both distributors and	Views noted. This is discussed in 3.4.47 above.

	distributed generators, and parties may welcome a reduction in their liability as it would reduce business risk and costs. SEANZ agrees with this statement, however it is difficult to arbitrarily set a level. EA should use its resources to investigate this and come up with a limit that reflects the relatively low risk profile.	
Solar City	We believe that the liability limits are too high and create a barrier and uncertainty to customers, particularly considering that such customers are not experts in DG. It is unclear what liabilities are covered e.g. H&S, damage to the grid, fraud etc. It is our view that DG under 10 kW could be treated as an appliance, no different to any other appliance found in a home for the purposes of liability. Where the DG installation is installed and operated with respect to the relevant electrical regulations (AS/NZS 3000), the customer should be deemed to have met the obligations and not be liable for technical aspects of the installation. It is not possible to define the limits of liability without reference to the liabilities the customer takes on when installing a DG installation.	DG is fundamentally different to an appliance in that it is an active energy producing device that could impact the network and other consumer installations beyond the point of connection to the network. The risks are thus different. Disagree. Compliance with an installation standard at one point in time does not rule out damage due to future operation. View noted.
Unison	Unison considers the level of liability caps under regulated terms as being high when compared with agreements outside the regulated terms. These high liability caps add	Views and suggestions noted. This is discussed in 3.4.47 above.

	unnecessary cost and risk. Typically \$2 million in relation to direct loss is a maximum amount for significant customer agreements. For smaller SSDG there may be alternative approaches (and remedies) under other legislation. Unison would welcome an alternative approach resulting in lower liability caps, similar to that suggested by Vector – that there are options around limits on liability.	
Vector	Liability limits should be able to be agreed upon between the distributor and the distributed generator, without “altering” the regulated terms. Failing agreement, standard liability limits should apply.	View noted. The regulated terms are explicitly those set out in schedule 6.2. Anything else is a negotiated agreement.

Question 13

Would there be a long-term benefit for consumers in seeking to develop nationally consistent inverter protection settings (as set out in paragraph 4.6.3) that are also consistent with distributors' connection and operation standards?

Submitter	Comment	Authority's response
Alphatron	Yes, see item 2. There are no technical reasons for settings to be different between distributors. Maintaining different standards for each distributor is impractical and adds cost.	Views noted. See discussion in the body of this paper.
Aurora	This may further assist to streamline the application and approval process.	Noted. See discussion in the body of this paper.
Genesis	Yes. We support standardisation of inverter protections settings. This will allow consumers to invest in DG with certainty around their ability to connect and will also reduce transaction costs for consumers overtime.	Noted. See discussion in the body of this paper.
MainPower	We agree that this is beneficial. The current AS4777 is inadequate to fully protect the assets of all stakeholders involved. All distributors are currently obliged to maintain distribution voltage level to within 6% of 230 volts single phase. Developing nationally consistent specific power quality	Noted. See discussion in the body of this paper.

	requirements will enable distributors and DG industry representatives to work together cooperatively on an industry-wide basis and come up with settings that are robust and acceptable to all stakeholders. Indeed, we believe that the introduction of a simplified alternative connection process for SSDG should be deferred until recognised nationally consistent settings and power quality standard is in place.	View noted. However, as discussed in this paper, this may take some time.
Meridian	Meridian supports the development of a national guideline for frequency and voltage protection settings for DG installations above 10 kW. Any guideline should be sufficiently flexible to allow for future technological and system developments. We consider that existing national standards as set out in the industry standard AS 4777 are sufficient for smaller scale DG.	The discussion was with respect to < 10 kW installations. For > 10 kW, grid protection and power quality is generally considered on an application-specific basis and this is understood to work generally well. View noted.
Orion	Possibly as there is a risk that large scale concentrated deployment of SSDG has the potential to impact on power quality and reliability both locally and, with sufficient scale, nationally.	View noted. See discussion in the body of this paper.
Pioneer Generation	Yes	View noted.
Powerco	No, there are no long term benefits for consumers and inverter protection settings are adequately managed by distributors.	View noted. See discussion in the body of this paper.

SEANZ	Yes, see item 2. There are no technical reasons for settings to be different between distributors. Maintaining different standards for each distributor is impractical, unnecessary, and adds complexity and cost.	View noted. See discussion in the body of this paper.
Solar City	Yes nationally consistent standards would remove barriers and costs to consumers. Inverter protection settings as well as connection and operational standards should be consistent nationally and where possible aligned with international standards. Standardisation should include a standard DG application/notification form that is : • used by all distributors • specific and relevant to the technology being applied for This is suggested to simplify the application process and reduce cost for consumers.	View noted. Nationally consistent connection and operation standards are not appropriate as these standards relate to the specific operation of each individual network. . There is already provision for an application form to be provided by the distributor. Distributors should be able to determine what information is required in order to be satisfied that the application will be consistent with their connection and operation standards.
TLC	TLC strongly supports the development of national inverter protection settings, consistent with the distributors' connection and operation standards. As discussed above, TLC believes the implementation of	View noted. However, any national standard would sit outside of individual distributor connection and operation standards. Disagree. The penalties would be enabling the

	measures to strengthen the applicable standards and to incentivize adherence to those standards (eg penalties for connecting non-compliant SSDG) would be beneficial to the safety of consumers and the integrity of distributors' networks. While TLC recognises that a central government agency, such as the Authority or Energy Safety within the Ministry of Business, Innovation and Employment, is best placed to develop these standards, TLC is very open to the idea of working with consumers and the Authority, in consultation to develop consistent national protection settings.	distributor to disconnect the distributed generator. The Authority intends to develop a revised proposal in the next Part 6 consultation paper that will consider this issue. See discussion in the body of this paper.
Unison	Yes, Unison believes that there would be a long-term benefit for consumers here. We would include these settings in our connection standards.	View noted. See discussion in the body of this paper.
Vector	National standards would be beneficial, provided local issues are acknowledged and addressed e.g. voltage, fault levels, and background harmonic levels.	View noted. See discussion in the body of this paper.

Question 14

Would you prefer a regulatory or non-regulatory measure to create nationally consistent protection settings for inverters? In the case of a non-regulatory measure, would an Authority guideline, an industry guideline or a New Zealand Standard be preferable?

Submitter	Comment	Authority's response
Alphatron	Note that recommended settings will be included in the next revision of 4777. Any country wide recommendation should be consistent with this standard. 4777 has been adopted as a joint standard. The next publication will be AS/NZS. The 4777 recommended settings may include different settings for sustained limits and for short term ride-through (which can help network power quality). Discussion on development with regards to settings should not take place on an individual distributor level but should be conducted through the standards bodies so all stakeholders, including inverter manufacturers and distributors can provide input. Note that 4777 always allows for specific trip settings in consultation with the Distributor. None of this will remove the individual lines companies' rights to require case-specific settings if they assess a need.	AS 4777 developments have been discussed in section 3.4.63 of this paper. Support for a NZ Standards based approach noted. See discussion in the body of this paper. Point noted. Point noted.

