Electricity Industry Participation Code 2010

Part 12
Transport

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Subpart 1—General

12.1 Contents of this Part
This Part relates to the following aspects of transmission:
(a) transmission agreements (subpart 2):
(b) grid reliability and industry information (subpart 3):
(c) the transmission pricing methodology (subpart 4):
(d) [Revoked]
(e) interconnection asset services (subpart 6):
(f) the Outage Protocol (subpart 7).

12.2 Discretion to waive Code requirements
(1) The Authority may agree to waive Code requirements under this Part if, before the commencement of an amendment to this Part,—
   (a) Transpower or any other participant required to complete actions under this Code has in substance done what it would have been required to do under this Code; and
   (b) the Authority is satisfied that the actions have been completed.

(2) If the Authority agrees to waive Code requirements under subclause (1), the Authority must publish its decision and reasons for agreeing to waive Code requirements.

12.3 Interaction between Parts 7 and 8 and this Part
(1) The principal performance obligations in relation to the real time delivery of common quality and dispatch under Part 7 relate to the functions and obligations of the system operator.

(2) When it is exercising its functions and powers under this Part, the Authority must have regard to the desirability of Parts 7 and 8 and this Part operating in an integrated and consistent manner.

(3) The performance or non-performance of a function or obligation of the system operator under Parts 7 or 8, and a claim against the system operator under Parts 7 or 8, is
without prejudice to the functions and obligations of Transpower under this Part.

(4) The performance or non-performance of a function or obligation of Transpower under this Part, and any claim against Transpower under this Part or a transmission agreement, is without prejudice to the functions and obligations of the system operator under Parts 7 or 8.

Compare: Electricity Governance Rules 2003 rule 3 section I part F

Subpart 2—Transmission agreements

12.4 Contents of this subpart
This subpart deals with transmission agreements, and provides for the following:
(a) a process for the Authority to determine the structure of transmission agreements;
(b) the categories of participants that must enter into transmission agreements;
(c) an obligation on Transpower and designated transmission customers to enter into transmission agreements;
(d) matters to be included in transmission agreements;
(e) a process for the Authority to determine benchmark agreements that—
   (i) provide the basis for the negotiation of transmission agreements; or
   (ii) act as a default transmission agreement if Transpower and a designated transmission customer fail to execute a transmission agreement;
(f) a process for the Authority to determine a Connection Code;
(g) a process for variations in transmission agreements from benchmark agreements;
(h) a process for resolving disputes arising from the negotiation of transmission agreements, and the application of the benchmark agreement as a default transmission agreement;
(i) existing agreements.

Compare: Electricity Governance Rules 2003 rule 1 section II part F

12.5 Structure for transmission agreements
(1) The structure for transmission agreements that applies at the commencement of this Code is the structure for transmission agreements published by the Electricity Commission under rule 2 of section II of part F of the rules on 21 May 2007.

(2) Until the Authority reviews the structure for transmission agreements, it must continue to publish the structure referred to in subclause (1).

Compare: Electricity Governance Rules 2003 rule 2.1.2 section II part F

12.6 Review of structure for transmission agreements
(1) This clause applies if the Authority wishes to review the structure for transmission agreement referred to in clause 12.5, or a structure for transmission agreements determined by the Authority under this clause.

(2) The Authority must publish a proposed structure for transmission agreements.

(3) When the Authority publishes its proposed structure, the Authority must advise
registered participants of the date by which submissions on the proposed structure are to be received by the Authority. The date must be no earlier than 15 business days from the date of publication of the proposed structure.

(4) Each submission on the proposed structure must be made in writing to the Authority and received on or before the submission expiry date. In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.

(5) Within 20 business days after the submission expiry date (or such longer period as the Authority may allow), the Authority must complete its consideration of all submissions it receives and determine an appropriate transmission agreement structure.

(6) The transmission agreement structure determined by the Authority under this clause must be the structure of the benchmark agreements to be developed and approved by the Authority under clauses 12.27 to 12.34.

Compare: Electricity Governance Rules 2003 rules 2.1.3 to 2.1.5 section II part F

12.7 Categories of participants required to enter into transmission agreements
(1) The categories of designated transmission customers required to enter into transmission agreements with Transpower under clause 12.8 are as specified in Schedule 12.1.

(2) The Authority must record in the register whether a registered participant is a designated transmission customer.

(3) Registration has no effect on a participant’s status as a designated transmission customer.

Compare: Electricity Governance Rules 2003 rule 2.2 section II part F

Transpower and designated transmission customers must enter transmission agreements

12.8 Obligation to enter transmission agreements
Transpower and designated transmission customers must enter into transmission agreements.

Compare: Electricity Governance Rules 2003 rule 3.1.1 section II part F

12.9 When designated transmission customer must enter into transmission agreement
A participant who becomes a designated transmission customer must enter into a transmission agreement with Transpower within 2 months after the participant becomes a designated transmission customer.

Compare: Electricity Governance Rules 2003 rule 3.1.2.3 section II part F

12.10 Benchmark agreements to be default transmission agreements
(1) Subject to clauses 12.49 and 12.50, if, at the expiry of 2 months after a participant becomes a designated transmission customer, the designated transmission customer and Transpower have not entered into a transmission agreement in accordance with clause 12.9, the benchmark agreement applies as a binding contract between the
designated transmission customer and Transpower, and the designated transmission customer and Transpower must comply with the process specified in this clause.

(2) If this clause applies:

(a) within 10 business days of the date that is 2 months after the participant became a designated transmission customer, the designated transmission customer must provide Transpower, at the address for service for Transpower registered at the New Zealand Companies Office, with—

(i) the designated transmission customer’s full name; and

(ii) the designated transmission customer’s physical address, postal address and electronic address to which notices under the default transmission agreement are to be sent; and

(iii) the name of the contact person of the designated transmission customer to whom such notices should be addressed:

(b) by the date 20 business days after the receipt of the designated transmission customer’s details under paragraph (a), Transpower must provide the designated transmission customer with a draft default transmission agreement completed in accordance with the benchmark agreement, which must include the following:

(i) the designated transmission customer’s details as provided under paragraph (a):

(ii) Transpower’s physical address, postal address and electronic address to which notices under the default transmission agreement are to be sent:

(iii) the contact person to whom notices under the default transmission agreement should be addressed:

(iv) Transpower’s designated bank account for the purposes of receiving payments under the default transmission agreement:

(v) a draft Schedule 1, which sets out the connection locations, points of service and points of connection of the assets owned or operated by the designated transmission customer to the grid:

(vi) a draft Schedule 4 setting out, in the same form as the diagram in Schedule 4 of the benchmark agreement, the configuration of the connection assets in relation to each connection location listed in Schedule 1:

(vii) a draft Schedule 5 setting out proposed service levels for each connection location listed in Schedule 1 determined in accordance with subclause (3):

(viii) if applicable, a draft Schedule 6, including identifying the facilities, facilities area, and land that are to be subject to the access and occupation terms set out in the schedule and the licence charges under the schedule:

(c) the designated transmission customer and Transpower may discuss the schedules proposed under paragraph (b)(v) to (viii), as a result of which Transpower may amend any of the schedules:

(d) the designated transmission customer must advise Transpower in writing no later than 20 business days after receiving the draft default transmission agreement under paragraph (b) whether—
(i) it accepts the schedules as proposed by Transpower under paragraph (b)(v) to (viii); or
(ii) if Transpower has amended any of those schedules under paragraph (c), it accepts the schedules as amended.

(3) The service levels set out in Schedule 5 of a default transmission agreement must be determined on the following basis:

(a) the capacity service levels for each branch must be consistent with—
   (i) the capacities of the branch or component assets in the most recent asset capability statement provided by Transpower under clause 2(5) of Technical Code A of Schedule 8.3; or
   (ii) if the relevant information is not contained in the asset capability statement, the manufacturer’s specification for the component assets:

(b) the service levels for the voltage range specified in the capacity service measures for each branch must be consistent with,—
   (i) for assets of voltages of 50kV or above,—
      (A) the voltage ranges for the component assets specified in the AOPOs, if any; or
      (B) the voltage range specified in any equivalence arrangement approved or any dispensation granted under clauses 8.29 to 8.31 in respect of any asset that does not comply with the voltage range specified in the AOPOs; or
   (ii) for assets of voltages less than 50kV, the normal operating voltage of the component assets:

(c) Transpower must ensure that each connection asset is included in a branch:

(d) the availability and reliability service levels must—
   (i) be set at a level equivalent to the average annual availability and reliability at each point of service subject to the default transmission agreement over the 5 year period (being years ending 30 June) immediately before the date that is 2 months after the participant became a designated transmission customer; or
   (ii) if a point of service subject to the default transmission agreement has not been in existence for 5 years (being years ending 30 June) before the date referred to in subparagraph (i), reflect a reasonable estimate of the expected availability and reliability at the point of service having regard to the performance data available for the point of service and average annual availability and reliability of assets similar to the connection assets at the connection location at which the point of service is located:

(e) the reporting and response service levels must be consistent with Transpower’s practices existing on the date that is 2 months after the participant became a designated transmission customer, including Transpower’s documented policies and procedures, and must not result in changes to the management or operation of the grid that could materially affect Transpower or any other participant or end use customer, or require Transpower to materially alter the level of its normal on-going grid expenditure.
(4) If the designated transmission customer accepts the schedules as proposed by Transpower under subclause (2)(b)(v) to (viii), or as amended by Transpower under subclause (2)(c), the default transmission agreement applies as a binding contract between Transpower and the designated transmission customer from the date that is 2 months after the participant became a designated transmission customer.

(5) If Transpower and a designated transmission customer are unable to agree on the terms of any of the schedules to a default transmission agreement proposed by Transpower under subclause (2)(b)(v) to (viii), or as amended by Transpower under subclause (2)(c), either party may refer the matter to the Rulings Panel for determination under clauses 12.45 to 12.48.

(6) If a dispute is referred to the Rulings Panel, under subclause (5)—

(a) the default transmission agreement as determined by the Rulings Panel in accordance with clauses 12.45 to 12.48 applies as a binding agreement between Transpower and the designated transmission customer from the date that is 2 months after the participant became a designated transmission customer or the date on which the Rulings Panel makes its determination or its determination is expressed to come into effect, whichever is later; and

(b) if the Rulings Panel has not made a determination by the date that is 2 months after the participant became a designated transmission customer, the draft default transmission agreement provided under subclause (2)(b) applies as a binding agreement between Transpower and the designated transmission customer until the date on which the Rulings Panel makes its determination or the determination comes into effect.

Compare: Electricity Governance Rules 2003 rule 3.1.3 section II part F

12.11 Subsequent transmission agreements
If a benchmark agreement applies as a default transmission agreement, the benchmark agreement may be superseded by a subsequent transmission agreement entered into by Transpower and the designated transmission customer.

Compare: Electricity Governance Rules 2003 rule 3.1.4 section II part F

12.12 Changes to connection assets under default transmission agreements
(1) If Transpower reconfigures, replaces, enhances, or permanently removes a connection asset from service in accordance with the provisions of a default transmission agreement that applies under clauses 12.10 or 12.13,—

(a) within 20 business days, to the extent necessary, Transpower must provide the designated transmission customer who is a party to that agreement with a revised Schedule 1, a revised Schedule 4, and a revised Schedule 5 for that agreement, reflecting any changes to the description of the connection locations, points of service, or points of connection in Schedule 1, the diagram in Schedule 4, or to the service levels specified in Schedule 5 resulting from the replacement or enhancement of the connection asset; and
(b) the designated transmission customer and Transpower may discuss the revised schedules, as a result of which Transpower may amend any of the revised schedules; and

(c) the designated transmission customer must advise Transpower within 20 business days of receiving the revised schedules under paragraph (a) whether—
   (i) it accepts the revised schedules as proposed by Transpower under paragraph (a); or
   (ii) if Transpower has amended any of those revised schedules under paragraph (b), it accepts the revised schedules as amended; and

(d) the revised schedules apply under the default transmission agreement from the date that acceptance is received by Transpower under paragraph (c).

(2) If the designated transmission customer does not accept the revised schedules under subclause (1)(c), either party may refer the matter to the Rulings Panel for determination under clauses 12.45 to 12.48.

(3) If a dispute is referred to the Rulings Panel in accordance with subclause (2)—
   (a) the revised schedules proposed by Transpower under subclause (1)(a) apply from the date on which Transpower provides the designated transmission customer with the revised schedules under subclause (1)(a) until the date on which the Rulings Panel makes its determination or the determination comes into effect; and
   (b) the revised schedules as determined by the Rulings Panel under clauses 12.45 to 12.48 apply under the default transmission agreement from the date determined by the Rulings Panel.

Compare: Electricity Governance Rules 2003 rule 3.1.5 section II part F

12.13 Expiry or termination of transmission agreements

If a transmission agreement, or an existing written agreement to which clause 12.49 applies, expires or terminates on or after the date that is 2 months after the participant became a designated transmission customer and Transpower and the designated transmission customer do not enter into a new transmission agreement within 2 months of that date, the following procedure applies:

(a) within 10 business days, the designated transmission customer must provide Transpower, at the address for service for Transpower registered at the New Zealand Companies Office, with—
   (i) the designated transmission customer’s full name; and
   (ii) the designated transmission customer’s physical address, postal address and electronic address to which notices under the default transmission agreement are to be sent; and
   (iii) the name of the contact person of the designated transmission customer to whom such notices should be addressed:

(b) within 20 business days of receipt of the designated transmission customer’s details under paragraph (a), Transpower must provide the designated transmission customer with a draft default transmission agreement completed in accordance with the benchmark agreement, which must include—
(i) the designated transmission customer’s details as provided under paragraph (a); and
(ii) Transpower’s physical address, postal address and electronic address to which notices under the default transmission agreement are to be sent; and
(iii) the contact person to whom notices under the default transmission agreement should be addressed; and
(iv) Transpower’s designated bank account for the purposes of receiving payments under the default transmission agreement; and
(v) a draft Schedule 1, which sets out the connection locations, points of service and points of connection of the assets owned or operated by the designated transmission customer to the grid; and
(vi) a draft Schedule 4 setting out, in the same form as the diagram in Schedule 4 of the benchmark agreement, the configuration of the connection assets in relation to each connection location listed in Schedule 1; and
(vii) a draft Schedule 5 setting out proposed service levels for each connection location listed in Schedule 1 determined in accordance with clause 12.10(3); and
(viii) if applicable, a draft Schedule 6, including identifying the facilities, facilities area, and land that are to be subject to the access and occupation terms set out in that schedule:
(c) the designated transmission customer and Transpower may discuss the schedules proposed under paragraph (b)(v) to (viii), as a result of which Transpower may amend any of the schedules:
(d) the designated transmission customer must advise Transpower in writing within 20 business days of receiving the draft default transmission agreement under paragraph (b) above whether—
(i) it accepts the schedules as proposed by Transpower under paragraph (b)(v) to (viii); or
(ii) if Transpower has amended any of those schedules under paragraph (c), it accepts the schedules as amended:
(e) if the designated transmission customer accepts the schedules as proposed by Transpower under paragraph (b)(v) to (viii), or as amended by Transpower under paragraph (c), the default transmission agreement applies as a binding contract between Transpower and the designated transmission customer, effective from the date on which the previous transmission agreement or existing written agreement to which clause 12.49 applies expired:
(f) if Transpower and a designated transmission customer are unable to agree on the terms of any of the schedules to a default transmission agreement proposed by Transpower under paragraph (b)(v) to (viii), or as amended by Transpower under paragraph (c), either party may refer the matter to the Rulings Panel for determination under clauses 12.45 to 12.48:
(g) if a dispute has been referred to the Rulings Panel in accordance with paragraph (f)—
(i) the draft default transmission agreement provided under paragraph (b)
applies as a binding agreement between Transpower and the designated transmission customer, effective from the date on which the previous transmission agreement or existing written agreement to which clause 12.49 applies expired, until the date on which the Rulings Panel makes its determination or the determination comes into effect; and

(ii) the default transmission agreement as determined by the Rulings Panel in accordance with clauses 12.45 to 12.48 applies as a binding agreement between Transpower and the designated transmission customer from the date determined by the Rulings Panel.

Compare: Electricity Governance Rules 2003 rule 3.1.6 section II part F

**Content of transmission agreements**

12.14 Transmission agreements to be consistent with benchmark agreements and grid reliability standards

Subject to clauses 12.35 to 12.38, a transmission agreement entered into between Transpower and a designated transmission customer under clause 12.8 must be consistent in all material respects with—

(a) the benchmark agreement; and
(b) the grid reliability standards,—
as at the date the transmission agreement is entered into.

Compare: Electricity Governance Rules 2003 rule 3.2.1 section II part F

12.15 Transpower to publish information about transmission agreements and provide them on request

(1) Transpower must publish and update annually a list of all transmission agreements it has with designated transmission customers that includes, in respect of each transmission agreement contained in the list, the following information:

(a) the full name of the designated transmission customer that is a party to the transmission agreement; and
(b) the date on which the transmission agreement was executed; and
(c) whether the transmission agreement includes any material variations from the benchmark agreement; and
(d) if the transmission agreement includes any material variations from the benchmark agreement, a description of the variations; and
(e) if any schedule to the transmission agreement has been revised in accordance with clause 12.12, the date from which the revised schedule began to apply.

(2) A person may request from Transpower a copy of a transmission agreement that Transpower has with a designated transmission customer, and Transpower must provide a copy to the person as soon as practicable after receiving the request.
(3) Despite subclause (2), **Transpower** may refuse to provide information from a **transmission agreement** if it considers that there would be grounds for withholding the information under the Official Information Act 1982.

Compare: Electricity Governance Rules 2003 rule 3.2.2 section II part F

### Connection Code

**12.16 Connection Code**

(1) The **Connection Code** set out in schedule F2 of section II of part F of the **rules** immediately before this Code came into force, continues in force and is deemed to be the **Connection Code** that applies at the commencement of this Code, with the following amendments:

- (a) every reference to the **rules** must be read as a reference to the Code:
- (b) every reference to a provision of the **rules** must be read as a reference to the corresponding provision of the Code.

(2) The **Authority** must, as soon as practicable after this Code comes into force, publish a version of the **Connection Code** in which the provisions of this Code that correspond to the provisions of the **rules** referred to in the **Connection Code** are shown.

(3) Clause 12.26 applies to the **Connection Code**.

**12.17 Purpose of Connection Code**

The purpose of the **Connection Code** is to set out the technical requirements and standards that **designated transmission customers** must meet in order to be connected to the **grid** and that **Transpower** must comply with. **Transpower** and **designated transmission customers** must comply with the **Connection Code** under default **transmission agreements** that apply under clauses 12.10 and 12.13.

Compare: Electricity Governance Rules 2003 rule 3.3.1 section II part F

**12.18 Review of Connection Code**

(1) The **Authority** may review the **Connection Code** at any time.

(2) Clauses 12.19 to 12.25 apply to any such review.

Compare: Electricity Governance Rules 2003 rule 3.3.10 section II part F

**12.19 Transpower to submit Connection Code**

(1) **Transpower** must submit a proposed **Connection Code** to the **Authority** within 90 days (or such longer period as the **Authority** may allow) of receipt of a written request from the **Authority**. The **Authority** may issue such a request at any time. The proposed **Connection Code** must provide for the matters set out in clause 12.20 and give effect to the principles set out in clause 12.21.

(2) With its proposed **Connection Code**, **Transpower** must submit to the **Authority** an explanation of the proposed **Connection Code** and a statement of proposal for the
12.20 Required content of Connection Code

The Connection Code must provide for the following matters:

(a) connection requirements for designated transmission customers:

(b) technical requirements for assets, including assets owned by Transpower, and for other equipment and plant that is connected to a local network or an embedded network or that forms part of an embedded network or embedded generating station if the operation of that equipment and plant could affect the grid assets:

(c) operating standards for equipment that is owned by a designated transmission customer, used in relation to the conveyance of electricity, and that is situated on land owned by Transpower:

(d) information requirements to be met by designated transmission customers before equipment is connected to the grid and before changes are made to the equipment:

(e) an obligation on Transpower to provide a 10 year forecast of the expected maximum fault level of each point of service to designated transmission customers set out in the transmission agreement between Transpower and each designated transmission customer.

12.21 Principles for developing Connection Code

The Connection Code must give effect to the following principles:

(a) the principles of the benchmark agreement in clause 12.30:

(b) the desirability of the Connection Code and Part 8 operating in an integrated and consistent manner, if possible:

(c) the need to ensure that the grid owner can meet all obligations placed on it by the system operator for the purpose of meeting common security and power quality requirements under Part 8:

(d) the need to ensure that the safety of all personnel is maintained:

(e) the need to ensure that the safety and integrity of equipment is maintained.
explanation and statement of proposal, the Authority may—
(a) provisionally approve the proposed Connection Code having regard to the matters set out in clause 12.20 and the principles in clause 12.21; or
(b) refer the proposed Connection Code and accompanying explanation and statement of proposal back to Transpower if, in the Authority’s view,—
(i) the proposed Connection Code does not contain the matters set out in clause 12.20; or
(ii) the proposed Connection Code does not adequately provide for the principles in clause 12.21; or
(iii) the explanation or statement of proposal provided with the proposed Connection Code in accordance with clause 12.19(2) is inadequate.

(2) Transpower may, no later than 20 business days (or such longer period as the Authority may allow) after the Authority advises Transpower of its decision under subclause (1), consider the Authority’s concerns and resubmit its proposed Connection Code and accompanying explanation and statement of proposal for consideration by the Authority.

Compare: Electricity Governance Rules 2003 rule 3.3.5 section II part F

12.23 Amendment of proposed Connection Code by Authority
If the Authority considers that the Connection Code resubmitted by Transpower under clause 12.22(b) does not adequately provide for the matters set out in clause 12.20 or adequately give effect to the principles in clause 12.21, the Authority may make any amendments to the proposed Connection Code it considers necessary.

Compare: Electricity Governance Rules 2003 rule 3.3.6 section II part F

12.24 Authority must consult on proposed Connection Code
(1) The Authority must publish the proposed Connection Code, either as provisionally approved by the Authority or as amended by the Authority, as soon as practicable, for consultation with any person that the Authority thinks is likely to be materially affected by the proposed Connection Code.

(2) As well as the consultation required under subclause (1), the Authority may undertake any other consultation it considers necessary.

Compare: Electricity Governance Rules 2003 rules 3.3.7 and 3.3.8 section II part F

12.25 Decision on Connection Code
(1) When the Authority has completed its consultation on the proposed Connection Code it must consider whether to incorporate the Connection Code by reference in this Code.

(2) If the Authority decides to incorporate the Connection Code by reference in this Code, the Authority must determine a date on which the incorporation by reference takes effect and comply with Schedule 1 of the Act in relation to it.

Compare: Electricity Governance Rules 2003 rule 3.3.9 section II part F
12.26 Incorporation of Connection Code by reference

(1) The Connection Code is incorporated by reference in this Code in accordance with section 32 of the Act.

(2) Subclause (1) is subject to Schedule 1 of the Act, which includes a requirement that the Authority must give notice in the Gazette before an amended or substituted Connection Code becomes incorporated by reference in this Code.


Benchmark agreements for connection to and/or use of the grid

12.27 Benchmark agreement

(1) The benchmark agreement set out in schedule F2 of section II of part F of the rules immediately before this Code came into force, continues in force and is deemed to be the benchmark agreement that applies at the commencement of this Code, with the following amendments:

(a) every reference to the Board must be read as a reference to the Authority:
(b) every reference to the rules must be read as a reference to the Code:
(c) every reference to the Electricity Governance Regulations must be read as a reference to the Code:
(d) every reference to a provision of the rules or the Electricity Governance Regulations must be read as a reference to the corresponding provision of the Code:
(e) the references in clause 40.2 to the value of unserved energy in schedule F4 of section III of part F of the rules must be read as references to the value of expected unserved energy in clause 4 of Schedule 12.2:
(f) the reference in clause 40.2(f)(2) to Transpower asking the Board of the Electricity Commission to request Transpower to submit a grid upgrade plan must be read as a reference to Transpower asking the Commerce Commission under clause 12.44 to request Transpower to submit an investment proposal.

(2) The Authority must, as soon as practicable after this Code comes into force, publish a version of the benchmark agreement in which the provisions of this Code that correspond to the provisions of the rules referred to in the benchmark agreement are shown.

(3) Clause 12.34 applies to the benchmark agreement.


