

Document Title**Distributed Generation Connection Standard****Document Number****ST – B1.1-001****Document Author****Planning Engineer****Document Reviewer****Network Planning Manager****Approval Authority****General Manager Network**

Contents

1 GENERAL 4

1.1 Interpretation4

1.2 Introduction5

1.3 Scope5

2 SCHEDULE A 6

2.1 Top Energy’s Connection and Operation Standards6

2.2 Top Energy’s Congestion Management Policy6

2.3 Distributed Generation Protection Systems Requirements6

2.4 Top Energy’s Health and Safety Standards7

2.4.1 General 7

2.4.2 Contractors 7

2.5 Industry Rules and Standards7

3 SCHEDULE B 8

3.1 Connection of Distributed Generation of 10kW or less8

3.1.1 Interface with the Retailer 8

3.1.2 Metering 8

3.1.3 Top Energy’s Connection and Operation Standards 8

3.1.4 Application Fee 8

3.1.5 Application by Customer 8

3.1.6 Connection 9

3.2 Application Form 11

4 SCHEDULE C 12

4.1 Connection of Distributed Generation of above 10kW in total 12

4.1.1 Interface with the Retailer 12

4.1.2 Interface with Planning Manager 12

4.1.3 Metering 12

4.1.4 Top Energy’s Connection and Operation Standards 12

4.1.5 Connection Charges 12

4.1.6 Initial Application by Customer 13

4.1.7 Final Application by the Customer 14

4.1.8 Connection 15

4.2 Initial Application Form 18

4.3 Final Application Form 18

4.4 Regulated Terms 19

4.4.1 Regulated Terms for Connection of Distributed Generation 19

5 SCHEDULE E 19

5.1 Dispute Resolution Process 19

5.1.1 Introduction 19

6 SCHEDULE F 19

 6.1 Connection Charges 19

 6.1.1 Share of generation-driven costs 20

 6.1.2 Repayment of previously funded investment 21

 6.1.3 The refund: 21

 6.1.4 Non-firm connection service 21

APPENDIX A – NETWORK SUPPORT 22

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

1 GENERAL

1.1 Interpretation

In this Policy:

ACOT	The amount equal to the actual reduction in Transpower’s annual charges payable by Top Energy to Transpower under Transpower’s “Transmission Pricing Methodology” (which may change from time to time) arising as a direct result of the Generator being connected to Top Energy’s Network and reflects the benefits to Top Energy of having the Generator connected to the Distribution Network.
Business Day	means any day of the week other than a Saturday, Sunday, or a public holiday within the meaning of the Holidays Act 2003.
Capacity Measurement Period	refers to the twelve month period 1 September – 31 August in which demand is measured to set the transmission pricing commencing 1 April the following year
Customer	the person who owns or operates DG and wishes to connect the DG to the Network
Clearing Manager	The service provider responsible for monitoring prudential security requirements and invoicing and settling electricity and ancillary service payments.
Connection Charges	means the cost of connecting distributed generation to Top Energy’s network (i.e. the capital cost of connection). Normal line charges and any offsets from having the generation connected will be discussed during the connection process.
DG or Distributed Generation	means distributed generation being equipment used, or proposed to be used, for generating electricity that is: <ul style="list-style-type: none"> • connected, or proposed to be connected, to the Network or to a consumer installation which is connected to the Network; and • is capable of injecting electricity into the Network.
DG Regulations	means the Electricity Industry Participation Code 2010.
Generator	A company that generates electricity connected to the grid or a local network.
Hedge Contract	A financial risk management product or contract for sale and purchase of electricity that protects against price risks associated with the spot price of electricity. It sets a price at which a buyer will purchase a specific quantity of electricity at a specified node for a set period. The buyer pays this price regardless of whether the market price is higher or lower than the set price. They are also known as contracts for differences (CFDs).
Hedge Market	A market through which HEDGE CONTRACTS are bought and sold.
Market	Being the mechanism for a Generator to sell electricity i.e. via Spot market or HEDGE MARKET.
Network	means the relevant Top Energy distribution network.
Point of Isolation	refers to the physical location of a device (e.g., a switch, fuse or link) which enables de-energisation of the connection from the Network.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	4 of 25
-----------------------	-----------	--------------------	------------	--------------------	---------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

Top Energy	means Top Energy Limited
Power Factor	Is a method of measuring the efficiency of a given load.
Regulated Terms	means the Regulated Terms for Connection of Distributed Generation set out in Schedule 6.2 of the Electricity Industry Participation Code 2010.
Retailer	means the Customer’s electricity retailer.
Spot Market	The buying and selling of wholesale electricity is done via a ‘pool’, where electricity generators offer electricity to the market and retailers bid to buy the electricity. This market is called the spot or physical wholesale market.
Transpower Connection Charge	the Customer’s allocation of the Distributor’s Annual Connection Charge for the GXP.
Transpower Interconnection Charge	the Customer’s allocation of the Distributor’s Annual Interconnection Charge for the GXP.
Transpower Interconnection Rate	the Interconnection Rate (\$/kW) used by Transpower to calculate the Distributor’s Annual Interconnection Charge at the GXP.

1.2 Introduction

DG (also referred to as embedded generation), is generation from any generating plant that is capable of exporting electricity into Top Energy’s Network. This type of generation can range from small photovoltaic installations at domestic premises to large wind, hydro and gas-fuelled generating stations.

