nationalgridESO

Data Validation and Consistency Checking

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Data Validation & Consistency Checking

1 Introduction

1.1 Purpose

This document defines the rules for data validation and consistency checking which are applied to Balancing Mechanism data received from Trading Points and Control Points under the terms of the Grid Code [2]. It also covers defaulting rules to be applied in the absence of expected data. This document forms one of the Grid Code's "associated documents" and is referenced from the Grid Code [2].

The mechanisms used for data transfer are EDT (for Trading Points, see [3]) and EDL (for Control Points, see [4]). The Grid Code refers to the EDT and the data submission part of EDL as Electronic Data Communication Facilities (EDL & EDT). It should be noted that with respect to EDL, only submission messages to National Grid will be covered in this document; no information is given concerning Bid-Offer Acceptances and Ancillary Service instructions sent to Control Points by National Grid.

Scope

The normal definition of terms still applies. That is, data validation is concerned with checking that data is in the correct format and within the correct limits, e.g. is it an integer, is it between given limits etc.

Data consistency concerns itself with checking if a particular data record is consistent with other data records and defaulting rules are applied in cases of missing data which should have been submitted.

Failure to comply with the validation or consistency rules will result in rejection of the submission for the BM Unit affected. Section 3 of this document details the validation checks for data submissions by EDL and EDT and section 4 the consistency checks for data submitted by these means. Section 5 details the default rules that apply where data submissions are incomplete and which are independent of the data submission method.

This document does not cover physical data formats for EDT or EDL. These issues are covered in references [3,5].

1.2 Definitions and Abbreviations

Auction Period	A TERRE auction period, which will initially be an hour, moving to half-hour once market matures
Automatic Logging Device	As defined in the Grid Code. It is instruction-receiving part of EDL.
BM Unit	Balancing Mechanism Unit
BST	British Summer Time - time set one hour ahead of Greenwich Mean Time (GMT)
CEC	Connection Entry Capacity, as defined in the CUSC
EDL	Electronic Dispatch Logging – a bi-directional message transfer mechanism. National Grid uses it to send instructions to Control Points and they use it to send BM Unit Data to National Grid. The instruction – issue/receiving part of EDL is referred to as an Automatic Logging

	Device (EDL) in the Grid Code, while the data submission part of EDL is referred to as Electronic Data Communication Facilities (EDL & EDT).
EDT	Electronic Data Transfer – Flat file transfer of submissions from the BM Participant to National Grid. This is referred to as Electronic Data Communication Facilities (EDL & EDT) in the Grid Code.
Gate Closure	Means, in relation to a Settlement Period, the spot time 1 hour before the spot time at the start of that Settlement Period.
GMT	Greenwich Mean Time - mean solar time on the 0° meridian passing through Greenwich, England, measured from midnight.
LTCS	Last Time to Cancel Synchronisation
M	A parameter used for some of the following validation rules – initially set to 239
MEL	Maximum Export Limit
MDP	Maximum Delivery Period
MDV	Maximum Delivery Volume
MIL	Maximum Import Limit
MNZT	Minimum Non-Zero Time
MZT	Minimum Zero Time
N	A parameter used for some of the following validation rules – set to 59
National Grid	In the context of this document means National Grid Electricity Transmission plc
NDZ	Notice to Deviate from Zero
NETA	New Electricity Trading Arrangements
Notification Time	The time at which the transfer of a submission to the National Grid System is completed.
NTB	Notice to Deliver Bids
NTO	Notice to Deliver Offers
Operational Day	Runs from 05:00 to 05:00 local time
RR	Replacement Reserve
Submission Maximum Date	A maximum limit will be placed on the date/times allowed in a given submission. The Submission Maximum Date is equal to the end of the current Operational Day + 5 days.
PN	The Physical Notification (PN) for a BM Unit is the expected level of export or import for that BM Unit in the absence of any Balancing Mechanism Bid-Offer Acceptances from National Grid.

QPN	A Quiescent Physical Notification is a MW value expressing the level of demand expected to be consumed by an underlying process that forms part of the operation of a particular BM Unit at any particular time
RDRE	Run-down Rates for an Exporting BM Unit
RDRI	Run-down Rates for an Importing BM Unit
RURE	Run-up Rates for an Exporting BM Unit
RURI	Run-up Rates for an Importing BM Unit
SEL	Stable Export Limit
SIL	Stable Import Limit
U	A parameter used for some of the following validation rules – initially set to –99999
V	A parameter used for some of the following validation rules – initially set to 99999

Table 1 - Definitions and Abbreviations

The majority of the terms used here are as defined in references 1 and 2.