12.28 Authority may initiate review

(1) Having regard to the statutory objective of the Authority in section 15 of the Act and to the principles for benchmark agreements set out in clause 12.30, the Authority may initiate a review of a benchmark agreement at any time. Reviews of the Connection Code must be carried out in accordance with clause 12.18.

(2) A review of a benchmark agreement must follow the purpose, process and principles in clauses 12.29 to 12.33.
12.29 Purpose of benchmark agreements
The purpose of benchmark agreements is to—
(a) facilitate commercial arrangements between Transpower and designated transmission customers by providing a basis for negotiating transmission agreements required under clause 12.8 that meet the particular requirements of Transpower and designated transmission customers; and
(b) act as a default transmission agreement if Transpower and a designated transmission customer fail to enter into a transmission agreement by the date that is 2 months after the participant became a designated transmission customer.

12.30 Principles for benchmark agreements
A benchmark agreement should—
(a) reflect a fair and reasonable balance between the requirements of designated transmission customers and the legitimate interests of Transpower as asset owner; and
(b) reflect the interests of end use customers; and
(c) reflect the reasonable requirements of designated transmission customers at the grid injection points and grid exit points, and the ability of Transpower to meet those requirements; and
(d) reflect the differing needs of different classes of designated transmission customers; and
(e) be appropriate to the technical requirements of services provided at the point of connection to the grid, but not duplicate requirements that are more appropriately included in the grid reliability standards; and
(f) establish common standards for a common configuration based on factors such as size of connection and voltage level; and
(g) encourage efficient and effective processes for enforcement of obligations and dispute resolution.

12.31 Contents of benchmark agreements
(1) A benchmark agreement must include—
(a) an obligation on the parties to design, construct, maintain and operate all relevant plant and equipment in accordance with—
(i) relevant laws; and
(ii) the requirements of this Code (including obligations on designated transmission customers to provide information to facilitate system planning, as set out in clause 12.54); and
(iii) good electricity industry practice and applicable New Zealand technical and safety standards; and

(b) an obligation on designated transmission customers to comply with Transpower’s reasonable technical connection and safety requirements; and

(c) an obligation on designated transmission customers to pay prices calculated in accordance with the transmission pricing methodology approved by the Authority under subpart 4; and

(d) arbitration or mediation processes for resolving disputes; and

(e) service definitions, service levels, and service measures to the extent practicable for transmission services, other than the services to which the clauses in subpart 6 apply.

(2) A benchmark agreement must be consistent in all material respects with the grid reliability standards.

Compare: Electricity Governance Rules 2003 rule 4.3 section II part F

12.32 Authority must consult on draft benchmark agreement

(1) The Authority must publish draft benchmark agreements.

(2) When the Authority publishes a draft benchmark agreement, the Authority must advise registered participants of the date (which must not be earlier than 15 business days after the date of publication of the draft benchmark agreement) by which submissions on the draft benchmark agreement must be received by the Authority.

(3) Each submission on a draft benchmark agreement must be made in writing to the Authority and received on or before the submission expiry date. In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.

Compare: Electricity Governance Rules 2003 rules 4.4 and 4.5 section II part F

12.33 Decision on benchmark agreement

(1) Within 20 business days after the submission expiry date (or such longer period as the Authority may allow), the Authority must complete its consideration of all submissions it receives on the draft benchmark agreement and consider whether to incorporate the draft benchmark agreement by reference as the benchmark agreement.

(2) If the Authority decides to incorporate the benchmark agreement by reference in this Code, the Authority must determine a date on which the incorporation by reference takes effect and comply with Schedule 1 of the Act in relation to it.

Compare: Electricity Governance Rules 2003 rule 4.6 section II part F

12.34 Incorporation of benchmark agreement by reference

(1) The benchmark agreement is incorporated by reference in this Code in accordance with section 32 of the Act.
(2) Subclause (1) is subject to Schedule 1 of the Act, which includes a requirement that the Authority must give notice in the Gazette before an amended or substituted benchmark agreement becomes incorporated by reference in this Code.


Variations from benchmark agreements and grid reliability standards and enhancement and removal of connection assets

12.35 Increased service levels and reliability

(1) This clause applies if—
(a) a proposed transmission agreement is not consistent in all material respects with the benchmark agreement because it increases the service levels above those that would apply if the benchmark agreement applied in accordance with clauses 12.10 or 12.13; or
(b) subject to clause 12.39, a proposed transmission agreement or other agreement between Transpower and a designated transmission customer increases the level of reliability above the grid reliability standards for a particular grid injection point or grid exit point.

(2) If this clause applies, the parties to the proposed transmission agreement must confirm in writing to the Authority that—
(a) they have consulted with affected end use customers in relation to—
(i) the proposed service levels or the proposed increase in reliability; and
(ii) any resulting price implications; and
(b) there are no material unresolved issues affecting the interests of those end use customers.

Compare: Electricity Governance Rules 2003 rule 5.1 section II part F

12.36 Decreased service levels and reliability

(1) This clause applies if—
(a) a proposed transmission agreement is not consistent in all material respects with the benchmark agreement because it decreases the service levels below those that would apply if the benchmark agreement applied in accordance with clauses 12.10 or 12.13; or
(b) subject to clause 12.39, a proposed transmission agreement or other agreement between Transpower and a designated transmission customer decreases the level of reliability below the grid reliability standards for a particular grid injection point or grid exit point.

(2) If this clause applies, the parties must obtain the Authority's approval of the proposed service levels or the lower level of reliability.

(3) The parties must satisfy the Authority that the Authority should grant an approval under subclause (2), having regard to any potential material adverse impacts of the
proposed service levels or the lower level of reliability on—
(a) current and future service levels or reliability for any affected designated transmission customer or end use customer; and
(b) the price paid for transmission or distribution services, or electricity, by any affected designated transmission customer or end use customer.

Compare: Electricity Governance Rules 2003 rule 5.2 section II part F

12.37 Variations that may increase or decrease reliability
If it is uncertain whether, subject to clause 12.39, a proposed transmission agreement or other agreement increases or decreases the service levels from those that would apply if the benchmark agreement applied, or whether a proposed transmission agreement or other agreement increases or decreases the level of reliability above or below the grid reliability standards, for a particular grid injection point or grid exit point, the parties must obtain the Authority’s approval described in clause 12.36(2).

Compare: Electricity Governance Rules 2003 rule 5.3 section II part F

12.38 Other variations from terms of benchmark agreements
(1) This clause applies if a proposed transmission agreement to be entered into by Transpower and a designated transmission customer under clause 12.8 is not consistent in all material aspects with the benchmark agreement, other than a situation to which clauses 12.35 to 12.37 apply.

(2) If this clause applies, the parties must obtain the Authority’s approval to the proposed variation from the benchmark agreement. The parties to the proposed transmission agreement must satisfy the Authority that they have consulted with any affected end use customers and designated transmission customers in relation to the proposed variation, and there are no material unresolved issues affecting the interests of those persons.

Compare: Electricity Governance Rules 2003 rule 5.4 section II part F

12.39 Customer specific value of expected unserved energy
(1) [Revoked]

(2) Transpower or a designated transmission customer may apply to the Authority—
(a) if permitted under a transmission agreement, for provisional approval to use a different value of expected unserved energy than the value specified in clause 4 of Schedule 12.2 for the purposes of determining whether to replace or enhance connection assets as provided for under that transmission agreement; or

(b) for approval to use a different value of expected unserved energy than the value specified in clause 4 of Schedule 12.2 for the purposes of applying the grid reliability standards under clauses 12.35 to 12.37 for a grid injection point or grid exit point, regardless of whether Transpower or the designated transmission customer has applied for the Authority’s provisional approval under subclause (4).
(3) An application under subclause (2) must be made in writing to the Authority—
   (a) in the case of an application under subclause (2)(a), within 20 business days of the designated transmission customer proposing that different value to Transpower under the transmission agreement; and
   (b) in the case of an application under subclause (2)(b), within 20 business days of the designated transmission customer reaching an agreement with Transpower to which clauses 12.35 to 12.37 apply.

(4) If Transpower or a designated transmission customer applies for approval of a different value of expected unserved energy under subclause (2)(a), the Authority may provisionally approve that value if the Authority considers that the value is a reasonable estimate of the value of expected unserved energy in respect of the grid injection point or grid exit point for the designated transmission customer concerned.

(5) If Transpower or a designated transmission customer applies for approval of a different value of expected unserved energy under subclause (2)(b) the Authority—
   (a) may approve that value if the Authority considers that the value is a reasonable estimate of the value of expected unserved energy in respect of the grid injection point or grid exit point for the designated transmission customer concerned; and
   (b) may decline to approve that value despite having provisionally approved that value under subclause (4).

(6) If the Authority approves the value of expected unserved energy proposed by Transpower or the designated transmission customer under subclause (2)(b), that value of expected unserved energy applies for the purposes of applying the grid reliability standards under clauses 12.35 to 12.37 for the grid injection point or grid exit point instead of the value of expected unserved energy specified under clause 4 of Schedule 12.2.

(7) If the Authority does not approve the value of expected unserved energy proposed by Transpower or the designated transmission customer under subclause (2)(b), the value of expected unserved energy under clause 4 of Schedule 12.2 applies for the purposes of applying the grid reliability standards under clauses 12.35 to 12.37 for the grid injection point or grid exit point.

Compare: Electricity Governance Rules 2003 rule 5.5 section II part F
12.40 Replacement and enhancement of shared connection assets

(1) If 2 or more designated transmission customers are connected to a point of connection and Transpower has advised those designated transmission customers, in accordance with the provisions of a transmission agreement between Transpower and each of the designated transmission customers, that a grid reliability report published by Transpower in accordance with clause 12.76 sets out that the power system is not reasonably expected to meet the N-1 criterion at all times over the next 5 years because of a connection asset related to that point of connection, Transpower must—

(a) as soon as practicable after advising the designated transmission customers, investigate whether the connection asset meets the grid reliability standards; and

(b) if it finds that the connection asset does not meet the grid reliability standards, develop proposals for investment in the grid to ensure that the connection asset meets the grid reliability standards and propose them to the designated transmission customers as soon as reasonably possible after publication of the grid reliability report.

(2) Transpower and the designated transmission customers advised under subclause (1) must attempt in good faith, within 6 months of the date on which Transpower makes its proposals to the designated transmission customers under subclause (1)(b), or such longer period as the Authority may allow, to reach an agreement for an investment or other solution that will have the effect of—

(a) maintaining the level of reliability for the connection asset at the level of reliability in the grid reliability standards; or

(b) increasing or decreasing the level of reliability for the connection asset above or below the grid reliability standards, so long as Transpower and the designated transmission customers have complied with clauses 12.35 to 12.37 and 12.39.

(3) Transpower may undertake an investment proposed under subclause (2) only—

(a) if the designated transmission customers unanimously agree with the proposal in accordance with subclause (2); or

(b) if the designated transmission customers do not unanimously agree or none of the designated transmission customers agree with the proposed investment, if—

(i) the proposal has been approved under a grid upgrade plan requested by the Electricity Commission in accordance with rule 5.10 of section II of part F of the rules before this Code came into force; or

(ii) the proposal is approved by the Commerce Commission under an investment proposal requested by the Commerce Commission in accordance with clause 12.44(1); or

(iii) the proposal is permitted under an input methodology determined by the Commerce Commission under section 54S of the Commerce Act 1986.

Compare: Electricity Governance Rules 2003 rule 5.6 section II part F
12.41 Removal of shared connection assets from service

(1) If 2 or more designated transmission customers are connected to a point of connection, and Transpower is required by a transmission agreement between Transpower and each of those designated transmission customers to provide the connection assets at the point of connection, Transpower may decommission a connection asset at that point of connection from service only—

(a) if the designated transmission customers unanimously agree with the decommissioning and clauses 12.35 to 12.37 (if applicable) are complied with; or

(b) if the designated transmission customers do not unanimously agree, or none of the designated transmission customers agree, with the decommissioning, if the decommissioning results in a net benefit, as calculated under the test set out in clause 12.43.

(2) To avoid doubt, this clause applies only if Transpower proposes to remove a connection asset from service and not replace the asset with another connection asset.

Compare: Electricity Governance Rules 2003 rule 5.7 section II part F

12.42 Reconfiguration of shared connection assets

If 2 or more designated transmission customers are connected to a point of connection, and Transpower is required by a transmission agreement between Transpower and each of those designated transmission customers to provide the connection assets in the configuration specified in each of those transmission agreements, Transpower may only change that configuration—

(a) if the designated transmission customers unanimously agree with the reconfiguration and clauses 12.35 to 12.37 (if applicable) are complied with; or

(b) if the designated transmission customers do not unanimously agree, or none of the designated transmission customers agree with the reconfiguration, if the reconfiguration results in a net benefit, as calculated under the test set out in clause 12.43.

Compare: Electricity Governance Rules 2003 rule 5.8 section II part F

12.43 Net benefits test

(1) When Transpower is required to apply a net benefit test, Transpower must—

(a) estimate the following costs:

(i) any additional fuel costs incurred by a generator in respect of any generating units that will be dispatched or are likely to be dispatched during or after the removal of the connection asset or the reconfiguration of the connection assets, arising as a result of the removal or reconfiguration:
(ii) any direct labour and material costs that will be incurred by Transpower and the designated transmission customers undertaking the removal of the connection asset or the reconfiguration of the connection assets:

(iii) any increase in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy, arising as a result of the removal of the connection asset or the reconfiguration of the connection assets:

(iv) any of the following costs, if the cost is to a person that produces, transmits, retails, or consumes electricity in New Zealand:
   (A) changes in fuel costs of existing assets, committed projects and modelled projects:
   (B) changes in the value of involuntary demand curtailment:
   (C) changes in the costs of demand-side management:
   (D) changes in costs resulting from deferral of capital expenditure on modelled projects:
   (E) changes in costs resulting from differences in the amount of capital expenditure on modelled projects:
   (F) changes in costs resulting from differences in operations and maintenance expenditure on existing assets, committed projects, and modelled projects:
   (G) changes in costs for ancillary services:
   (H) changes in losses, including local losses:
   (I) subsidies or other benefits provided under or arising pursuant to all applicable laws, regulations and administrative determinations:
   (J) the value of the expected change in economic surplus due to a change in competition among participants arising as a result of the removal of the connection asset or the reconfiguration of the connection assets, excluding any expected change in economic surplus due to a change in another cost in this net benefit test:

(v) any other relevant cost to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(b) estimate the following benefits:

(i) any reduction in maintenance costs arising as a result of the removal of the connection asset or the reconfiguration of the connection assets (including Transpower's and any designated transmission customer's costs):

(ii) any reduction in fuel costs incurred by a generator in respect of any generating units, arising or likely to arise during or after the removal of the connection asset or the reconfiguration of the connection assets, as a result of the removal or reconfiguration:

(iii) any decrease in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy, arising as a result of the removal of the connection asset or the reconfiguration of the connection assets:

(iv) any of the following benefits, if the benefit is to a person that produces,
transmits, retails or consumes electricity in New Zealand:

(A) changes in fuel costs of existing assets, committed projects and modelled projects:

(B) changes in the value of involuntary demand curtailment:

(C) changes in the costs of demand-side management:

(D) changes in costs resulting from the deferral of capital expenditure on modelled projects:

(E) changes in costs resulting from differences in the amount of capital expenditure on modelled projects:

(F) changes in costs resulting from differences in operations and maintenance expenditure on existing assets, committed projects, and modelled projects:

(G) changes in costs for ancillary services:

(H) changes in losses, including local losses:

(I) subsidies or other benefits provided under or arising pursuant to all applicable laws, regulations and administrative determinations:

(J) the value of the expected change in economic surplus due to a change in competition among participants arising as a result of the removal of the connection asset or the reconfiguration of the connection assets, excluding any expected change in economic surplus due to a change in another benefit in this net benefit test:

(v) any other relevant benefit to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(c) deduct the costs estimated under paragraph (a) from the benefits estimated under paragraph (b) to determine the net benefit of the proposed removal of the connection asset or the reconfiguration of the connection assets.

(2) Transpower may apply the test under this clause at differing levels of rigour in different circumstances, which may include taking into account the number of assets to be removed or reconfigured, the value of the assets involved, and the size of the load served by the assets.

(3) Transpower is only required to—

(a) make a reasonable estimate of the costs and benefits identified in subclause (1), based on information reasonably available to it at the time it undertakes the test, and taking into account the proposed number of assets to be removed or reconfigured, the value of the assets involved, and the size of the load served by the assets; and

(b) take account of events that can be reasonably foreseen.

(4) Transpower’s estimate of fuel costs under subclause (1) must—

(a) in relation to thermal generating stations, be a reasonable estimate of the fuel costs, based on the economic value of the fuel required for the relevant thermal generating station, and justified by Transpower with reference to opinions on the economic value of the fuel, provided by 1 or more independent and suitably qualified persons; and

(b) in relation to hydroelectric generating stations—
(i) be a reasonable estimate of the fuel costs, based on the economic value of the water stored at a hydroelectric generating station, provided by a suitably qualified person other than—
   (A) Transpower; or
   (B) an employee of Transpower; and
(ii) be published, as provided for in the Outage Protocol.

(5) The direct labour costs of Transpower and designated transmission customers under subclause (1)(a) may include any amounts paid to contractors, but must not include any apportionment of the overheads or office costs of Transpower or designated transmission customers.

(6) The material costs of Transpower and designated transmission customers under subclause (1)(a) are the costs of the materials used in carrying out the work during the removal of the connection asset or the reconfiguration of the connection assets.

(7) In assessing costs and benefits under subclause (1), Transpower must consider any reasonably expected operating conditions, forecasts in the system security forecast, likely fuel costs, and any other reasonable assumptions.

(8) The estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy under subclause (1) must be based on—
   (a) the estimated amount and value of the expected unserved energy as agreed between Transpower and each affected designated transmission customer; or
   (b) if Transpower and a designated transmission customer cannot agree on the amount and value of the expected unserved energy under paragraph (a), the value of expected unserved energy in clause 4 of Schedule 12.2 and Transpower's estimate of the expected unserved energy in respect of each affected designated transmission customer and end use customer.

Compare: Electricity Governance Rules 2003 rule 5.9 section II part F

12.44 Request to the Commerce Commission to request an investment proposal be submitted

(1) Transpower may request in writing that the Commerce Commission request that Transpower submit an investment proposal to the Commerce Commission—
   (a) for the purposes of clause 12.40(3); or
   (b) if permitted by a transmission agreement.

(2) Unless requested to do so by the Commerce Commission, Transpower must not submit an investment proposal to the Commerce Commission for approval in respect of an investment that has been proposed by Transpower in accordance with a transmission agreement or clause 12.40(3).

Compare: Electricity Governance Rules 2003 rules 5.10 section II, and 12.2.2 section III part F
12.45 Certain disputes relating to transmission agreements may be referred to Rulings Panel

If a dispute between Transpower and a designated transmission customer concerning—

(a) the customer specific terms of a transmission agreement being negotiated between those parties; or

(b) a requested variation of any of the terms of a default transmission agreement (other than a variation under clause 12.12) that applies between Transpower and the designated transmission customer in accordance with clauses 12.10 to 12.13 (including a requested variation from the services described in the default transmission agreement); or

(c) the schedules proposed by Transpower under clauses 12.10(2)(b)(v) to (viii) for a default transmission agreement; or

(d) any revision to Schedule 4 or Schedule 5 of a default transmission agreement proposed by Transpower under clause 12.12; or

(e) the schedules proposed by Transpower under clauses 12.13(1)(b)(v) to (viii) on the expiry or termination of a transmission agreement—is not resolved within a reasonable time, either party may refer the matter to the Rulings Panel for determination.

Compare: Electricity Governance Rules 2003 rule 6.1 section II part F

12.46 Rulings Panel has discretion to determine dispute

(1) The Rulings Panel may, in its discretion, decide whether or not to undertake the determination of a dispute under clause 12.45(a) or (b).

(2) If the Rulings Panel decides not to undertake the determination of the dispute, the Rulings Panel must inform Transpower or the designated transmission customer—

(a) that the Rulings Panel intends to do no more in relation to the matter; and

(b) of the reasons for that intention.

Compare: Electricity Governance Rules 2003 rule 6.2 section II part F

12.47 Determinations by Rulings Panel

(1) In determining a dispute under this clause, the Rulings Panel must take into account—

(a) the principles for benchmark agreements in clause 12.30; and

(b) the desirability of consistent treatment of designated transmission customers except if special circumstances justify a departure; and

(c) the potential impact of a decision on the contents of other transmission agreements or existing agreements as described in clauses 12.49 and 12.50.

(2) The Rulings Panel must not determine disputes relating to the interpretation or enforcement of a transmission agreement including a benchmark agreement.

(3) The Rulings Panel must give notice to the parties of its determination, as soon as reasonably practicable.
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12.48 Status of default transmission agreement while Rulings Panel determining dispute
Nothing in clauses 12.45 to 12.47 overrides the application of a benchmark agreement as a default transmission agreement under clause 12.10, pending a determination of the Rulings Panel.

Compare: Electricity Governance Rules 2003 rule 6.5 section II part F

Existing agreements not affected

12.49 Existing agreements
(1) Except as provided for by clause 12.95, this Part does not apply to or affect the rights, powers or obligations of a participant or Transpower under a written agreement entered into between that participant and Transpower for connection to and/or use of the grid that is—
   (a) entered into before 29 October 2003; or
   (b) based on Transpower’s standard connection contract and entered into before 28 June 2007.

(2) The exception from this Part in subclause (1) does not apply to a right, power or obligation of a participant that arises because of the variation of an agreement described in subclause (1).

(3) To avoid doubt, the posted terms and conditions of Transpower do not constitute a written agreement.

Compare: Electricity Governance Rules 2003 rule 8.1 section II part F

12.50 Copies of other agreements to be provided to Authority
(1) If requested to do so by the Authority, Transpower or a participant must provide a copy of any written agreement for connection to and/or use of the grid that Transpower or the participant is a party to and that was entered into before 28 June 2007.

(2) The copy that is provided must be—
   (a) a copy of the complete agreement; and
   (b) certified by a director or the chief executive of Transpower or the participant, to the best of the director’s or chief executive’s knowledge and belief, to be a true and complete copy of the agreement.

(3) An agreement must be published by the Authority, unless the parties establish to the satisfaction of the Authority that there is good reason for not publishing the agreement.

Compare: Electricity Governance Rules 2003 rule 8.2 section II part F
12.51 Application to Rio Tinto agreements [Revoked]

Compare: Electricity Governance Rules 2003 rule 8.3 section II part F

Subpart 3—Grid reliability and industry information

12.52 Contents of this subpart

This subpart relates to—
(a) grid reliability standards; and
(b) investment contracts; and
(c) [Revoked]
(d) grid reliability reporting.

Compare: Electricity Governance Rules 2003 rule 1 section III part F

12.53 Purpose of the reliability and industry information clauses

The purposes of this subpart are to—
(a) facilitate Transpower’s ability to develop and implement long term plans (including timely securing of land access and resource consents) for investment in the grid; and
(b) assist participants to identify and evaluate investments in transmission alternatives; and
(c) facilitate efficient investment in generation; and
(d) facilitate any processes pursuant to Part 4 of the Commerce Act 1986.

Compare: Electricity Governance Rules 2003 rule 2 section III part F

12.54 Obligations to provide information

(1) Each participant must provide information reasonably required by the Authority for the purposes of this subpart and respond to requests from the Authority under this subpart promptly and accurately.
(2) Each participant must use reasonable endeavours to provide accurate information.
(3) The Authority is not liable for the accuracy of information provided by a participant.
(4) Subject to the Official Information Act 1982, the Authority may at its discretion, or on the application of an affected party, withhold publication of confidential aspects of the information provided by a participant to the Authority if the Authority reasonably considers that there is good reason for withholding it.