Top Energy promotes the safety of staff and contractors who may be working on its Network; the general public and also ensure the integrity of its Network at all times. Accordingly, Top Energy must know where all DG is located, must note installations on SCADA and schematic diagrams, and must have the ability to isolate the generating plant from the relevant Network from time to time for operational and maintenance purposes.

This Standard does **NOT** apply to any generating plant that is **always** operated in isolation from Top Energy’s Network – e.g. independent generation for remote locations, and standby generators, which have a changeover arrangement to prevent operation in parallel with Top Energy’s Network.

The DG Regulations set out a framework to enable the connection of DG to Top Energy’s Network.

1.3 Scope

Contents of Standard

This Standard takes account of the provisions of the DG Regulations and sets out the process and requirements for the connection to the relevant Top Energy Network and operation of:

- DG of 10kW or less in total
- DG 10kW – 1000kW
- DG > 1000kW

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	5 of 25
-----------------------	-----------	--------------------	------------	--------------------	---------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

2 SCHEDULE A

2.1 Top Energy’s Connection and Operation Standards

Top Energy’s Connection and Operation Standards include:

- (a) the Congestion Management Policy;
- (b) Emergency Response Policies;
- (c) Health and Safety Standards; and
- (d) Certain Industry Rules and Standards.
- (e) Micro Embedded Generation Standard (10 kW or less in total)
- (f) Standard for Connection of Small Generation to Top Energy’s Network (above 10 kW but less than 1 MW).

These standards are available on request from Top Energy at: distributedgeneration@topenergy.co.nz

2.2 Top Energy’s Congestion Management Policy

The Congestion Management Policy sets out the policies, rules and conditions under which Distributed Generation that is connected to any of Top Energy’s Network, can be curtailed or interrupted from time to time to ensure that Top Energy’s other Connection and Operation Standards are met.

Top Energy may interrupt the connection of any Distributed Generation to the Network, or curtail either the operation or output of Distributed Generation, or both, and may temporarily disconnect the Distributed Generation from the Network in any one or more of the following cases:

- (a) if Top Energy considers it reasonably necessary for planned maintenance, construction or repairs on the Network;
- (b) in an emergency or for the purpose of protecting, or preventing danger or damage to, persons or property;
- (c) if the Customer modifies its Distributed Generation, without obtaining prior authorisation from Top Energy, in such a way that the modification has a material effect on the injection of electricity from the Distributed Generation into the Network; or
- (d) as a consequence of obligations that may be imposed on Top Energy which, in Top Energy’s opinion, could affect the operation of the Distributed Generation for example, obligations imposed by Transpower New Zealand Limited both as owner of the National Grid and as the System Operator, obligations to an electricity retailer, or obligations arising in respect of other distribution network, or imposed by law including the Electricity Industry Participation Code 2010.
- (e) in the case of a prevalence or saturation of DG installations on any part of Top Energy’s Network leading to operational issues including (but not restricted to) excessive voltage or the compromising of protection equipment or settings.

Top Energy strongly recommends that prospective generation operators review their internal networks with regard to minimizing voltage drop between the point of connection and the generator.

2.3 Distributed Generation Protection Systems Requirements

The protection systems associated with Distributed Generation plant must be coordinated with the other protection systems associated with the Network.

The setting or operating limits of any protection controlling a circuit breaker, or operating values of any automatic switching device at any point of connection between the Distributed Generation and the Network, shall be agreed

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	6 of 25
----------------	-----------	-------------	------------	-------------	---------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

in writing, between Top Energy and the relevant generator, during the process for approval and connection of the Distributed Generation. These protection settings or operating values must not be changed without the express written agreement of Top Energy.

Operators of DG must ensure that voltage levels of injected energy to the grid remain within the requirements of the *Electricity (Safety) Regulations*.

2.4 Top Energy’s Health and Safety Standards

2.4.1 General

Top Energy promotes the safety of its staff and contractors who may be working on its Network from time to time and the general public and to also ensure the integrity of its Network at all times.

2.4.2 Contractors

All contractors working on the Network or involved in the connection or disconnection of the Distributed Generation must take all practicable steps to ensure the site safety, health and welfare of their employees, other contractors and the general public in performing the work for which they have been contracted. The contractor must implement adequate management systems to achieve the safety outcomes required by law and its contractual obligations.

2.5 Industry Rules and Standards

In constructing, operating and maintaining the Distributed Generation the Customer and any contractors working on the Network must comply with the requirements of the following industry standards as they may be amended and reissued from time to time:

- Electricity (Safety) Regulations 2010 and subsequent amendments
- Electricity Industry Participation Code 2010 including all relevant Codes of Practice and subsequent amendments.
- Safety Manual - Electricity Industry (SM-EI).
- NZECP 35:1993 Power Systems Earthing
- AS/NZS 3000:2007 Aust/NZ Wiring Rules (excluding interlocking requirements).
- AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines
- AS/NZ4777 Parts 1, 2 & 3 Grid Connection of Energy Systems via Inverters.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	7 of 25
-----------------------	-----------	--------------------	------------	--------------------	---------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

3 SCHEDULE B

3.1 Connection of Distributed Generation of 10kW or less

3.1.1 Interface with the Retailer

- (a) The Customer should discuss the options for the sale of the electricity to be produced by the DG with its Retailer. The Retailer will usually enter into a contract for the purchase of the electricity once the DG has been approved for connection to the Network.
- (b) Each ICP installation control point must have only one Retailer for importing and exporting electricity.
- (c) The billing and data requirements relating to any connection of DG to the Network will be dealt with in the Customer's contract with the Retailer.
- (d) If the Customer wishes to switch its Retailer, the switch must occur at the beginning of a month.