1.3 Related Documents

1. Balancing and Settlement Code, www.elexon.co.uk
2. The Grid Code, www.nationalgrid.com/uk/Electricity/Codes/gridcode
3. EDT Interface Specification
4. EDL Message Specification

References 3, 4, and in due course 5, are available on the Grid Code, Governance of Electrical Standards web-page: http://www2.nationalgrid.com/UK/Industry-information/Electricity-codes/Grid-code/Electrical-Standards-Documents/

2 Differences between EDL & EDT

The physical data formats for EDL and EDT are covered in references [3,4]. EDL is the primary mechanism by which Control Points inform National Grid of changes to their operating conditions while EDT is used by Trading Points to inform National Grid of changes to other data. As a result the two mechanisms can have different validation and consistency rules applied to the data submitted.

The following table summarises these differences:

Data Item	EDL	EDT
Physical Notifications	Not submitted by EDL	Can be submitted by EDT but only for certain date/times enforced by the rules contained in this document
Quiescent Physical Notifications	Not submitted by EDL	Can be submitted by EDT but only for certain date/times enforced by the rules contained in this document
Bid-Offer Data	Not submitted by EDL	Can be submitted by EDT but only for certain date/times enforced by the rules contained in this document
Maximum Export Limits & Maximum Import Limits	Can be submitted by EDL.	Can be submitted by EDT but only for certain date/times enforced by the rules contained in this document
Existing Dynamic Parameters that are not changing, NDZ, NTO, NTB, MZT, MNZT, MDV & MDP	Can be submitted by EDL and will be applicable from the Notification Time	Only Day Ahead Dynamic Parameters can be submitted by EDT, but they have been removed from the Grid Code and are not used by National Grid. Market participants' EDT clients may continue to send this data to National Grid if it is not possible to stop sending it. Any Day Ahead Dynamic Parameters submitted to National Grid via EDT will be accepted by National Grid without any data validation or consistency checks.
Existing versions of Dynamic Parameters that are changing: SEL[static], SIL[static], RURE[3 rates], RDRE[3 rates], RURI[3 rates] & RDRI[3 rates]	Can be submitted by EDL and will be applicable from the Notification Time	

Table 2 - Differences between EDL and EDT

It is also worth noting that EDL is a message based system while EDT is a file based system. As a result data records sent via EDL are processed separately and will have distinct notification times. However, data records sent via EDT are part of a single file and so will have the same notification time. The notification time is important because it determines the precedence of different submissions.

3 Validation CHECKS FOR EDL & EDT

3.1 Valid Date/Times

Rule Number	Description
V_GEN_1	All date/times must obey the formats given below
V_GEN_2	Any submitted date/times must be valid calendar date/times

Table 3 - Valid date / times

Fields designated as date/times must be in GMT and must be to a resolution of one minute.

Rule V_GEN_2 ensures that a date such as 2000-02-31 will be rejected.

3.1.1 EDT Date/Time Formats

EDT date/time formats follow the convention

YYYY-MM-DD HH:MI

Where the following definitions apply:

YYYY	A 4 digit integer
MM	A 2 digit integer from the set {01..12}
DD	A 2 digit integer from the set {01..31}
HH	A 2 digit number from the set {00..23}
MI	A 2 digit number from the set {00..59}

Table 4 - EDT Date / Time Formats

3.1.2 EDL Date/Time Formats

EDL date formats follow the convention

DD-MON-YYYY HH:MI

Where the following definitions apply:

DD	A 2 digit integer from the set {01..31}
MON	From the set {JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC}
YYYY	A 4 digit integer
HH	A 2 digit number from the set {00..23}
MI	A 2 digit number from the set {00..59}

Table 5 - EDL Date / Time Formats

3.2 Other General Validation Rules

The following rules enforce checks on the BM Unit names and the relationship between the BM Unit and Control Point or trading Point. Also there could be general format problems with the submitted data, meaning that validation and consistency rules cannot be applied.

Rule Number	Description
V_GEN_3	Submissions will be checked to ensure that the submitter has the right to send data for a given BM Unit
V_GEN_4	The BM Unit must have a valid name
V_GEN_5	It must be possible to process a submission in order to check its validity or consistency. The rule covers cases where the data submission does not follow basic EDT or EDL formats and therefore cannot be checked. For example an EDT file could be so corrupted that individual data items may not be identifiable.

