

Criteria for departing from the methodology for determining non-conforming GXPs

Consultation Paper

10 April 2012



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1. Introduction and purpose of this paper

1.1 Introduction

- 1.1.1 The objective of the demand-side bidding and forecasting (DSBF) initiative is to capture the benefits of central load forecasting, while also facilitating demand-side price response through improving the bidding process.
- 1.1.2 The majority of the DSBF arrangements come into force on 28 June 2012. The DSBF provisions that deal with determining conforming and non-conforming grid exit points (GXPs) came into force on 28 March 2012.
- 1.1.3 When the DSBF amendments were drafted it was intended that GXPs with a predictable demand pattern will be called 'conforming GXPs', while those that do not follow a predictable pattern will be called 'non-conforming GXPs'. Under the DSBF amendments, all GXPs are deemed to be conforming unless the Authority determines otherwise.
- 1.1.4 The process for determining whether a GXP is conforming or non-conforming is set out in clauses 13.27A to 13.27K of the Electricity Industry Participation Code 2010 (Code). The Authority must apply a prescribed methodology (set out in Schedule 13.7 of the Code), and request and take into account advice from the system operator and any information submitted by a purchaser who purchases electricity at the GXP.
- 1.1.5 The Authority is required to make each determination in accordance with the methodology set out in Schedule 13.7 of the Code. However, under certain circumstances specified in clause 13.27C(2), the Authority may depart from applying the methodology and use criteria it has previously consulted on and publicised, to determine that a conforming GXP is non-conforming.
- 1.1.6 The purpose of this Consultation paper is to consult on proposed criteria. The Consultation paper proposes three mutually exclusive criteria the Authority can use when considering whether a GXP that has been determined conforming after applying the prescribed methodology, should be determined as being a non-conforming GXP.

1.2 Purpose of this paper

- 1.2.1 The purpose of this paper is to consult with interested parties on proposed criteria as prescribed in clause 13.27E of the Code¹.

¹ The relevant clauses of the Code are included in Appendix B.

1.3 Submissions

The Authority's preference is to receive submissions in electronic format (Microsoft Word). It is not necessary to send hard copies of submissions to the Authority, unless it is not possible to do so electronically. Submissions in electronic form should be emailed to submissions@ea.govt.nz with "Consultation Paper—Criteria for departing from the methodology for determining non-conforming GXPs" in the subject line.

If submitters do not wish to send their submission electronically, they should post one hard copy of their submission to one of the following addresses:

Submissions
Electricity Authority
PO Box 10041
Wellington 6143

Submissions
Electricity Authority
Level 7, ASB Bank Tower
2 Hunter Street
Wellington

Tel: 0-4-460 8860

Fax: 0-4-460 8879

- 1.3.1 Submissions should be received by 4pm on Thursday 26 April 2012. Please note that late submissions are unlikely to be considered.
- 1.3.2 The Authority will acknowledge receipt of all submissions electronically. Please contact the Submissions' Administrator if you do not receive electronic acknowledgement of your submission within two business days of sending it.

2. Analysis

2.1 Transparency

- 2.1.1 The amendments to the Code for DSBF that were proposed in the June 2011 consultation paper included the methodology the Authority must apply when determining non-conforming and conforming GXPs.
- 2.1.2 That consultation paper also proposed that the Authority be given the discretion to deem a GXP to be non-conforming without applying the methodology. This was mainly proposed so that when the dispatchable demand initiative is implemented, purchasers at what would have already been determined to be conforming GXPs, could be given an opportunity to take part in the dispatchable demand regime. Under the dispatchable demand regime only purchasers at non-conforming GXPs can be dispatched.
- 2.1.3 Submitters accepted that the Authority should have discretion to depart from the methodology, provided there was transparency in the criteria that the Authority would use. Accordingly, the DSBF Code Amendment that was gazetted on 20 October 2011 included provisions that gave the Authority discretion to develop criteria which the Authority would have to consult on and publicise.