3.1.2 Metering

- (a) A DG installation must have a meter which records import and export electricity flows separately and the meter must comply with the requirements of the Electricity Industry Participation Code 2010.
- (b) Where DG is being installed as part of an existing load connection, the existing metering equipment may need to be changed.
- (c) The Retailer or a registered electrician should be able to confirm whether the existing metering needs to be changed.

3.1.3 Top Energy's Connection and Operation Standards

Top Energy's Connection and Operation Standards for the connection of DG to its Network is set out in Schedule A to this Policy.

3.1.4 Application Fee

At the time the Customer submits its application for Distribution Generator of **10kW or less**, the customer must pay Top Energy an application fee of \$230 inclusive of GST.

3.1.5 Application by Customer

Top Energy recommends the Customer use the services of a consultant to carry out the initial evaluation when proposing to connect a DG to Top Energy's Network.

Please note: this is an evaluation process and does not constitute an Application to Top Energy.

- (a) **Application Form:** The Customer must apply using the Application Form set out in Section 2 to this Schedule B. The Customer must include with its application all the information and supporting documentation that is specified by Top Energy on the Application Form.
- (b) **Application Complete:** Within 5 Business Days of the date it receives the Application from the Customer, Top Energy will provide written notification to the Customer stating whether the application is complete.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	8 of 25
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	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

- (c) **Approval or Declined:** Within 30 Business Days of the date that it receives the completed Application Form and required documentation, Top Energy will give written notification to the Customer stating whether the application is approved or declined.
- (d) **Application Declined:** If Top Energy declines the application, the notice to the Customer stating that the application is declined will be accompanied by:
- (i) detailed reasons why the application has been declined; and if the Customer makes a new application the steps that the Customer can take to ensure connection of the DG; and
 - (ii) a copy of the Dispute Resolution Process set out in Schedule E to this Policy.
- (e) **Extension Time:** Top Energy may, give written notice to the Customer, seek of extension of the 30 Business Day period referred to in paragraph (c) above for considering whether the application is approved or declined. Top Energy will specify the reasons for seeking the extension in the notice. The Customer can grant Top Energy an extension of up to 20 Business Days. The Customer must not unreasonably withhold its consent to Top Energy's request for an extension of time.

3.1.6 Connection

- (a) **Customer to proceed with Connection:** Within 10 Business Days of receipt of the notice from Top Energy that the application is approved the Customer must provide written notice to Top Energy confirming whether the Customer intends to proceed with the connection of the DG and confirming the details of the DG to be connected.
- (b) The Customer may request Top Energy to agree a longer period than 10 Business Days by which the Customer must give this notice.
- (c) If the Customer does not give this notice within the 10 Business Day period or such other agreed period then Top Energy is no longer required to proceed with the application to connect the DG.
- (d) **Connection Agreement:** If the Customer gives written notice under paragraph (a) above, that it intends to proceed with the connection of the DG and confirms the details of the DG then, Top Energy will agree to connect, as soon as practicable, the DG under the term and conditions set out in the **Regulated Terms**.
- (e) **Inspection and Testing of DG:** The Customer, at its own cost, must test and inspect its DG. The Customer is to give adequate notice to Top Energy of the times and place where the testing and inspection is to occur. Top Energy may send an approved contractor to observe the testing and inspection of the DG.
- (f) **Report on Testing and Inspection:** When the testing and inspection of the DG is completed the Customer is to provide Top Energy with a written report as per Schedule B 3.3 including suitable evidence that the metering installation complies with the metering standards in the Electricity Industry Participation Code.
- (g) **Certificate by Electrician:** Prior to connecting the DG to the Network the Customer must provide Top Energy with a certificate of completion from a registered electrician or licensed electrical inspector that the DG complies with the Electricity Regulations 1997 and Associated Standards AS/NZS 3000:2007.
- (h) **Review of Connection Charges:** Top Energy will be entitled to review the connection charge not more than once in any 12 month period following the date of the connection of the DG to the Network. Following any review Top Energy must provide the Customer with written notice of any change to the connection charge that is payable. This notice must be given to the Customer at least 3 months before the date that the change is to take effect.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	9 of 25
----------------	-----------	-------------	------------	-------------	---------

	Top Energy		Standard	
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard		

- (i) **Regular Testing and Certification:** Top Energy requires customers operating DG to supply a statement of compliance with protection and auto-isolation standards at regular intervals to ensure continuing protection of Top Energy's Network, staff and contractors. The statement of compliance shall be due every two years. Failure to supply such statement may result in the disconnection of the DG from the network.

	Top Energy		Standard	
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard		

Connection of Distributed Generation of 10kW or less in total

3.2 Application Form

Please refer to Top Energy website:

<https://topenergy.co.nz/i-want-to/get-connected/distributed-generation-solar>

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	11 of 25
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	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

4 SCHEDULE C

4.1 Connection of Distributed Generation of above 10kW in total

4.1.1 Interface with the Retailer

- (a) The Customer should discuss the options for the sale of the electricity to be produced by the DG with its Retailer. The Retailer will usually enter into a contract for the purchase of the electricity.
- (b) Each ICP installation control point must have only one Retailer for importing and exporting electricity.
- (c) The billing and data requirements relating to any connection of DG to the Network will be dealt with in the Customer's contract with the Retailer.
- (d) If the Customer wishes to switch its Retailer, the switch must occur at the beginning of a month.