Table 6 - Other general validation rules

3.3 Valid Physical Notifications

Physical Notifications (PN) can only be submitted via EDT, i.e. EDL does not have the capability to handle this information.

A Physical Notification record consists of the following fields.

- A date/time from.
- A PN level from (units of MW).
- A date/time to.
- A PN level to (units of MW).

Rule Number	Description
V_PN_1	A PN level must be an integer greater than or equal to –9999MW and less than or equal to the Connection Entry Capacity (CEC) of the BM Unit where such a value exists or an alternative value agreed with the Lead Party where such a value does not exist. In either case, the Lead Party may from time to time choose to submit alternative lower values to validate against.
V_PN_2	Null fields are not allowed
V_PN_3	A Physical Notification “date/time from” must be earlier than its “date/time to”
V_PN_4	The Physical Notification “date/time from” field must be later than or equal to the end of the Balancing Mechanism Window Period.

V_PN_5	The Physical Notification “date/time to” field must be earlier than or equal to the Submission Maximum Date

Table 7 - Valid Physical Notifications

MW levels for exporters of power would be expected to be positive. MW levels for importers of power would be expected to be negative.

3.4 Valid Quiescent Physical Notifications

Quiescent Physical Notifications (QPN) can only be submitted via EDT, i.e. EDL does not have the capability to handle this information.

A quiescent physical notification record consists of the following fields.

- A date/time from.
- A QPN level from (units of MW).
- A date/time to.
- A QPN level to (units of MW).

Rule Number	Description
V_QPN_1	A QPN level must be an integer greater than or equal to –9999MW and less than or equal to 0MW
V_QPN_2	Null fields are not allowed
V_QPN_3	A Quiescent Physical Notification “date/time from” must be earlier than its “date/time to”
V_QPN_4	The Quiescent Physical Notification “date/time from” field must be later than or equal to the end of the Balancing Mechanism Window Period.
V_QPN_5	The Quiescent Physical Notification “date/time to” field must be earlier than or equal to the Submission Maximum Date

Table 8 - Valid Quiescent Physical Notifications

From the ranges allowed for QPN levels it can be deduced that only importers of power are expected to submit non-zero values for Quiescent Physical Notifications.

3.5 Valid Bid-Offer Data

Bid-offer data can only be submitted via EDT, i.e. EDL does not have the capability to handle this information.

A bid-offer record consists of the following fields.

- A date/time from.
- A date/time to.

- A bid-offer pair number.
- A bid-offer level from (units of MW).
- A bid-offer level to (units of MW).
- An offer price (units of £/MWh).
- A bid price (units of £/MWh).

Rule Number	Description
V_BOD_1	The fields “date/time from” and “date/time to” must correspond to settlement half hour period boundaries
V_BOD_2	The field “date/time from” must be earlier than the field “date/time to”
V_BOD_3	The “bid-offer pair number” must be an integer greater than or equal to –5 and less than or equal to 5 BUT must not have the value 0
V_BOD_4	The fields “bid-offer level from” and “bid-offer level to” must be an integer greater than or equal to –9999MW and less than or equal to 9999MW
V_BOD_5	The fields “bid-offer level from” and “bid-offer level to” must be equal
V_BOD_6	If the “bid-offer pair number” is positive then the values of the fields “bid-offer level from” and “bid-offer level to” must also be positive or zero. If the “bid-offer pair number” is negative then the values of the fields “bid-offer level from” and “bid-offer level to” must also be negative or zero.
V_BOD_7	Null fields are not allowed
V_BOD_8	All “offer prices” and “bid prices” must be a real number, accurate to 2 decimal places, which must be greater than or equal to –99999.00 £/MWh and less than or equal to 99999.00 £/MWh
V_BOD_9	The bid-offer “date/time from” field must be later than or equal to the end of the Balancing Mechanism Window Period.
V_BOD_10	The bid-offer “date/time to” field must be earlier than or equal to the Submission Maximum Date
V_BOD_11	In order to submit Bid-Offer Data, a BM Unit must have an Automatic Logging Device associated with it.

Table 9 - Valid Bid-Offer Data

3.6 Valid Maximum Export Limits

A Maximum Export Limit (MEL) record consists of the following fields.

- A date/time from.

- A MEL level from (units of MW).
- A date/time to.
- A MEL level to (units of MW).