Compare: Electricity Governance Rules 2003 rule 3 section III part F

Grid reliability standards

12.55 Authority determines grid reliability standards

(1) The Authority must determine the most appropriate grid reliability standards.
(2) The Authority must consider and determine grid reliability standards, having regard to the purposes set out in clause 12.56 and the principles set out in clause 12.57.
(3) The grid reliability standards that apply at the commencement of this Code are the grid reliability standards in Schedule 12.2.
Compare: Electricity Governance Rules 2003 rule 4.1 section III part F

12.56 Purpose of grid reliability standards
The purpose of the grid reliability standards is to provide a basis for Transpower and other parties to appraise opportunities for transmission investments and transmission alternatives.
Compare: Electricity Governance Rules 2003 rule 4.2 section III part F

12.57 Principles of grid reliability standards
The grid reliability standards should—
(a) take into account that transmission investments are long-lived assets and require a long-term planning perspective; and
(b) reflect the public interest in reasonable stability in planning, having regard to the long term nature of investment in transmission assets; and
(c) be consistent with good electricity industry practice; and
(d) provide flexibility to allow the form of the standards to evolve over time, reflecting any changes in good electricity industry practice.
Compare: Electricity Governance Rules 2003 rule 4.3 section III part F

12.58 Content of grid reliability standards
(1) The grid reliability standards must contain 1 or more standards for reliability of the grid, which may include without limitation a primary reliability standard and other reliability standards.
(2) The reliability standards set out in the grid reliability standards may differ to reflect differing circumstances in different regions supplied by the grid.
(3) The grid reliability standards may include 1 or more standards for reliability of the core grid.
(4) The grid reliability standards may contain supporting information, such as information summarising economic assessments balancing different levels of reliability and the expected value of energy at risk.
Compare: Electricity Governance Rules 2003 rule 4.4 section III part F

Review of grid reliability standards

12.59 Interested parties may request review of grid reliability standards
(1) 1 or more interested parties may request a review by the Authority of the grid reliability standards. The request must be in the form of a written submission to the Authority describing—
(a) the nature of the interest of each party seeking the review; and
(b) how the review might enable the grid reliability standards to better reflect the purpose and principles set out in clauses 12.56 and 12.57
(2) In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.
Electricity Industry Participation Code 2010
Part 12

(3) The Authority must either undertake a review of the grid reliability standards, or
decline to review the grid reliability standards and publish reasons for declining.
Compare: Electricity Governance Rules 2003 rule 5.1 section III part F

12.60 Authority review of grid reliability standards
The Authority may initiate a review of the grid reliability standards for any reason
consistent with the statutory objective of the Authority in section 15 of the Act and the
purpose and principles set out in clauses 12.56 and 12.57.
Compare: Electricity Governance Rules 2003 rule 5.2 section III part F

12.61 Authority must publish draft grid reliability standards
(1) This clause applies if the Authority undertakes a review of the grid reliability
standards under clauses 12.59 or 12.60.
(2) The Authority must publish draft grid reliability standards.
(3) At the time the Authority publishes the draft grid reliability standards the Authority
must publish the date by which submissions on the draft grid reliability standards are
to be received by the Authority. The date must be no earlier than 15 business days
from the date of publication of the draft grid reliability standards.
(4) Each submission on the draft grid reliability standards must be made in writing to the
Authority and be received on or before the submission expiry date. In addition to
receiving written submissions, the Authority may elect to hear 1 or more oral
submissions.
Compare: Electricity Governance Rules 2003 rules 4.5 and 4.6 section III part F
Clause 12.61(3): amended, on 5 October 2017, by clause 301 of the Electricity Industry Participation Code

12.62 Decision on grid reliability standards
Within 20 business days of the submission expiry date (or such longer period as the
Authority may allow), the Authority must complete its consideration of all
submissions it receives on the draft grid reliability standards and consider whether to
include the grid reliability standards as a schedule to this Part, in accordance with the
Act.
Compare: Electricity Governance Rules 2003 rule 4.7 section III part F

Core grid determination

12.63 Authority determines core grid determination
(1) The Authority must determine the most appropriate core grid determination.
(2) The core grid specified in the core grid determination must include—
   (a) at a minimum, those assets that comprise the main elements of the grid; and
   (b) at most, all assets that form part of the grid and operate at nominal voltages of
       66kV and above.
(3) In determining the most appropriate core grid determination, and in a subsequent
review of the core grid determination, the Authority must have regard to—
   (a) the purposes set out in clause 12.64; and
   (b) the principles set out in clause 12.57 for the grid reliability standards; and
(c) the objectives set out in clause 12.65.

(4) In determining the most appropriate core grid determination, the Authority may engage Transpower or any other person to assist in the preparation of all or part of the core grid determination.

(5) The core grid determination that applies at the commencement of this Code is the core grid determination in Schedule 12.3.

Compare: Electricity Governance Rules 2003 rule 5A.1 section III part F

12.64 Purpose of core grid determination

The purpose of the core grid determination is to provide a basis for—
(a) the Authority to determine the grid reliability standards; and
(b) Transpower and other parties to appraise opportunities for transmission investment and transmission alternatives.

Compare: Electricity Governance Rules 2003 rule 5A.2 section III part F

12.65 Objectives of core grid determination

The Authority must have regard to the following objectives in determining, and in any subsequent review of, the core grid determination:
(a) avoiding the failure or removal from service of any asset forming part of the core grid, if the failure or removal from service of that asset may result in cascade failure;
(b) providing flexibility to allow the core grid to evolve over time, reflecting any changes in the grid;
(c) reflecting the public interest in reasonable stability in planning for transmission.

Compare: Electricity Governance Rules 2003 rule 5A.3 section III part F

Review of core grid determination

12.66 Interested parties may request review of core grid determination

(1) 1 or more interested parties may request a review by the Authority of the core grid determination. The request must be in the form of a written submission to the Authority describing—
(a) the nature of the interest of each party seeking the review; and
(b) how the review might enable the core grid determination to better reflect the purpose and objectives set out in clauses 12.64 and 12.65 respectively.

(2) In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.

(3) The Authority must either undertake a review of the core grid determination, or decline to review the core grid determination and publish reasons for declining.

Compare: Electricity Governance Rules 2003 rule 5B.1 section III part F

12.67 Authority review of grid determination

The Authority may initiate a review of the core grid determination for any reason consistent with the statutory objective of the Authority in section 15 of the Act and the purpose and objectives set out in clauses 12.64 and 12.65 respectively.
12.68 Authority must publish draft core grid determination

(1) This clause applies if the Authority undertakes a review of the core grid determination in accordance with clauses 12.66 or 12.67.

(2) The Authority must publish a draft core grid determination.

(3) When the Authority publishes the draft core grid determination the Authority must publish the date by which submissions on the draft core grid determination are to be received by the Authority. The date must be no earlier than 15 business days from the date of publication of the draft core grid determination.

(4) Each submission on the draft core grid determination must be made in writing to the Authority and be received on or before the submission expiry date. In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.


12.69 Decision on core grid determination

Within 20 business days of the submission expiry date (or such longer period as the Authority may allow), the Authority must complete its consideration of all submissions it receives on the draft core grid determination and consider whether to include the core grid determination in a schedule to this Part.

Investment contracts

12.70 Purpose

Clause 12.71 provides for investment contracts to be agreed between designated transmission customers and Transpower, and establishes a process to manage any potential implications for grid reliability standards.

Investment contracts

12.71 Investment contracts

Transpower may enter into an investment contract with implications for grid reliability standards only if—

(a) the investment contract is consistent with the grid reliability standards or the proposed investment has been approved by the Authority under clause 12.36(2), and clause 12.36(2) will apply as if the investment contract was a transmission agreement; and

(b) Transpower advises the Authority of the proposed investment contract.

Grid reliability reporting

12.76 Transpower to publish grid reliability report

(1) Transpower must publish a grid reliability report setting out—
   (a) a forecast of demand at each grid exit point over the next 10 years; and
   (b) a forecast of supply at each grid injection point over the next 10 years; and
   (c) whether the power system is reasonably expected to meet the N-1 criterion, including in particular whether the power system would be in a secure state at each grid exit point, at all times over the next 10 years; and
   (d) proposals for addressing any matters identified in accordance with paragraph (c).

(2) Transpower must publish a grid reliability report no later than 2 years after the date on which it published the previous grid reliability report, or such other date as determined by the Authority (having consulted with Transpower).

(3) If there is a material change in the forecast demand at a grid exit point or in the forecast supply at a grid injection point in the period to which the most recent grid reliability report relates, Transpower must publish a revised grid reliability report as soon as reasonably practicable after the material change.

Compare: Electricity Governance Rules 2003 rule 12A section III part F
Subpart 4—Transmission pricing methodology

12.77 Recovery of investment costs by Transpower
The costs incurred by Transpower (irrespective of when they are incurred) in relation to an approved investment are recoverable by Transpower from designated transmission customers on the basis of the transmission pricing methodology and must be paid by designated transmission customers accordingly.
Compare: Electricity Governance Rules 2003 rule 17.1 section III part F

12.78 Purpose for establishing transmission pricing methodology
The purpose of the transmission pricing methodology is to ensure that, subject to Part 4 of the Commerce Act 1986, the full economic costs of Transpower’s services are allocated in accordance with the Authority’s objective in section 15 of the Act.
Compare: Electricity Governance Rules 2003 rule 1 section IV part F

12.79 Statutory objective
Transpower, in developing the transmission pricing methodology, and the Authority, in approving the transmission pricing methodology, must assess the transmission pricing methodology against the Authority’s objective in section 15 of the Act.
Compare: Electricity Governance Rules 2003 rule 2 section IV part F

12.80 Application and interpretation of pricing principles
[Revoked]
Compare: Electricity Governance Rules 2003 rule 3 section IV part F

12.81 Authority must prepare an issues paper
(1) The Authority must prepare an issues paper on—
(a) the process for development and approval of the transmission pricing methodology; and
(b) the guidelines to be followed by Transpower in preparing a methodology for allocating Transpower’s revenues to designated transmission customers.
(2) The process and guidelines must be developed in accordance with the Authority’s objective in section 15 of the Act.
Compare: Electricity Governance Rules 2003 rule 4 section IV part F

12.82 Authority must consult on issues paper
(1) When the Authority publishes the issues paper, the Authority must publish of the date by which submissions are to be received by the Authority. The date must be no earlier than 15 business days from the date of publication of the issues paper.
(2) Each submission on the issues paper must be made in writing to the Authority and received on or before the submission expiry date. In addition to receiving written submissions, the Authority may elect to hear one or more oral submissions.

(3) Within 20 business days of the submission expiry date (or such longer period as the Authority may allow), the Authority must complete its consideration of all submissions it receives on the issues paper.

Compare: Electricity Governance Rules 2003 rule 5 section IV part F

12.83 Authority must publish process and guidelines for development of transmission pricing methodology

After consideration of submissions in clause 12.82(3), the Authority must, as soon as reasonably practicable, publish—

(a) the process for the development of the transmission pricing methodology; and

(b) any guidelines that Transpower must follow in developing the transmission pricing methodology.

Compare: Electricity Governance Rules 2003 rule 6 section IV part F

Development of transmission pricing methodology by Transpower

12.84 A Transmission pricing methodology

The transmission pricing methodology that applies at the commencement of this Code is the transmission pricing methodology in Schedule 12.4.

Review of an approved transmission pricing methodology


12.85 Review by Transpower

At any time, Transpower may submit to the Authority a proposed variation of its transmission pricing methodology, provided that the submission is made at least 12 months after the last Authority approval of the transmission pricing methodology.

Compare: Electricity Governance Rules 2003 rule 11.1 section IV part F

12.86 Review by the Authority

The Authority may review an approved transmission pricing methodology if it considers that there has been a material change in circumstances.

Compare: Electricity Governance Rules 2003 rule 11.2 section IV part F

12.87 Process for review

A review of the transmission pricing methodology must take into account the requirements of clauses 12.79 and 12.89(1). The Authority must follow the processes
outlined in clauses 12.91 to 12.94 when reviewing a transmission pricing methodology.

Compare: Electricity Governance Rules 2003 rule 11.3 section IV part F

12.88 Transpower to submit methodology

(1) Transpower must submit a proposed transmission pricing methodology to the Authority within 90 days (or such longer period as the Authority may allow) of receipt of a written request from the Authority.

(2) The Authority may, after publishing the process described in clause 12.83(a) and the guidelines described in clause 12.83(b), issue such a request.

Compare: Electricity Governance Rules 2003 rule 7.1 section IV part F


12.89 Form of proposed transmission pricing methodology

(1) Transpower must develop its proposed transmission pricing methodology consistent with—

(a) any determination made under Part 4 of the Commerce Act 1986; and

(b) the Authority’s objective in section 15 of the Act; and

(c) any guidelines published under clause 12.83(b).

(2) Transpower’s proposed transmission pricing methodology must include indicative prices to allow the Authority and interested parties to understand the impact of the methodology on designated transmission customers.

Compare: Electricity Governance Rules 2003 rule 7.2 section IV part F

12.90 Authority may decline to consider proposed transmission pricing methodology

(1) The Authority may decline to consider the proposed Transpower transmission pricing methodology if, in the Authority’s view, Transpower has not provided sufficient information for the Authority to make an informed assessment of the matters referred to in clauses 12.91 to 12.94.

(2) If the Authority so declines, the Authority must advise Transpower of the extra information required, and Transpower must provide a revised transmission pricing methodology by a date specified by the Authority.

Compare: Electricity Governance Rules 2003 rule 7.3 section IV part F

Process for determination of transmission pricing methodology

12.91 Authority may approve proposed transmission pricing methodology or refer back to Transpower

(1) After consideration of Transpower’s proposed transmission pricing methodology, the Authority may either—

(a) approve the proposed transmission pricing methodology having regard to the requirements of clause 12.89(1); or

(b) refer the proposed transmission pricing methodology back to Transpower if in the Authority’s view the proposed transmission pricing methodology does not adequately conform to the requirements of clause 12.89(1) and Transpower will
have 20 business days to consider the Authority’s concerns and to resubmit its proposed transmission pricing methodology for consideration by the Authority.

(2) If the Authority considers that the transmission pricing methodology resubmitted by Transpower under subclause (1)(b) does not conform to the requirements of clause 12.89(1), the Authority may make any amendments it considers necessary to ensure that the proposed transmission pricing methodology adequately conforms to the requirements of clause 12.89(1).

Compare: Electricity Governance Rules 2003 rule 8.1 section IV part F

12.92 Authority must publish proposed transmission pricing methodology

(1) The Authority must publish the proposed transmission pricing methodology as soon as practicable.

(2) At the time the Authority publishes the proposed transmission pricing methodology the Authority must publish the date by which submissions are to be received by the Authority. The date must be no earlier than 15 business days from the date of publication of the proposed transmission pricing methodology.

(3) Each submission on the proposed transmission pricing methodology must be made in writing to the Authority and received on or before the submission expiry date. In addition to receiving written submissions, the Authority may elect to hear 1 or more oral submissions.

Compare: Electricity Governance Rules 2003 rules 8.2 and 8.3 section IV part F


12.93 Decision on transmission pricing methodology

Within 40 business days of the submission expiry date (or such longer period as the Authority may allow), the Authority must complete its consideration of all submissions it receives on a proposed transmission pricing methodology and consider whether to include the transmission pricing methodology in a schedule to this Part and, if so, the date that the transmission pricing methodology will take effect.

Compare: Electricity Governance Rules 2003 rule 8.4 section IV part F

12.94 Authority to determine commencement date

In determining a date on which the transmission pricing methodology must take effect, the Authority must consult with Transpower.

Compare: Electricity Governance Rules 2003 rule 8.5 section IV part F

Application of approved transmission pricing methodology

12.95 Charges to comply with approved transmission methodology

(1) Except for the input connection contracts, new investment agreement contracts, and notional embedding contracts, Transpower must charge for those transmission services affected only in accordance with the approved transmission pricing methodology.

(2) [Revoked]

Compare: Electricity Governance Rules 2003 rule 9.1 section IV part F
12.96 Development of transmission prices

After approval of the transmission pricing methodology, Transpower must—
(a) develop and publish transmission prices consistent with the transmission pricing methodology based on its total revenue requirement for connection to or use of the grid; and
(b) demonstrate to the Authority that the prices are consistent with the transmission pricing methodology.

Compare: Electricity Governance Rules 2003 rule 9.2 section IV part F

Audit of transmission prices

12.97 Audit of transmission prices

(1) The Authority may appoint an auditor to confirm whether Transpower’s transmission prices have been calculated in accordance with the transmission pricing methodology.

(2) Transpower must ensure that the auditor's report includes the auditor's view on whether the application of the transmission pricing methodology by Transpower contains errors or inconsistencies that may have a material impact on the prices of any individual designated transmission customers, or designated transmission customers in general.

(3) Transpower must provide the auditor with all relevant information required by the auditor to complete its review.

Compare: Electricity Governance Rules 2003 rule 9.3 section IV part F

12.98 Transpower may respond to auditor’s report

Transpower must ensure that the auditor's report includes any comments that Transpower provided to the auditor within 15 business days of Transpower receiving a draft of the report.

Compare: Electricity Governance Rules 2003 rule 9.4 section IV part F

12.99 Final auditor report to the Authority

(1) Transpower must ensure that, within 10 business days after the auditor receives Transpower’s response under clause 12.98, the auditor provides a report to the Authority certifying that either—
(a) Transpower had applied correctly the approved transmission pricing methodology; or
(b) material errors remained in Transpower’s application of the transmission pricing methodology.

(2) Within 5 business days of receiving the report, the Authority must publish the auditor’s report.

Compare: Electricity Governance Rules 2003 rules 9.5 and 9.6 section IV part F

12.100 Transpower to redetermine transmission prices

If the auditor concludes that there are material errors in Transpower’s application of the transmission pricing methodology, Transpower must recalculate and publish revised transmission prices to correct identified errors.

Compare: Electricity Governance Rules 2003 rule 9.7 section IV part F

12.101 Auditor’s costs

Transpower must meet the actual and reasonable expenses of the auditor.

Compare: Electricity Governance Rules 2003 rule 9.8 section IV part F

12.102 Enforcement of transmission charges

(1) The approved transmission pricing methodology must be incorporated in transmission agreements between Transpower and designated transmission customers.

(2) The amount payable by a designated transmission customer under a transmission agreement under subclause (1)—

(a) is recoverable in any court of competent jurisdiction as a debt due to Transpower; and

(b) may be challenged in any proceedings to recover the debt on the ground that Transpower has incorrectly applied the transmission pricing methodology in a manner that is adverse to the designated transmission customer but the transmission pricing methodology itself may not be challenged.

Compare: Electricity Governance Rules 2003 rule 10 section IV part F

Subpart 5—Financial transmission rights [Revoked]


12.103 Contents of this subpart [Revoked]

Compare: Electricity Governance Rules 2003 rule 1 section V part F

12.104 Design [Revoked]

Compare: Electricity Governance Rules 2003 rule 2 section V part F
Subpart 6—Interconnection asset services

12.105 Purpose of this subpart
The purpose of this subpart is to—
(a) create incentives on Transpower, through enforceable service measures, to provide interconnection assets at the capacity ratings required by designated transmission customers and other grid users; and
(b) ensure that Transpower provides information on the capacity of interconnection assets, and their reliability and availability, to enable grid users to monitor the capacity and performance of interconnection assets; and
(c) establish processes for the identification of investments in the grid, and alternatives to such investments, to ensure efficient decision-making on the use of and upgrades to the grid; and
(d) specify the circumstances in which Transpower may permanently or temporarily remove interconnection assets from service or reconfigure the grid.

Compare: Electricity Governance Rules 2003 rule 1 section VI part F

12.106 Interconnection asset capacity and grid configuration
(1) The interconnection asset capacity and grid configuration set out in schedule F6 of section VI of part F of the rules immediately before this Code came into force, continues in force and is deemed to be the interconnection asset capacity and grid configuration that applies at the commencement of this Code.
(2) Clause 12.110 applies to the interconnection asset capacity and grid configuration.

12.107 Transpower to identify interconnection branches, and propose service measures and levels
(1) Transpower must provide the Authority with the information set out in subclause (4) and a diagram showing the configuration of the grid, other than connection assets.
(2) Transpower must provide the information and diagram referred to in subclause (1) to the Authority in the form specified by the Authority.
(3) The interconnection asset capacity and grid configuration referred to in subclause (1) must be provided within 3 months of the date on which the Authority, in accordance with subclause (2), sets the form in which the interconnection asset capacity and grid configuration must be provided.
(4) The information required under subclause (1) is—
(a) for each interconnection circuit branch, the following service measures and service levels:
   (i) the overall continuous capacity rating of the interconnection circuit branch, for both summer and winter periods in MVA and amperes:
   (ii) the level of impedance of the interconnection circuit branch both resistive
and reactive and for assets arranged in both shunt and series in PU, using a base of 100 MVA, provided the impedance of the interconnection circuit branch is equal to or more than 0.0001 PU, using 100 MVA as the base:

(iii) the nominal high voltage rating of each interconnection circuit branch in kV:

(iv) the high voltage range that each interconnection circuit branch can be operated over in kV, specified as a maximum and a minimum; and

(b) for each interconnection transformer branch, the following information:

(i) the overall 24 hour post contingency capacity rating of the interconnection transformer branch, for both the summer and winter period, in amperes and MVA as follows:

(A) for 2 Winding interconnection transformer branches, the overall 24 hour post contingency capacity rating:

(B) for 3 Winding interconnection transformer branches, the overall 24 hour post contingency capacity rating, at HV, MV, and LV:

(ii) the continuous capacity rating of the interconnection transformer branch in amperes and MVA as follows:

(A) for 2 Winding interconnection transformer branches, the continuous capacity rating:

(B) for 3 Winding interconnection transformer branches, the continuous capacity rating, at HV, MV, and LV:

(iii) the level of impedance of the interconnection transformer branch, both resistive and reactive and for assets arranged in both shunt and in series in PU, using a base of 100 MVA, as follows:

(A) for 2 Winding interconnection transformer branches, the level of impedance of the interconnection transformer branch:

(B) for 3 Winding interconnection transformer branches, the level of impedance of the interconnection transformer branch, at HV, MV, and LV:

(iv) the nominal high voltage rating of the interconnection transformer branch in kV:

(v) the high voltage range that the interconnection transformer branch can be operated over in kV, specified as a maximum, and a minimum:

(vi) in respect of the tapping steps and ranges of the interconnection transformer branch:

(A) the tap voltage range in volts, specified as a maximum and a minimum:

(B) the number of tapping steps:

(C) the size of each tapping step as a percentage of the operational voltage range:

(D) whether the tapping step is on-load or off-load:

(E) whether on-load tapping capacity is automatic or manual;

(F) if on-load tapping capacity is automatic, whether it is auto-selected:

(G) if on-load tapping capacity is manual, the tap step it is normally set to,
which for the purposes of this clause is the actual or expected position at winter peak demand; and

(c) the transfer capacity in the North and South transfer for each configuration of the HVDC link expressed as follows:
(i) DC sent in MW;
(ii) AC received in MW; and

(d) for each shunt asset, the following service measures and service levels:
(i) the overall capacity rating, in MVAr, in terms of both absorption or provision:
(ii) the nominal voltage rating of the shunt asset in kV:
(iii) the maximum and minimum voltage range in kV that the shunt asset can operate over; and

(e) in addition to the information required under paragraph (d) in relation to shunt assets:
(i) whether each shunt asset is dynamic or static:
(ii) if the shunt asset is dynamic, whether it is an SVC or synchronous compensator:
(iii) any shunt assets that may directly affect the capacity of the HVDC link as set out in paragraph (c) and the likely magnitude of such effect; and

(f) the dates for the summer and winter periods or other such defined periods as may apply for the purposes of paragraphs (a) and (b).

(5) The information provided under subclause (4) must,—
(a) in the case of information provided under subclause (4)(a), (c) and (d), be consistent with the information disclosed by Transpower in the most recent asset capability statement provided by Transpower under clause 2(5) of Technical Code A of Schedule 8.3; and

(b) in the case of information provided under subclause (4)(b), be consistent with the manufacturer’s specification for the component assets and the information disclosed by Transpower in the most recent asset capability statement provided under clause 2(5) of Technical Code A of Schedule 8.3, if this differs from the manufacturer’s specifications;

(c) in the case of information provided under subclause (4)(a), be consistent with the thermal design rating of each interconnection branch; and

(d) cover every interconnection asset, either as part of an interconnection circuit branch, interconnection transformer branch, the HVDC link or as a shunt asset.

(6) After reviewing the interconnection asset capacity and grid configuration provided under subclause (1), the Authority may request Transpower to reconsider whether any of the interconnection asset capacity and grid configuration, is accurate, and require Transpower to resubmit the interconnection asset capacity and grid configuration to the Authority for reconsideration.

Compare: Electricity Governance Rules 2003 rules 2.1 to 2.6 section VI part F
12.108 Consultation on proposed interconnection asset capacity and grid configuration

(1) If the Authority is provisionally satisfied that the interconnection asset capacity and grid configuration provided under clause 12.107(1) or resubmitted under clause 12.107(6) are correct, the Authority must publish the proposed interconnection asset capacity and grid configuration as soon as practicable for consultation with any person that the Authority thinks is likely to be materially affected by the incorporation of the proposed interconnection asset capacity and grid configuration by reference in this Code.