Aurora	We consider that regulatory measures would be excessive. We consider an industry guideline to be preferable.	View noted. See discussion in the body of this paper.
Genesis	In this instance, we consider that a regulatory response is necessary to provide consumers with an appropriate level of investment certainty.	View noted. See discussion in the body of this paper.
MainPower	A non-regulatory measure will be preferable because it is still unknown the effects of multiple DGs will have on distribution feeder's voltage and frequency. There may be a risk of the need to constantly revise the specific settings according to the new understandings gained from experience in operating DGs. A non-regulatory measure in the form of an industry guideline and cross-referenced in an EA-issued guideline, will be preferable as the industry representatives are the most qualified with knowledge of DG operations to develop such settings. More importantly, we believe this will impose the least transaction cost compared with an EA guideline.	View noted. See discussion in the body of this paper.
Meridian	As above, we consider that a non-regulatory approach, preferably a national guideline, would be appropriate.	View noted. See discussion in the body of this paper.
Orion	Standards, developed as part of a good consultative process, are a good way to achieve this. Depending on how much local conditions vary there may be a regulatory need to be clearer about distributors' rights to impose more onerous requirements. Relates a little to question 11 above.	View noted. See discussion in the body of this paper.

Pioneer Generation	Would prefer a New Zealand Standard or nationally accepted guide	View noted. See discussion in the body of this paper.
Powerco	Non-regulatory measure. Continuing to use AS4777 compliance requirements as a guideline provides the level of control needed to effectively manage inverters on the network.	View noted. See discussion in the body of this paper.
SEANZ	Note that recommended settings will be included in the next revision of AS 4777 AS 4777 has been adopted as a joint standard. The next publication will be a joint AS/NZS standard and as such any country wide recommendation should be consistent with this standard. The AS 4777 recommended settings may include different settings for sustained limits and for short term ride-through (which can help network power quality). Discussions development with regards to settings should not take place on an individual distributor level but should be conducted through the standards bodies so all stakeholders, including inverter manufacturer's and distributors can provide input. Note that AS 4777 always allows for specific trip settings in consultation with the Distributor.	View noted. See discussion in the body of this paper.
Solar City	A regulatory measure would be preferred. DG presents potential competition to distributors and regulation is relevant	View noted. See discussion in the body of this

	to ensure consistent and timely implementation of a national standard.	paper.
TLC	TLC considers that strict standards which are rigidly enforced are required to protect the integrity of the distribution network. To this end, TLC recommends that guidelines be drafted by the Authority, in consultation with industry participants and enforced by the Authority. Further, education and awareness programs around such standards are best undertaken by a central government agency, such as the Authority.	View noted. See discussion in the body of this paper.
Unison	Regulatory, particularly around the voltage limit settings for inverters. The main reason for this relates to the risk of voltages falling outside the required range for compliance with the potential for the following: • damage to customer's electrical equipment • safety hazards in the event that damage leads to electrical fires. • overloading and damage to Network assets.	View noted. See discussion in the body of this paper.
Vector	A NZ Standard is preferable. A guideline requires additional review time and therefore additional costs. As the volume of distributed generation increases on networks, the settings for inverters could be related to the entire power system. Consequently the settings should be set in a way that is nationally consistent, although there is scope for differences	View noted. See discussion in the body of this paper. Presumably the SI/NI differences referred to would be in relation to frequency management.

	between the North and South Island.	
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Question 15

What settings, or ranges of settings, would be appropriate?

Submitter	Comment	Authority's response
Alphatron	Current draft 4777 figures: Frequency 47 – 50.5 Hz (sustained) Voltage 205 – 264 V (short duration)	Views noted. See discussion in the body of this paper.
Aurora	No specific comment at this time.	Noted.
Genesis	These should be consistent with the existing range of settings set out in AS4777.3.	Views noted. See discussion in the body of this paper.
MainPower	We believe the settings should be left for discussion at an industry-level forum rather than for us to come up with a figure that may not be robust at this stage.	Noted. See discussion in the body of this paper.
Meridian	No comment.	
Orion	We would be happy to discuss this as part of a standards setting process. We note the work carried out in other jurisdictions, eg Germany, that may inform the process. This is not our IP to share in this forum, but we would be happy to	Views noted. See discussion in the body of this paper.

	discuss this with the Authority.				
Powerco	No comment				
SEANZ	Frequency 47 – 50.5 Hz (sustained) Voltage 205 – 264 V (short duration)	Views noted. See discussion in the body of this paper.			
TLC	TLC does not believe that it is possible or appropriate to develop settings as an appropriate part of the current Part 6 consultation process. However, TLC supports, and would work alongside, the development of settings in consultation with a suitably qualified technical working group in the future.	Views noted. See discussion in the body of this paper.			
Unison	230V +/- 6% - consistent with the current voltage regulations. These settings would be useful in avoiding circumstances where close neighbouring consumers were subject to a supply voltage higher than the +/- 6% determined by the regulations.	Views noted. See discussion in the body of this paper.			
Vector	Vector submits that settings in the table below would be appropriate: <table border="1"> <tr> <td>Parameter</td><td>Maximum clearance time</td><td>Trip settings</td></tr> </table>	Parameter	Maximum clearance time	Trip settings	Views noted. See discussion in the body of this paper.
Parameter	Maximum clearance time	Trip settings			

	Over-voltage U>	0.5s	230V +10%
	Under-voltage U<	1.5s	230V -10%
	Over-Frequency f>	0.5s	50.5Hz
	Under-Frequency f<	0.5s	47 Hz
	LoM (Loss of Mains) ¹	0.5s	
¹ LoM protection shall use a recognized technique suitable (or the micro-generator technology employed such as ROCOF, Vector shift or Frequency shift.			

Appendix C Responses to submissions on individual Code amendment proposals

- C.1 This Appendix provides in tabular form the Authority's responses to submissions that were made relating to any of the 68 detailed technical and operational amendments
- C.2 The background and rationale relating to the Code amendment proposals were set out in Appendix D of the September 2012 consultation paper. This table of responses follows the reference numbering sequence used in that table.