Rule Number	Description
V_MEL_1	The fields “MEL level from” and “MEL level to” must be integers greater than or equal to 0MW and less than or equal to 9999MW
V_MEL_2	Null fields are not allowed
V_MEL_3	The field “date/time from” must be earlier than the field “date/time to”
V_MEL_4	If the submission has been received via EDT then the MEL “date/time from” field must be later than or equal to the end of Balancing Mechanism Window Period.
V_MEL_5	The MEL “date/time to” field must be earlier than or equal to the Submission Maximum Date
V_MEL_6	The MEL “date/time from” field must be later than or equal to the Notification Time.

Table 10 - Valid Maximum Export Limits

3.7 Valid Maximum Import Limits

A Maximum Import Limit (MIL) record consists of the following fields.

- A date/time from.
- A MIL level from (units of MW).
- A date/time to.
- A MIL level to (units of MW).

Rule Number	Description
V_MIL_1	The fields “MIL level from” and “MIL level to” must be integers greater than or equal to –9999MW and less than or equal to 0MW
V_MIL_2	Null fields are not allowed
V_MIL_3	The field “date/time from” must be earlier than the field “date/time to”
V_MIL_4	If the submission has been received via EDT then the MIL “date/time from” field must be later than or equal to the end of the Balancing Mechanism Window Period.
V_MIL_5	The MIL “date/time to” field must be earlier than or equal to the Submission Maximum Date.

V_MIL_6	The MIL “date/time from” field must be later than or equal to the Notification Time.

Table 11 - Valid Maximum Import Limits

3.8 Valid Run-up and Run-down Rates

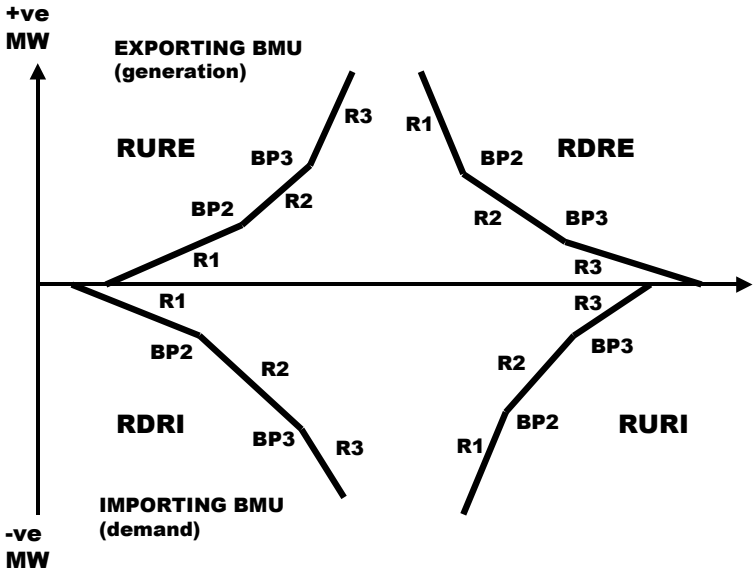
Submissions can be made for run-up and run-down rates which correspond to changes in the production and consumption of power. Hence a given BM Unit can have four sets of rates and breakpoints in the following way:

- A set of parameters describing run-up rates when exporting.
- A set of parameters describing run-down rates when exporting.
- A set of parameters describing run-up rates when importing.
- A set of parameters describing run-down rates when importing.

This section 3.8 only applies to the current immediately-applicable versions of Run-Up and Run-Down Rates submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Agents may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

Reference 1 uses the abbreviation ^{g}RUR and ^{g}RUE for the run-up rates and the elbow points for a given BM Unit. The g superscripts for the run-up dynamics of an exporting BM Unit are described in detail but the use of this superscript for an importing BM Unit is less well defined (there is a simple statement that in this case g will be less than zero). Similar abbreviations are proposed for run-down dynamics.

It has proved very difficult to use the proposed negative g superscripts in a logical way and as a result this document deviates from the proposal in reference 1 and will instead use the abbreviations given overleaf.



3.8.1 Valid Run-up Rates for an Exporting BM Unit

A record for the Run-up Rates of an Exporting BM Unit (RURE) consists of the following fields.

- First Run-up Rate (abbreviation RURE_R1, units MW/minute).
- Second Run-up Rate Breakpoint (abbreviation RURE_BP2, units MW).
- Second Run-up Rate (abbreviation RURE_R2, units MW/minute).
- Third Run-up Rate Breakpoint (abbreviation RURE_BP3, units MW).
- Third Run-up Rate (abbreviation RURE_R3, units MW/minute).