4.1.2 Interface with Planning Manager

Where the customer elects to clear direct to the MARKET as a GENERATOR, the customer must interface with the Network Planning Manager as required and enter into a Use of System Agreement.

4.1.3 Metering

- (a) A DG installation must have an interval meter which records import and export electricity flows separately and the meter must comply with the requirements of the Electricity Industry Participation Code.
- (b) Where DG is being installed as part of an existing load connection, the existing metering equipment may need to be changed.
- (c) The Retailer or a registered electrician should be able to confirm whether the existing metering needs to be changed.

4.1.4 Top Energy's Connection and Operation Standards

Top Energy's Connection and Operation Standards for the connection of DG to its Network is set out in Schedule A to this Standard.

4.1.5 Connection Charges

The charges payable by the Customer for the connection of the DG to the relevant Network are set out in Schedule F.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	12 of 25
-----------------------	-----------	--------------------	------------	--------------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

4.1.6 Initial Application by Customer

Top Energy recommends that consultants carry out the initial evaluation when a customer wishes to connect a DG to Top Energy's Network. This evaluation is at the expense of the Customer.

- (a) **Initial Application:** The Customer must apply to Top Energy using the Initial Application Form set out in Section 2 to this Schedule C.

The Customer must include all the information and supporting documentation that is specified by Top Energy on the Initial Application Form.

- (b) **Application Fee:** At the time the Customer submits its application, the Customer must pay Top Energy the relevant application fee set out below GST inclusive:

- For DG of over 10kW but less than 100kW in total: \$575
- For DG of 100kW or above in total, but less than 1MW: \$1,150
- For DG of 1MW and above: \$5,750

- (c) **Initial Application Complete:** Top Energy will, within 5 Business Days of receiving the Initial Application Form give written notice to the Customer advising whether or not the application is complete.

- (d) **Information to be provided by Top Energy:** Within 30 Business Days of the date that it receives the completed Initial Application Form and required documentation, Top Energy will provide the following information to the Customer:

- (i) Information about the capacity of the distribution network, including, both the design capacity including fault levels and actual operating levels.
- (ii) Information about the extent to which the connection and operation of the DG may result in the breach of the relevant standards for safety, voltage, power quality, and reliability of supply to other connected parties.
- (iii) Information about any measures or conditions including, modifications of the design and operation of the distribution network or the operation of the DG that may be necessary to address the matters in paragraph (d)(i) and (ii) above.
- (iv) The approximate costs of any network-related measures or conditions, identified under paragraph (d)(iii) and an estimate of time constraints or restrictions that may delay the connection of the DG.
- (v) Information about any further detailed investigative studies that Top Energy considers are necessary to identify any potential adverse effects on the system resulting from the proposed connection of the DG, together with an indication of:

Whether Top Energy agrees to the Customer, or a suitably qualified agent of the Customer, undertaking those studies; or

If not, whether Top Energy or a recommended consultant could undertake those studies, and if so the reasonably estimated cost of the studies that the Customers would be charged.

- (vi) Information about any obligations to other parties such as Transpower or under the Electricity Industry Participation Code 2010 that could be imposed on Top Energy and whether those obligations could affect the DG.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	13 of 25
----------------	-----------	-------------	------------	-------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

- (vii) Any additional information or documents that would assist Top Energy in considering the Customer's Initial Application.
- (viii) Information about the extent to which planned and unplanned outages may adversely affect the operation of the DG.
- (e) **Customer Request for Further Information:** The Customer may request further information from Top Energy such as single line diagrams, equipment ratings, normal switch configurations including fault levels and protection systems relevant to the proposed point of connection of the DG to the relevant Network. Top Energy will provide this information to the Customer within 30 Business Days of receipt of the request being received by Top Energy.
- (f) **New Information:** If either the Customer or Top Energy subsequently becomes aware of new information relevant to the application to connect the DG, it will use reasonable endeavors to provide it to the other party.

4.1.7 Final Application by the Customer

- (a) **Final Application:** The Customer must make a final application - within 12 months after receipt of the information from Top Energy under paragraph 4.1.5(d) and 4.1.5(e) above if it intends to proceed to connect the DG to Top Energy's Network.
- (b) **Final Application Form:** The Customer must make a Final Application by using the Final Application Form set out in Section 3 to this Schedule C. The Customer must include all the information and supporting documentation that is specified by Top Energy on the Final Application Form.

This information is to include the results of any investigative studies identified by Top Energy as being required to be undertaken by the Customer or its agent in the Initial Application process.