Table 6: Authority's responses to submissions on individual Code amendment proposals

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Various within Parts 1 and 6	1	Reword definitions within Part 1 (that relate to Part 6) and clauses within Part 6 that use the defined term "supply".	-	-
Definition of "capacity" in Part 1	2	Remove the defined term "capacity" and replace it with "distribution network capacity". All references to "capacity" will be changed to	Powerco: Agree	Noted.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		"distribution network capacity".		
Definition of "connect" in Part 1	3	Modify the definition to include 'connected' and better reflect that the definition relates to <i>electrical</i> connections. Remove any references to "connected" that do not fit within the newly defined term and add new references where appropriate. This includes an amendment to clause 17.16(1) to bold the term "connected".	Powerco: Agree PwC: The term 'electrically connected' is also confusing and needs to be better clarified.	Noted Disagree. The proposal is not to change the defined term to "electrically connected" but to add a clarification within the definition of the term "connect" to mean that the term relates to an electrical connection, as opposed to any other type of connection (e.g. a mechanical connection). An electrical connection between two things means that electricity may flow between those two things.
Definition of "consumer installation"	4	Amend the defined term "consumer installation" by removing any reference to "electrical installation" and	Powerco: Agree	Noted.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
" in Part 1		incorporating the content of paragraph (a) of the "electrical installation" definition. The amendment includes other drafting changes.		
Definition of "distributor" in Part 1	5	Specify that the definition of "distributor" includes a participant who owns— (c) a local network; (d) an embedded network that is used to convey 5 GWh or more per annum; or (e) a system of lines that— a. is used for providing line function services to a person other than the owner of those	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		lines; b. has no direct or indirect connection to the grid; and c. conveys 5 GWh or more of electricity per annum.		
Definition of "distributed generator" in Part 1	6	Amend "distributed generator" so as to include a party that does not yet own generation plant, but intends to.	Powerco: Agree	Noted.
Definition of "distributed generation" in Part 1	7	Exclude the following types of generating plant from the definition of "distributed generation": (f) generating plant connected and operated by a distributor for the	Aurora: Aurora agrees with the clarification that synchronised generation (other than momentarily synchronised) should be subject to Part 6, irrespective of whether export is likely or not.	Noted.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		purpose of maintaining or restoring the provision of electricity to all or part of the distribution network: a. as a result of a planned distribution network outage; b. as a result of an unplanned distribution network outage; and c. during a period when the distribution network capacity would otherwise be exceeded on part or all of the distribution network; and (g) generating plant that is only momentarily	Powerco: Agree PwC: The current definition does not set out what the DG is 'connected' to. The reader must refer to the definition of 'connect' to interpret that distributed generation is 'connected' to the distribution network. This is potentially confusing for the reader as there is no definition of "connected". It sits within the definition of connect. This should be clarified. In regards to (a)(i) and (ii), for the avoidance of doubt, the definition should allow temporary generation to be used for any outage on the distribution network, regardless of the cause (e.g. distributor, Transpower or a third party etc). The current wording could be construed as only including distributor caused outages. The exclusion for standby generation in (b) does not specifically refer to standby generation. The following	Noted. Disagree. The definition of "connected" is explicitly set out within the proposed new definition of "connect". Where the defined term is used, it is clearly shown in bold type. Agree. This will be made more general. Agree. This is a useful addition.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		synchronised with the distribution network for the purpose of operations to start or stop the generating plant. Part 6 should not apply to the above types of generation.	phrase should be added at the end "(for example, standby generation)".	
Definition of "distribution network" in Part 1	8	Amend the definition to remove the exclusion of "national grid" and embedded network that is used to convey less than 5 GWh per annum.	PwC: Note issues raised in 5.	The submitter made no comment in relation to proposal reference 5, so it is not clear what this cross reference refers to.
Create a Part 6-specific definition for "nameplate capacity"	9	Include a new defined term "nameplate capacity". The proposed definition is: "nameplate capacity" means the lesser of:	TLC: The Authority has proposed the introduction of a new definition "nameplate capacity" as follows: "nameplate capacity" means the lesser of	Disagree. In all instances where "nameplate capacity" is used in Part 6, it is either (a) for the purpose of categorising DG installations so that the appropriate

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
e capacity" in Part 1		(a) the full-load continuous rating of generating plant under conditions as specified by its designer and measured in MW or kilowatts; or (b) the full-load continuous rating of the generating plant's inverter (if any) under conditions specified by its designer and measured in MW or kilowatts. Where appropriate in Part 6, amend the existing provisions to use the newly defined term.	(a) the full-load continuous rating of generating plant under conditions as specified by its designer and measured in MW or kilowatts; or (b) the full-load continuous rating of the generating plant's inverter (if any) under conditions specified by its designer and measured in MW or kilowatts. While TLC generally agrees with the Authority's proposal to clarify the definition of nameplate capacity contained in the Code, TLC recommends some minor amendments: • substituting references to MW with MVA and references to kilowatts with KVA; and • including reference in the definition to the operating power factor ranges. In TLC's view this would more	connection process is selected; or (b) in the context of increasing the size (nameplate capacity) of the DG. The Authority considers that the use of "watts" as the units adopted for process selection purposes is appropriate. Nameplate ratings are typically expressed in kilowatts. Requirements consequent to an increase in nameplate capacity are triggered regardless of the units used. The definition would in no way preclude the distributor from considering the full operating range (in VA and power factor) of DG on its network.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			accurately reflect the requirements of the carrying network (active and reactive power flows). TLC notes that any such amendment may require consequential amendments throughout the Code.	
Definition of "national grid"	10	Remove this definition.	-	-
Definition of "reasonable and prudent operating practice" in Part 1	11	Delete "excessive power flow at feeder points or" from the definition of 'reasonable and prudent operating practice'. Bold references to "reasonable and prudent operating practice" in other parts of Part 1 and Part 6 that are intended to have the same meaning as the	TLC is broadly comfortable with the Authority's proposed amendment, set out below. However, TLC recommends that subclause (ii) includes a reference to reactive power flows, as indicated below. This amendment recognises that while voltage levels and reactive power flows are often interrelated they can also operate independently of each other. <i>reasonable and prudent operating</i>	Agree. On review, the original wording relating to power flows appears to be preferable. The proposal will be amended to insert. For (b)(ii): <i>"results in excessive power flow at feeder points or a significant adverse effect on voltage levels"</i>.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		defined term.	<i>practice, in relation to distributed generation, includes—</i> <i>(a) the industry operating standards; and</i> <i>(b) measures to avoid the injection of electricity from distributed generation that—</i> <i>(i) exceeds the distribution network capacity of the distribution network at the point of injection; or</i> <i>(ii) results in excessive power flow at feeder points or a significant adverse effect on voltage levels <u>and/or active or reactive power flows</u>; or</i>	
Various clauses throughout Part 6	12	Replace all references to the defined term “year”, with alternative wording that clarifies the intended period (e.g. “3 years” becomes “36	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		months").		
Various clauses throughout clause 6	13	Amend various clauses throughout Part 6 to clarify which metering installation the clause refers to (e.g. "the metering installation at the point of connection at which the distributed generation is connected or proposed to be connected").	-	-
Clause 6.4 and various other clauses throughout Part 6	14	Amend Part 6 to require a distributed generator to apply to a distributor if it wishes to continue an existing connection if a connection contract is in force or has expired. If a connection contract is agreed, the distributor must continue the distributed generator's existing	Powerco: Agree TLC: TLC understands the Authority's intention to clarify the situation when a connection contract for distributed generation has expired or will soon expire. The Authority is seeking to clarify the situation for continuing a connection beyond expiry of any agreed terms. However, in TLC's view there are still some ambiguities contained in the amendments.	Noted. Point noted. This will be considered as part of a revised proposal. There will be further opportunity to provide additional detail in response to the next Part 6 consultation paper