(2) As well as the consultation required under subclause (1), the Authority may undertake any other consultation it considers necessary.

Compare: Electricity Governance Rules 2003 rules 2.7 and 2.8 section VI part F

12.109 Decision on interconnection asset capacity and grid configuration

(1) When the Authority has completed its consultation on the proposed interconnection asset capacity and grid configuration, it must consider whether to incorporate the proposed interconnection asset capacity and grid configuration by reference in this Code.

(2) If the Authority decides to incorporate the interconnection asset capacity and grid configuration by reference in this Code, the Authority must determine a date on which the incorporation by reference takes effect and comply with Schedule 1 of the Act in relation to it.

Compare: Electricity Governance Rules 2003 rule 2.9 section VI part F

12.110 Incorporation of interconnection asset capacity and grid configuration by reference

(1) The interconnection asset capacity and grid configuration is incorporated by reference in this Code in accordance with section 32 of the Act.

(2) Subclause (1) is subject to Schedule 1 of the Act, which includes a requirement that the Authority must give notice in the Gazette before an amended or substituted interconnection asset capacity and grid configuration becomes incorporated by reference in this Code.


12.111 Transpower to make interconnection branches and other assets available and keep grid configuration

(1) Transpower must make each interconnection circuit branch, interconnection transformer branch, the HVDC link, and each shunt asset identified in the interconnection asset capacity and grid configuration available for use by the system operator for the conveyance of electricity—

(a) at least at the service levels specified in the interconnection asset capacity and grid configuration in accordance with clause 12.107(4); and

(b) in accordance with good electricity industry practice and relevant health and
safety standards.

(2) **Transpower** must keep the **grid** in the configuration set out in the interconnection asset capacity and grid configuration.

(3) **Transpower** is not required to comply with subclauses (1)(a) or (2) if clause 12.112(1) applies.

Compare: Electricity Governance Rules 2003 rule 3 section VI part F

### 12.112 Exceptions to clause 12.111

(1) **Transpower** is not required to comply with clause 12.111(1)(a) or (2) if—

(a) permitted under the **Outage Protocol** made under subpart 7; or

(b) an **interconnection asset** that forms part of an interconnection **branch** or the **HVDC link**, or a **shunt asset**—

(i) is permanently removed from service, the **grid** is permanently reconfigured, or the transmission capacity of such an **asset** is reduced, and the decision to remove the **asset** from service or reconfigure the **grid** or reduce the transmission capacity of the **asset** takes into account the effect of the removal of the **asset**, reconfiguration of the **grid**, or the reduction in transmission capacity of the **asset**, on other materially affected parties, and is undertaken—

   (A) in order to maintain the health and safety of any person; or
   
   (B) in order to maintain the safety and integrity of equipment; or
   
   (C) in accordance with demonstrably prudent economic criteria; or

   (iaa) has been temporarily removed from service, or the **grid** has been temporarily reconfigured, in accordance with clause 12.116AA; or

   (ia) [Expired]

   (iia) has been permanently removed from service, or the **grid** has been permanently reconfigured, in accordance with clause 12.117; or

(c) a modification to an **interconnection branch**, the **HVDC link**, a **shunt asset** or to the configuration of the **grid**, has been made as a result of an investment in the **grid**; or

(d) a modification to an **interconnection branch**, the **HVDC link**, a **shunt asset** or to the configuration of the **grid** has been made as a result of an investment made under an **investment contract** entered into in accordance with clauses 12.70 and 12.71; or

(e) the voltage range specified in the **AOPOs** for an **interconnection asset** that forms part of an **interconnection branch** is modified, or any **equivalence arrangement** is approved or **dispensation** is granted under clauses 8.29 to 8.31 in respect of the **asset**; or

(ea) in relation to the **HVDC link**—

(i) the **HVDC owner** is operating the **HVDC link** in accordance with—

   (A) a **commissioning** plan agreed with the **system operator** under clause 2(6) to (9) of **Technical Code** A of Schedule 8.3; or

   (B) a test plan provided to the **system operator** under clause 2(6) to (9) of **Technical Code** A of Schedule 8.3; and
(ii) the configuration of the HVDC link is—
(A) Pole 3 and Pole 2 bipole round power; or
(B) Pole 3 and Pole 2 bipole not round power; or

(f) Transpower and a designated transmission customer have agreed otherwise in accordance with clause 12.128.

(2) If subclause (1)(c) to (e) applies, or the grid is reconfigured under subclause (1)(b)(i) or (ii), Transpower must—
(a) make the interconnection branch, the HVDC link or the shunt asset available to the system operator at least at its modified capacity rating, and at its modified service levels; and
(b) keep the grid in its modified configuration.

(2AA) Subclause (2AB) applies—
(a) if subclause (1)(b)(iaa) applies; and
(b) while—
(i) an interconnection asset that forms part of an interconnection branch or the HVDC link, or a shunt asset, has been temporarily removed; or
(ii) the grid has been temporarily reconfigured.

(2AB) Transpower must make the interconnection branch, the HVDC link or the shunt asset available to the system operator at least at its modified capacity rating, and at its modified service levels.

(2A) [Expired]
(2B) [Expired]

(3) If a decision to remove an asset, or reconfigure the grid, or reduce the transmission capacity of an asset has been made under subclause (1)(b)(i) or (ii), Transpower must as soon as reasonably possible publish the analysis it undertook in accordance with subclause (1)(b)(i) or (ii), or a summary of that analysis.

Compare: Electricity Governance Rules 2003 rule 4 section VI part F
Clause 12.112(2AA) and (2AB): inserted, from 15 March 2013 to 15 December 2013, by clause 5(3) of the Electricity Industry Participation (Temporary Grid Reconfiguration) Code Amendment 2013.
Clause 12.112(2AA) and (2AB): inserted, on 16 December 2013, by clause 7(5) of the Electricity Industry Participation (Urgent Temporary Grid Reconfiguration) Code Amendment 2013.

12.113 Transpower to maintain interconnection assets

Transpower must design, construct, maintain and operate all interconnection assets in accordance with good electricity industry practice.

Compare: Electricity Governance Rules 2003 rule 5 section VI part F

Transpower to propose investments

12.114 Investments to meet the grid reliability standards

(1) If a grid reliability report identifies, in accordance with clause 12.76(1)(c), that the power system is not reasonably expected to meet the N-1 criterion at a grid exit point at all times over the 5 years following the date on which the report is published and that this is due to an interconnection asset, Transpower must—

(a) as soon as practicable, investigate whether the interconnection asset meets the grid reliability standards; and

(b) if the interconnection asset does not meet the grid reliability standards, consider reasonably practicable options for ensuring that the grid reliability standards can be met in respect of that asset; and

(c) if Transpower considers that 1 or more investments are required in respect of that interconnection asset in order to meet the grid reliability standards, submit an investment proposal to the Commerce Commission—

(i) in sufficient time to avoid a breach of the grid reliability standards; or

(ii) if the grid reliability standards have already been breached, within 6 months, or such longer period as the Authority may allow, after the publication of the grid reliability report that sets out the investment or investments that Transpower proposes to make; and

(d) if it considers that an investment is not necessary, publish the reasons for this and any alternative measures that Transpower proposes to undertake.

(2) If an investment proposal submitted under this clause is approved by the Commerce Commission under section 54R of the Commerce Act 1986 or permitted under an input methodology determined under section 54S of that Act, Transpower must undertake the investment—

(a) before the grid falls below the grid reliability standards for the reason referred to in subclause (1); or

(b) if the grid had already fallen below the grid reliability standards, or if it is not reasonably practicable to undertake the investment as provided in paragraph (a), as
soon as reasonably practicable.

(3) **Transpower** does not need to submit an investment proposal under subclause (1)(c) if the investment to which the proposal relates has previously been included in an investment proposal submitted to, and considered—
   (a) before this Code came into force, by the Electricity Commission under section III of part F of the **rules**; or
   (b) after this Code came into force, by the Commerce Commission under section 54R or section 54S of the Commerce Act 1986.

Compare: Electricity Governance Rules 2003 rule 6.1 section VI part F

12.115 Other investments

(1) **Transpower** must publish a **grid economic investment report** on whether there are investments that it considers, other than the investments identified under clause 12.114, could be made in respect of the **interconnection assets**.

(2) **Transpower** must publish a **grid economic investment report** no later than 2 years after the date on which it published the previous **grid economic investment report**, or such other date as determined by the **Authority**.

(3) If a **grid economic investment report** identifies that there are investments that could be made, **Transpower** must publish within 6 months a report setting out a proposed timetable for **Transpower** to consider whether to submit 1 or more investment proposals to the Commerce Commission in respect of those possible investments.

(4) The **grid economic investment report** does not need to report on possible investments that have been previously included in an investment proposal submitted to, and considered,—
   (a) before this Code came into force, by the Electricity Commission under section III of part F of the **rules**; or
   (b) after this Code came into force, by the Commerce Commission under section 54R or section 54S of Part 4 of the Commerce Act 1986.

Compare: Electricity Governance Rules 2003 rule 6.2 section VI part F

12.116 Information on capacities of individual interconnection assets

(1) **Transpower** must publish the following information in respect of each **interconnection asset**:
   (a) for each transformer that is an **interconnection asset**, the overall 24 hour post contingency capacity rating of the **asset** in amperes and MVA, for both the summer and winter periods:
   (b) for all other **interconnection assets**, the overall capacity rating of the **asset** in amperes and MVA and, if the **interconnection assets** are circuits, for both the summer and winter periods.

(2) The information required under subclause (1)—
   (a) must be consistent with the **manufacturer's specification** for the **asset** or with the most recent **asset capability statement** provided by **Transpower** under clause 2(5) of Technical Code A of Schedule 8.3, if this differs from the **manufacturer's specification**; and
   (b) must be in a form that allows the **branch** to which each **asset** belongs to be easily
12.116AA Temporary removal of interconnection assets from service or temporary grid reconfiguration

(1) Transpower must temporarily remove 1 or more interconnection assets from service, or temporarily reconfigure the grid as permitted under clause 12.112(1)(b)(iaa), if—

(a) the removal or reconfiguration is requested by the system operator in accordance with clause 9.13B; and

(b) the removal or reconfiguration will result in a net benefit, as calculated under the test set out in clause 12.117.

(2) If Transpower temporarily removes interconnection assets from service or temporarily reconfigures the grid in response to a notice given under clause 9.13B, Transpower must, as soon as is reasonably practicable after the circumstances specified in that notice cease to exist—

(a) restore the interconnection assets to service; or

(b) restore the grid to its original configuration.


12.116AB [Expired]


12.116AC Information to be published

If Transpower receives a notice given in accordance with clause 9.13B, Transpower must publish,—

(a) as soon as practical, a copy of the notice; and

(b) by no later than 5 business days after receiving the notice, a summary of Transpower’s application of the net benefit test that relates to the exceptional circumstances stated in the notice.

12.116A [Expired]

12.116B [Expired]

12.116C [Expired]

12.117 Permanent removal of interconnection assets from service or permanent grid reconfiguration

(1) Transpower may permanently remove interconnection assets from service or permanently reconfigure the grid as permitted under clause 12.112(1)(b) only if removal of the asset or reconfiguration of the grid results in a net benefit, as calculated under the test set out in subclause (2).

(2) When Transpower is required to apply a net benefit test, Transpower must—
(a) estimate the following costs:
   (i) any additional fuel costs incurred by a generator in respect of any generating units that will be dispatched or are likely to be dispatched during or after the removal of the interconnection asset or the reconfiguration of the grid, arising as a result of the removal or reconfiguration:
   (ii) any direct labour and material costs that will be incurred by Transpower and the designated transmission customers undertaking the removal of the interconnection asset or the reconfiguration of the grid:
   (iii) any increase in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy, arising as a result of the removal of the interconnection asset or the reconfiguration of the grid:
   (iv) any relevant cost specified in clause 12.43(1)(a)(iv):
   (v) any other relevant cost to a person that produces, transmits, retails or consumes electricity in New Zealand; and
(b) estimate the following benefits:
   (i) any reduction in maintenance costs arising as a result of the removal of the interconnection asset or the reconfiguration of the grid (including Transpower's and any designated transmission customer's costs):
   (ii) any reduction in fuel costs incurred by a generator in respect of any generating units, arising or likely to arise during or after the removal
of the **interconnection asset** or the reconfiguration of the **grid**, as a result of the removal or reconfiguration:

(iii) any decrease in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy, arising as a result of the removal of the **interconnection asset** or the reconfiguration of the **grid**:

(iv) any relevant benefit specified in clause 12.43(1)(b)(iv):

(v) any other relevant benefit to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(c) deduct the costs estimated under paragraph (a) from the benefits estimated under paragraph (b) to determine the net benefit of the proposed removal of the **interconnection asset** or the reconfiguration of the **grid**.

(3) **Transpower** may apply the test under this clause at differing levels of rigour in different circumstances, which may include taking into account the number of **assets** to be removed or reconfigured, the value of the **assets** involved, and the size of the load served by the **assets**.

(4) **Transpower** is only required to—

(a) make a reasonable estimate of the costs and benefits identified in subclause (2), based on information reasonably available to it at the time it undertakes the test, and taking into account the proposed number of **assets** to be removed or reconfigured, the value of the **assets** involved, and the size of the load served by the **assets**; and

(b) take account of events that can be reasonably foreseen.

(5) **Transpower's** estimate of fuel costs under subclause (2) must—

(a) in relation to thermal **generating stations**, be a reasonable estimate of the fuel costs, based on the economic value of the fuel required for the relevant thermal **generating station**, and justified by **Transpower** with reference to opinions on the economic value of the fuel, provided by 1 or more independent and suitably qualified persons; and

(b) in relation to hydroelectric **generating stations**—

   (i) be a reasonable estimate of the fuel costs, based on the economic value of the water stored at a hydroelectric **generating station**, provided by a suitably qualified person other than—

      (A) **Transpower**; or

      (B) an employee of **Transpower**; and

   (ii) be published, as provided for in the **Outage Protocol**.

(6) The direct labour costs of **Transpower** and designated transmission customers under subclause (2)(a) may include any amounts paid to contractors, but must not include any apportionment of the overheads or office costs of **Transpower** or designated transmission customers.

(7) The material costs of **Transpower** and designated transmission customers under subclause (2)(a) are the costs of the materials used in carrying out the work during the removal of the **interconnection asset** or the reconfiguration of the **grid**.
(8) In assessing the costs and benefits under subclause (2), Transpower must consider any reasonably expected operating conditions, forecasts in the system security forecast, likely fuel costs, and any other reasonable assumptions.

(9) The estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy under subclause (2) must be based on the value of expected unserved energy in clause 4 of Schedule 12.2 and Transpower’s estimate of the expected unserved energy in respect of each affected designated transmission customer and end use customer.

(10) To avoid doubt, this clause applies to the removal of interconnection assets from service if Transpower does not propose to replace those assets with another asset.

Compare: Electricity Governance Rules 2003 rule 8 section VI part F

12.118 Transpower to provide and publish annual report on interconnection asset capacity and grid configuration

(1) Transpower must provide the Authority with and publish an annual report including—

(a) any matter required to be reported on for the purposes of this clause by the Outage Protocol; and

(b) the extent to which, in the preceding year ending 30 June, it has complied with the requirements of clause 12.111(1)(a) and (2); and

(c) any specific instances in which Transpower has not complied with clause 12.111(1)(a) and (2); and

(d) to the extent practicable, the circumstances that have given rise to any failure to comply with clause 12.111(1)(a) and (2); and

(e) to the extent practicable, any steps that it intends to take or other options to reduce the likelihood of failing to comply with clause 12.111(1)(a) and (2) in the future; and

(f) any modifications made to interconnection circuit branches, the HVDC link, and each shunt asset under clause 12.112(c) to (e) in the preceding year ending 30 June and the extent to which it has complied with clause 12.112(2) in respect of those modifications, including any specific instances in which Transpower has not complied; and

(g) any interconnection assets that have been removed from service, or any reconfigurations to the grid made, in accordance with clause 12.116AA or clause...
12.117; and

(h) copies of any agreements made under clause 12.128 or, in respect of interconnection assets only, clause 12.151 in the preceding year ending 30 June; and

(i) an update of the interconnection asset capacity and grid configuration required under clause 12.107(1), as at the end of the preceding year ending 30 June.

(2) Transpower must provide to the Authority and publish, the report referred to in subclause (1) by 30 November each year.

(3) The Authority may incorporate by reference in this Code the updated interconnection asset capacity and grid configuration referred to in subclause (1)(i) in accordance with clause 12.110. The Authority may consult with any person the Authority considers is likely to be materially affected by the proposed amendments to the interconnection asset capacity and grid configuration, as it sees fit. Transpower must comply with the interconnection asset capacity and grid configuration incorporated by reference in this Code in accordance with clause 12.110.

Compare: Electricity Governance Rules 2003 rule 9 section VI part F

Reporting on availability and reliability

12.119 Index measures for availability and reliability
The index measures for availability and reliability for each interconnection branch, shunt asset and the HVDC link are the index measures for reliability for each interconnection branch, shunt asset and the HVDC link in Schedule 12.5.

12.120 Updating of availability and reliability index measures
(1) This clause applies if interconnection assets—
   (a) are modified or replaced as permitted under clause 12.112(1); or
   (b) have been damaged or degraded but, after conducting the investigation required under clause 12.114(1), Transpower considers that they still meet the grid reliability standards.

(2) If this clause applies, if, after the availability and the reliability or availability index measures for an interconnection branch, shunt asset and the HVDC link or aggregated interconnection branches or shunt assets no longer meet the requirements of clause 12.122, the availability and reliability index measures in Schedule 12.5 must be updated following the procedure specified in clauses 12.121 to 12.127.

(3) Transpower must propose the revised index measures under clause 12.121 within 20 business days of the modification or replacement, or such longer period as the Authority may allow.
12.121 Transpower to submit draft index measures for availability and reliability

(1) Transpower must provide the Authority with proposed index measures for availability and reliability for each interconnection branch, shunt asset and the HVDC link, in accordance with this clause.

(2) For the purposes of subclause (1), Transpower must categorise interconnection branches and shunt assets into groups of interconnection branches and shunt assets comprising similar assets.

(3) The index measures to be provided under subclause (1) are—
   (a) annual unavailability of each interconnection branch, shunt asset and the HVDC link due to planned outages of 1 minute or longer in hours per year ending 30 June, expressed as a percentage; and
   (b) annual unavailability of each interconnection branch, shunt asset and the HVDC link due to unplanned outages of 1 minute or longer in hours per year ending 30 June, expressed as a percentage; and
   (c) annual number of planned interruptions of 1 minute or longer caused by planned outages of 1 minute or longer of each interconnection branch, shunt asset and the HVDC link; and
   (d) annual number of unplanned interruptions of 1 minute or longer caused by unplanned outages of 1 minute or longer of each interconnection branch, shunt asset and the HVDC link;
   (e) total unserved energy per year ending 30 June in MWh resulting from planned interruptions of 1 minute or longer caused by planned outages of 1 minute or longer of each interconnection branch, shunt asset and the HVDC link; and
   (f) total unserved energy per year ending 30 June in MWh resulting from unplanned interruptions of 1 minute or longer caused by unplanned outages of 1 minute or longer of each interconnection branch, shunt asset and the HVDC link.

(4) At the same time, Transpower must propose availability and reliability index measures for aggregated interconnection branches and shunt assets, such as by asset class or for all of the grid.

12.122 Requirements for index measures

(1) The proposed availability and reliability index measures under clause 12.121(3) must be based on the average annual availability and reliability of each category of interconnection branch, or shunt asset and of the HVDC link over the 5 year period (ending 30 June) immediately before this clause came into force.

(2) The proposed index measures under clause 12.121(3) must be accompanied by an explanation showing how the requirements of subclause (1) were applied.

(3) The index measure for unserved energy under clause 12.121(3)(e) and (f) must be determined in accordance with the methodology for determining expected unserved
energy relating to outages of interconnection assets specified in the Outage Protocol.

(4) In proposing the availability and reliability index measures under clause 12.121(4), Transpower must specify its reasons for proposing those measures.

12.123 Authority may initially approve proposed index measures or refer back to Transpower

After considering Transpower’s proposed availability and reliability index measures and accompanying reasons the Authority may either—

(a) provisionally approve the proposed availability and reliability index measures; or

(b) refer the proposed availability and reliability index measures and accompanying explanation back to Transpower if in the Authority’s view—

(i) the proposed availability and reliability index measures under clause 12.121 are not consistent with the requirements of clause 12.122(1) or the methodology referred to in clause 12.122(3); or

(ii) the proposed availability and reliability index measures under clause 12.121 do not provide sufficient information to meet the reasonable needs of grid users; or

(iii) the reasons provided with the availability and reliability targets in accordance with clause 12.122 are inadequate—

and Transpower must within 20 business days (or such longer period as the Authority may allow) consider the Authority’s concerns and resubmit the proposed availability and reliability index measures and accompanying explanations for consideration by the Authority.

12.124 Amendment of proposed index measures by the Authority

If the Authority considers that the availability and reliability index measures resubmitted by Transpower under clause 12.123(b) are not consistent with the requirements of clause 12.122(1) or the methodology referred to in clause 12.122(3), or do not provide relevant information to grid users, the Authority may make any amendments to the index measures it considers necessary.

12.125 Authority must consult on proposed index measures

(1) The Authority must publish the proposed availability and reliability index measures, either as provisionally approved by the Authority or as amended by the Authority, as soon as is practicable, for consultation with any person that the Authority thinks is likely to be materially affected by the proposed index measures.

(2) As well as the consultation required under subclause (1), the Authority may undertake any other consultation it considers necessary.
12.126 Decision on index measures
When the Authority has completed its consultation on the proposed availability and reliability measures it must consider whether to include the index measures as a schedule to this Part.

Compare: Electricity Governance Rules 2003 rule 10.7 section VI part F

12.127 Transpower to report on availability and reliability
(1) By 30 November in each year, Transpower must publish and provide to the Authority information on availability and reliability of interconnection assets including—

(a) annual unavailability of each interconnection branch, shunt asset and the HVDC link due to planned outages of 1 minute or longer in the preceding year ending 30 June in hours per year expressed as a percentage; and

(b) annual unavailability of each interconnection branch, shunt asset and the HVDC link due to unplanned outages of 1 minute or longer in the preceding year ending 30 June in hours per year expressed as a percentage; and

(c) annual number of planned interruptions of 1 minute or longer caused by planned outages of one minute or longer of each interconnection branch, shunt asset and the HVDC link in the preceding year ending 30 June; and

(d) annual number of unplanned interruptions of 1 minute or longer caused by unplanned outages of one minute or longer of each interconnection branch, shunt asset and the HVDC link in the preceding year ending 30 June; and

(e) total unserved energy in the preceding year ending 30 June resulting from planned interruptions of 1 minute or longer caused by planned outages of 1 minute or longer of interconnection branches, shunt assets and the HVDC link; and

(f) total unserved energy in the preceding year ending 30 June resulting from unplanned interruptions of 1 minute or longer caused by unplanned outages of 1 minute or longer of interconnection branches, shunt assets and the HVDC link; and

(g) annual number of outages of each interconnection branch, shunt asset and the HVDC link that are shorter than 1 minute in the preceding year ending 30 June; and

(h) the annual number of interruptions shorter than 1 minute caused by outages that are shorter than 1 minute of each interconnection branch, shunt asset and the HVDC link, in the preceding year ending 30 June; and

(i) a comparison of the information required by paragraphs (a) to (f) against the availability and reliability index measures for interconnection branches, shunt assets and the HVDC link included in a schedule to this Part under clause 12.126; and

(j) to the extent practicable, an explanation of the reasons for not meeting the reliability and availability index measures for interconnection branches, shunt assets and the HVDC link included in a schedule to this Part under clause 12.126 and any steps or other options it intends to take in future to meet the index measures; and
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(k) information on its performance against the reliability and availability index measures for aggregated interconnection branches included in a schedule to this Part under clause 12.126.

(2) The information published under subclause (1) must be specified in the same units of measurement as the corresponding index measures included in a schedule to this Part under clause 12.126.

(3) Transpower does not breach this Code by reason of a failure to meet the index measures included in a schedule to this Part under clause 12.126.

Compare: Electricity Governance Rules 2003 rule 10.8 section VI part F

12.128 Transpower and designated transmission customers may agree on other requirements

(1) Transpower and each designated transmission customer must comply with this Part, unless agreed otherwise by Transpower and the designated transmission customer in respect of specified interconnection circuit branches, the HVDC link, shunt assets or interconnection assets, or the designated transmission customer in accordance with subclause (2).