- (c) **Notification by Top Energy:** When Top Energy receives the Final Application it will use reasonable endeavors to give written notice to:
 - (i) all persons who have made an Initial Application for the connection of DG to the particular part of the Network that Top Energy considers would be affected by the connection of the DG that is the subject of the Final Application; and
 - (ii) all Customers who have DG above 10kW in total connected on Regulated Terms to the particular part of the Network that Top Energy considers would be affected by the connection of the DG to that part of the Network.
- (d) **Priority of Applications:** If Top Energy receives a Final Application for connection to a Network (the first application) and within 10 Business Days of receiving the first application Top Energy receives another Final Application (the second application) for connection to part of the Network that Top Energy considers would be affected by the DG subject of the first application then:
 - (i) Top Energy may consider the two or more Final Applications together as if they were competitive bids to use the same part of the Network; and
 - (ii) must consider the applications in the light of the purpose of the DG Regulations, which is to enable connection of DG where connection is consistent with Top Energy's Connection and Operation Standards; and
 - (iii) if a Final Application is declined, Top Energy must set out the reasons for its decline in the notice given under this paragraph (e) below and must also set out in that notice the criteria used by Top Energy in making any decision under these paragraphs (d)(i) and (ii).

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	14 of 25
----------------	-----------	-------------	------------	-------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

In any other case in which Top Energy receives more than one Final Application for connection to a similar part of its Network, Top Energy must consider the earlier Final Application in priority to other Final Applications.

- (e) **Approved or Declined:** Top Energy will give written notice to the Customer stating whether the Final Application is approved or declined within the time limits specified below:
- (i) **For DG up to 1 MW:** 45 Business Days after the date of receipt of the Final Application.
 - (ii) **For a DG above 1 MW but no greater than 5 MW:** 60 Business Days after the date of receipt of the Final Application.
 - (iii) **For a DG 5MW or above:** 80 Business Days after the date of receipt of the Final Application.
- (f) **Extension Time:** Top Energy may by giving written notice to the Customer, seek one or more extensions of the relevant time, specified in paragraph (e) above, for considering whether the Final Application is approved or declined.
- (i) Top Energy must specify the reasons for seeking the extension of time in the notice.
 - (ii) The Customer may grant Top Energy an extension of up to 40 Business Days.
 - (iii) The Customer must not unreasonably withhold its consent to Top Energy's request for an extension of time.
- (g) **Final Application Approved with Conditions:** A notice given by Top Energy approving the Final Application under paragraph 4.1.6 (e) should be accompanied by:
- (i) a detailed description of the conditions or other measures that are conditions of the connection of the DG and what the Customer must do to comply with them;
 - (ii) detailed reasons for those conditions or other measures;
 - (iii) a detailed description of the charges payable by the Customer; and
 - (iv) the Dispute Resolution Process set out in Schedule E to this Policy if the Customer disputes any or all of the conditions or charges payable.
- (h) **Final Application Declined:** If Top Energy declines the Final Application, the notice to the Customer stating that the application is declined must be accompanied by:
- (i) detailed reasons why the application has been declined and, if the Customer makes a new application the steps that the Customer can take to ensure connection of the DG; and
 - (ii) a copy of the Dispute Resolution Process set out in Schedule E to this Policy.

4.1.8 Connection

- (a) **Customer to proceed with Connection:** Within 30 Business Days of receipt of the notice from Top Energy that the Final Application is approved, the Customer must provide written notice to Top Energy confirming whether the Customer intends to proceed with the connection of the DG and, if so, confirming:

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	15 of 25
----------------	-----------	-------------	------------	-------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

- (i) the details of the DG to be connected; and
- (ii) that the Customer accepts all of the conditions or other measures that have been specified by Top Energy under paragraph 4.1.7 above as conditions of the connection of the DG.

The Customer and Top Energy may agree to a longer period than 30 Business Days by which the Customer must give this notice.

If the Customer does not give this notice within the 30 Business Day period or such other agreed period, then Top Energy is no longer required to proceed with the application to connect the DG.

- (b) **Connection Contract:** If the Customer gives the written notice under this paragraph (a) above that it intends to proceed with the connection of the DG and confirms the details of the DG then, Top Energy will provide the Customer with it's standard Connection Contract (Distributed Generation, Electricity Network Contract Agreement). The Customer and Top Energy have a period of 30 Business Days, starting on the date on which Top Energy received the notice, to attempt in good faith, to negotiate a connection contract.

The parties may agree to extend the 30 Business Day term.

If the Customer and Top Energy enter into a connection contract Top Energy will connect the DG to the Network in accordance with that contract as soon as practicable.

- (c) **Regulated Terms:** If Top Energy and the Customer do not enter into a connection contract within the period prescribed in this paragraph (b) above then Top Energy must connect the DG to the Network on the Regulated Terms set out at Schedule D to this Policy as soon as practicable after the later of:
 - (i) the expiry of that period; and
 - (ii) the date on which the Customer has fully complied with any conditions or other measures that were specified by Top Energy under paragraph 4.1.7 above as conditions of the connection; or
 - (iii) if conditions or other measures are the subject of a dispute, the date on which the dispute is finally resolved and those conditions or other measures have been performed by the Customer.

- (d) **Inspection and Testing of DG:** The Customer must test and inspect its DG. The Customer is to give adequate notice to Top Energy of the times and place where the testing and inspection is to occur. Top Energy may send an approved contractor to observe the testing and inspection of the DG.

- (e) **Report on Testing and Inspection:** When the testing and inspection of the DG is completed the Customer is to provide Top Energy with a written test report to include but are not limited to points listed in Schedule C including suitable evidence that the metering installation complies with the metering standards in the Electricity Industry Participation Code 2010.