2.2 Process for determining non-conforming GXPs

- 2.2.1 Clause 13.27C of the Code outlines the process for the Authority to determine whether a GXP is conforming or non-conforming. Clause 13.27C(1) requires the Authority to apply the methodology set out in Schedule 13.7 of the Code², take into account advice from the system operator, and take into account any information submitted by a purchaser who purchases electricity at the GXP.
- 2.2.2 Clauses 13.27C(2) and 13.27C(3) then outline a process that the Authority may follow to depart from the methodology, if the methodology described in schedule 13.7 has resulted in a GXP being categorised as a conforming GXP, but the Authority considers that the GXP should in fact be non-conforming.
- 2.2.3 In such a case, the Authority can only determine that the GXP is a non-conforming GXP in accordance with criteria which the Authority has previously consulted on and publicised.
- 2.2.4 The Authority initially planned to consult on the proposed criteria nearer to the implementation of the dispatchable demand regime but has brought it forward

² Schedule 13.7 is included in Appendix B.

because of the concern raised in paragraph 2.3.2 below regarding industrial GXP.

2.3 Applying the process

- 2.3.1 The Authority has applied the prescribed methodology to all GXPs in a test run and produced a draft list of GXPs which are likely to be determined as being non-conforming. The Authority intends to make determinations for all GXPs before the rest of the DSBF amendments to the Code come into effect on 28 June 2012. Those determinations will be based on the latest data available at the time.
- 2.3.2 The draft list that the Authority has produced does not include some key industrial GXPs which is of concern to both the system operator and the Authority. These industrial GXPs are KIN0111, KIN0112, KIN0113 and KAW0111 which are in a highly constrained part of the transmission system.
- 2.3.3 The draft list of non-conforming GXPs and the key industrial GXPs discussed in paragraph 2.3.2 are included in Appendix C.
- 2.3.4 The Code does not permit the Authority to depart from applying the methodology without first developing, consulting on, and publicising criteria. The Authority can only use the criteria when it considers that a GXP, which if considered under the methodology would have been conforming, should be considered as non-conforming, but not vice-versa.

2.4 Proposed criteria for departing from the prescribed methodology

- 2.4.1 The Authority proposes that the Authority be allowed to depart from the methodology when one or more of the following three criteria applies to a GXP, which if considered under the methodology would have been conforming.

2.4.2 Criterion 1: System security

The Authority may determine that a GXP is a non-conforming GXP if:

- (a) the system operator has advised it is unable to forecast the demand at the GXP at all times to a level of accuracy that will ensure system security; and
- (b) taking the system operator's advice into account, the Authority is satisfied that the GXP should be non-conforming to ensure system security.

2.4.3 Criterion 2: Industrial demand at a GXP

The Authority may determine that a GXP is a non-conforming GXP if:

- (a) the demand at the GXP is primarily an industrial load; and

- (b) the system operator has advised that in its opinion the purchaser, rather than the system operator, will be better able to predict the demand at the GXP to a level that will ensure system security; and
- (c) taking the system operator's advice into account, the Authority is satisfied that the GXP should be considered as non-conforming to ensure system security.

2.4.4 Criterion 3: Purchaser request

The Authority may determine that a GXP is a non-conforming GXP if:

- (a) a purchaser at a conforming GXP has requested that the GXP be changed from conforming to non-conforming, and has given reasons; and
- (b) the Authority has requested the views of all other purchasers at the GXP; and
- (c) the Authority has requested the views of the system operator; and
- (d) taking the purchasers' and system operator's views into account, the Authority is satisfied that changing the GXP from conforming to non-conforming will be for the long term benefit of consumers at the GXP.

2.5 Consultation questions

2.5.1 The Authority seeks submitters' views on the following questions:

Q1.	Do you agree with criteria 1 for system security? If not, please provide your reasons.
Q2.	Do you agree with the criteria 2 for industrial demand at a GXP? If not, please provide your reasons.
Q3.	Do you agree with the criteria 3 for purchaser request? If not, please provide your reasons.
Q4.	Do you think there are any other criteria that should be considered?

Appendix A Format for submissions

Question No.	Question	Response

Appendix B Relevant clauses of the Code

Process for determining conforming and non-conforming grid exit points

Heading: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27A Authority determines conforming and non-conforming GXPs on own initiative

The **Authority** may, on its own initiative,—

- (a) determine whether a **GXP**, which is deemed to be a **conforming GXP** under clause 13.27F, is a **conforming GXP** or a **non-conforming GXP**;
- (b) reconsider a previous determination, and as a result may decide to replace the previous determination with a new determination.