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		connection in accordance with that contract: (c) if a connection contract is in force, from the expiry of the existing connection contract; or (d) if a connection contract has expired, as soon as practicable. If a connection contract is not agreed, the distributor must continue the distributed generator's existing connection in accordance with the regulated terms in Schedule 6.2: (e) if a connection contract is in force, from the expiry of the existing connection contract; (f) if a connection contract	Second, it is not clear what would happen if an existing connection contract had expiry provisions contrary to the proposed amendments contained in clause 6.4. While clause 6.4(3) restricts the parties to a connection contract from contracting out of the obligations of Schedule 6.1, the provision does not prevent the parties from contracting contrary to the proposed amendments contained in clause 6.4. Accordingly, the ability to apply for re-connection should be subject to the terms of any connection contract that remains in force. Further, the two parties should be able to separately agree procedures for reconnection following the expiry of any current connection agreement. TLC envisages that under such an agreement it would be open to the parties to exclude the initial application processes set out in the Code (currently required each time the	It was not intended to interfere with (in particular) the termination provisions of an existing connection contract. The Authority will clarify this in the revised Code amendment proposal. The Authority agrees that the parties ought to be able to agree a simplified process, eliminating unnecessary steps in the context, and this will be provided for in a revised proposal.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		has expired, as soon as practicable after the expiry of the period for negotiating a connection contract. This requires a number of consequential amendments to the remainder of Part 6.	distributed generator wishes to connect/reconnect to the distributor's network). However, because the application processes are requirements set out in Schedule 6.1 (which cannot be contracted out of, under clause 6.4(3) of the Code) TLC requests an express clause in Schedule 6.1 which provides the power for parties to separately agree reconnection procedures. Such a clause would reduce administrative costs for both parties, and promote continued connection of distributed generation to the network. Finally, TLC wishes to emphasise that any agreement regarding the reconnection of distributed generation should not supersede any existing connection agreement until that agreement has expired. TLC understands that this is the proposed position under the proposed Code amendments and is in support of this	The Authority agrees that the intention of the proposed amendment was not to interfere with an existing connection contract. Inclusion of the phrase "or in force" was intended to reflect that the process to determine a replacement agreement could and should

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			position.	start prior to termination date of the existing agreement. We will develop a revised proposal that should clarify this.
Clause 6.4 and various other clauses throughout Part 6	15	Amend Part 6 to require a distributed generator to apply to increase the nameplate capacity of DG. If a connection contract is agreed, the distributor's existing connection will be continued with the increased nameplate capacity in accordance with that contract as soon as practicable. If a connection contract is not agreed, the distributor's existing connection will be continued with the increased nameplate capacity in accordance with the	Powerco: Agree	Noted.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		regulated terms from the expiry of the period for negotiating the connection contract. This requires a number of consequential amendments to the remainder of Part 6.		
Clause 6.4 and various other clauses throughout Part 6	16	Amend Part 6 to include a process for applications from distributed generators to continue an existing connection of DG that has not previously been connected under a connection contract. If a connection contract is agreed, the distributor's existing connection will be continued in accordance with that contract as soon as practicable. If a connection contract is	Powerco: Agree PwC: See main submission that Part 6 should capture any modification to a DG connection. [This cross reference reads as follows: 29. While these modifications are useful, we consider that they should be expanded to include distributed generators that intend to make any significant modification to their existing DG connections, not just in relation to an increase in nameplate capacity. That is, a distributed generator under the current requirements could change	Noted. The Authority understands the point being made but consider the following: • A decrease in nameplate capacity should not require <i>application</i> to the distributor but note that the distributor is required under Part 11 of the Code to update the registry with nameplate capacity and fuel type of DG installations and therefore needs to get that information from

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		not agreed, the distributor's existing connection will be continued in accordance with the regulated terms from the expiry of the period for negotiating the connection contract. This requires a number of consequential amendments to the remainder of Part 6.	the type of generation unit (e.g. from an inverter to non-inverter generation) or reduce the nameplate capacity without having to reapply under the Code. We consider these situations, or any other significant change outside of the current connection terms and conditions, should be captured by Part 6. Accordingly, we propose that the current proposal that distributed generators that intend to increase the nameplate capacity of their DG should be expanded to include any material modification to the DG connection.]	distributed generators. The example given would create a new DG installation because the original DG system that had been approved has been changed. A new application in this situation is required under current drafting.
Various clauses in Part 6	17	Replace the term "notify" with "advise" where it is intended to have a different meaning from the defined term "notify" in Part 1 of the Code.	Vector: The proposed change needs to be defined. If it is desirable to change "notify" to "advise" then the term "advise" should be defined.	"Advise" is proposed to have the normal dictionary definition (by not being otherwise defined in the Code). We consider that the meaning of "advise" is clear.
Various clauses in	18	Replace some instances of the term "network" with	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Part 6		"distribution network".		
Clause 6.3(2)(e)	19	Amend this paragraph to clarify that the fees identified by a distributor are the fees that it is entitled to charge under Schedule 6.1 which must not exceed the limits in Schedule 6.5.	-	-
Clause 6.6(1)	20	Delete this subclause.	-	-
Clause 6.9(a)	21	This clause should refer to clause 19 of Schedule 6.2, not clause 20.	-	-
Clause 6.10	22	Delete this clause.	TLC: TLC appreciates that the Authority's proposal to remove the provision that deems the Code to apply to other parties in certain circumstances is aimed at restricting the ability of distributed generators or	Clause 6.10 will be redrafted to reinstate the non-delegation principle.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			distributors to limit their responsibility or liability for compliance under the Code. However, in TLC's view, this "non-delegation" principle is already provided for in clause 6.10(3), which prevents any agreement under clause 6.10 from limiting the obligations and rights of the distributor or distributed generator under Part 6 of the Code. Accordingly, in TLC's view, removal of clause 6.10 is unjustified and unnecessary. In addition, TLC submits that the Authority should not remove clause 6.10 without assessing why the provision was originally included and the potential effects in practice if it is removed. Although this does not directly impact on TLC, it may affect arrangements between other industry participants.	