(2) An agreement between Transpower and a designated transmission customer under this clause must not exclude the application of subclause (3)(b) and must be conditional in all respects on—

(a) obtaining agreement from all other potentially affected designated transmission customers that this Part does not apply to the specified interconnection circuit branches, the HVDC link, shunt assets or interconnection assets, or the designated transmission customer; and

(b) Transpower and the designated transmission customer confirming in writing to the Authority that they have consulted with all potentially affected end use customers on this Part not applying to the specified interconnection branches, circuit branches, the HVDC link, shunt assets or interconnection assets or the designated transmission customer, and that there are no material unresolved issues affecting the interests of those end use customers.

(3) Transpower must—

(a) give written notice to the Authority as soon as practicable if Transpower enters into an agreement with a designated transmission customer under this clause; and

(b) publish the agreement no later than 20 business days after entering into the agreement.

Compare: Electricity Governance Rules 2003 rule 11 section VI part F
Subpart 7—Preparation of Outage Protocol

12.129 Purpose of this subpart
The purpose of this subpart is to provide for the making of an Outage Protocol, with input from Transpower and in consultation with other interested parties, that—
(a) specifies the circumstances in which Transpower may temporarily remove any assets forming part of the grid from service or reduce the capacity of assets to efficiently manage the operation of the grid; and
(b) specifies procedures and policies for Transpower to plan for outages and for carrying out such outages to—
   (i) ensure Transpower involves designated transmission customers in making decisions on planned outages as much as possible; and
   (ii) ensure coordination between Transpower and designated transmission customers; and
   (iii) enable Transpower to efficiently manage the operation of the grid; and
(c) specifies procedures and policies for dealing with unplanned outages of the grid.

Compare: Electricity Governance Rules 2003 rule 1 section VII part F

12.130 Definition of outage
(1) An outage exists when interconnection assets or connection assets are temporarily not provided in accordance with—
   (a) the requirements of a transmission agreement; or
   (b) the requirements of subpart 6.
(2) Without limiting subclause (1), an outage includes any situation in which—
   (a) Transpower removes assets from service temporarily; or
   (b) assets are not able to be provided due to grid emergencies, in order to deal with health and safety issues, or due to circumstances beyond Transpower’s reasonable control; or
   (c) Transpower reduces the capacity of branches below the capacity required by a transmission agreement or clause 12.111; or
   (d) Transpower changes the configuration of the grid; or
   (e) Transpower is required by law to carry out an outage.

Compare: Electricity Governance Rules 2003 rule 2 section VII part F

12.131 Outage Protocol
(1) The Outage Protocol set out in schedule F7 of section VII of part F of the rules immediately before this Code came into force, continues in force and is deemed to be the Outage Protocol that applies at the commencement of this Code, with the following amendments:
   (a) every reference to the Board must be read as a reference to the Authority:
   (b) every reference to the rules must be read as a reference to the Code:
   (c) every reference to a provision of the rules must be read as a reference to the corresponding provision of the Code:
(d) the reference in clause 3.1.2(d), clause 3.3.5(c), and clause 3.3.8(a) to a reliability investment or an economic investment approved by the Board must be read as a reference to an approved investment:

(e) the reference in clause 10.2.1(a) and (b) to the benchmark agreement in schedule F2 must be read as a reference to the benchmark agreement incorporated by reference into this Code under clause 12.34:

(f) the reference in clauses A1.1(a)(ii), A7.2(a)(ii), and A7.2(b)(i) to the value of unserved energy in clause 8.3.4 of schedule F4 of section III must be read as a reference to the value of expected unserved energy in clause 4 of Schedule 12.2:

(g) the reference in clauses A6.1(f) and A6.2(e) to the matters specified in clauses 27.1 to 27.9 of schedule F4 of section III must be read as the matters specified in clause 12.43(1)(a)(iv) and (b)(iv):

(h) the reference in clause A8.1(a)(i) to fuel costs specified in the statement of opportunities must be read as a reference to fuel costs calculated in accordance with clause 12.141(3)(a)(i).

(2) The Authority must as soon as practicable after this Code comes into force, publish a version of the Outage Protocol in which the provisions of this Code that correspond to the provisions of the rules referred to in the Outage Protocol are shown.

(3) Clause 12.150 applies to the Outage Protocol.

Review of Outage Protocol

12.132 Review of Outage Protocol

The Authority may review the Outage Protocol at any time, in accordance with the requirements of clauses 12.133 and 12.145 to 12.149.

Compare: Electricity Governance Rules 2003 rule 14 section VII part F

12.133 Transpower to submit proposed Outage Protocol

(1) Transpower must submit a proposed Outage Protocol to the Authority within 3 months (or such longer period as the Authority may allow) of receipt of a written request from the Authority. The Authority may issue such a request at any time.

(2) The proposed Outage Protocol must give effect to or promote the principles set out in clause 12.134 and provide for the matters set out in clauses 12.135 to 12.144.

(3) With its proposed Outage Protocol, Transpower must submit to the Authority an explanation of the proposed Outage Protocol and a statement of proposal for the proposed Outage Protocol.

Compare: Electricity Governance Rules 2003 rule 8 section VII part F

Principles and required content of Outage Protocol

12.134 Principles for developing Outage Protocol

The Outage Protocol must give effect to the following principles:

(a) the matters in clause 12.129;

(b) the need for a fair and reasonable balance of interests between the grid owner and designated transmission customers:
(c) the need to ensure that the grid owner can meet all obligations placed on it by the system operator for the purpose of meeting common security and power quality requirements under Part 8 of this Code;

(d) the need to ensure that the safety of all personnel is maintained;

(e) the need to ensure that the safety and integrity of equipment is maintained;

(f) the desirability of the Outage Protocol and Part 8 operating in an integrated and consistent manner, if possible.

Compare: Electricity Governance Rules 2003 rule 3 section VII part F

12.135 Required content of Outage Protocol

(1) The Outage Protocol must—

(a) require Transpower to plan for outages, other than outages that are not reasonably foreseeable, in accordance with clause 12.136; and

(b) require Transpower and designated transmission customers to act reasonably and in good faith in planning for outages, in accordance with clause 12.137; and

(c) set out the situations and times at which Transpower must reconsider the timing of proposed planned outages, as specified in clause 12.138; and

(d) permit Transpower to vary a proposed planned outage, as specified in clause 12.139;

(e) set out the requirements for Transpower to consider when planning for outages, in order to give effect to the net benefit principle, as specified in clause 12.140; and

(f) permit Transpower to undertake outages in order to give effect to an approved investment, and to undertake outages that are required by the Electricity Act 1992, as specified in clause 12.142; and

(g) permit Transpower to undertake outages, or take such other steps, as the system operator may reasonably require.

(2) The Outage Protocol must require Transpower to set out the procedures and policies for dealing with unplanned outages, as specified in clause 12.143.

(3) The Outage Protocol must require Transpower to report on compliance with the Outage Protocol, in accordance with clause 12.144.

(4) The Outage Protocol must set out—

(a) processes for Transpower to consult with designated transmission customers and to determine an outage plan setting out planned outages for each year ending 30 June, and processes for the outage plan to be updated; and

(b) requirements on Transpower to keep designated transmission customers informed about planned outages, including minimum notice periods for Transpower to advise affected designated transmission customers of planned outages not set out in the outage plan; and

(c) procedures for outage co-ordination by Transpower and between Transpower and designated transmission customers; and

(d) requirements on Transpower to provide information to designated transmission customers about unplanned outages.
(5) The **Outage Protocol** is not limited to the matters referred to in this clause, and may provide for any other matters related to **outages**.

Compare: Electricity Governance Rules 2003 rule 4 section VII part F

### 12.136 Planning for outages

The **Outage Protocol** must require Transpower to plan for **outages**, other than **outages** that are not reasonably foreseeable—

(a) in respect of **interconnection assets**, in accordance with the requirements of the **Outage Protocol** specified under clause 12.140(1); and

(b) in respect of **connection assets**, by agreeing with each affected designated transmission customer on the timing and duration of the **outage** or, failing agreement, in accordance with the requirements of the **Outage Protocol** specified under clause 12.140(1); and

(c) in respect of outages of both **interconnection assets** and **connection assets** that are required in order to give effect to an approved investment or are required by the Electricity Act 1992, in accordance with the requirements of the **Outage Protocol** specified under clause 12.142.

Compare: Electricity Governance Rules 2003 rule 5.1 section VII part F

### 12.137 Transpower and designated transmission customers to act reasonably and in good faith

(1) The **Outage Protocol** must require Transpower, in planning for **outages** in accordance with clauses 12.136, 12.140, and 12.142, reconsidering the timing of proposed **planned outages** in accordance with clause 12.138 or varying proposed **planned outages** in accordance with clause 12.139, to act reasonably and in good faith, taking into account the information reasonably known at the time or that can be reasonably forecast.

(2) The **Outage Protocol** must require designated transmission customers, in exercising rights or undertaking obligations under the **Outage Protocol**, to act reasonably and in good faith.

Compare: Electricity Governance Rules 2003 rule 5.2 section VII part F

### 12.138 Reconsideration of planned outages

The **Outage Protocol** must set out the situations and the times at which Transpower must reconsider the timing of proposed **planned outages**, and the extent to which the proposed timing of **planned outages** needs to be reconsidered, which may include—

(a) whenever material new information has been provided to Transpower about the likely effect of a proposed **planned outage**; and

(b) whenever circumstances relating to a proposed **planned outage** have changed sufficiently to justify reconsideration of the requirements specified under clauses 12.140 or 12.142, and Transpower is aware or has been made aware of the change in circumstances.

Compare: Electricity Governance Rules 2003 rule 5.3 section VII part F
12.139 Variations to planned outages

(1) The Outage Protocol may permit Transpower to vary a proposed planned outage only if—

(a) in respect of a proposed planned outage of interconnection assets, the variation of the proposed planned outage is permitted in accordance with the requirements of the Outage Protocol specified under clauses 12.140 or 12.142; or

(b) in respect of a proposed planned outage of connection assets, Transpower and each affected designated transmission customer agree on the variation as provided for in the Outage Protocol or, failing agreement, the variation of the proposed planned outage is permitted in accordance with the requirements of the Outage Protocol specified under clauses 12.140 or 12.142; or

(c) the variation is necessary as a result of a grid emergency, in order to deal with health and safety issues, in order to comply with the Act or due to other circumstances beyond Transpower’s reasonable control; or

(d) the variation is required to meet a request of the system operator that Transpower vary a proposed planned outage.

(2) The Outage Protocol must require Transpower, if possible, to give notice of a variation before the proposed planned outage, and if prior notice is not possible, to advise of the variation to the proposed planned outage as soon as possible after the variation occurs.

Compare: Electricity Governance Rules 2003 rule 5.4 section VII part F

12.140 Net benefit principle, requirements and methodologies

(1) The requirements of the Outage Protocol relating to planning for outages under clause 12.136(a) or (b), or for varying proposed planned outages under clause 12.139(1)(a) or (b)—

(a) must give effect to the net benefit principle specified in subclause (2), in determining the timing and duration of a planned outage, and whether to undertake a planned outage, either by including the particular requirements set out in clause 12.141(2), or by some other means; and

(b) may include methodologies and processes for Transpower to apply when planning for outages; and

(c) may include other requirements that may apply in different situations.

(2) The net benefit principle is that, in planning and varying a planned outage, Transpower must ensure that the planned outage is likely to result in net benefits to persons who produce, transmit, distribute, retail or consume electricity—

(a) in respect of interconnection assets, to the extent those persons are affected by an outage; and

(b) in respect of connection assets, if Transpower has not agreed the timing and duration of the outage with the relevant designated transmission customer in accordance with the Outage Protocol, to the extent those persons are affected by an outage.

Compare: Electricity Governance Rules 2003 rule 5.5 section VII part F
12.141 Consideration of the likely effects of planned outages

(1) The Outage Protocol may require Transpower to determine the likely effect of a proposed planned outage on the power system, generators and consumers, and—
   (a) if a proposed outage is not reasonably expected to—
       (i) result in the power system failing to meet the grid reliability standards; and/or
       (ii) give rise to binding constraints; and/or
       (iii) result in loss of supply to consumers,
       may permit Transpower to undertake the outage; and
   (b) if a proposed outage is likely to result in, or give rise to, the matters referred to in paragraph (a), the Outage Protocol may require Transpower to comply with the particular requirements specified in subclause (2).

(2) The requirements in subclause (1) that the Outage Protocol may provide are—
   (a) if a proposed planned outage is likely to result in the power system failing to meet the grid reliability standards, but is not expected to give rise to binding constraints or result in loss of supply to consumers, Transpower must—
       (i) estimate the following costs:
           (A) any direct labour and material costs that Transpower will incur in undertaking the outage:
           (B) any direct labour and material costs that designated transmission customers will incur as a result of Transpower undertaking the outage:
           (C) if the outage will result in an increased risk of loss of supply, any increase in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy:
           (D) any relevant cost specified in clause 12.43(1)(a)(iv):
           (E) any other relevant cost to a person that produces, transmits, retails or consumes electricity in New Zealand; and
       (ii) estimate the following benefits:
           (A) if the outage will result in a decreased risk of loss of supply, any decrease in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy:
           (B) any reduction in maintenance costs arising as a result of the outage (including Transpower’s and any designated transmission customer’s costs):
           (C) any relevant benefit specified in clause 12.43(1)(b)(iv):
           (D) any other relevant benefit to a person that produces, transmits, retails or consumes electricity in New Zealand; and
       (iii) carry out the outage only if the costs estimated under subparagraph (i) are less than the benefits estimated under subparagraph (ii); and
   (b) if a proposed planned outage is likely to give rise to binding constraints, whether or not the outage is also likely to result in a loss of supply to consumers, Transpower must—
(i) estimate the following costs:
   (A) any direct labour and material costs that Transpower will incur in undertaking the outage:
   (B) any direct labour and material costs that designated transmission customers will incur as a result of Transpower undertaking the outage:
   (C) if the outage will result in an increased risk of loss of supply, any increase in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy:
   (D) any additional fuel costs incurred by a generator in respect of any generating units that will be dispatched or are likely to be dispatched during or after the outage and as a result of the outage:
   (E) any relevant cost specified in clause 12.43(1)(a)(iv):
   (F) any other relevant costs to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(ii) estimate the following benefits:
   (A) any reduction in maintenance costs resulting from the outage (including Transpower’s and any designated transmission customer’s costs):
   (B) any reduction in fuel costs incurred by a generator in respect of any generating units, arising or likely to arise during or after the outage and as a result of the outage:
   (BA) if the outage will result in a decreased risk of loss of supply, any decrease in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy:
   (C) any relevant benefit specified in clause 12.43(1)(b)(iv):
   (D) any other relevant benefit to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(iii) carry out the outage only if the costs estimated under subparagraph (i) are less than the benefits estimated under subparagraph (ii); and

(c) if a proposed planned outage is likely to lead to loss of supply to consumers, whether or not the outage is also likely to give rise to binding constraints, Transpower must—

(i) estimate the following costs:
   (A) any direct labour and material costs that Transpower will incur in undertaking the outage:
   (B) any direct labour and material costs that designated transmission customers will incur as a result of Transpower undertaking the outage:
   (C) any increase in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy, arising from the loss of supply during the outage:
(CA) any additional fuel costs incurred by a generator in respect of any generating units that will be dispatched or are likely to be dispatched during or after the outage and as a result of the outage;

(D) any relevant cost specified in clause 12.43(1)(a)(iv);

(E) any other relevant cost to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(ii) estimate the following benefits:

(A) any reduction in maintenance costs resulting from the outage (including Transpower’s and any designated transmission customer’s costs);

(B) if the outage will result in a decreased risk of loss of supply, any decrease in the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy;

(C) any reduction in fuel costs incurred by a generator in respect of any generating units, arising or likely to arise during or after the outage and as a result of the outage;

(D) any relevant benefit specified in clause 12.43(1)(b)(iv);

(E) any other relevant benefit to a person that produces, transmits, retails or consumes electricity in New Zealand; and

(iii) carry out the outage only if the costs estimated under subparagraph (i) are less than the benefits estimated under subparagraph (ii).

(3) In providing for the matters referred to in subclause (2), the Outage Protocol must include the following requirements:

(a) Transpower’s estimate of the fuel costs under subclause (2)(b) and (c) must—

(i) in relation to thermal generating stations, be a reasonable estimate of the fuel costs, based on the economic value of the fuel required for the relevant thermal generating station, and justified by Transpower with reference to opinions on the economic value of the fuel, provided by 1 or more independent and suitably qualified persons; and

(ii) in relation to hydroelectric generating stations—

(A) be a reasonable estimate of the fuel costs, based on the economic value of the water stored at a hydroelectric generating station, provided by a suitably qualified person other than—

(1) Transpower; or

(2) an employee of Transpower; and

(B) be published, as provided for in the Outage Protocol:

(b) the direct labour costs of Transpower and designated transmission customers under subclause (2) may include any amounts paid to contractors, but must not include any apportionment of the overheads or office costs of Transpower or designated transmission customers;

(c) the material costs of Transpower and designated transmission customers under subclause (2) are the costs of the materials used in carrying out the work during the outage:
(d) the estimate of expected unserved energy in MWh multiplied by the value per MWh of that expected unserved energy under subclause (2) must—

(i) in the case of connection assets, be based on—

(A) the estimated amount and value of the expected unserved energy as agreed between Transpower and each affected designated transmission customer; or

(B) if Transpower and a designated transmission customer cannot agree on the amount and value of the expected unserved energy under subsubparagraph (A), the value of expected unserved energy in clause 4 of Schedule 12.2 and Transpower's estimate of the expected unserved energy in respect of each affected designated transmission customer and end use customer; and

(ii) in the case of interconnection assets, be based on—

(A) the value of expected unserved energy in clause 4 of Schedule 12.2; and

(B) Transpower's estimate of the expected unserved energy in respect of each affected designated transmission customer and end use customer.

(4) In addition to the requirements in subclause (3), the Outage Protocol must require Transpower, in planning for outages, to consider any reasonably expected operating conditions, forecasts in the system security forecast, likely fuel costs, and any other reasonable assumptions.

(5) The Outage Protocol must include a methodology for determining expected unserved energy for the purposes of subclause (2)(a) to (c) that complies with subclauses (3)(d) and (4).

(6) The Outage Protocol may permit Transpower to—

(a) make only a reasonable estimate of the matters specified in subclauses (2) to (4) based on information reasonably available to it at the time Transpower considers whether to carry out a planned outage, and taking into account the number of assets to which the proposed outage applies, the value of the assets involved, the size of the load served by the assets, the proposed duration of the outage; and

(b) apply differing levels of rigour in different circumstances, which may include taking into account the number of assets to which a proposed outage applies, the value of the assets involved, the size of the load served by the assets, the proposed duration of the outage, and any other relevant matters.
12.142 Planned outages required in order to give effect to an investment or required by the Act
(1) The Outage Protocol must set out requirements for Transpower to consider when determining the timing of planned outages that are required in order to give effect to an approved investment or that are required by the Electricity Act 1992.
(2) The requirements specified under subclause (1) must require Transpower to give effect to the net benefit principle in clause 12.140(2) in determining the timing and duration of outages subject to this clause, and may require Transpower to consider some or all of the costs and benefits specified in clause 12.141.
Compare: Electricity Governance Rules 2003 rule 5.7 section VII part F

12.143 Required content of Outage Protocol in relation to unplanned outages
(1) The Outage Protocol must—
(a) set out procedures and policies for dealing with unplanned outages, so as to minimise the costs and, if relevant, maximise the benefits arising from an unplanned outage; and
(b) set out the reasonable steps and measures that Transpower must take in order to be prepared for unplanned outages, so as to ensure that it is readily able to deal with unplanned outages in a way that minimises the costs and, if relevant, maximises the benefits arising from an unplanned outage; and
(c) require Transpower to deal with unplanned outages as quickly as reasonably possible, in accordance with the procedures specified in the Outage Protocol.
(2) The costs and benefits under subclause (1) are the costs and benefits of the outage to persons who produce, transmit, distribute, retail, or consume electricity.
Compare: Electricity Governance Rules 2003 rule 6 section VII part F

12.144 Reporting on compliance with Outage Protocol
The Outage Protocol must require Transpower to publish and report to designated transmission customers and the Authority, whether in the report provided under clause 12.118 or otherwise, on its compliance with the requirements of the Outage Protocol, including the requirements specified in clause 12.140(1) for giving effect to the net benefit principle specified in clause 12.140(2) and the requirements of the Outage Protocol relating to unplanned outages specified in clause 12.143.
Compare: Electricity Governance Rules 2003 rule 7 section VII part F

Decisions on Outage Protocol

12.145 Authority may initially approve the proposed Outage Protocol or refer back to Transpower
After consideration of Transpower’s proposed Outage Protocol and accompanying explanation and statement of proposal, the Authority may—
(a) provisionally approve the proposed Outage Protocol having regard to the principles in clause 12.134 and the matters set out in clauses 12.135 to 12.144; or
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(b) refer the proposed Outage Protocol and accompanying explanation and regulatory statement back to Transpower, if in the Authority’s view—

(i) the proposed Outage Protocol does not adequately give effect to or promote the principles in clause 12.134; or

(ii) the proposed Outage Protocol does not adequately provide for the matters set out in clauses 12.135 to 12.144; or

(iii) the explanation or statement of proposal provided with the Outage Protocol in accordance with clause 12.133(3) is not adequate—and Transpower must, within 20 business days (or such longer period as the Authority may allow), consider the Authority’s concerns and resubmit its proposed Outage Protocol and accompanying explanation and statement of proposal for reconsideration by the Authority.

Compare: Electricity Governance Rules 2003 rule 9 section VII part F

12.146 Reconsideration of revised Outage Protocol by the Authority
After reconsideration of Transpower’s proposed Outage Protocol, and accompanying explanation and statement of proposal, as revised under clause 12.145(b), the Authority may either—

(a) provisionally approve the proposed Outage Protocol, as revised, having regard to the principles in clause 12.134 and the matters set out in clauses 12.135 to 12.144; or

(b) if the Authority considers that the Outage Protocol resubmitted by Transpower under clause 12.145(b) does not adequately give effect to or promote the principles in clause 12.134, or adequately provide for the matters set out in clauses 12.135 to 12.144, the Authority may make any amendments to the proposed Outage Protocol, as revised, that it considers necessary.

Compare: Electricity Governance Rules 2003 rule 10 section VII part F

12.147 Authority must consult on the proposed Outage Protocol
The Authority must publish the proposed Outage Protocol, either as provisionally approved by the Authority or as amended by the Authority, as soon as is practicable, for consultation with any person that the Authority thinks is likely to be materially affected by the proposed Outage Protocol.

Compare: Electricity Governance Rules 2003 rule 11 section VII part F

12.148 Authority may undertake additional consultation
As well as the consultation required under clause 12.147, the Authority may undertake any other consultation it considers necessary.

Compare: Electricity Governance Rules 2003 rule 12 section VII part F

12.149 Decision on Outage Protocol
(1) When the Authority has completed its consultation on the proposed Outage Protocol, it must consider whether to incorporate the proposed Outage Protocol by reference as the Outage Protocol.
(2) If the Authority decides to incorporate the Outage Protocol by reference in this Code, the Authority must determine a date on which the incorporation by reference takes effect and comply with Schedule 1 of the Act in relation to it.

Compare: Electricity Governance Rules 2003 rule 13 section VII part F

12.150 Incorporation of Outage Protocol by reference

(1) The Outage Protocol is incorporated by reference in this Code in accordance with section 32 of the Act.

(2) Subclause (1) is subject to Schedule 1 of the Act, which includes a requirement that the Authority must give notice in the Gazette before an amendment or substituted Outage Protocol becomes incorporated by reference in this Code.


Complying with Outage Protocol

12.151 Compliance with Outage Protocol

(1) Transpower and each designated transmission customer must comply with the Outage Protocol, unless agreed otherwise by Transpower and a designated transmission customer in respect of specified assets or the designated transmission customer in accordance with subclause (2).

(2) An agreement between Transpower and a designated transmission customer to which the Outage Protocol does not apply in respect of specified assets must not exclude the application of subclause (3)(b) and must be conditional in all respects on—

(a) obtaining agreement from all other potentially affected designated transmission customers that the Outage Protocol does not apply in respect of the specified assets or the designated transmission customer; and

(b) Transpower and the designated transmission customer satisfying the Authority that they have consulted with all potentially affected end use customers on the Outage Protocol not applying in respect of the specified assets or the designated transmission customer and that there are no material unresolved issues affecting the interests of those end use customers.