Clause 13.27A: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27B Authority to determine conforming and non-conforming GXPs if requested

- (1) Subclause (4) applies if—
 - (a) a **purchaser** or the **system operator** makes a request under clause 13.27H; and
 - (b) the **Authority** decides there are valid grounds to consider the request.
- (2) The **Authority** must decide whether to proceed with the request within a reasonable time after receiving the request.
- (3) If the **Authority** decides there are no valid grounds to consider the request, the **Authority** must notify the requester in writing of—
 - (a) the **Authority's** decision; and
 - (b) the grounds for the **Authority's** decision.
- (4) If subclause (1) applies, the **Authority** must—
 - (a) determine whether a **GXP**, which is deemed to be a **conforming GXP** under clause 13.27F, is a **conforming GXP** or a **non-conforming GXP**;
 - (b) reconsider a previous determination, and as a result may decide to replace the previous determination with a new determination.

Clause 13.27B: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27C Process for making a determination

- (1) In making a determination, the **Authority** must—
 - (a) apply the methodology set out in Schedule 13.7; and
 - (b) request and take into account advice from the **system operator**; and
 - (c) take into account any information submitted by a **purchaser** who purchases **electricity** at the **GXP**.
- (2) The **Authority** must make a determination in accordance with the methodology in Schedule 13.7, unless—
 - (a) the **Authority** has applied the methodology; and
 - (b) according to the methodology, the **GXP** is a **conforming GXP**; and
 - (c) the **Authority** considers that the **GXP** should be treated as a **non-conforming GXP**; and
 - (d) the **Authority** has **publicised** criteria under clause 13.27E; and
 - (e) making a determination that the **GXP** is a **non-conforming GXP** is in accordance with the criteria.
- (3) If paragraphs (a) to (e) in subclause (2) apply, the **Authority** may make a determination in accordance with the criteria **publicised** under clause 13.27E.
- (4) As soon as practicable after making a determination, the **Authority** must—
 - (a) advise all **purchasers** and the **system operator**—

- (i) of its determination; and
- (ii) whether, in making the determination, the **Authority** has followed—
 - (A) the methodology set out in Schedule 13.7; or
 - (B) the criteria **publicised** under clause 13.27E; and
- (iii) of the right to request, under clause 13.27H, a reconsideration of the determination; and
- (b) if the determination was requested under clause 13.27H, provide reasons for its decision to the requester.

Clause 13.27C: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27D System operator to provide advice within reasonable time

The **system operator** must provide the advice requested under clause 13.27C(1)(b) within a reasonable time specified by the **Authority**.

Clause 13.27D: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27E Authority may publicise criteria for determining GXP to be non-conforming

- (1) The **Authority** may **publicise** criteria that set out the circumstances in which the **Authority** may make a determination that does not follow the methodology set out in Schedule 13.7.
- (2) The **Authority** must consult with **participants** before—
 - (a) **publicising** the criteria under subclause (1);
 - (b) amending the criteria **publicised** under subclause (1).

Clause 13.27E: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27F GXP deemed to be conforming GXP before determination is made

If the **Authority** has not made a determination for a **GXP**, the **GXP** is deemed to be a **conforming GXP** until the **Authority** determines otherwise.

Clause 13.27F: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27G Authority must publicise and maintain list of non-conforming and conforming GXPs

The **Authority** must **publicise** and maintain a list of all **non-conforming GXPs** and all **conforming GXPs**, including—

- (a) the mean **demand** (in MW) for each **GXP** calculated in accordance with clause 1(b) of Schedule 13.7; and
- (b) if the mean **demand** for a **GXP** is 10 MW or more, the unpredictability measure for the **GXP** calculated in accordance with clause 1(c) of Schedule 13.7.

Clause 13.27G: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27H Right to request determination or reconsideration of determination

- (1) A **purchaser** may request that the **Authority**—
 - (a) determine whether a **GXP** is a **conforming GXP** or a **non-conforming GXP**, in respect of a **GXP**—
 - (i) at which the **purchaser** purchases **electricity**; and
 - (ii) which is deemed to be a **conforming GXP** under clause 13.27F;
 - (b) reconsider a determination made under clause 13.27A or clause 13.27B(4) for a **GXP** at which the **purchaser** purchases **electricity**.
- (2) The **system operator** may request that the **Authority**—
 - (a) determine whether a **GXP**, which is deemed to be a **conforming GXP** under clause 13.27F, is a **conforming GXP** or a **non-conforming GXP**:

- (b) reconsider a determination made under clause 13.27A or clause 13.27B(4).
- (3) The person making the request may provide the **Authority** with information that the person considers relevant to its request.