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Clause 6.11	23	Restructure paragraphs (a) to (c) into distinct items.	-	-
Heading of Clause 6.13	24	Amend the heading to read: "This Part does not apply to earlier connections".	-	-
Clause 6.13	25	Amend this clause to clarify that that Part 6 applies to pre 30 August 2007 contracts for the purpose of continuing an existing connection of DG if a connection contract is in force or has expired.	PwC: Agree with intent. However the proposed wording is confusing. It suggests that the Part still applies for existing contracts entered into before 1 April 2007. It should be made clear that the Part applies to these contracts only in relation to applications for renewal of these contracts.	The Authority has revised the drafting to improve clarity.
Clause 6.13(2)	26	Delete this subclause.	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Structure of Schedule 6.1	27	Restructure Schedule 6.1 so that it does not contain "Parts". Possible solutions include re-labelling the parts within Schedule 6.1, removing the parts within Schedule 6.1, and breaking the parts of Schedule 6.1 into separate Schedules. Note that this proposal is not presented in Appendix C as draft Code.	-	-
Various clauses in Schedule 6.1	28	Where appropriate change references to "generating unit" to "distributed generation".	-	-
Clause 1(1) and 10(1) of	29	Amend these subclauses to clarify that whether Part 1 or Part 2 of Schedule 6.1	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Schedule 6.1		applies will depend on the size of the DG if the application is approved.		
Clause 2(3)(d) and 11(3)(d) of Schedule 6.1	30	Amend to clarify the term 'location', as in "proposed location of the distributed generation..." It is proposed that the location referred to in 2(3)(d) is clarified to mean "a brief description of the location of the distributed generation at the address where it will be located." (e.g. "solar PV modules mounted to house roof and inverter mounted beside main switchboard" or "wind turbine mounted on freestanding pole behind garage and inverter mounted to the inside wall of the garage").	Aurora: In our view, the proposed location definition is excessively detailed.	The Authority considers that the proposal resolves the uncertainty that was identified.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		Remove the reference to the date on which the DG is likely to be connected from this paragraph and include it in a new paragraph.		
Clauses 2(4) and 11(4) of Schedule 6.1	31	Remove clauses 2(4) and 11(4) of Schedule 6.1 and add a new clause 2(2)(c) and 11(2)(c).	Powerco: Agree	Noted.
Clause 2(3)(e)(iv) and 11(3)(e)(iv) of Schedule 6.1	32	Replace "ICP number" with "ICP identifier".	-	-
Clauses 3(2)(b)(ii) and	33	Amend the subparagraphs to reflect that a distributed generator (as opposed to	TLC: While TLC agrees with the Authority's overall intention to improve the clarity and application of the Code,	The Authority has revised the drafting to address this concern.

Code reference	Propo al referen ce	Description of proposed change	Submission	Authority's response
18(2)(b)(ii) of Schedule 6.1		distributed generation) is required to comply with the Act and the Code.	TLC believes that the clarification amendment proposed for clauses 3(2)(b)(ii) and 18(2)(b)(ii) of Schedule 6.1 go beyond mere clarification and significantly alter the material effect of the provisions concerned. For example, clause 3(2)(b)(ii) currently requires distributed generation to comply at all times with the Act and the Code. The Authority's proposal to replace "distributed generation" with "distributed generator" could have the unintended effect of allowing distributed generators to argue that they have not breached the Code or Act, if, for example, the provision in question is expressed to apply to the distributed generation rather than its owner or operator. In TLC's view including "and/or" will ensure that all types of generation and distributed generator are captured. This is a materially better approach and ensures that any separate	

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			requirements for actual generation which may be exempted under the proposed amendment are covered by the Code.	
Clauses 7 and 22 of Schedule 6.1	34	Amend these clauses to: (g) allow the distributor to waive the distributed generator's requirement to test and inspect provided the distributor is satisfied that the DG is compliant with connection and operation standards; (h) allow the distributor to set a reasonable timeframe within which the testing and inspection must be completed; (i) require the test report to	Powerco: Agree Aurora: We consider that proposed amendment (a) is inconsistent with good electricity industry practice. An installer must always test his/her work. We consider the issue here to be whether the distributor needs to witness and observe those tests. In that case, we consider that a distributor should be entitled to waive its right to observe.	Noted. Disagree. Refer to the purpose statement that was provided for this amendment in Table 5 of the September 2012 consultation paper. Testing and inspection may not be necessary for an existing connected and operating installation. In this case, a waiver would likely be perfectly acceptable (i.e. where no work had been done and the plant simply remained in service).

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		include evidence that the distributed generation complies with the distributor's connection and operation standards; (j) remove the requirement for the test report to include "suitable evidence that the metering installation complies with the appropriate metering standards in this Code".		
Clauses 8(1)(b), 9(1)(b), 23(1)(b) and 24(1)(b) of Schedule 6.1	35	Delete these paragraphs.	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Clause 15 of Schedule 6.1	36	Allow for an initial application to be accepted with no need for a final application, provided it is by mutual agreement and that there are no notifications required under clause 16 of Schedule 6.1. If the distributed generator and distributor agree that a final application is not required, the distributed generator's initial application will be treated as a final application.	Aurora: We agree with the option for the distributor to approve a connection application without requiring a final application to be made, and have been doing this in practice where the distributed generator has provided a comprehensive initial application. Vector: To provide a measure of costs we need to have an expiry timeframe around previous but non-actioned applications. This is not clearly provided in clause 15. This comment and the comments above in item 10 of Table 1 are relevant to clause 12(d) of Schedule 6.1.	Support for proposal noted. An expiry timeframe on any initial application is provided in clause 15(1).
Clauses 16 and 17 of Schedule 6.1	37	Replace the requirement to use reasonable endeavours to notify in clause 16 with a specific timeframe of 10 business days. Replace "10 business days"	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		with "20 business days" in clause 17(1)(b).		
Clause 17(1) of Schedule 6.1	38	Change subclause (1) from "This clause applies if—" to "Subclause (2) applies if—". Change subclause (2) to state "When this subclause applies, the distributor—"	-	-
Clause 17(1) of Schedule 6.1	39	Bold the term "first application", which is defined for the purpose of this clause.	-	-
Clause 18(3) of Schedule 6.1	40	Amend the subclause to reflect that there may or may not be conditions.	TLC: The Authority's has proposed some amendments to clarify what information must be provided in a notice of approval under clause 18(3) of Schedule 6.1. TLC suggests that it should be clarified that the requirement to notify the	Agree. Drafting revised to clarify.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			distributed generator of conditions is only where such conditions have been imposed, by including the words "if any" in the conditions notification requirement in clause 18(3). Vector: The amendments are not clear as they imply that all approved applications will be accompanied by conditions, which is not the case. Vector recommends adding the words "if any" after the word "measures" in subclause 3(a).	Agree. Drafting revised to clarify.
Clauses 18(3)(c) of Schedule 6.1 and 19 of Schedule 6.2	41	Amend these clauses to reflect that the charges might be payable by either party.	-	-
Clause 18(3)(c) of	42	Move the requirements of clause 2(g) of Schedule 6.4	PwC: 18(3)(c) requires distributors to set out "an explanation of how the	Disagree. Disclosure may possibly not provide adequate