Rule Number	Description
V_RURE_2	The following are the only valid combinations of rates and breakpoint fields allowed 1st valid combination RURE_R1 = NOT NULL RURE_BP2 = NULL RURE_R2 = NULL RURE_BP3 = NULL RURE_R3 = NULL 2nd valid combination RURE_R1 = NOT NULL RURE_BP2 = NOT NULL RURE_R2 = NOT NULL RURE_BP3 = NULL RURE_R3 = NULL 3rd valid combination RURE_R1 = NOT NULL RURE_BP2 = NOT NULL RURE_R2 = NOT NULL RURE_BP3 = NOT NULL RURE_R3 = NOT NULL
V_RURE_3	If a run-up rate field is not null it must be a real number, accurate to 1 decimal place, greater than or equal to 0.2MW/minute and less than or equal to 999.0MW/minute.
V_RURE_4	If a run-up rate breakpoint field is not null it must be an integer greater than or equal to 1MW and less than or equal to 9999MW
V_RURE_5	If both run-up rate breakpoints are not null then the field “Second Run-up Rate Breakpoint” must be less than the field “Third Run-up Rate Breakpoint”

Table 12 - Run-up Rates for an Exporting BM Unit

3.8.2 Valid Run-down Rates for an Exporting BM Unit

A record for the Run-down Rates of an Exporting BM Unit (RDRE) consists of the following fields.

- First Run-down Rate (abbreviation RDRE_R1, units MW/minute).
- Second Run-down Rate Breakpoint (abbreviation RDRE_BP2, units MW).
- Second Run-down Rate (abbreviation RDRE_R2, units MW/minute).
- Third Run-down Rate Breakpoint (abbreviation RDRE_BP3, units MW).
- Third Run-down Rate (abbreviation RDRE_R3, units MW/minute).

Rule Number	Description
V_RDRE_2	The following are the only valid combinations of rates and breakpoint fields allowed 1st valid combination RDRE_R1 = NOT NULL RDRE_BP2 = NULL RDRE_R2 = NULL RDRE_BP3 = NULL RDRE_R3 = NULL 2nd valid combination RDRE_R1 = NOT NULL RDRE_BP2 = NOT NULL RDRE_R2 = NOT NULL RDRE_BP3 = NULL RDRE_R3 = NULL 3rd valid combination RDRE_R1 = NOT NULL RDRE_BP2 = NOT NULL RDRE_R2 = NOT NULL RDRE_BP3 = NOT NULL RDRE_R3 = NOT NULL
V_RDRE_3	If a run-down rate field is not null it must be a real, accurate to 1 decimal place, greater than or equal to 0.2MW/minute and less than or equal to 999.0MW/minute.
V_RDRE_4	If a run-down rate breakpoint field is not null it must be an integer greater than or equal to 1MW and less than or equal to 9999MW
V_RDRE_5	If both run-down rate breakpoints are not null then the field “Second Run-down Rate Breakpoint” must be greater than the field “Third Run-down Rate Breakpoint”

Table 13 – Run-down Rates for an Exporting BM Unit

3.8.3 Valid Run-up Rates for an Importing BM Unit

A record for the Run-up Rates of an Importing BM Unit (RURI) consists of the following fields.

- First Run-up Rate (abbreviation RURI_R1, units MW/minute).
- Second Run-up Rate Breakpoint (abbreviation RURI_BP2, units MW).
- Second Run-up Rate (abbreviation RURI_R2, units MW/minute).
- Third Run-up Rate Breakpoint (abbreviation RURI_BP3, units MW).
- Third Run-up Rate (abbreviation RURI_R3, units MW/minute).