Clause 13.27H: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27I Effect of determination

- (1) When making a determination, the **Authority** must specify a date and a **trading period** from which the determination takes effect.
- (2) The **Authority** must not specify a date that is earlier than 5 **business days** after the date on which the **Authority** makes the determination.

Clause 13.27I: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27J New GXPs

At least 1 calendar month before a **grid owner** connects a **GXP** to the **grid** for the first time, the **grid owner** must advise the **Authority** in writing of its intention to connect the **GXP**.

Clause 13.27J: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

13.27K Authority to provide information at purchaser's request

- (1) After the **Authority** has made a determination under clause 13.27A or clause 13.27B(4) for a **GXP**, a **purchaser** who purchases **electricity** at the **GXP** may request from the **Authority** the following information in relation to the **GXP**:
 - (a) reconciled **half hour demand** data (in **MW**), as described in clause 2(1)(a) of Schedule 13.7:
 - (b) information about the way in which **demand** switching information (described in clause 2(1)(b) of Schedule 13.7) has been used to prepare the adjusted reconciled **half hour demand** data described in clause 1(a) of Schedule 13.7:
 - (c) information about the one-off events described in clause 2(1)(c) and clause 2(3) of Schedule 13.7 and the way in which those one-off events have been used to prepare the adjusted reconciled **half hour demand** data described in clause 1(a) of Schedule 13.7:
 - (d) the adjusted reconciled **half hour demand** data (in **MW**), as described in clause 1(a) of Schedule 13.7:
 - (e) the estimates of the adjusted reconciled **half hour demand** produced by the statistical predictive model under clause 3(1)(a) of Schedule 13.7, and the residuals calculated under clause 3(1)(b) of Schedule 13.7.
- (2) If a **purchaser** requests information under subclause (1), the **Authority** must provide the information if the information—
 - (a) is available to the **Authority**; and
 - (b) is not confidential; and
 - (c) is not commercially sensitive.

Clause 13.27K: inserted, on 28 March 2012, by clause 21 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

Schedule 13.7

cls 13.27C, 13.27E, 13.27G, and 13.27K

Schedule 13.7: inserted, on 28 March 2012, by clause 67 of the Electricity Industry Participation (Demand-side Bidding and Forecasting) Code Amendment 2011.

Methodology for Determining Conforming and Non-Conforming GXPs

1 Methodology for determining whether GXP is conforming GXP or non-conforming GXP

In making a determination under clause 13.27A or clause 13.27B(4), the **Authority** must use the following method:

- (a) use the input data described in clause 2 to determine the adjusted reconciled **half hour demand** data (in **MW**) for the **GXP** for each **trading period** during the most recent 12 consecutive months for which data is available; and
- (b) using the results from paragraph (a), determine the mean **demand** (in **MW**) for the **GXP** over the most recent 12 consecutive months for which data is available; and
- (c) determine the unpredictability measure for the **GXP** in accordance with clause 3; and
- (d) apply the results from paragraphs (b) and (c) to the table below, to determine whether the **GXP** is either a **conforming GXP** or a **non-conforming GXP**.

Table 1: Determining whether GXP is conforming or non conforming

Category for mean demand (in MW) for a GXP over relevant 12 months (clause 1(b)) (<i>d</i>)	Category for unpredictability measure (clause 1(c)) (<i>p</i>)	Resulting classification of the GXP
Where $d < 10\text{MW}$	For all p	Conforming GXP
Where $10\text{MW} \leq d < 20\text{MW}$	For $p < 0.15$	Conforming GXP
	For $p \geq 0.15$	Non-conforming GXP
Where $20\text{MW} \leq d < 250\text{MW}$	For $p < 0.10$	Conforming GXP
	For $p \geq 0.10$	Non-conforming GXP
Where $d \geq 250\text{MW}$	For all p	Non-conforming GXP