- (f) **Fee for Testing and Inspection:** The Customer is to pay Top Energy the relevant fee (as per the Distributed Generation Regulation) set out below GST inclusive for observation of the testing and inspection of the DG under this paragraph (d) above:

- DG of above 10kW in total but less than 100kW in total: \$138
- DG of 100kW and above: \$1,380

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	16 of 25
----------------	-----------	-------------	------------	-------------	----------

	Top Energy		Standard	
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard		

- (g) **Certificate by Electrician:** Prior to connecting the DG to the Network the Customer must provide Top Energy with a certificate from a registered electrician or licensed electrical inspector that the DG complies with the Electricity Regulations 1997 and Associated Standards AS/NZS 3000:2007.
- (h) **Connection Charges:** Prior to the connection of the DG to the Network, Top Energy will provide the Customer with a written notice specifying the connection charge payable by the Customer and explaining how the charge has been calculated.
- (i) **Review of Connection Charges:** Top Energy will be entitled to review the connection charge not more than once in any 12 month period following the date of the connection of the DG to the Network. Following any review Top Energy must provide the Customer with written notice of any change to the connection charge that is payable. This notice must be given to the Customer at least 3 months before the date that the change is to take effect.
- (j) **Regular Testing and Certification:** Top Energy requires customers operating DG to supply a “statement of compliance” with protection and auto-isolation standards at regular intervals to ensure continuing protection of Top Energy’s Network, staff and contractors. For DG over 10kW the statement of compliance shall be due every two years. Where the DG network connection is at HV the statement of compliance shall be due every 12 months.

	Top Energy		Standard	
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard		

Connection of Distributed Generation of above 10kW in total

4.2 Initial Application Form

Please refer to Top Energy website:

<https://topenergy.co.nz/i-want-to/get-connected/distributed-generation-solar>

Connection of Distributed Generation of above 10kW in total

4.3 Final Application Form

Please refer to Top Energy website:

<https://topenergy.co.nz/i-want-to/get-connected/distributed-generation-solar>

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

Schedule D

4.4 Regulated Terms

4.4.1 Regulated Terms for Connection of Distributed Generation

(a) Introduction

These regulated terms are a copy of the regulated terms contained in Schedule 2 of the Electricity Governance Connection of Distributed Generation Regulations the **DG Regulations**.

Link: [Distributed Generation - Schedule 6.2 Regulated Terms](#)

The terms used in these regulated terms have the meanings set out or referred to in the DG Regulations.

(b) When Regulated Terms Apply

These regulated terms will apply if:

- (i) Top Energy grants the generator approval to connect the DG to its network; and
- (ii) Top Energy and the generator do not enter into a connection contract outside of these regulated terms within the period specified in Schedule A or Schedule B of this Policy for the negotiation of such a connection contract.

Top Energy must connect the DG to its network on these regulated terms as soon as practicable after the expiry of the period for negotiation of the connection contract. If these regulated terms apply the parties' rights and obligations in respect of the connection of the DG are governed by these regulated terms. A breach of these regulated terms is not a breach of contract.

The generator and Top Energy may any time, by mutual agreement, enter into a connection contract outside these regulated terms that will apply instead of these regulated terms.

5 SCHEDULE E

5.1 Dispute Resolution Process

5.1.1 Introduction

The dispute process set out below is specified in Schedule 6.3 of the Electricity Industry Participation Code 2010.

6 SCHEDULE F

6.1 Connection Charges

Top Energy's pricing principles are charges based on recovery of reasonable costs incurred by Top Energy to connect the generator and to comply with Top Energy's connection and operation standards.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	19 of 25
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	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

Incremental costs means the reasonable costs that an efficient service provider would incur in providing electricity distribution services with connection services to the distributed generation, less the costs that the efficient service provider would incur if it did not provide those connection services.

- (a) Top Energy’s connection charges for the connection of distributed generation consist of the incremental costs of providing connection services to the distributed generation. For the avoidance of doubt, incremental cost is net of transmission and distribution costs that an efficient service provider would be able to avoid as a result of the connection of the distributed generation:
- (b) Avoidable costs, that cannot be calculated, will be estimated taking into account reasonable estimates of how the Top Energy’s capital investment decisions and operating costs would differ, in the future, with and without the generation.
- (c) Estimated costs may be adjusted ex post. Ex-post adjustment involves calculating, at the end of a period, the actual costs incurred by Top Energy as a result of the distributed generation being connected to the Top Energy network and deducting the costs that would have been incurred had the generation not been connected. In this case, if the costs differ from the costs charged to the generator, Top Energy will notify and recover or refund those costs after they are incurred unless the distributor and the generator agree otherwise.

Capital and operating expenses include distinct capital expenditure, such as costs for a significant asset replacement or upgrade, the connection charge attributable to the generator's actions or proposals and is payable by the generator before Top Energy has committed to incurring those costs. Top Energy is not obliged to incur those costs until that payment has been received.

- (a) Where incremental costs are negative, the generator is deemed to be providing network support services to the distributor, and may invoice the distributor for this service and, in that case, the generator must comply with all relevant obligations for example, obligations under these regulations and in respect of tax.
- (b) Where costs relate to ongoing or periodic operating expenses, such as costs for routine maintenance, the connection charge attributable to the generator's actions or proposals may take the form of a periodic charge expressed in dollars per annum.
- (c) Before the connection of distributed generation, Top Energy will notify the generator in writing of the connection charges that will be payable and explain how the connection charges have been calculated.
- (d) After the connection of the distributed generation, Top Energy may review the connection charges payable by a generator not more than once in any 12 month period. Following a review, Top Energy will notify the generator in writing of any change in the connection charges payable, and the reasons for any change, not less than 3 months before the date the change is to take effect.
- (e) Top Energy currently do not impose any ongoing charges in relation to distributed generation. Normal line charges and any offsets created from having the distributed generation connected to Top Energy’s network will be discussed during the connection process.