Rule Number	Description
V_RURI_2	The following are the only valid combinations of rates and breakpoint fields allowed 1st valid combination RURI_R1 = NOT NULL RURI_BP2 = NULL RURI_R2 = NULL RURI_BP3 = NULL RURI_R3 = NULL 2nd valid combination RURI_R1 = NOT NULL RURI_BP2 = NOT NULL RURI_R2 = NOT NULL RURI_BP3 = NULL RURI_R3 = NULL 3rd valid combination RURI_R1 = NOT NULL RURI_BP2 = NOT NULL RURI_R2 = NOT NULL RURI_BP3 = NOT NULL RURI_R3 = NOT NULL
V_RURI_3	If a run-up rate field is not null it must be a real number, accurate to 1 decimal place, greater than or equal to 0.2MW/minute and less than or equal to 999.0MW/minute.
V_RURI_4	If a run-up rate breakpoint field is not null it must be an integer greater than or equal to -9999MW and less than or equal to -1MW
V_RURI_5	If both run-up rate breakpoints are not null then the field “Second Run-up Rate Breakpoint” must be less than the field “Third Run-up Rate Breakpoint”

Table 14 – Run-up Rates for Importing BM Unit

3.8.4 Valid Run-down Rates for an Importing BM Unit

A record for the Run-down Rates of an Importing BM Unit (RDRI) consists of the following fields.

- First Run-down Rate (abbreviation RDRI_R1, units MW/minute).
- Second Run-down Rate Breakpoint (abbreviation RDRI_BP2, units MW).
- Second Run-down Rate (abbreviation RDRI_R2, units MW/minute).
- Third Run-down Rate Breakpoint (abbreviation RDRI_BP3, units MW).
- Third Run-down Rate (abbreviation RDRI_R3, units MW/minute).

Rule Number	Description
V_RDRI_2	The following are the only valid combinations of rates and breakpoint fields allowed 1st valid combination RDRI_R1 = NOT NULL RDRI_BP2 = NULL RDRI_R2 = NULL RDRI_BP3 = NULL RDRI_R3 = NULL 2nd valid combination RDRI_R1 = NOT NULL RDRI_BP2 = NOT NULL RDRI_R2 = NOT NULL RDRI_BP3 = NULL RDRI_R3 = NULL 3rd valid combination RDRI_R1 = NOT NULL RDRI_BP2 = NOT NULL RDRI_R2 = NOT NULL RDRI_BP3 = NOT NULL RDRI_R3 = NOT NULL
V_RDRI_3	If a run-down rate field is not null it must be a real, accurate to 1 decimal place, greater than or equal to 0.2MW/minute and less than or equal to 999.0MW/minute.
V_RDRI_4	If a run-down rate breakpoint field is not null it must be an integer greater than or equal to -9999MW and less than or equal to –1MW
V_RDRI_5	If both run-down rate breakpoints are not null then the field “Second Run-up Rate Breakpoint” must be greater than the field “Third Run-up Rate Breakpoint”

Table 15 - Run-down Rates for Importing BM Unit

3.9 Valid Notice to Deviate from Zero

This section 3.9 only applies to the immediately-applicable version of Notice to Deviate from Zero submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Notice to Deviate from Zero (NDZ) record consists of the following field.

- An NDZ value (units of minutes).

Rule Number	Description
V_NDZ_2	The field “NDZ value” cannot be null and must be an integer greater than or equal to 0 minutes and less than or equal to 999 minutes

Table 16 - Valid Notice to deviate from zero

3.10 Valid Notice to Deliver Offers

This section 3.10 only applies to the immediately-applicable version of Notice to Deliver Offers submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Notice to Deliver Offers (NTO) record consists of the following field.

- An NTO value (units of minutes).

Rule Number	Description
V_NTO_2	The field “NTO value” cannot be null and must be an integer greater than or equal to 0 minutes and less than or equal to N minutes

Table 17 - Valid Notice to deliver offers

3.11 Valid Notice to Deliver Bids

This section 3.11 only applies to the immediately-applicable version of Notice to Deliver Bids submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Notice to Deliver Bids (NTB) record consists of the following field.

- An NTB value (units of minutes).

Rule Number	Description
V_NTB_2	The field “NTB value” cannot be null and must be an integer greater than or equal to 0 minutes and less than or equal to N minutes

Table 18 - Valid Notice to deliver bids

3.12 Valid Minimum Zero Time

This section 3.12 only applies to the immediately-applicable version of Minimum Zero Time submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Minimum Zero Time (MZT) record consists of the following field.

- An MZT value (units of minutes).

Rule Number	Description
V_MZT_2	The field “MZT value” cannot be null and must be an integer greater than or equal to 0 minutes and less than or equal to 999 minutes

Table 19 - Valid Minimum Zero Time

3.13 Valid Minimum Non-Zero Time

This section 3.13 only applies to the immediately-applicable version of Minimum Non-Zero Time submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Minimum Non-zero Time (MNZT) record consists of the following field.

- An MNZT value (units of minutes).