2 Input data

- (1) For the purpose of determining the adjusted reconciled **half hour demand** data for a **GXP** under clause 1(a), the **Authority** must use the following data from the most recent 12 consecutive months for which data is available:
 - (a) reconciled **half hour demand** data for the **GXP** representing purchases of **electricity** at the **GXP** aggregated across all **purchasers** at the **GXP**, and with each **half hour** figure in **MWh** converted to an average **demand** in **MW** over that **half hour**; and
 - (b) information about the impact of **demand** switching on the **GXP**; and
 - (c) information from **distributors**, **purchasers** and the **system operator** about any one-off events that have affected **demand** but which would not be expected to affect **demand** in the future.
- (2) If the **Authority** identifies, under subclause (1)(b), that 2 or more adjacent **GXPs** are significantly affected by **demand** switching, the **Authority** must—

- (a) combine the **GXPs**' reconciled **half hour demand** data as described in subclause (1)(a) and follow the method set out in clause 1 for the combined **GXPs** as if they were a single **GXP**; or
 - (b) follow such other method of addressing the impact of **demand** switching as the **Authority** may determine is appropriate in the circumstances.
- (3) In applying the methodology under clause 1, the **Authority** must remove one-off events identified under this clause from the input data.
- (4) A one-off event includes, but is not limited to, the following:
- (a) a transmission outage that has caused a **GXP** to be unable to be supplied with **electricity**;
 - (b) a **consumer** ceasing to consume at a **GXP**, if over the proportion of the relevant 12 month period for which the **consumer** was consuming **electricity**, the reconciled **demand** attributed to the **consumer** (in **MW**) was on average at least 40% of the total **demand** (in **MW**) at the **GXP**.

3 Calculate unpredictability measures

- (1) For the purpose of determining the unpredictability measure of a **GXP** under clause 1(c), the **Authority** must use the following method:
- (a) the **Authority** must fit an appropriate statistical predictive model as described in subclause (2), to the adjusted reconciled **half hour demand** data (in **MW**) which is produced in accordance with clause 1(a); and
 - (b) the **Authority** must calculate the residuals (in **MW** for each **half hour**) of the statistical predictive model (representing the simulated predictive errors of such a model); and
 - (c) the **Authority** must calculate the unpredictability measure as the ratio of the standard deviation of the residuals calculated under paragraph (b) to the mean **demand** at the **GXP** (calculated under clause 1(b)).
- (2) The statistical predictive model under subclause (1)(a) must achieve the approximate level of predictive accuracy that should be able to be achieved by the **system operator** when preparing the forecast of **demand** under clause 13.7A several hours in advance in the absence of forecast information from **purchasers** and **electricity** users.
- (3) To avoid doubt, the statistical predictive model may include a variable representing weather forecast information.

4 Data for most recent 12 months unavailable

- (1) If the data required under clauses 1 to 3 is not available for the most recent 12 consecutive months, the **Authority** must use reasonable endeavours to make a determination in accordance with the methodology set out in this Schedule using the data it has available.
- (2) If the available data is insufficient to enable the **Authority** to make a determination in accordance with subclause (1), the **Authority** must make a determination by—
- (a) using all available data; and
 - (b) using its own reasonable expectations of the future activities at the **GXP**; and
 - (c) taking into account, to the extent practicable, the methodology set out in clauses 1 to 3.

Appendix C Draft list of non-conforming GXPs

Based on the test run, the following would be non-conforming GXPs based on the data for the year ending 29 February 2012. All other GXPs would be conforming.

GXP	Comment
ASB0661	Irrigation during the summer months impacts on the predictability
EDG0331	Large industrial demand at the GXP – dairy factory
GLN0331	NZ Steel
KAW0112	Norske Skog Tasman
KAW0113	Norske Skog Tasman
MNG1101	Large industrial demand at the GXP – Pacific Steel
TNG0111	Winstone Pulp International
TWI2201	Rio Tinto Aluminium Smelter
WHI0111	Pan Pac Forest Products

According to the methodology applied to the data for the year ending 29 February 2012, the following GXPs would be conforming. However, if the proposed criteria are approved, these GXPs may be determined to be non-conforming.

GXP	Comment
KAW0111	Primarily large industrial demand at the GXP but includes Kawerau township.
KIN0111	Carter Holt Harvey Pulp and Paper Kinleith Mill.
KIN0112	
KIN0113	