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Schedule 6.1		into clause 18(3)(c) of Schedule 6.1, so that the explanation of how the charges have been calculated accompanies the description of charges.	charges have been calculated" in addition to a description of the charges payable. We note that EDBs are now required to disclose their DG pricing methodology in their distribution pricing methodologies (i.e. under the Commission's IDD) as well as in their DG connections policy. These disclosures should be sufficient. We therefore recommend this additional clause be deleted. TLC: The Authority has proposed to retain the clause requiring the notice of approval to include a "detailed description of the charges payable" and has introduced a new requirement to include an "explanation of how the charges have been calculated". In TLC's view this does not reflect the reality that in practice it is not always possible to provide with any certainty detailed pricing given the conditions of connection can sometimes require significant work to be undertaken	explanation. It is appropriate that an individual DG connection applicant is provided with an individual explanation as to how charges for the service they have applied for have been determined. If the relevant disclosure document provides suitable explanation, the distributor should be able to copy or reference the relevant part. Agree. This is the intent of the clause. E.g., detailed capital costs may not be available at the time the approval is given. Drafting will be revised to clarify.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			before the final design and impact on the network is known. TLC proposes that the requirement in clause 18(3) be changed to read "a description of the charges payable, to the extent reasonably possible or a detailed description of the method that will be used to calculate the charge". This approach would be consistent with the fact that the regulated terms only include pricing principles and that the parties can negotiate detailed price terms after connection is approved. Vector: Add the words "or will be" after "...how the charges have been" to sub-clause 18(3)(c).	Agree. See response to TLC on what is essentially the same point.
Clause 18(4)	43	Amend this subclause to require a distributor's notice that an application is declined to include the criteria used by the distributor in making its	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		decision if the decision relates to two competing applications under clause 17.		
Clause 19(1) of Schedule 6.1	44	Amend clause 19(1) to clarify that the timeframe that applies depends on the nameplate capacity of the DG if the application is approved (rather than the additional capacity where the application is to increase capacity).	-	-
Clause 21(1) of Schedule 6.1	45	Amend clause 21(1) to clarify that the notice referred to in this clause is the notice provided under clause 20(1) and not the notice of a dispute under 20(3)(a).	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Clause 22(1) of Schedule 6.1	46	Replace "application" with "final application".	-	-
Clause 24(2) of Schedule 6.1	47	Delete this subclause.	TLC: In TLC's view while the regulated terms can only apply once the distributed generator has accepted the distributors' conditions, TLC submits that the Authority needs to consider the implications of a situation where the conditions are altered as a result of the dispute process. In TLC's view the application of the Code to this situation requires clarification, to recognise that, following a dispute process, the distributed generator may not in fact accept all of the conditions that were originally imposed under clause 18 even though it wishes to proceed with connection.	Clause 24(2) is not needed because these provisions would be part of the decision arising from dispute resolution.
Clause 25 of	48	Amend this clause to extend the confidentiality	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Schedule 6.1		obligations in Schedule 6.1 to apply to any confidential information that a distributed generator receives from the distributor during the application process under Schedule 6.1. Currently, clause 25 of Schedule 6.1 requires only the distributor to maintain confidentiality. Amend subclause (1) to clarify that information relating to an application is confidential. Amend subclause (3)(a) to clarify that the information may be used for the purpose of the application process.		
Clauses 26 and 27 of	49	Delete these clauses.	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Schedule 6.1				
New clause 29 of Schedule 6.1	50	Make it clear that distributors and distributed generators must meet their own costs (including legal) incurred under Schedule 6.1.	PWC: This clause is inconsistent with the incremental cost pricing principle. A distributor will need to recoup its costs somehow. If it cannot recoup them from the distributed generator then it will other consumers will need to fund these costs associated with connecting that DG consumer. While this may reduce DG transaction costs it is not allocatively efficient, so may not meet the Authorities statutory obligations. In any case, this clause should exclude standard fees payable to the distributor under schedule 6.5 and connection charges.	Distributors are able to impose fees to cover the costs they incur in processing applications and observing testing and inspection, up to the limits specified in Schedule 6.5. For consistency with the approach adopted for this review, price levels are out of scope and will be considered in the review of distribution pricing. The clause refers to costs and does not impair the ability of the distributor to charge fees.
Clause 4(1) of Schedule 6.2	51	Delete this subclause.	TLC agrees with the Authority's intention to clarify the regime surrounding the installation and monitoring of metering installations.	Disagree. The Code requirements relating to metering are clearly set out in other Parts of the Code. It would

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			However, the proposed amendments do not make it clear that the distributed generator must still have responsibility to install meters, even if the metering equipment provider has other obligations under the Code. TLC submits that the amendments should be clarified accordingly.	be redundant (and potentially confusing) to repeat them in Part 6.
Clause 4(3) of Schedule 6.2	52	Amend this subclause to simplify the wording and clearly obligate the distributed generator to meet the requirement to provide reactive metering (if the distributor requires it to do so).	-	-
Clause 4(4) of Schedule 6.2	53	Amend the subclause to state that the distributor's measurement and accuracy requirements for metering installations must be the	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		same as Part 10 of the Code.		
Clauses 11 and 15(1)(b) of Schedule 6.2	54	Redraft clause 15(1)(b) of Schedule 6.2 so that such an action must be preceded by a temporary disconnection under clause 11, and a permanent disconnection may only occur where the distributed generator fails to remedy the non-compliance within a reasonable period of time. Amend clause 11 to specify that a temporary disconnection may occur where a distributed generator fails to comply with connection and operation standards or safety requirements.	TLC disagrees with the Authority's interpretation of clause 11(e). In TLC's view it is not clear that a material change to the distributed generation will always amount to a failure to comply with the distributor's connection and operation standards. From a technical perspective, any such material change (while not falling foul of the connection and operation standards) could have a substantial effect on other parts of TLC's network. This means that a distributed generator could, without notice to the distributor, materially alter their generation, without breaching compliance with the connection standards resulting in a detrimental effect on TLC's distribution network.	In the absence in any further information the Authority holds to its interpretation of 11(e). The rationale provided for this amendment in the September 2012 consultation paper considered that connection and operation standards should be able to be written in a way that covers the situation. Failure to conform to connection and operation standards, required in 11(g), can trigger disconnection.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		Delete clause 11(e), as this can be described as a failure to comply with connection and operation standards.	In TLC's view the deletion of clause 11(e) therefore contravenes the logical position that notification to the distributor by the distributed generator should occur where the distributed generator wishes to modify its generation. Accordingly, TLC recommends retention of clause 11(e) of Schedule 6.2.	
Clause 15(1)(c) of Schedule 6.2	55	Replace this paragraph with "without notice, if the trader has de-energised the ICP at which the distributed generation is connected to the distribution network and advised the registry that the ICP has a status of "inactive" with the reason of "de-energised – ready for decommissioning"".	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Clauses 15(2) and 15(3) of Schedule 6.2	56	Delete clause 15(2). Delete the sentence "If applicable...the ICP" from clause 15(3).	-	-
Clauses 15(4) of Schedule 6.2	57	Delete clause 15(4).	-	-
15(5) of Schedule 6.2	58	Delete clause 15(5).	-	-
New clause 15A of Schedule 6.2	59	Include a new clause 15A that states that the regulated terms no longer apply if the distributed generator does not construct the DG within 18 months from the commencement of the regulated terms (this can be	PwC: While not unreasonable, the rationale for the 18 months is not clear and needs to be explained. Furthermore, this clause should clarify that the DG must be connected within this timeframe in a manner consistent with that agreed in a final application approval to avoid changes to the	18 months was selected as representing a reasonable period of time. If it is too short in the circumstances, it can be extended by mutual consent. The submission agrees that 18 months is "not unreasonable".