Rule Number	Description
V_MNZT_2	The field “MNZT value” cannot be null and must be an integer greater than or equal to 0 minutes and less than or equal to 999 minutes

Table 20 - Valid Minimum Non-Zero Time

3.14 Valid Stable Export Limit

This section 3.14 only applies to the immediately-applicable version of Stable Export Limit submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Stable Export Limit (SEL) record consists of the following field.

- A SEL value (units of MW).

Rule Number	Description
V_SEL_2	The field “SEL value” cannot be null and must be an integer greater than or equal to 0MW and less than or equal to 9999MW

Table 21 - Valid Stable Export Limit

3.15 Valid Stable Import Limit

This section 3.15 only applies to the immediately-applicable version of Stable Import Limit submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Stable Import Limit (SIL) record consists of the following fields.

- A SIL value (units of MW).

Rule Number	Description
V_SIL_2	The field “SIL value” cannot be null and must be an integer greater than or equal to –9999MW and less than or equal to 0MW

Table 22 - Valid Stable Import Limit

3.16 Valid Maximum Delivery Volume

This section 3.16 only applies to the immediately-applicable version of Maximum Delivery Volume submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Maximum Delivery Volume (MDV) record consists of the following field.

- An MDV value (units of MWh).

Rule Number	Description
V_MDV_2	The field “MDV value” cannot be null and must be an integer greater than or equal to U MWh and less than or equal to V MWh

Table 23 - Valid Maximum Delivery Volume

3.17 Valid Maximum Delivery Period

This section 3.17 only applies to the immediately-applicable version of Maximum Delivery Period submitted by EDL, as day-ahead Dynamic Parameters have been removed from the Grid Code and are not used by National Grid. For the purposes of backwards compatibility, Trading Points may still submit day ahead Dynamic Parameters by EDT in accordance with reference [3] and these will be accepted by National Grid without any validation or consistency checks.

A Maximum Delivery Period (MDP) record consists of the following field.

- An MDP value (units of minutes).

Rule Number	Description
V_MDP_2	The field “MDP value” cannot be null and must be an integer greater than or equal to 1 minute and less than or equal to M minutes

Table 24 - Valid Maximum Delivery Period

3.18 Valid RR Bid Data

RR Bid data can only be submitted via EDT.

A RR Bid record consists of the following fields.

- Date/time from.
- Direction (Up or Down)
- Level (Maximum)
- *Level (Minimum)*
- Price (units of £/MWh)

- *Associated Bid Type (LINK, MULT or EXCL)*
- *Associated Bid Id*

Rule Number	Description
V_RRB_1	Mandatory field {Time From, Direction, Level, Price} is not specified
V_RRB_2	Date/time from relates to a closed RR Auction period
V_RRB_5	The date/time from field must be earlier than or equal to the Submission Maximum Date
V_RRB_6	Direction must be UP or DOWN
V_RRB_7	Associated bid type must be one of LINK, MULT, EXCL
V_RRB_9	Divisible flag must be TRUE or FALSE
V_RRB_10	Associated bid type and set must both have a value or both be NULL
V_RRB_11	Max limit of bids per BM Unit per Auction Period exceeded[1]

Table 25 - Valid RR Bid Data

[1] At present this number is set to 20, however, under its own discretion NGESO may need to change this limit

4 Consistency CHECKS FOR EDT files

4.1 Physical Notification Consistency Rules

Physical Notification records are submitted via EDT flat files. Within an EDT file there is no implied ordering and as a result records for the same BM Unit cannot cover the same time period. If the records did cover the same time period it would be impossible to determine which record took precedence.

There is also a requirement that a Physical Notification for a given BM Unit must be submitted for every half hour period start “date/time” covered by the submission and that the records submitted must cover complete half hour periods. For example the following combination of to and from date/times is acceptable

“from date/time”	“to date/time”
2000-02-07 10:00	2000-02-07 10:15
2000-02-07 10:15	2000-02-07 10:30
2000-02-07 10:30	2000-02-07 11:00

However this combination

“from date/time”	“to date/time”
2000-02-07 10:00	2000-02-07 10:15
2000-02-07 10:16	2000-02-07 10:31
2000-02-07 10:31	2000-02-07 10:59

will fail consistency checking because there is a gap in the records between 10:15 and 10:16, the record starting at 10:16 and extending to 10:31 goes beyond the settlement half hour end time of 10:30, there is no record corresponding to the settlement period start of 10:30, and there is a gap between 10:59 and the end of the settlement period given by 11:00.