(3) Transpower must—

(a) give written notice to the Authority as soon as practicable if Transpower enters into an agreement with a designated transmission customer under this clause; and

(b) publish the agreement no later than 20 business days after entering into the agreement.

Compare: Electricity Governance Rules 2003 rule 15 section VII part F


Schedule 12.1

Categories of designated transmission customers

1 Categories of designated transmission customers required to enter into transmission agreements with Transpower

(1) The categories of designated transmission customers required to enter into transmission agreements with Transpower are—

(a) connected asset owners; and
(b) generators that are directly connected to the grid.

(2) 

(3) 

(4) 

(5) 

Compare: Electricity Governance Rules 2003 schedule F1 part F
Schedule 12.1, clause 1(2) to (5): revoked, on 16 December 2013, by clause 9(2) of the Electricity Industry Participation (Revocation of Part 16) Code Amendment 2013.
Schedule 12.2  cl 12.55

Grid reliability standards

1 Preamble
Clause 12.55 of this Code, requires the Authority to determine the most appropriate grid reliability standards and in so doing must have regard to the purposes in clause 12.56 and the principles set out in clause 12.57, as required by clause 12.55.

Compare: Electricity Governance Rules 2003 clause 2 schedule F3 part F

2 The grid reliability standards
(1) The purpose of the grid reliability standards is to provide a basis for Transpower and other parties to appraise opportunities for transmission investments and transmission alternatives.

(2) For the purpose of subclause (1), the grid satisfies the grid reliability standards if—
(a) the power system is reasonably expected to achieve a level of reliability at or above the level that would be achieved if all economic reliability investments were to be implemented; and
(b) with all assets that are reasonably expected to be in service, the power system would remain in a satisfactory state during and following a single credible contingency event occurring on the core grid.

(3) For the purpose of subclause (2)(a), the expected level of reliability of the power system must be assessed at each and every grid exit point and grid injection point (wherever located on the grid).

(4) For the purpose of subclause (2)(a) and (b), the expected level of reliability, and state, of the power system must be assessed using the range of relevant operating conditions that could reasonably be expected to occur.

Compare: Electricity Governance Rules 2003 clauses 3 to 6 schedule F3 part F

3 Interpretation and definitions
(1) For the purposes of these grid reliability standards, unless the context calls for another interpretation—
(a) the terms defined in Part 1 of this Code take that defined meaning; and
(b) the term defined in subclause (2) takes that defined meaning; and
(c) a reference—
(i) to the singular includes the plural and conversely; and
(ii) to a person includes an individual, company, other body corporate, association, partnership, firm, joint venture, trust, or Government Agency; and
(d) the word including or includes means including, but not limited to, or includes, without limitation; and
(e) the other grammatical forms of the term defined in subclause (2) have a corresponding meaning.

(2) Economic reliability investments means investments in the grid and transmission
alternatives that would satisfy the economic test for an investment proposal applied by
the Commerce Commission under Part 4 of the Commerce Act 1986—
(a) assuming that the economic test was applied to both investments in the grid and
transmission alternatives; and
(b) having regard to Parts 7 and 8 (including the policy statement).
Compare: Electricity Governance Rules 2003 clauses 7 and 8 schedule F3 part F

4 Value of expected unserved energy
(1) The value of any expected unserved energy is—
   (a) $20,000 per MWh; or
   (b) such other value as the Authority may determine.
(2) The Authority may determine different values of expected unserved energy under this
clause for different purposes and for different times.
(3) If the Authority determines a value of expected unserved energy under this clause, the
Authority must publish its determination.
Schedule 12.2, clause 4(1): amended, on 1 February 2016, by clause 59(1) of the Electricity Industry Participation
Schedule 12.2, clause 4(2): amended, on 1 February 2016, by clause 59(2) of the Electricity Industry Participation
Schedule 12.2, clause 4(3): amended, on 1 February 2016, by clause 59(3) of the Electricity Industry Participation
Schedule 12.3
Core grid determination

c1 12.63

1 Background
Clause 12.63 of this Code, requires the Authority to determine the most appropriate core grid determination and in so doing to have regard to the purposes set out in clause 12.64, the principles set out in clause 12.57 for the grid reliability standards and the objectives set out in clause 12.65.

Compare: Electricity Governance Rules 2003 clause 2 schedule F3A part F

2 The core grid determination
(1) The purpose of this core grid determination is to define the core grid for the purposes of the grid reliability standards and so provide a basis for—
   (a) the Authority to determine the grid reliability standards; and
   (b) Transpower and other parties to appraise opportunities for transmission investment and transmission alternatives.

(2) The core grid consists of those assets that comprise the transmission links listed in Table 1 below:

<table>
<thead>
<tr>
<th>North Island core grid links</th>
<th>South Island core grid links</th>
</tr>
</thead>
<tbody>
<tr>
<td>220kV Huapai-Marsden</td>
<td>220kV Islington-Kikiwa</td>
</tr>
<tr>
<td>220kV Huapai-Bream Bay</td>
<td>220kV Kikiwa-Stoke</td>
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<tr>
<td>220kV Bream Bay-Marsden</td>
<td>220kV Twizel-Tekapo B</td>
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<td>110kV Marsden-Maungatapere</td>
<td>220kV Tekapo B-Islington</td>
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<td>220 kV Henderson-Huapai</td>
<td>220kV Twizel-Opihi-Timaru-Ashburton</td>
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<td>220 kV Albany-Huapai</td>
<td>220kV Ashburton-Bromley</td>
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<td>220 kV Albany-Henderson</td>
<td>220kV Bromley-Islington</td>
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<td>220kV Livingstone-Islington</td>
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<td>220kV Benmore-Ohau B</td>
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<td>220kV Naseby-Livingstone</td>
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<td>110kV Wiri-Bombay</td>
<td>220kV Roxburgh-Naseby</td>
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<tr>
<td>220kV Huntly-Glenbrook</td>
<td>220kV Roxburgh-Three Mile Hill</td>
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### North Island core grid links

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<tr>
<th>220kV Glenbrook-Takanini</th>
<th>220kV Three Mile Hill-Half Way Bush</th>
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<td>220kV Rangipo-Wairakei</td>
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### North Island core grid links
- 220/110kV interconnection Tarukenga
- 220/110kV interconnection New Plymouth
- 220/110kV interconnection Stratford
- 220/110kV interconnection Redclyffe
- 220/110kV interconnection Bunnythorpe
- 220/110kV interconnection Haywards
- 220/110kV interconnection Wilton

### South Island core grid links

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Compare: Electricity Governance Rules 2003 clauses 3 and 4 schedule F3A part F

### Interpretation
For the purposes of this **core grid determination**, unless the context calls for another interpretation, a term has the meaning given to that term in the **grid reliability standards**.

Compare: Electricity Governance Rules 2003 clause 5 schedule F3A part F
Schedule 12.4  
Transmission Pricing Methodology

1  Introduction
The transmission pricing methodology is used to recover the full economic costs of Transpower's services, with the exception of investment contracts entered into under clauses 12.70 and 12.71 of this Code, existing new investment contracts and other contracts of the kind referred to in clause 12.95 of this Code. The full economic costs of Transpower's services include costs relating to investments which are not subject to approval by the Commerce Commission under section 54R of the Commerce Act 1986 or to which the input methodology under section 54S of that Act applies.

2  Overview of the Pricing Methodology—
(1) Transpower's principal objective as a State Owned Enterprise is to operate as a successful business. To this end Transpower's pricing must, subject to Part 4 of the Commerce Act 1986, recover the costs of providing its transmission services, which include capital, maintenance, operating and overhead costs. Before the start of each pricing year, Transpower's Board approves forecasts of—
(a) the revenue required to recover the costs of providing AC transmission services during the pricing year. This forecast is referred to as the AC revenue for that pricing year; and
(b) the revenue required to recover the costs of providing the HVDC assets during the pricing year. This forecast is referred to as the HVDC revenue for that pricing year.

(2) The transmission pricing methodology comprises—
(a) connection charges, which recover part of Transpower's AC revenue by reference to the cost of providing connection assets. Clauses 8 to 26 describe how connection charges are calculated;
(b) interconnection charges, which recover the remainder of Transpower's AC revenue. Clauses 27 to 30 describe how interconnection charges are calculated; and
(c) HVDC charges, which recover Transpower's HVDC revenue. Clauses 31 to 33D describe how HVDC charges are calculated.

(3) An overview of how Transpower's AC revenue and HVDC revenue are recovered through these charges is shown in diagrammatic form in Appendix A.

(4) The transmission pricing methodology also describes—
(a) how the costs of transmission alternative services are charged and recovered, if and when transmission alternatives services are provided and/or funded by Transpower (clause 35); and
(b) practical ways to facilitate greater transparency in relation to Transpower’s prudent discount policy, which helps to ensure that the transmission pricing...
Electricity Industry Participation Code 2010
Schedule 12.4

methodology does not provide incentives for inefficient by-pass of the existing grid (clauses 36 to 42).

Compare: Electricity Governance Rules 2003 clause 2 schedule F5 part F

3 Definitions and interpretation

Unless the context otherwise requires—

AC asset means a grid asset other than an HVDC asset

AC revenue has the meaning set out in clause 2(1)

AC switch means a switch that is an AC asset

alternative project means an investment proposed by a customer, which if implemented, would bypass existing grid assets, but does not include proposed new generation

annual charges means any or all of the annual connection charge, annual interconnection charge and annual HVDC charge for a customer at a connection location for a pricing year


annual connection charge has the meaning set out in clause 8(2)

annual HVDC charge has the meaning set out in clause 31

annual interconnection charge has the meaning set out in clause 27

anytime maximum demand or AMD for a customer at a connection location means the average of the 12 highest offtake quantities for that customer at that connection location during the capacity measurement period for the relevant pricing year. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement

anytime maximum injection or AMI for a customer at a connection location means the average of the 12 highest injection quantities for that customer at that connection location during the capacity measurement period for the relevant pricing year. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement

capacity measurement period means, for a pricing year—

(a) for every purpose other than determining regional peak demand periods for the Lower South Island, Lower North Island and Upper North Island, the 12 month period commencing 1 September and ending with the close of 31 August, immediately before the commencement of the pricing year:

(b) for the purpose of determining regional peak demand periods for the Lower South Island, Lower North Island, and Upper North Island, the period specified in
paragraph (a), excluding within that period the period commencing 1 November and ending with the close of 30 April

Schedule 12.4, clause 3, capacity measurement period: replaced, on 1 April 2017, by clause 5(1)(a) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

connection asset has the meaning set out in clause 6(1)

connection link has the meaning set out in clause 5(c)

connection location means the substation or other location at which a customer's assets are directly connected to the grid


connection node has the meaning set out in clause 5(b)

customer means a person who has or controls assets directly connected to the grid and, in relation to a connection location, means a person who has or controls assets directly connected to the grid at that connection location. A customer may be both an offtake customer and an injection customer at the same connection location


customer allocation has the meaning set out in clause 25(1)

financial year means the financial year adopted by Transpower from time to time, being a 12 month period or such other period as Transpower determines.

Transpower's current financial year is a 12 month period from 1 July to 30 June

grid assets means assets and other works (including land and buildings) owned or operated by Transpower, which form part of the grid or are required to support the grid

GXP tie means a situation in which GXPs are simultaneously connected to the grid at more than 1 point of connection

Schedule 12.4, clause 3, GXP tie: inserted, on 1 April 2017, by clause 5(2) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

historical anytime maximum injection or HAMI is the value calculated under clauses 33D and 34

Schedule 12.4, clause 3, historical anytime maximum injection or HAMI: replaced, on 1 April 2017, by clause 5(1)(b) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

HVDC assets means the HVDC link and all land and buildings associated with the HVDC link

HVDC customer means a customer who is, from time to time, the owner or operator of—

(a) South Island generation which is directly connected to the grid assets; or

(b) a local network to which South Island generation is connected, either directly or indirectly;


HVDC revenue has the meaning set out in clause 2(1)
independent expert means an independent person who is a recognised technical expert in the matter that has been referred to him or her. In appointing an independent expert the party referring the matter to the independent expert must nominate 3 persons and the other party may agree that any one of them be appointed. Failing agreement between the parties, the independent expert will be appointed by the Authority

injection means the net quantity of electricity flow into the grid at a connection location from a customer’s assets during a half hour determined from metering information. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement

injection customer means, subject to clause 34, in relation to a connection location, a customer who has or controls assets from which electricity flowed into the grid at that connection location in any half hour during the capacity measurement period for the relevant pricing year or, if the connection location is a South Island generation connection location, an HVDC customer who has or controls assets from which electricity flowed into the grid at the South Island generation connection location in any half hour during the capacity measurement period for the relevant pricing year or a capacity measurement period for any of the 4 immediately preceding capacity measurement periods

interconnection asset has the meaning set out in clause 6(2)

interconnection link has the meaning set out in clause 5(d)

interconnection node has the meaning set out in clause 5(a)

land and buildings means any and all land or interest in land (including easements) acquired by Transpower for the purposes of establishing a connection location or substation, or for supporting grid assets, together with all buildings, oil containment facilities and the capitalised cost of establishing a connection location or substation or other grid asset (as the case may be)

link has the meaning set out in clause 4(3)

monthly charges means any or all of the monthly connection charge, monthly interconnection charge and monthly HVDC charge for a customer at a connection location

monthly connection charge has the meaning set out in clause 8(2)

monthly HVDC charge has the meaning set out in clause 31

monthly interconnection charge has the meaning set out in clause 27

new investment contract means a contract entered into at any time between Transpower and a customer of Transpower, under which Transpower agrees to provide any new or upgraded grid assets and the customer agrees to pay charges based on Transpower’s cost of providing the new or upgraded grid assets. It includes, but is not limited to a new investment agreement contract as defined in Part 1 of this Code

node has the meaning set out in clause 4(1)
offtake means the net quantity of electricity flow out of the grid at a connection location into customer assets during a half hour determined from metering information. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement.

offtake customer means, subject to clause 34, in relation to a connection location, a customer who has or controls assets into which electricity flowed from the grid at that connection location in any half hour during the capacity measurement period for the relevant pricing year.

optimised replacement cost means, for any assets or group of assets, the optimised replacement cost of that asset or group of assets recorded in a Transpower asset register as at the transition date.

point of injection means a connection location at which an injection customer has assets connected to the grid.

pricing year means the period from April 1 to March 31, in respect of which Transpower calculates its prices.

region means a group of connection locations, being one of the groups described in Appendix B as—

(a) Upper North Island; and
(b) Lower North Island; and
(c) Upper South Island; and
(d) Lower South Island.

regional coincident peak demand or RCPD for a customer at a connection location means the customer's offtake at that connection location during a regional peak demand period. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement.

regional demand means, in any half hour, the sum over all customers at all connection locations in a region of all offtake quantities at those connection locations.

regional peak demand period means, for each region, a half hour in which any of the 100 highest regional demands occur in the region during a capacity measurement period for the relevant pricing year. This definition is subject to clause 34 of this transmission pricing methodology and any prudent discount agreement.


regional coincident peak [Revoked]

replacement cost means—

(a) for a connection asset commissioned before the transition date, the cost of replacing that asset (either separately or as part of a group of assets) with a modern equivalent asset with the same service potential, multiplied by the replacement cost adjustment factor; and

(b) for any other grid asset, the cost of replacing that asset (either separately or as part of a group of assets) with a modern equivalent asset with the same service potential,
as determined by Transpower and (unless stated otherwise) recorded in a Transpower asset register;

replacement cost adjustment factor means for any asset (or group of assets) the percentage which is the optimised replacement cost divided by the cost, as at (or about) the transition date, of replacing that asset (or group of assets) with the then modern equivalent asset with the same service potential

reverse flow means electricity exiting the grid at a GXP and entering the grid at another GXP as a result of a GXP tie

Schedule 12.4, clause 3, reverse flow: inserted, on 1 April 2017, by clause 5(2) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

South Island generation means, subject to clause 34, any generating unit or generating station located in the South Island, which:

(a) is directly connected to the grid or is connected to a local network which is connected (directly or indirectly) to the grid; and

(b) has (directly or indirectly) injected electricity into the grid at any time during any capacity measurement period for all or any of the previous 5 pricing years


South Island generation connection location means any connection location at which South Island generation is connected to the grid either directly, or indirectly via connection of a local network, to which South Island generation is in turn either directly or indirectly connected substation means a substation, including all land and buildings, switches, transformers, revenue meters and all other assets comprising or located at that substation


South Island mean injection or SIMI is the value calculated under clauses 33B and 34

Schedule 12.4, clause 3, South Island mean injection or SIMI: inserted, on 1 April 2017, by clause 5(2) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

transition date means the date of the last ODV report published by Transpower before the date on which this transmission pricing methodology takes effect

weighted average cost of capital means, for any pricing year, the pre-tax nominal weighted average cost of capital used by Transpower to determine AC revenue or HVDC revenue (as the case may be) for that pricing year.

Compare: Electricity Governance Rules 2003 clauses 3.1 to 3.53 schedule F5 part F

4 Definition of Nodes and Links

(1) A node is any of the following:
   (a) a connection location:
   (b) a location where a circuit, which is connected to 2 or more other nodes, diverges or terminates (such as a “tee” point or a deviation):
   (c) any substation or switching station.

(2) Any node which connects with 1 or more multiple circuits on the same towers or poles where at least 1 of those circuits deviates or terminates at that node is treated as a single node encompassing all of those circuits at that location.

Figure 1: Illustration of definition of a node

(3) A link is either a single circuit or multiple parallel circuits (of the same voltage) connecting 2 nodes (and includes any grid assets, such as circuit breakers, that are required to connect the link at either node).

(4) Figures 1 and 2 illustrate how nodes and links are identified. In Figure 1, A, B, C, D, E, F and G are all nodes. C is a single node, because 1 of the circuits of the link AC terminates at C. AC, CD (and DE, EF, FG and GD) and BC are separate links, although AB may be recorded as a single line in a Transpower asset register. Figure 2 shows the same configuration as Figure 1 but describes the circuits by way of links.
5 Identification of Nodes and Links as Connection or Interconnection

Nodes and links are identified as connection nodes or connection links or interconnection nodes or interconnection links according to the following:

(a) an interconnection node is any node connected to 2 or more nodes in a “loop”, other than a “small regional loop”. A loop is a continuous path of nodes and links with the same start and end node. A “small regional loop” is where a loop path exists between any group of nodes (excluding the nodes at Benmore and Haywards) with only a single link from the loop back to the next node that is outside the loop (see Figure 3 below):

(b) a connection node is any node that is not an interconnection node:

Figure 3 – Example of a small regional loop
(c) a connection link is a link with a connection node at one or more of its ends:
(d) an interconnection link is a link that connects 2 interconnection nodes:
(e) links and nodes that comprise a “small regional loop” are connection links and connection nodes.

Compare: Electricity Governance Rules 2003 clause 3.58 schedule F5 part F

6 Definition of Connection Assets and Interconnection Assets

(1) A connection asset is—
(a) any grid asset at a connection node other than voltage support equipment that is for grid voltage support purposes and has not been installed at a customer’s request; and
(b) at an interconnection node that is a connection location,—
   (i) any grid asset that is specifically required to connect a customer, including a supply transformer, feeder bay or supply transformer high voltage or low voltage breaker. Low voltage breakers, low voltage bus section breakers, voltage transformers, revenue meters and other equipment where they are on the same bus as the feeders are also connection assets; and
   (ii) any grid asset that is used both to connect a customer (whether injection or offtake) and for grid operation generally; and
   (iii) a proportion of the land and buildings at that connection location. The proportion of land and buildings defined as a connection asset is that proportion which the replacement cost of the connection assets identified in subparagraph (i) but excluding land and buildings, bears to the replacement cost of all grid assets (excluding land and buildings) at the connection location; and
(c) any grid asset that is a connection link. A single line, recorded as such in a Transpower asset register, may form part of more than 1 link, so that a portion of a line may be identified as a connection asset with the remaining portion identified as an interconnection asset. For example, in Figure 1, if a line AB were recorded in a Transpower asset register, it would form part of a connection link BC and an interconnection link AC. If part of a line is, or forms part of, a connection link, the value and costs ascribed to the connection link for the purposes of calculating connection charges is the same proportion that the ratio of the length of the connection link bears to the total length of the line.

(2) An interconnection asset is any grid asset that is not a connection asset, or an HVDC asset.

(3) A connection asset which connects a customer's assets at a connection location to the interconnection assets is referred to as a connection asset "for" or "which connects" (or other grammatical form of that phrase) that connection location or customer's assets (as the case may be).

Compare: Electricity Governance Rules 2003 clauses 3.59 to 3.61 schedule F5 part F
7 Interpretation

Unless the context otherwise requires—

(a) all defined terms are shown in bold text; and
(b) terms defined in Part 1 of this Code have that defined meaning;
(c) terms defined below and elsewhere in the text of this transmission pricing methodology take that defined meaning, and any other grammatical form of that term has a corresponding meaning; and
(d) if there is any inconsistency between the text description of a calculation for which there is formula and the particular formula, the formula takes precedence; and
(e) diagrams are for information only and do not form a binding part of this transmission pricing methodology; and
(f) a reference—
   (i) to the singular includes the plural and conversely; and
   (ii) to a person includes an individual, company, other body corporate, association, partnership, firm, joint venture, trust or Government agency; and
(g) the word "including" is to be read as "including, but not limited to", and the word "includes" is to be read as "includes, without limitation"; and
(h) if any matter is to be determined by Transpower or Transpower's Board, it is to be determined in Transpower's or Transpower's Board (as the case may be) sole discretion while acting at all times reasonably; and
(i) a reference to a preceding financial year is a reference to the first complete financial year that precedes the start of the pricing year in respect of which the relevant calculation is undertaken; and
(j) a reference to a prudent discount agreement includes any agreement entered into under the prudent discount policy in clauses 36 to 42 and any agreement which has the same or similar purpose as the prudent discount policy (including a notional embedding contract) entered into between Transpower and a customer whether before or after commencement of this transmission pricing methodology.

Compare: Electricity Governance Rules 2003 clauses 3.62 to 3.71 schedule F5 part F

Connection Charges

8 Calculation of the Connection Charges

(1) A connection charge for each connection asset for a connection location is calculated for each pricing year for each customer at that connection location by multiplying the sum of the asset, maintenance, operating and (for injection customers) overhead cost components for a connection asset by the relevant customer allocation, as follows:
connection charge = (A_{conn} + M_{conn} + O_{conn} + IO_{conn}) \times CA_{conn}

where

A_{conn} is the asset component for the connection asset calculated in accordance with clauses 10 to 12

M_{conn} is the maintenance component for the connection asset calculated in accordance with clauses 13 to 17 and is M_{conn \text{ subs}} or M_{conn \text{ line type}} depending on the nature of the connection asset

O_{conn} is the operating component for the connection asset calculated in accordance with clauses 18 to 20

IO_{conn} is the injection overhead component for the connection asset calculated in accordance with clauses 21 to 24

CA_{conn} is the customer allocation for the connection asset for the connection location in respect of which the connection charge is being calculated, calculated in accordance with clause 25(1) and (2)(a) to (c).

(2) The sum of all connection charges calculated for a customer for all connection assets for a connection location in accordance with subclause (1) is the annual connection charge for that customer at that connection location in that pricing year. The customer's monthly connection charge at that connection location for that pricing year is (subject to clause 34 of this transmission pricing methodology) calculated as 1/12 of the annual connection charge. The example connection charge report at clause 25(3) illustrates how a customer's annual connection charge for a connection location is calculated. (3) If a customer is both an offtake customer and an injection customer at a connection location, connection charges for that connection location are calculated separately for that customer as an offtake customer and an injection customer.

Compare: Electricity Governance Rules 2003 clauses 4.1 to 4.3 schedule F5 part F
Schedule 12.4, clause 8: amended, on 23 February 2015, by clause 75 of the Electricity Industry Participation Code Amendment (Distributed Generation) 2014.

9 Calculation of Connection Charge Components

(1) Each of the asset, maintenance, operating and overhead cost components of the connection charge is calculated by reference to a rate set for that component which is then applied to the particular connection asset. Different rates may be set for different types of connection assets; for example, different rates are used to calculate the maintenance component depending on whether the connection asset is located at a substation or is a line. Different types of lines have different rates. Clauses 10 to 26 describe how the rates are set and applied to determine each component of the connection charge.
(2) The rates for each component of the connection charge are recalculated for each pricing year.