6.1.1 Share of generation-driven costs

If multiple generators are sharing an investment, the portion of costs payable by any one generator:

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	20 of 25
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	Top Energy		Standard	
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard		

- (a) must be calculated so that the charges paid or payable by each generator take into account the relative expected peak of each generator's injected generation; and
- (b) may also have regard to the percentage of assets that will be used by each generator, the percentage of capacity used by each generator, the relative share of expected maximum combined peak output, and whether the combined peak generation is coincident with the peak load on Top Energy's Network;
- (c) in order to facilitate the calculation of equitable connection charges under paragraph (b) above, Top Energy will make and retain adequate records of investments for a period of 5 years, provide the rationale for the investment in terms of facilitating distributed generation, and indicate the extent to which the associated costs have been or are to be recovered through generation connection charges.

6.1.2 Repayment of previously funded investment

- (a) If a generator has paid connection charges that include in part the cost of an investment that is subsequently shared by other generators, Top Energy will refund to the generator all connection charges paid to Top Energy under paragraph 7.1.3(b) above, by other generators in respect of that investment.
- (b) If there are multiple prior generators, a refund to each generator referred to in this paragraph (a) must be provided in accordance with the expected peak of that generator's injected generation over a period of time agreed between the generator and Top Energy.

6.1.3 The refund:

- (a) must take into account the relative expected peak of each generator's injected generation; and
- (b) may also have regard to the percentage of assets that will be used by each generator, the percentage of capacity used by each generator, the relative share of expected maximum combined peak output, and whether the combined peak generation is coincident with the peak load on Top Energy's Network.
- (c) no refund of previous payments from the generator referred to in paragraph 7.1.4 (a) is required after a period of 3 years from the initial connection of that generator.

6.1.4 Non-firm connection service

To avoid doubt, nothing in the DG regulations creates any capacity or property rights in any part of the Top Energy's network unless these are specifically contracted for. Top Energy will maintain connection and lines services to generators in accordance with their connection and operation standards.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	21 of 25
-----------------------	-----------	--------------------	------------	--------------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

APPENDIX A – NETWORK SUPPORT

1. Network Support Service & Avoided Cost of Transmission (ACOT)

Where incremental costs are negative the Generator is deemed to be providing “Network Support Services” and may invoice Top Energy for this service.

It should be noted that Top Energy’s Network is constructed to provide for the known loads at the time with spare capacity for future growth. The known (requested) load for each ICP is limited by the protection at the Point of Isolation. If without the Generator operating, Top Energy’s Network shows signs of being unstable, but with the Generator operating there is a noticeable effect on the stability of the network, then in this instance the Generator is deemed to be providing Network Support Services.

Therefore, where a Generator is connected under the Electricity Industry Participation Code 2010 and,

- can provide evidence to Top Energy that the Generator is providing “network support services” to Top Energy’s network as described above,
- complies with all relevant obligations under these Regulations (and in respect of Tax),

the Generator may invoice Top Energy for this network support services (ACOT).

ACOT is directly related to the kVA exported from the Generator into the Network. For example, if the Generator is rated at 2MW but is exporting at 1MW during the “peak period”, it is this exported figure (1MW) that would be used to calculate ACOT.

The “Energy” Exported by the Generator is accounted for via the export meter which is reconciled by the Generators nominated method, i.e. Retailer or Clearing Manager.

Where a Generator is already connected to Top Energy’s network (and not currently receiving ACOT), any benefit via reduced Transpower interconnection charges, has already been passed through to customers. To this end, for Top Energy to pay an existing Generator ACOT, Top Energy would have to increase its charges. Therefore the window for Top Energy to factor any Generator benefit (ACOT) is in November/December for implementation 1 April the year following. For the avoidance of doubt, for existing Generators, ACOT will be determined as outlined in 2 below, and applied effective from 1 April in the forthcoming price year i.e. ACOT will not be applied retrospectively.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	22 of 25
-----------------------	-----------	--------------------	------------	--------------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

2. Requirements of receiving ACOT payments

ACOT will only be paid for Generators which export into Top Energy’s Network, with an exporting capacity over and above 1MW and if the Generator is deemed to be supporting Top Energy’s network

Where the Generator is deemed to be providing the Network Support Services the Generator should provide the data in the required format to Top Energy for payment of ACOT in the following way:

- a) Ensure that the data provided has been audited by a Qualified Independent Auditor approved by Top Energy.
- b) Provide to Top Energy the data as outlined below by Business Day 5 in December each year
- c) Invoice Top Energy monthly from the following April each year.

Monthly data obtained from year one of operation will be used to make up the invoice to Top Energy during year two of operation. If a Generator changes hands during, or at the end of, an operating year the payments made to the Generator for the generation during that Capacity Measurement Period will be paid to the Generator operating during that period.