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		extended by mutual agreement). If the distributed generator fails to construct the DG within this timeframe or negotiate an extension, the regulated terms no longer apply and the distributed generator must reapply under Schedule 6.1.	original connection design. Vector: In clause 15A(1) of Schedule 6.2, "...date on which the regulated terms apply..." is not defined, only when DG is connected on regulated terms, see clause 24 of Schedule 6.1.	Revised drafting should address this concern.
Clause 20 of Schedule 6.2	60	Amend clause 20 of Schedule 6.2 to emphasise that participant liability to the Crown is set by the Act and the Electricity Industry (Enforcement) Regulations 2010, but liability of distributors and distributed generators to each other is set by these clauses. Amend clause 20(3) to refer to clauses 20 to 25 (the liability clauses) rather than	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
		just 'this clause'.		
Clause 21(2)(b)(ii) of Schedule 6.2	61	Amend this subparagraph so that it is two separate subparagraphs. One subparagraph will contain (A), the other will contain (B).	-	-
Clause 24 of Schedule 6.2	62	Delete this clause.	-	-
Clause 1(2) of Schedule 6.3	63	Delete clause 1(2) of Schedule 6.3 and add the contents of this subclause to clause 6.8.	-	-
Clause 2(a) and 3 of Schedule	64	Replace the references to "market operation service provider" with "distributor".	-	-

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
6.4				
Clause 2(f) of Schedule 6.4	65	Delete the words "... expressed in dollars per annum." This removes the unnecessary requirement that period charges are only expressed in dollars per annum.	-	-
Clause 3 of Schedule 6.4	66	Delete this clause. Replace it with a definition of 'incremental costs' in Part 1 of the Code. Bold each instance of the term 'incremental costs'.	PwC: The new definition of incremental cost relates to DG pricing which is outside of the scope of the EA's review. We suggest that this definition is revisited in the EA's proposed review of DG pricing principles. It is also unclear when the EA will address DG pricing. We would welcome further guidance from the EA on the timing of its DG pricing review.	Disagree. The definition is not new, it is simply moved to Part 1 of the Code (although the obviously incorrect reference to market operation service provider has been replaced with a reference to the distributor). As previously advised in discussing the relevant out-of-scope item, the consideration of pricing principles will be undertaken in the review of distribution pricing.

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
Clause 1 of Schedule 6.5	67	Amend this clause to refer to the nameplate capacity of the DG if the application or notification is approved.	-	-
Table in Schedule 6.5	68	Specify that the maximum fees in the table in clause 2 are <i>exclusive of GST</i>. The table will also be restructured to better present the information. This includes new fees relating to a notice under Part 1A.	PwC: The proposed fees, particularly for Part 1A, have not been adequately justified and are likely to under recover the costs distributors face. We recommend that the EA estimate these fees with reference to the time that a qualified electrical engineer on standard rates would spend in reviewing these connection applications. The proposed formatting is appropriate along with the approach to make fees GST exclusive. However, this section should be amended to allow fees to be escalated by annual CPI inflation each year from 2013 onwards (i.e. the approximate time of gazetting of these changes) to future proof the fees. Otherwise these fees will fall in real	View noted. The level of fees is out of scope of this review and will be considered in the distribution pricing review. View noted, however for simplicity the Authority considers that fees should be fixed (but subject to future review).

Code reference	Proposal reference	Description of proposed change	Submission	Authority's response
			terms overtime.	

Appendix D Responses to submissions on out-of-scope items

- D.1 This Appendix provides in tabular form the Authority's responses to submissions that were made that the Authority considered to be out-of-scope of the current review of Part 6.
- D.2 The background and rationale relating to the out-of-scope items were set out in Appendix E of the September 2012 consultation paper. This table of responses follows the reference numbering sequence used in that table and, for brevity, omits items that attracted no submissions.

Table 7: Authority's responses to submissions on out-of-scope items

Code reference	Item reference	Description of proposed change	Submission	Authority's response
Clause 5 of Schedule 6.1 Clause 6 of Schedule 6.1	6	Delete this clause. The only requirement for the distributed generator should be to give notice of its connection to the distributor.	Vector: The proposed Part 1A will simplify the connection process. However, if the distributed generator chooses to follow the application process (in lieu of the notification process), clause 5 of Schedule 6.1 does not add any value to the application process. Vector recommends the deletion of clause 5 of Schedule 6.1.	Note that the proposed amended clause 5 refocuses on whether the applicant wishes to negotiate an agreement outside of regulated terms.
Clause 15 of Schedule	10	Under clause 12, distributors are required to provide the distributed generator with information	TLC: TLC recognises the Authority's reasoning that distributors have existing powers under clause 18 to decline applications or place conditions	As previously stated, the Authority considers that the Code already provides the distributor with sufficient rights

Code reference	Item reference	Description of proposed change	Submission	Authority's response
6.1		about any deficiencies with its initial application. However, there is no express requirement that the distributed generator remedies or addresses these deficiencies in the final application. In other words, as it stands, a distributor may be technically required to approve a distributed generator's application to connect (albeit subject to conditions) even if the distributed generator has not addressed the deficiencies identified by the distributor.	on applications to ensure compliance with connection and operation standards. However, TLC remains of the view that distributors require an express power to decline an application where the distributed generator cannot demonstrate an ability to meet the distributor's connection and operation standards. We have set out our reasons in other parts of this submission. At the very least, TLC submits that the Authority should clarify that the distributor is under no obligation to impose conditions on a distributed generator's application, where that application is insufficient to meet the distributor's connection and operation standards. If the Authority is of the view that the Code already embodies this position, then there should be no issue including express provisions to that effect to provide further certainty.	to insist that an application must conform to its connection and operation standards. This additional information does not alter that view.

Code reference	Item reference	Description of proposed change	Submission	Authority's response
Clause 18 of Schedule 6.1	11	TLC considers that "significant delays can occur between approving connection and construction negotiation period, a generator changing its proposal or design, and/or the parties awaiting the resolution of a dispute. During this delay there may be regulatory and/or network changes that impact on the applicant's connection application, such as another distributed generator being approved within that time and building and connecting before the first applicant. The result can be that the original conditions of approval are no longer appropriate in that they may no longer ensure that connection will be consistent with the distributor's connection and	TLC: The Authority has proposed a new clause 15A which states that the regulated terms will no longer apply if the distributed generator does not construct the distributed generation within 18 months of the commencement of the regulated terms. TLC agrees with this proposal. However this amendment does not address the concerns raised by TLC in pre-consultation. Specifically, in TLC's view, the Code needs to provide the distributor with the ability to revisit or amend the conditions up to the time of connection to ensure that connection of the applicant is consistent with the distributor's connection and operation standards. This requirement would allow the distributor to manage delay periods which may arise from, for example, a generator changing its proposal or design, and/or the parties awaiting the resolution of a dispute. During this delay period, there may be	Support noted. In respect of the delay situation described and the possibility of a second DG submitting an application the Authority considers that analysis of the second DG must be undertaken in full light of any previously approved (whether commissioned or not) applications. Thus, the original approved DG would have certainty over its requirements for connection and not have to change half-way through construction because another DG was subsequently