Compare: Electricity Governance Rules 2003 clauses 4.4 and 4.5 schedule F5 part F

10 Asset Component

The asset component of the connection charge allocates a portion of the cost of funding all connection assets plus their depreciation to the connection asset for which the connection charge is being calculated.

Compare: Electricity Governance Rules 2003 clause 4.6 schedule F5 part F

11 Asset Return Rate

The asset return rate used to calculate the asset component is referred to as ARR_{conn} and is expressed as a proportion. ARR_{conn} is calculated by dividing the product of the weighted average cost of capital and the regulatory asset value of all connection assets plus the annual depreciation of those assets by the replacement cost of all connection assets as follows:

\[
ARR_{conn} = \frac{WACC \times RAV_{conn} + D_{conn}}{\sum_{conn} RC_{conn}}
\]

where

- WACC is the weighted average cost of capital (expressed as a percentage)
- RAV_{conn} is the regulatory asset value of all connection assets, as determined by Transpower and recorded in a Transpower asset register (expressed in dollars)
- D_{conn} is total annual depreciation of all connection assets in the preceding financial year as determined by Transpower and recorded in a Transpower asset register (expressed in dollars)
- \( \sum_{conn} RC_{conn} \) is the total replacement cost of all connection assets.

Compare: Electricity Governance Rules 2003 clause 4.7 schedule F5 part F

12 Calculation of Asset Component

The asset component of a connection charge is calculated by multiplying ARR_{conn} by the replacement cost of the connection asset for which the connection charge is being calculated as follows:
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\[ A_{\text{conn}} = \text{ARR}_{\text{conn}} \times \text{RC}_{\text{conn}} \]

where

\( \text{RC}_{\text{conn}} \) is the replacement cost of the connection asset for which the connection charge is being calculated (expressed in dollars).

Compare: Electricity Governance Rules 2003 clause 4.8 schedule F5 part F

13 Maintenance component

(1) The maintenance component of the connection charge allocates a portion of Transpower's total maintenance costs for all connection assets to the connection asset for which the connection charge is being calculated.

(2) Maintenance recovery rates are set separately for connection assets located at substations and for the different types of lines. The different line types (all AC) used are—
   (a) 220kV or higher voltage tower lines;
   (b) other tower lines; and
   (c) pole lines.

Compare: Electricity Governance Rules 2003 clauses 4.9 and 4.10 schedule F5 part F

14 Substation Maintenance Recovery Rate

The maintenance recovery rate used to calculate the maintenance component of the connection charge for connection assets located at substations is referred to as \( \text{MRR}_{\text{conn subs}} \) and is expressed as a proportion. \( \text{MRR}_{\text{conn subs}} \) is calculated as the average of the annual maintenance costs incurred by Transpower for all connection assets located at all substations in each of the 4 immediately preceding financial years divided by the sum of the replacement costs of all connection assets located at all substations as follows:

\[ \text{MRR}_{\text{conn subs}} = \frac{\sum_{\text{subs}} \sum_{\text{conn}} \text{MC}_{\text{conn subs}}}{\sum_{\text{subs}} \sum_{\text{conn}} \text{RC}_{\text{conn subs}}} \]

where

\( \text{MC}_{\text{conn subs}} \) is the average of the annual maintenance costs incurred by Transpower for all connection assets located at all substations in each of the 4 immediately preceding financial years, as determined by Transpower and recorded in Transpower's Maintenance Management System accounts for each of those financial years (expressed in dollars)
is the sum of the replacement costs of all connection assets located at all substations.

15 Calculation of Maintenance Component for a Connection Asset Located at a Substation

The maintenance component of the connection charge for a connection asset located at a substation is calculated by multiplying MRR_{conn subs} by the replacement cost of the connection asset for which the connection charge is being calculated as follows:

\[ M_{conn subs} = MRR_{conn subs} \times RC_{conn subs} \]

where

\[ RC_{conn subs} \]

is the replacement cost of the connection asset for which the connection charge is being calculated (expressed in dollars).

16 Line Maintenance Recovery Rate

The maintenance recovery rate used to calculate the maintenance component of the connection charge for connection assets which are lines is referred to as MRR_{conn line type} and is expressed as a dollar cost per length (expressed in km) of line for each line type. MRR_{conn line type} is calculated for each of the 3 types of line referred to in clause 13(2) and is the average of annual maintenance costs incurred by Transpower for all lines of the type for which MRR_{conn line type} is being calculated in each of the preceding 4 financial years divided by the total line length of line of that type as follows:

\[ MRR_{conn line type} = \frac{MC_{conn line type}}{TL_{conn line type}} \]

where

\[ MC_{conn line type} \]

is the average of the annual maintenance costs incurred by Transpower for all lines of the type for which the maintenance recovery rate is being calculated in each of the 4 immediately preceding financial years, as determined by Transpower and recorded in Transpower's Maintenance Management System accounts for each of those financial years (expressed in dollars)

\[ TL_{conn line type} \]

is the total length of line of the type for which the maintenance recovery rate is being calculated forming part of the grid assets (other than HVDC assets), as determined by Transpower and
recorded in a Transpower asset register at the end of the immediately preceding financial year (expressed in km).

**Calculation of the Maintenance Component for Line Connection Assets**

The maintenance component of the connection charge for a connection asset which is a line is calculated by multiplying \( \text{MRR}_{\text{conn \ line \ type}} \) by the length of the line which is the connection asset for which the connection charge is being calculated as follows:

\[
\text{M}_{\text{conn \ line \ type}} = \text{MRR}_{\text{conn \ line \ type}} \times L_{\text{conn \ line}}
\]

where

\( L_{\text{conn \ line}} \) is the length of the line which is the connection asset for which the connection charge is being calculated, as determined by Transpower and recorded in a Transpower asset register (expressed in km).

**Operating Component**

The operating component of the connection charge allocates a portion of Transpower's total operating cost for all AC assets to the connection asset for which the connection charge is being calculated.

**Operating Recovery Rate**

The operating recovery rate used to calculate the operating component of the connection charge is referred to as ORR and is expressed as a dollar cost per switch. ORR is calculated by dividing the cost of operating all AC switches incurred by Transpower in the preceding financial year by the total number of AC switches less the product of 0.1 multiplied by the total number of AC switches operated by customers as follows:

\[
\text{ORR} = \frac{\text{OC}}{\text{TS}}
\]

where

\( \text{OC} \) is the cost associated with operating all AC switches incurred by Transpower in the immediately preceding financial year, as determined by Transpower and recorded in its Maintenance...
Management System accounts for that **financial year** (expressed in dollars)

TS is the total number of **AC switches**, based on the number of switching devices in a **substation** or switching station, (as determined by **Transpower** and recorded in a **Transpower** asset register as at the end of the immediately preceding **financial year**) less the product of 0.1 multiplied by the total number of **AC switches** operated by customers.

**Compare:** Electricity Governance Rules 2003 clause 4.16 schedule F5 part F

**20 Calculation of the Operating Component of the Connection Charge for a Connection Asset**

The operating component of the **connection** charge for a **connection asset** is calculated by multiplying **ORR** by the number of **AC switches** that form part of the **connection asset** for which the **connection** charge is being calculated less the product of 0.1 multiplied by the number of **AC switches** within the **connection asset** that are operated by customers as follows:

\[ O_{\text{conn}} = \text{ORR} \times S_{\text{conn}} \]

where

\[ S_{\text{conn}} \]

is the number of switches that form part of the **connection asset** for which the **connection** charge is being calculated, (as determined by **Transpower** and recorded in a **Transpower** asset register) less the product of 0.1 multiplied by the number of **AC switches** within the **connection asset** that are operated by customers.

**Compare:** Electricity Governance Rules 2003 clause 4.17 schedule F5 part F

**21 Injection Overhead Component**

**Offtake customers** pay a portion of **AC revenue** overhead costs through the interconnection charge. **Injection customers** are not charged an interconnection charge, so a share of **AC revenue** overhead cost is allocated through their **connection** charges. The injection overhead component of the **connection** charge is calculated only for **connection assets** that connect a customer's **assets** at a **point of injection** to the **interconnection assets** and therefore applies only to **injection customers**.

**Compare:** Electricity Governance Rules 2003 clause 4.18 schedule F5 part F

**22 Injection Overhead Revenue**

The portion of **AC** overhead cost to be recovered from **injection customers** is referred to as **OHC\text{inj}**. **OHC\text{inj}** is calculated by reference to the proportion that the sum of the
maintenance components for all connection assets for all points of injection bears to total maintenance costs of AC assets as follows:

\[ \text{OHC}_{\text{eq}} = \text{OHC}_{\text{AC}} \times \frac{\text{MC}_{\text{inj}}}{\text{MC}_{\text{AC}}} \]

where

- \( \text{OHC}_{\text{AC}} \) is the overhead cost component of Transpower's AC revenue for the relevant pricing year, as determined by Transpower when setting the AC revenue.
- \( \text{MC}_{\text{inj}} \) is the sum of the maintenance cost of the connection assets for all points of injection in the preceding financial year, as determined by Transpower and recorded in Transpower's Maintenance Management System accounts for that financial year.
- \( \text{MC}_{\text{AC}} \) is the sum of the maintenance cost of the AC assets in the preceding financial year, as determined by Transpower and recorded in Transpower’s Maintenance Management System accounts for that financial year.

Compare: Electricity Governance Rules 2003 clause 4.19 schedule F5 part F

23 Injection Overhead Rate

The injection overhead rate used to calculate the injection overhead component of the connection charge is referred to as IOR. IOR is calculated by dividing \( \text{OHC}_{\text{inj}} \) by the sum of the proportion of the replacement cost of each connection asset connecting injection customer assets at all points of injection to the interconnection assets as follows:

\[ \text{IOR} = \frac{\sum \text{RC}_\text{conn inj} \times \text{CA}_\text{conn inj}}{\sum \text{RC}_\text{conn inj} \times \text{CA}_\text{conn inj}} \]

where

- \( \text{RC}_\text{conn inj} \) is the replacement cost of a connection asset connecting injection customer assets at a point of injection to the interconnection assets.
- \( \text{CA}_\text{conn inj} \) is the customer allocation of the relevant connection asset for the relevant injection customer at the relevant connection location.

\[ \sum \text{RC}_\text{conn inj} \times \text{CA}_\text{conn inj} \] is the sum of all amounts calculated as \( \text{RC}_\text{conn inj} \times \text{CA}_\text{conn inj} \) for all injection customers' connection assets for all points of injection.

Compare: Electricity Governance Rules 2003 clause 4.20 schedule F5 part F
24 Injection Overhead Component

The injection overhead component of the connection charge is calculated for a connection asset for a point of injection by multiplying the IOR by the replacement cost of that connection asset for which the connection charge is being calculated as follows:

\[ IO_{conn} = IOR \times RC_{conn \text{ inj}} \]

Compare: Electricity Governance Rules 2003 clause 4.21 schedule F5 part F


25 Customer Allocation

(1) Each customer at a connection location is allocated a proportion (expressed as a percentage) of each connection asset for that connection location. This percentage is referred to as the customer allocation for that connection asset at that connection location. The customer allocation is calculated in accordance with subclause (2). If a customer is both an offtake customer and an injection customer at a connection location, a customer allocation for each connection asset for that connection location will be calculated for that customer as both an offtake customer and as an injection customer.

(2) The customer allocation is calculated as follows:

(a) for a connection asset which connects only 1 connection location to interconnection assets, except for a connection asset of the kind referred to in clause (6)(1)(b)(ii), the customer allocation is the proportion that the customer's anytime maximum demand or anytime maximum injection (as the case may be) at that connection location bears to the sum of all customers' anytime maximum demands and anytime maximum injections at that connection location:

(b) for a connection asset which connects more than 1 connection location to interconnection assets, except for a connection asset of the kind referred to in clause (6)(1)(b)(ii), the customer allocation is the proportion that the customer's anytime maximum demand or anytime maximum injection (as the case may be) at that connection location bears to the sum of all customers’ anytime maximum demands and anytime maximum injections at all connection locations for that connection asset:

(c) for a connection asset of the kind referred in clause (6)(1)(b)(ii), the customer allocation is the proportion that the customer’s anytime maximum demand or anytime maximum injection (as the case may be) at the connection location bears to the total capacity of that connection asset, as specified in a Transpower asset register.

(3) The following table illustrates the calculation of an offtake customer’s annual connection charge at a particular connection location. It lists all connection assets for that connection location and the proportion of the connection charge for each of those connection assets (including the amount of each of the asset, maintenance, and
operating components of the connection charge) included in the annual connection charge together with the customer allocation for the relevant connection asset). The column headed "Recovery" is provided for information only and indicates whether the asset, maintenance and operating components (respectively) are recovered under this transmission pricing methodology (TPM) or under a new investment contract (NIC).

<table>
<thead>
<tr>
<th>Substation</th>
<th>Load Type</th>
<th>Asset</th>
<th>Physical Location</th>
<th>Recovery</th>
<th>Asse Value</th>
<th>Asse 1 Value</th>
<th>Maintenance Component</th>
<th>Operating Component</th>
<th>Customer Allocation</th>
<th>Connection Charge</th>
</tr>
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<td>LIN</td>
<td>OF</td>
<td>JTN-PVL</td>
<td>TPM</td>
<td>A</td>
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<td>JTN</td>
<td>TPM</td>
<td>M</td>
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<td>100.00</td>
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<td>T1</td>
<td>NIC</td>
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</tr>
</tbody>
</table>

Example figures only

Annual Connection Charge 225,683

Compare: Electricity Governance Rules 2003 clauses 4.22 to 4.24 schedule F5 part F

26 Exceptions to the Application of the Connection Charge

(1) If a connection asset is provided by Transpower under a new investment contract, in which the capital costs of that connection asset are recovered, calculation of the connection charge for that connection asset for the customer who is a party to that new investment contract (irrespective of when that agreement was entered into) is as follows:

(a) for the purposes of calculating the connection charge for that connection asset under clause 8(1), the asset component $A_{\text{conn}}$ is $0$. Recovery of the amount that would otherwise be recovered as the asset component for that connection asset is determined by, and recovered under, the new investment contract, in accordance with the provisions of the new investment contract;

(b) the maintenance component and operating component of the connection charge are calculated as per clauses 15, 17, and 20; and

(c) if the connection asset connects more than 1 connection location or it connects a connection location at which there is more than 1 customer, the customer allocation is determined in accordance with the relevant new investment contract, rather than in accordance with clause 25(2) of this transmission pricing methodology.

(2) If Transpower has entered into a prudent discount agreement in which it is agreed that notional connection assets that form part of the alternative project specified in the prudent discount agreement substitute for connection assets at a connection location, then for the purposes of clause 8(1) the customer’s customer allocation for the connection assets so substituted is deemed to be 0.
(3) If a customer is connected at a connection location subject to an input connection contract, the following apply:

(a) those assets that the customer uses to connect at that connection location will not be included in the calculation of the total connection charge for that connection location:

(b) the customer will be charged in accordance with the terms of the applicable input connection contract.

Compare: Electricity Governance Rules 2003 clauses 4.25 to 4.27 schedule F5 part F

Interconnection Charge

27 Interconnection Charge

The purpose of the interconnection charge is to recover the remainder of Transpower's AC revenue that is not recovered via connection charges. Monthly interconnection charges are paid by offtake customers in respect of each connection location at which they have assets connected to the grid. An annual interconnection charge is calculated for each customer at a connection location in accordance with clauses 28 to 30. A customer's monthly interconnection charge at that connection location is \( \frac{1}{12} \) of the annual interconnection charge, subject to clause 34 of this transmission pricing methodology.

Compare: Electricity Governance Rules 2003 clause 5.1 schedule F5 part F

28 Interconnection Revenue

The portion of AC revenue to be recovered by interconnection charges is calculated as the difference between Transpower's AC revenue and the amounts recovered by the connection charges for that pricing year as follows:

\[
R_{IC} = AC\ revenue - \sum\ connection\ charges
\]

where

\( AC\ revenue \) is Transpower's AC revenue for the relevant pricing year

\( \sum\ connection\ charges \) is the sum of all connection charges calculated for the relevant pricing year.

Compare: Electricity Governance Rules 2003 clause 5.2 schedule F5 part F

29 Interconnection Rate

The interconnection rate used to determine the annual interconnection charge is referred to as IR and is the same for all offtake customers at all connection locations in all regions. The IR is calculated by dividing the interconnection revenue by the sum.
of the average of the RCPDs for each customer at a connection location for all customers at all connection locations for all regions as follows:

\[
IR = \frac{R_{IC}}{\sum_{\text{regions}} \sum_{\text{cust}} \sum_{\text{loc}} \frac{1}{N_{\text{reg}}} \sum_{i=1}^{N_{\text{loc}}} \text{RCPD}_i}
\]

where

- \( R_{IC} \) is the interconnection revenue calculated in accordance with clause 28
- \( \sum_{\text{regions}} \sum_{\text{cust}} \sum_{\text{loc}} \frac{1}{N_{\text{reg}}} \sum_{i=1}^{N_{\text{loc}}} \text{RCPD}_i \) is the sum of the average RCPDs for each customer at a connection location for all customers at all connection locations for all regions.

Compare: Electricity Governance Rules 2003 clause 5.3 schedule F5 part F

### 30 Calculating the Interconnection Charge

An annual interconnection charge is calculated for each offtake customer at a connection location by multiplying the interconnection rate by the sum of the customer's RCPD at a connection location as follows:

\[
\text{interconnection charge} = IR \times \frac{1}{N_{\text{reg}}} \sum_{i=1}^{N_{\text{loc}}} \text{RCPD}_i
\]

where

- \( IR \) is \( IR \)
- \( \frac{1}{N_{\text{reg}}} \sum_{i=1}^{N_{\text{loc}}} \text{RCPD}_i \) is the average RCPD for the offtake customer in respect of whom the interconnection charge is being calculated at the relevant connection locations.

Compare: Electricity Governance Rules 2003 clause 5.4 schedule F5 part F

**HVDC charge**

### 31 HVDC Charge

The purpose of the HVDC charge is to recover Transpower's HVDC revenue. HVDC charges are paid by all HVDC customers. An annual HVDC charge is calculated for each HVDC customer at each South Island generation connection location. The monthly HVDC charge is \( \frac{1}{12} \) of the annual HVDC charge subject to clause 34 of this transmission pricing methodology.

Compare: Electricity Governance Rules 2003 clause 6.1 schedule F5 part F

### 32 HVDC Rate

[Revoked]

Compare: Electricity Governance Rules 2003 clause 6.2 schedule F5 part F

Schedule 12.4, clause 32: revoked, on 1 April 2017, by clause 7 of the Electricity Industry Participation Code
33 Calculating the HVDC charge

The **annual HVDC charge** is calculated for each **HVDC customer** at each **South Island generation connection location** as follows:

\[
\text{HVDC charge} = (\text{DCR}_{\text{SIMI}} \times \text{SIMI}) + (\text{DCR}_{\text{HAMI}} \times \text{HAMI})
\]

where

- **DCR\text{SIMI}** is the **SIMI-based rate** calculated in accordance with clause 33A, in $/MWh
- **SIMI** is the **South Island mean injection** for the **HVDC customer** at the **South Island generation connection location** calculated in accordance with clause 33B, in MWh
- **DCR\text{HAMI}** is the **HAMI-based rate** calculated in accordance with clause 33C, in $/kW
- **HAMI** is the **historical anytime maximum injection** for the **HVDC customer** at the **South Island generation connection location** calculated in accordance with clause 33D, in kW.

Compare: Electricity Governance Rules 2003 clause 6.3 schedule F5 part F
Schedule 12.4, clause 33: replaced, on 1 April 2017, by clause 8 of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

33A SIMI-based rate

The **SIMI-based rate** is calculated for each **pricing year** by dividing **HVDC revenue** by the sum of the **SIMI** of all **HVDC customers** at all **South Island generation connection locations**, as follows:

\[
\text{DCR}_{\text{SIMI}} = \left(\frac{1}{I}\right) \frac{R_{\text{HVDC}}}{\sum \text{SIMI}}
\]

Where

- **DCR\text{SIMI}** is the **SIMI-based rate** for the relevant **pricing year**, in $/MWh
- **I** for the **pricing year** 2017/18 \( i = 1 \)
  - for the **pricing year** 2018/19 \( i = 2 \)
  - for the **pricing year** 2019/20 \( i = 3 \)
  - for each subsequent **pricing year** \( i = 4 \)
- **R\text{HVDC}** is **HVDC revenue** for the relevant **pricing year**, in dollars
- \( \sum \text{SIMI} \) is the sum of the **SIMI** of all **HVDC customers** at all **South Island generation connection locations** for the relevant **pricing year**, in MWh.
33B Calculation of South Island mean injection

South Island mean injection or SIMI is calculated for each HVDC customer at each South Island generation connection location for a pricing year, and is the average of the total injection from the HVDC customer's assets at the South Island generation connection location in the capacity measurement period for the pricing year and the capacity measurement periods for previous pricing years, as follows:

$$\text{SIMI} = \frac{\sum \text{injection}}{1 + p}$$

Where

- SIMI is the HVDC customer's South Island mean injection for the relevant pricing year, in MWh
- $\sum \text{injection}$ is the total injection from the HVDC customer's assets at the South Island generation connection location in the capacity measurement period for the pricing year for which SIMI is being calculated and the capacity measurement periods for the $p$ immediately preceding pricing years, in MWh
- $P$ for the pricing year 2017/18 $p=0$
  for the pricing year 2018/19 $p=1$
  for the pricing year 2019/20 $p=2$
  for the pricing year 2020/21 $p=3$
  for each subsequent pricing year $p=4$.

33C HAMI-based rate

The HAMI-based rate is calculated for each pricing year by dividing HVDC revenue by the sum of the HAMI for all HVDC customers at all South Island generation connection locations for the relevant pricing year, as follows:

$$\text{DCR}_{\text{HAMI}} = \left( \frac{4 - i}{4} \right) \frac{R_{\text{HVDC}}}{\sum \text{HAMI}}$$

Where

- $\text{DCR}_{\text{HAMI}}$ is the HAMI-based rate for the relevant pricing year, in $$/kW
- $I$ for the pricing year 2017/18 $i=1$
  for the pricing year 2018/19 $i=2$
  for the pricing year 2019/20 $i=3$
for each subsequent pricing year \( i=4 \)

\[
R_{HVDC} \quad \text{is HVDC revenue for the relevant pricing year, in dollars}
\]

\[\sum \text{HAMI} \quad \text{is the sum of the HAMI of all HVDC customers at all South Island generation connection locations for the relevant pricing year, in kW.}\]

Schedule 12.4, clause 33C: inserted, on 1 April 2017, by clause 8 of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.

33D Calculation of historical anytime maximum injection

**Historical anytime maximum injection** or HAMI is calculated for each HVDC customer at each South Island generation connection location for a pricing year, and is—

(a) for the pricing year 2017/18, the greater of the following:

(i) the average of the customer's 12 highest injections at the connection location during the pricing year 2013/14:

(ii) the average of the customer's 12 highest injections at the connection location during the pricing year 2014/15:

(iii) the average of the customer's 12 highest injections at the connection location during the period commencing on 1 April 2015 and ending with the close of 31 August 2015:

(iv) the average of the customer's 12 highest injections at the connection location during the capacity measurement period for the pricing year 2016/17; and

(b) for the pricing year 2018/19, the greater of the following:

(i) the average of the customer's 12 highest injections at the connection location during the pricing year 2014/15:

(ii) the average of the customer's 12 highest injections at the connection location during the period commencing on 1 April 2015 and ending with the close of 31 August 2015:

(iii) the average of the customer's 12 highest injections at the connection location during the capacity measurement period for the pricing year 2016/17; and

(c) for the pricing year 2019/20, the greater of the following:

(i) the average of the customer's 12 highest injections at the connection location during the period commencing on 1 April 2015 and ending with the close of 31 August 2015:

(ii) the average of the customer's 12 highest injections at the connection location during the capacity measurement period for the pricing year 2016/17.

Schedule 12.4, clause 33D: inserted, on 1 April 2017, by clause 8 of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.
34 Adjustments to AMD, AMI, HAMI, SIMI and RCPD and calculation of customer charges

(1) Before the start of a pricing year, and otherwise during a pricing year as provided in this clause, Transpower will calculate—

(a) AMD AMI, HAMI, SIMI and RCPD quantities (for each regional peak demand period); and

(b) annual charges; and

(c) monthly charges—

in each case for every customer at every connection location for that pricing year. When a monthly charge is recalculated for part of a pricing year, all inputs used in the calculation will be the same as those used to calculate that monthly charge before the start of the pricing year except for the adjustments specifically provided in this clause.