3. Method of Calculating ACOT

- (a) From April 2008 ACOT will be paid in the following way:
 - (i) The Annual Interconnection Charge that Top Energy pays to Transpower is determined from Top Energy’s demand offtake at the GXP coincident with the Regional Peak Demand Periods occurring during the Capacity Measurement Period relevant for the applicable Pricing Year.
 - (ii) ACOT will not be paid to the Generator until electricity from the Generating Station is generated within the Capacity Measurement Period relevant for the applicable Pricing Year.
 - (iii) ACOT will be a fixed amount each year, using the Regional Peak Demand Periods and Regional Coincident Peak Demand applicable for the GXP and as notified by Transpower during the Capacity Measurement Period for the applicable Pricing Year.
 - (iv) ACOT will be calculated using the Transpower Interconnection Rate applicable to the Pricing Year.
 - (v) The annual ACOT amount will be the difference between:
 - i. the average of the Regional Coincident Peak Demand at the GXP (as notified by Transpower); and
 - ii. the average of Top Energy’s net demand offtake (in kW), as measured at the GXP, plus the net electricity (in kW) injected into the Top Energy’s Network by the Generation Station at the Generator’s Connection Point for each Regional Peak Demand Period.
 - (vi) Paid in 12 equal portions by the 20th day of each month during the Pricing Year to the Generator.
- (b) The Generator agrees that any payment due to the Customer in respect of the ACOT payment may be netted off by Top Energy against any Network Charges due and payable by the Generator to Top Energy.

If, at any time while the Distributed Generation connection is connected to Top Energy’s network, and Transpower changes its pricing methodology such that the ACOT calculation method described in clauses above is or will become obsolete, the parties agree that Top Energy shall nonetheless pay the Generator the ACOT amount determined that is applicable in that Pricing Year. Following which, ACOT determination will be on the basis of the new Transpower methodology.

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	23 of 25
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	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

4. Data Requirements

4.1 Data Timings and Format

- (a) Consumption data is to be supplied no later than the final Business Day prior to Christmas Day in December.
- (b) Load and generation data must be adjusted to the GXP-based data by adding the appropriate the Distributor network loss factor. Time of use data should be the same as the data which is provided to the electricity market for reconciliation purposes.
- (c) The half hourly kWh and kVAh or kVAh data from the Retailer or the Data Administrator must be provided to the Distributor in a CSV file similar to the present data format used for reconciliation purposes under the EGRs.
- (d) The files received from the Retailer and Data Administrator must contain either kVAh or kVArh data. The system will accept kVArh data and will convert it into kVAh during processing.
- (e) File names must have a format xxxxMMYY.MNN. where xxxx is the data supplier, MMYY is the month and year, M is the unique file type identifier and NN is a sequential number for each month starting at 01.
- (f) Files are adjusted for daylight savings time i.e., 46 time periods in October and 50 time periods in March.

Each data file will contain one record per half hour period per day in the month in a horizontal format as follows:

Field Name	Data Format	Example
Bus/Id	Char 7	WGN0331
Network ID	Char 4	POCO
Point of Injection	Char 2	GN
Retailer (Party Code)	Char 4	GENE
ICP Number	Char 15	0001234567PCXYZ
Units (kVAh, Kvarh, kW, kWh)	Char 5	kWh
Flow (X, I)	Char 1	X
Status (I, F)	Char 1	F
Date*	DD/MM/YYYY	01/04/2004
Quantity**	Number 8	99999999
Checksum ***	Number 10	9999999999

Notes:

* This field will repeat for every day of the month.

** This field will repeat for every trading period in the day (1, 2...48).

*** This field will repeat for every day and contain the sum of the trading periods for the day.

4.2 Inaccurate Data

If any meter data provided to the Distributor is found to be inaccurate, the Distributor reserves the right to decide whether to use that data or to make appropriate adjustments to the data.

4.3 Loss Factor

The technical loss factor allocated to the Generating Station for reconciliation of the data at the relevant Grid Exit Point is:

Effective Date	1/05/2018	Expiry Date	30/04/2023	Page Number	24 of 25
----------------	-----------	-------------	------------	-------------	----------

	Top Energy	Standard
	Name and No	ST-B1-1-001 - Distribution Generation DG Connection Standard

Micro Generation <10kW.....1.0

Generation above 10kW but less than 1MW.....1.0

1MW and above.....Special Loss Factor as determined by Top Energy

5. Power Factor:

If power factor at the Generator’s Connection Point is less than 0.95 lagging when the Generator is importing power, or 0.95 leading when the Generator is exporting power, the Distributor may:

- a) on the first occasion this clause applies, allow the Generator three months to correct the power factor at the Generator’s Connection Point and then commence charging the power factor charge set out in clause c) if the power factor is not corrected within that specified time.
- b) on the second and subsequent occasions this clause applies, charge the power factor charge set out in clause c).
- c) The power factor charge for the purposes of this clause is 7.00/kVAr/month in respect of the Generator.

Where the kVAr amount represents the largest difference between the kVAr amount recorded in any one half hour period and one third of the kW demand recorded in the same half hour period. The charge is applicable only during weekdays, between 7am and 8pm.

The charge detailed in clause (iii) will not be applicable in circumstances where power factor is 0.95 or below due to a System Operator instruction by way of the EGRs.

Annual Connection Charge, Annual Interconnection Charge, Capacity Measurement Period, Interconnection Rate, Pricing Year, Regional Coincident Peak Demand, Regional Peak Demand Period: have the same meanings as defined in the Transmission Pricing Methodology.