Code reference	Item reference	Description of proposed change	Submission	Authority's response
		operation standards.”	a number of factors which materially affect the appropriateness of the distributor's original conditions, for example, the connection of another distributed generator. Further, TLC wishes to reiterate that where a distributed generator whose application has been approved materially changes its connection proposal (even if the material change complies with the connection conditions and operation standards), the Code should require that the distributed generator submits a new application (unless the distributor requires otherwise).	approved. The Authority considers that Part 6 requires a distributor to connect the DG that it has approved once any conditions it has specified have been met. Modified plant is not the plant that has been approved.
Clause 18(3)(c) of Schedule 6.1	13	Clarify what is meant by “a detailed description of the charges payable ...”	TLC: TLC understands the Authority's intention behind requiring distributors to provide pricing information to the distributed generator is that distributors' have all the "key information" required to make a final decision whether or not to connect to	As stated previously, the Authority appreciates that some price-critical information may not be available at the time the application is approved (e.g. a price based on actual costs that have not yet been finalised). We consider that unknown

Code reference	Item reference	Description of proposed change	Submission	Authority's response
			the distribution network. However, TLC disagrees that such information is always readily available at that stage. It is too simplistic to think that on the basis of the information supplied by the distributed generator in support of its application that it will always be possible to provide a detailed description of charges payable. In TLC's view, it is not always possible to provide detailed pricing given the conditions of connection can require significant work to be undertaken. TLC proposes that the requirement in clause 18(3) be changed to read "a description of the charges payable to the extent reasonably possible or a detailed description of the method that will be used to calculate the charge." This approach would be consistent with the fact that the regulated terms only include pricing principles and that the parties can negotiate detailed price	information can be at least estimated and provided to comply with clause 18(3)(c). It would obviously be necessary to clearly explain that the price was based on an estimate that would be finalised once final information was available.

Code reference	Item reference	Description of proposed change	Submission	Authority's response
			terms after connection is approved. However if the Authority's intention is that applications should be declined if they are not sufficiently developed to allow a detailed description of charges payable, then TLC would welcome confirmation of that intent.	
Clause 18(3)(d) of Schedule 6.1	14	There should be no ability for a distributed generator to use the dispute resolution process to dispute conditions that are imposed to ensure compliance with connection and operation standards.	TLC: TLC believes that conditions which ensure compliance with a distributor's connection and operations standards should not be capable of being subjected to dispute resolution processes. While TLC recognises the Authority's intention is to prevent the imposition of unreasonable connection conditions by distributors, TLC believes that such conditions are non-contentious and fundamental to the connection of distributed generation. Therefore, by their very nature such conditions are unlikely to be unreasonable and the proper subject of dispute resolution	The Authority has considered this additional information but stands by its original view. If the conditions are not contentious as TLC states, there should be no concern in respect of an applicant's access to dispute resolution. Vexatious use of the dispute resolution process by either party would carry risk for that party. If the conditions set out by the distributor are "...often material, extensive and misunderstood by the connecting party, inevitably leading to unnecessary delay

Code reference	Item reference	Description of proposed change	Submission	Authority's response
			processes. It should also encourage distributors to approve applications with conditions attached instead of declining to avoid disputes about the conditions. If the Authority remains of the view that all conditions should be subject to the dispute procedure, then TLC believes that this reinforces the need for the Code to expressly provide that a distributor is not obligated to formulate conditions so that an application can be approved. TLC's experience with these conditions is that they are often material, extensive and misunderstood by the connecting party, inevitably leading to unnecessary delay and dispute. As outlined elsewhere in this submission, the requirement for the use of a registered engineer by the connecting party at the outset (where reasonably required by the distributor)	and dispute" then the distributor would appear to have an issue with respect to customer service (the applicant is, after all, a potential customer) and clear communication.

Code reference	Item reference	Description of proposed change	Submission	Authority's response
			would also help mitigate TLC's concern in this regard.	
Clause 20(3) of Schedule 6.1	15	There is uncertainty regarding the process under clause 20 of Schedule 6.1 of the Code where a distributed generator decides to dispute the conditions of connection that have been specified by the distributor under clause 18. In order to progress the connection, clause 20(1) requires the distributed generator to give notice that it accepts all conditions specified. However, clause 20(3) anticipates that the distributed generator can dispute the conditions specified by the distributor. This creates uncertainty because it is not clear on what grounds conditions can	TLC: TLC appreciates the Authority's proposed amendments which clarify the ambit of disputes capable of being resolved under clause 6.8 of the Code. However, in TLC's view, the Authority has not addressed TLC's proposal to include amendments which provide flexibility within Part 6 of the Code to allow the parties to discuss and deliberate on the conditions of connection if the nature of the distributed generator's connection materially changes throughout the connection process. However, the distributor should always be able to determine the conditions of the distributed generator's connection to ensure compliance with connection and operation standards.	Support noted. As previously stated, a connection approval will be linked to a specific and complete application. If the DG changes between application approval and intended commissioning, the distributor is fully within its rights to decline connection until a new/revised application is considered and approved (possibly with new conditions).

Code reference	Item reference	Description of proposed change	Submission	Authority's response
		be disputed, or how disputes about conditions are to be resolved to allow the next step of connection to occur. Clause 6.8 does not list disputes regarding the conditions of an approval as a dispute to which Schedule 6.3 applies, but clauses 18 and 20 of Schedule 6.1 suggest that disputes regarding conditions fall within the disputes resolution process under Schedule 6.3. In TLC's experience, distributors and distributed generators have been confused as to the distinction between a dispute regarding a breach of the Part 6, and a dispute regarding a condition of connection. This has resulted in undue delay to		

Code reference	Item reference	Description of proposed change	Submission	Authority's response
		the connection process, not only because the rules are unclear, but also because distributed generators have disputed conditions which are in effect non-negotiable as they are necessary to ensure the integrity and stability of the distributor's network. TLC does, however, recommend that there is flexibility within Part 6 of the Code that allows the parties to discuss and deliberate on the conditions of connection as the nature of the distributed generator's connection can change throughout the connection process. However, the distributor should always be able to determine the conditions of the distributed generator's connection to		

Code reference	Item reference	Description of proposed change	Submission	Authority's response
		ensure compliance with connection and operation standards.		
Schedule 6.4	24	Remove the restriction on a distributor to charge a distributed generator no more than the incremental costs.	Vector: See comments in the main section of this submission. Vector disagrees with the low priority the Authority has given this item.	Noted. The Authority will consider all pricing matters in its review of distribution pricing.
	25	Clarify that incremental costs are measured over the long-term, not the short-term.	Vector: See comments in the main section of this submission. Vector disagrees with the low priority the Authority has given this item.	Noted. The Authority will consider all pricing matters in its review of distribution pricing.
	26	Remove the obligation to set charges net of avoidable transmission charges.	Vector: See comments in the main section of this submission. Vector disagrees with the low priority the Authority has given this item.	Noted. The Authority will consider all pricing matters in its review of distribution pricing.