(2) If, when calculating AMD, AMI, HAMI, SIMI and RCPD quantities before the start of a pricing year, Transpower, in its sole discretion, considers that exceptional operating circumstances during the relevant capacity measurement period(s) have resulted in—

(a) abnormal regional demand resulting in an exceptional regional peak demand period for that pricing year; and/or

(b) distortions to a customer's AMD, AMI, HAMI, SIMI and/or any RCPD quantity at a connection location for that pricing year—

Transpower may, but is under no obligation to—

(c) determine that the exceptional regional peak demand period is to be ignored when assessing the regional peak demand periods for that pricing year; and/or

(d) adjust the customer's AMD, AMI, HAMI, SIMI and/or any RCPD for the quantity at the relevant connection location to minimise the impact of such distortion, as assessed by Transpower acting reasonably but otherwise in its sole discretion, as applicable. Such adjusted AMD, AMI, HAMI, SIMI and RCPD qualities, as the case may be, shall be used to calculate monthly charges for that customer for that connection location for that pricing year.

(3) If Transpower—

(a) is advised that South Island generation at a connection location has been permanently de-rated (including decommissioning) to a specified aggregate rate capacity (“maximum de-rated capacity”); and

(b) is satisfied that such South Island generation has been so permanently de-rated,—

then, for the purposes of calculating a customer’s HAMI and SIMI at the relevant connection location for any pricing year that commences not less than 6 months after the date on which Transpower is satisfied under paragraph (b), any injection at that connection location in any half-hour period up to the date on which Transpower is satisfied under paragraph (b) which:

(c) is used to determine the customer’s HAMI and SIMI; and

(d) exceeds the maximum de-rated capacity,—

will be deemed to be equal to the maximum de-rated capacity.
(4) If not less than 6 months before the start of a pricing year, Transpower—
(a) is advised that the offtake and/or injection capacity of a customer’s assets at a connection location has been permanently de-rated (including decommissioning); and
(b) is satisfied that the offtake and/or injection capacity of such assets has been so permanently de-rated—
then, for the purpose of calculating the customer’s AMD, AMI and/or RCPD quantities at that connection location for any pricing year that commences not less than 6 months after the date on which Transpower is satisfied under paragraph (b)—
(c) Transpower will estimate (acting reasonably but otherwise in its sole discretion) the customer’s likely future offtake or injection (as the case may be) at that connection location, having regard to the change in the customer’s offtake and/or injection; and
(d) injection or offtake quantities for any half-hour period up to the date on which Transpower is satisfied under paragraph (b) which—
(i) are used to determine the customer’s AMD, AMI or RCPD quantities; and
(ii) exceed Transpower’s estimate under paragraph (c),—
will be deemed to be no more than the amounts estimated by Transpower under paragraph (c).

(5) If—
(a) Transpower decommissions a connection location; or
(b) a customer causes all of its assets connected to the grid at a connection location to be, and Transpower is satisfied that the customer’s assets have been, permanently disconnected from the grid at that connection location,—
then—
(c) the customer’s monthly charges for the month in which the connection location is decommissioned, will be pro-rated for the number of days that the connection location was decommissioned or assets were disconnected and the monthly charges will be reduced accordingly; and
(d) from the month following the month in which such decommissioning or disconnection occurred, the customer’s AMD, AMI, HAMI, SIMI and all RCPD quantities at that connection location and the customer’s monthly charges at that connection location will be deemed to be 0.

(6) If a customer connects assets to the grid at a connection location where that customer does not already have assets connected to the grid (including a new connection location), the following applies:
(a) Transpower will agree with the customer whether the customer is to be an offtake customer or an injection customer at the relevant connection location and the customer will, until such time as the assets have been connected for a full capacity measurement period, be deemed to be an offtake customer and/or an injection customer accordingly:
(b) if the asset is a generating unit or generating station located in the South Island, the generating unit or generation station will be deemed to be South Island generation:
(c) Transpower will assign the new connection location to a region (unless it is an existing connection location):

(d) from the time of connection of the assets until such time as the assets have been connected to the grid for the whole of the capacity measurement period for a pricing year, or, in the case of assets which are deemed to be South Island generation under paragraph (b), have been connected to the grid for 5 consecutive capacity measurement periods, the customer’s AMD, AMI, HAMI, SIMI and RCPD quantities at the connection location will be determined using Transpower’s estimates of the customer’s likely offtake and/or injection at the connection location for that period:

(e) the customer will pay monthly charges at the connection location from the date the customer’s assets are connected to the grid. If the customer’s assets are connected part way through a month, the monthly charges for that month will be reduced by an amount, being a pro-rata proportion of the monthly charges for the number of days in the month that the customer’s assets were not connected.

(7) If—

(a) a customer’s connection of new assets at a connection location to which subclause (5) applies, (the “first connection location”) is a direct consequence of that customer’s de-rating of assets at another connection location, (the “second connection location”) without the customer terminating the second connection location as a point of connection under any relevant transmission agreement; and

(b) the connection assets for the second connection location are shared with any other customer,—

then—

(c) Transpower will estimate (acting reasonably but otherwise in its sole discretion) the customer’s likely offtake or injection at the second connection location from the date on which the new assets are connected at the first connection location (“load transfer date”) until those assets have been connected to the grid for the whole of a capacity measurement period for a pricing year; and

(d) the customer’s monthly connection charges at the second connection will be recalculated from the load transfer date. When recalculating the customer’s monthly connection charges from the load transfer date, any injection and/or offtake prior to the load transfer date used to calculate the customer’s AMD and/or AMI at the second connection location will be capped at Transpower’s estimates in accordance with subclause (6)(a); and

(e) if the load transfer date occurs part way through a month, the customer’s monthly connection charges at the second connection location for that month will be the sum of:

(i) a pro-rata proportion of the customer’s monthly connection charges at the second connection location immediately before the load transfer date, based on the number of days in the month prior to the load transfer date; and

(ii) a pro-rata proportion of the customer’s monthly connection charges at the second connection location recalculated in accordance with
subclause (6)(e), based on the number of days in the month including and subsequent to the load transfer date.

(8) If Transpower enhances or upgrades connection assets for a connection location under a new investment contract with a customer (a “NIC customer”), excluding NIC customers to whom subclause (5) applies,—
   (a) if the enhancement or upgrade is commissioned part way through a pricing year, monthly connection charges at that connection location for the NIC customer will be recalculated from the date the enhanced or upgraded connection assets are commissioned to take into account those enhanced or upgraded connection assets; and
   (b) if the connection asset enhancement or upgrade is commissioned part way through a month, the NIC customer’s monthly connection charge for that month will be the recalculated monthly connection charge reduced by an amount, being a pro-rata proportion of the recalculated monthly connection charge for the number of days in the month before commissioning of the enhancement or upgrade.

(9) If under this clause, Transpower estimates a customer’s likely offtake or injection over any period, Transpower may, but is not obliged to, review its estimate from time to time, but not more frequently than at 3 monthly intervals. If Transpower revises its estimate, the customer’s—
   (a) AMD, AMI, HAMI, SIMI and RCPD quantities; and
   (b) monthly charges—
will be recalculated accordingly and such recalculated monthly charges will be payable upon Transpower giving such notice as required in the relevant transmission agreement with the customer.

(10) If subclauses (6), (7) or (8) apply, or Transpower revises any estimate and monthly grid charges under subclause (9), there will be a wash-up and reconciliation at the end of the relevant pricing year of—
   (a) monthly connection charges paid by—
      (i) all customers at the connection location; and
      (ii) all other customers at connection locations which share the same connection assets; and
   (b) monthly HVDC charges paid by all HVDC customers,—
in each case, in that pricing year as follows:
   (c) in the case of monthly connection charges, the wash-up and reconciliation is to be undertaken in respect of all charges calculated in accordance with clause 8(1) for each shared connection asset—
      (i) using AMD or AMI for each customer as at the last day of the pricing year (including any Transpower estimate); and
      (ii) so that the sum of the percentage proportions allocated to customers in accordance with clause 25(1) does not exceed 100% for any connection asset and so that Transpower, in turn, does not recover, in aggregate, more than 100% of the sum of the asset, maintenance, operating and overhead
cost components calculated in accordance with clauses 8 to 26 for any connection asset:

(d) in the case of monthly HVDC charges, the wash-up and reconciliation is to be undertaken—
   (i) using HAMI and SIMI for each HVDC customer as at the last day of the pricing year; and
   (ii) so that the sum of all monthly HVDC charges paid by the HVDC customer for that pricing year does not exceed the HVDC revenue for that pricing year:

(e) Transpower will issue a credit note for any overpayment by a customer consequent upon the wash-up.

(11) If a prudent discount agreement commences part way through a pricing year, Transpower will recalculate the customer’s monthly charges at the relevant connection location(s) consistently with the prudent discount agreement from the date the prudent discount agreement takes effect until it terminates or otherwise ceases to apply. If the prudent discount agreement commences part way through a month, the customer’s monthly charges for that month will be the sum of—
   (a) a pro-rata proportion of the monthly charges calculated in accordance with this transmission pricing methodology being the proportionate number of days in the month before the commencement of the prudent discount agreement; and
   (b) a pro-rata proportion of the monthly charges calculated in accordance with the prudent discount agreement being the proportionate number of days in the month on and from commencement of the prudent discount agreement.

(12) Transpower must adjust a customer's AMD, AMI, HAMI, SIMI, or RCPD at a connection location to minimise the impact of reverse flow at the connection location if—
   (a) the customer has an agreement with the system operator under clause 6 of Technical Code A of Schedule 8.3; and
   (b) within 20 business days after the reverse flow commences at the connection location, the customer has advised Transpower that there is reverse flow at the connection location; and
   (c) Transpower agrees that there is reverse flow at the connection location.

(13) If Transpower makes an adjustment under subclause (12), Transpower must, no later than 20 business days after making the adjustment, make available on its website the reasons for the adjustment, and how the adjustment was calculated.

(14) Transpower is not required to calculate HAMI quantities under this clause for any pricing year after the pricing year 2019/20.

Compare: Electricity Governance Rules 2003 clause 7 schedule F5 part F
Schedule 12.4, clause 34 Heading: amended, on 1 April 2017, by clause 9(1) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.
Schedule 12.4, clause 34(1) to (10): amended, on 1 April 2017, by clause 9(2) to (4) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.
Schedule 12.4, clause 34(3)(a), (4)(a) and (12)(b): amended, on 1 November 2018, by clause 81(a) to (c) of the Electricity Industry Participation Code Amendment (Code Review Programme) 2018.
Transmission alternatives

35 Transmission Alternatives

(1) Charges for transmission alternative services will apply when transmission alternative services are provided and/or funded by Transpower. Transmission alternative services are services which substitute for the services provided by connection assets or interconnection assets or both.

(2) If a transmission alternative service substitutes for a service which would otherwise be provided by connection assets, a charge recovering Transpower's costs of funding that transmission alternative service is added to the connection charge(s) of the customer(s) for the relevant connection location(s). The costs of the transmission alternative service are allocated between all customers at the relevant connection locations in the same proportion that each customer's total connection charges for the relevant connection location(s) bears to the sum of all customers' connection charges for those connection location(s).

(3) If a transmission alternative service substitutes for services which would otherwise be provided by interconnection assets a charge recovering the cost of the transmission alternative service is allocated between offtake customers in the same proportion that each offtake customer's interconnection charges bears to the sum of all offtake customers' interconnection charges.

(4) If a transmission alternative service substitutes for both connection assets and interconnection assets, the allocation of the costs of the transmission alternative service as between connection assets and interconnection assets must be calculated in accordance with clause 25(2) for shared connection assets at an interconnection node.

(5) The costs of funding transmission alternative services will be charged to, and payable by, customers in the month following the month in which Transpower is invoiced for those costs.

Prudent Discount Policy

36 Purpose of the Prudent Discount Policy

(1) The purpose of the prudent discount policy is to help ensure that the transmission pricing methodology does not provide incentives for the uneconomic bypass of existing grid assets. The prudent discount policy aims to deter investment in alternative projects which would allow a customer to reduce its own transmission charges while increasing the total economic costs to the nation as a whole.
(2) In order for a customer to obtain a prudent discount a customer’s alternative project must be—
(a) technically, operationally and commercially viable and have a reasonable prospect of being able to be successfully implemented; and
(b) uneconomic to implement given Transpower’s economic costs of providing existing grid assets and the economic costs that would be incurred by the customer if it proceeded with the alternative project,—
determined in accordance with this prudent discount policy.

Compare: Electricity Governance Rules 2003 clauses 9.1 and 9.2 schedule F5 part F

37 Information Required in a Prudent Discount Application

(1) In order for an alternative project to be accepted by Transpower as a prudent discount application it must be developed to a level of detail equivalent to the detail that a prudent company Board would reasonably expect when considering an investment proposal.

(2) If a customer wishes to apply for a prudent discount, that customer must (at its own expense) submit to Transpower a written proposal describing the alternative project and the likely impact of that alternative project on that customer's transmission charges.

(3) The proposal must, to the extent relevant, contain all of the information described in Appendix C, together with any other information which is likely to be relevant to Transpower's consideration of the alternative project.

(4) Without limiting subclause (3) Transpower may require the customer to provide any additional information which Transpower considers is reasonably necessary to enable it to conduct its assessment of the alternative project in accordance with clauses 38 and 39.

Compare: Electricity Governance Rules 2003 clauses 9.3 to 9.6 schedule F5 part F

38 Assessment of Technical, Operational and Commercial Viability of Alternative Project

(1) Transpower will, within a reasonable time of receiving the proposal, assess the alternative project to determine whether or not—
(a) it is technically feasible; and
(b) it is operationally feasible and compliant with the asset owner performance obligations and technical codes, and any other relevant requirements as set out in Part 8 of this Code; and
(c) the alternative project could reasonably be expected to provide the customer with transmission charges that would result in a lower overall commercial cost having regard to the capital, operating, maintenance and all other costs likely to be incurred by the customer as a result of undertaking the alternative project to the customer than the current Transpower charges, for the same or a similar level of service.

(2) In undertaking its assessment of the alternative project, Transpower may adjust any of the information provided by the customer to reflect Transpower's reasonable
assessment of current market prices, good engineering practice and any consequential impacts of the alternative project on the grid assets and the customer's assets.

39 Assessment that the Alternative Project is Uneconomic
(1) If Transpower considers that the alternative project does not satisfy one or more of the criteria specified in clause 38(1), no prudent discount will be provided.

(2) If Transpower considers that the alternative project satisfies all of the criteria specified in clause 38(1), Transpower will, within a reasonable time thereafter, assess the alternative project to determine whether or not it is uneconomic in accordance with subclauses (3) to (7).

(3) Transpower will calculate the present value of the estimated total costs of the alternative project including capital costs and operating and maintenance costs. Transpower may use the cost estimates provided by the customer or may reasonably adjust those costs to reflect current market prices, good engineering practice and consequential impacts of the alternative project on grid assets and the customer’s assets.

(4) The discount rate used to undertake the calculations required by subclauses (3) to (7) must be a discount rate determined by the Authority, from time to time, or if the Authority has not determined a discount rate, a discount rate of, or equivalent to, a pre-tax real rate of 7%. The calculations required by subclauses (3) to (7) will be carried out using a period of 15 years or the remaining life of the grid assets which the alternative project would bypass, whichever is the lesser.

(5) Transpower will then calculate the present values of—
(a) Transpower’s costs of continuing to provide transmission services to the customer if the alternative project does not proceed, including operating and maintenance costs and planned future capital expenditure needed to maintain required service levels; and
(b) Transpower’s costs of continuing to provide transmission services to the customer if the alternative project does proceed, including operating and maintenance costs and planned future capital expenditure needed to maintain required service levels.

(6) If the amount calculated under subclause (5)(a) minus the amount calculated under subclause (5)(b) is greater than the amount calculated under subclause (3), the alternative project will be determined to be economic and no discount will be provided.

(7) If the amount calculated under subclause (5)(a) minus the amount calculated under subclause (5)(b) is less than the amount calculated under subclause (3), the alternative project will be determined to be uneconomic.

Compare: Electricity Governance Rules 2003 clauses 9.9 to 9.15 schedule F5 part F

40 Independent Review
(1) The customer may, within 60 days of being advised of Transpower's decision to offer a prudent discount agreement or that no discount will be provided, request a review by
an independent expert of any or all of the assessments undertaken by Transpower for the purposes of that decision.

(2) Within a reasonable time of being appointed, the independent expert is to report his or her findings to Transpower and the customer. The findings of the independent expert will be binding on Transpower and the customer. If the independent expert finds that the customer’s alternative project is uneconomic and satisfies all the requirements of clause 38(1), the provisions of clause 41(1) will apply.

(3) The costs of the independent expert are to be met by the party requesting the review if the information or assessments reviewed are confirmed as reasonable; otherwise the costs will be met by the other party.

Compare: Electricity Governance Rules 2003 clauses 9.16 to 9.18 schedule F5 part F

41 Prudent Discount Agreement

(1) If the customer’s alternative project is considered by Transpower to be uneconomic and to satisfy all the requirements of clause 38(1), Transpower will offer a prudent discount agreement to all customers that are directly affected by the proposal. The prudent discount agreement will provide for—

(a) the customer to pay to Transpower an annuity (the amount of which is to be specified in the prudent discount agreement) determined by reference to the customer’s cost of funding, maintaining and operating the alternative project over the duration of the prudent discount agreement, applying a commercial discount rate; and

(b) Transpower to calculate the customer’s transmission charges in accordance with this transmission pricing methodology as if the alternative project had been implemented.

(2) The commencement date of a prudent discount agreement will take full account of the time that would reasonably be required for the customer to implement the alternative project.

(3) The duration of a prudent discount agreement will be the lesser of the remaining economic life of the grid assets that are affected by the agreement, or 15 years.

Compare: Electricity Governance Rules 2003 clauses 9.19 to 9.21 schedule F5 part F

42 Prudent Discount Details to be Published

(1) As soon as reasonably practicable after concluding a prudent discount agreement with a customer, Transpower must publish the decision made, the analysis supporting that decision and the following information:

(a) the cost estimate used by Transpower in assessing the alternative project and the calculations undertaken by Transpower using those cost estimates:

(b) any report prepared by an independent expert:

(c) the annual amount payable by the customer under clause 41(1)(a):

(d) details of how the customer’s transmission charges will be calculated under clause 41(1)(b).

Compare: Electricity Governance Rules 2003 clause 9.22 schedule F5 part F
Appendix A– Allocation of Transpower’s AC Revenue and HVDC Revenue to its

Transmission Pricing Methodology

AC Revenue
Determined by Transpower Board in accordance with Part 4 of Commerce Act

HVDC Revenue
determined by Transpower Board in accordance with Part 4 of Commerce Act

Connection Allocation
1) Asset return (derived from regulated asset value )
2) Maintenance cost of connection substations (average of last 4 years)
3) Maintenance cost – lines (average of last 4 years)
4) Operating costs of switches
5) Injection overhead (set by Transpower Board )

Interconnection Allocation
(AC Revenue – Σ Connection Charges )

Allocated to connection locations by:
1) Replacement cost (RC) of connection assets (adjusted to preserve last optimised values )
2) RC of connection substation assets
3) Length of connection lines
4) Number of switches
5) RC of injection connection assets

Allocated to customers by:
Regional Coincident peak demands of offtake customers using N =T2

Allocated to South Island injection customers by:
HAMI and SIMI

Allocated to individual customer
Further allocated to customers that share Connection Assets
By:
1) Anytime Maximum Demand (AMD )
2) Anytime Maximum Injection (AMI)

Connection Charge

Interconnection Charge

HVDC Charge

Compare: Electricity Governance Rules 2003 appendix A schedule F5 part F
Schedule 12.4, Appendix A: amended, on 1 April 2017, by clause 10(1) and (2) of the Electricity Industry Participation Code Amendment (Transmission Pricing) 2015.
Appendix B

Regions

North Island

(a) Upper North Island (UNI): all connection locations on, or north and west of, a line—
   (i) commencing at 38°02'S and 174°42'E; then
   (ii) proceeding in a generally north-easterly direction directly to 37°36'S and 175°27'E; then
   (iii) proceeding north along the 175°27'E line of longitude.

(b) Lower North Island (LNI): all connection locations south and east of the line described in paragraph (a).

South Island

(a) Upper South Island (USI): all connection locations on, or north of, a line passing through 43°30'S and 169°30'E, and 44°40'S and 171°12'E.

(b) Lower South Island (LSI): all connection locations south of the line described in paragraph (a).

Compare: Electricity Governance Rules 2003 appendix B schedule F5 part F
Appendix C
Information Required to Support a Prudent Discount Application

General information
1. Location of the alternative project.
2. A brief description of the alternative project.
3. A sketch or schematic of the alternative project.

Part A: Information required to enable a technical evaluation of the proposal
(1) A report on the technical viability of the alternative project, provided by either the customer, or an external consultant on behalf of the customer. The report must include details of voltage quality, especially if there are switched capacitors and/or switched loads, such as motor starting, and information on the size of load, the size of any capacitors, the frequency of switching and the size of voltage steps.
(2) A circuit diagram.
(3) For a customer who operates a distribution network, a diagram of the customer’s distribution network that is sufficiently detailed to run load-flow models. The network diagram should contain load distribution data, circuit parameters and the parameters of any embedded generation.
(4) A description of how the requirement for any additional physical space will be met. (When attaching to existing equipment, or to an existing facility, there may be a need for physical space for new equipment, e.g. a new circuit breaker bay or a connection point to a generator bus.)
(5) The following information, except if it is not applicable to the alternative project:
   • Voltage (kV)
   • Demand (peak MW/low MW)
   • Conductor rating and type
   • Circuit length (km) and type (single or double)
   • Voltage support type and rating (VARs)
   • Estimated losses (MW/km)
   • Transformers: size (VA) and impedance (Ω)

Part B: Cost of the alternative project
The following information is required to enable independent validation of the customer’s cost estimates. This information must be provided, except if it does not apply to the alternative project.

Capital cost (line)
(1) Conductor type, capital cost per metre, distance in metres and total estimated cost.
(2) Type of structures (poles or lattice towers), number of structures, capital cost per structure and total estimated cost.
(3) Type and number of insulators, capital cost per insulator and total estimated cost.
(4) The capital cost of line fittings.
(5) Any other capital costs of lines.

**Capital cost (substation)**
(1) The type and number of transformers, the capital cost per unit and the total estimated cost.
(2) The type and number of circuit breakers, the capital cost per unit and the total estimated cost.
(3) The type and number of disconnectors, the capital cost per unit and the total estimated cost.
(4) The type of protection and metering, the capital cost per unit and the total estimated cost.
(5) The type and capital cost of buswork.
(6) The type and capital cost of other infrastructure.
(7) Any other miscellaneous substation costs.

**Labour cost**
(1) Estimated labour costs.
(2) Estimated design and project management costs.

**Cost of system losses**
The estimated cost of the electrical line losses that would result if the alternative were implemented, specifically:
- Estimated additional losses in MW/km.
- Estimated additional losses per annum in MWh.
- The estimated average price of energy in $/MWh.
- Total estimated value of additional electrical losses per annum in dollars.

**The cost of easements and consents**
(1) A topographical map of the line route in sufficient detail to verify estimates of the costs of easements and consents, or to verify that easements and consents are not required.
(2) An estimate of consent costs.
(3) An estimate of easements costs.
(4) Estimate of property right costs.

**Part C: Commercial evaluation**
An analysis by the customer that provides a prima facie demonstration that the proposed alternative project would provide the customer with Transpower charges that would result in a lower overall commercial cost to the customer than the current Transpower charges, for the same or a similar level of service.

**Part D: Legal matters**
The implementation of some alternative project proposals will require the customer to enter into contractual agreements with third parties and to satisfy statutory requirements. In this
case, the customer must provide reasonable evidence that the alternative project would be able to be successfully implemented, including but not limited to—

(1) a report from appropriately qualified planning, legal and property consultants that demonstrates that all consents required to implement the alternative project are either held, or are reasonably likely to be obtained; and

(2) evidence of access, easement and other property rights required to implement the alternative project.

Compare: Electricity Governance Rules 2003 appendix C schedule F5 part F
## Schedule 12.5
### Availability and reliability index measures

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<th>Unplanned unavailability</th>
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Compare: Electricity Governance Rules 2003 schedule F6A part F