Rule Number	Description
C_PN_1	Physical Notification records, for the same BM Unit, with the same Notification Time must cover distinct time ranges.
C_PN_2	Physical Notification records, for the same BM Unit, with the same Notification Time must cover complete settlement half hour periods. In addition a sub-set of the records must have “date/time” fields corresponding to the start of each half hour period covered.

Table 26 - Physical Notification Consistency Rules

4.2 Quiescent Physical Notification Rules

The clarification comments given in section 4.1 for physical notifications are equally applicable to quiescent physical notifications.

Rule Number	Description

C_QPN_1	Quiescent Physical Notification records, for the same BM Unit, with the same Notification Time must cover distinct time ranges.
C_QPN_2	Quiescent Physical Notification records, for the same BM Unit, with the same Notification Time must cover complete settlement half hour periods. In addition a sub-set of the records must have “date/time” fields corresponding to the start of each half hour period covered.

Table 27 - Quiescent Physical Notification Rules

4.3 Bid-Offer Consistency Rules

A bid-offer set is defined as those bid-offer records, for a given BM Unit, that have the same Notification Times, the same “date/time from” fields, and the same “date/time to” fields.

Rule Number	Description
C_BOD_1	Bid-offer sets must cover distinct time ranges.
C_BOD_2	For a given bid-offer set “offer prices” submitted must not decrease as the values of the “bid-offer pair number” increases, i.e. prices must be monotonically non-decreasing
C_BOD_3	For a given bid-offer set “bid prices” submitted must not decrease as the values of the “bid-offer pair number” increases, i.e. prices must be monotonically non-decreasing
C_BOD_4	Each bid-offer set must contain bid-offer records corresponding to the “bid-offer pair numbers” +1 and –1 and for a given bid-offer set the “bid-offer pair numbers” must be continuous (with the exception that 0 is not an allowed value).
C_BOD_5	For a given bid-offer set the “offer price” must be equal to or greater than the “bid price” for each individual “bid-offer pair number”.
C_BOD_6	For a given bid-offer set, the fields “bid-offer level from” and “bid-offer level to”, for all bid-offer pairs other than the pair with the highest positive “bid-offer pair number” and the pair with the lowest negative “bid-offer pair number”, must not be zero.

Table 28 - Bid-Offer Consistency Rules

4.4 Maximum Export Limit Consistency Rules

Rule Number	Description
C_MEL_1	Maximum Export Limit records, for the same BM Unit, with the same Notification Time must cover distinct time ranges.

Table 29 - Maximum Export Limit Consistency Rules

4.5 Maximum Import Limit Consistency Rules

Rule Number	Description
C_MIL_1	Maximum Import Limit records, for the same BM Unit, with the same Notification Time must cover distinct time ranges.

Table 30 - Maximum Import Limit Consistency Rules

4.6 RR Bid Consistency Rules

Rule Number	Description
C_RRB_8	Bid Id must be unique within a Delivery Period
C_RRB_9	Bid Id requires common values for Divisible, Direction, Assoc Bid Type and Set

Table 31 – RR Bid Consistency Rules

5 Defaults

5.1 Default Data

It should be noted that, in general, if defaulted data is not overwritten by subsequent submissions it will become operational data.

There is a single defaulting rule for Bid-Offer Data. However, for Physical Notifications, Quiescent Physical Notifications, Maximum Export Limits, Minimum Import Limits, Stable Export Limits and Stable Import Limits, there is a choice between two defaulting rules; the selected option will apply for all these data types for a particular BM Unit. In the absence of any request to apply a specific rule for any BM Unit and data type, the first rule C will be applied as a matter of course, unless it relates to an External Interconnection, in which case the second rule Z will apply in the absence of any such request. The decision as to which rule can be applied to a specific BM Unit is the responsibility of National Grid.

Data defaulting is applied where the submitted data is not complete for any Operational Day at the relevant time. For example, at 1999-12-06 11:00 if there were a gap in data covering a period from 1999-12-07 13:00 to 1999-12-07 14:00 (that is in the following Operational Day) then default data would be generated to fill the gap. Using the first rule, the data from 1999-12-06 13:00 to 1999-12-06 14:00 would be copied to fill the gap. This data would include all updates that had been made up to 1999-12-06 11:00 for that time period. Using the second rule Z, this gap would be filled with zero level data.

5.2 Defaulting and Clock Change Days

For real-time systems operating twenty-four hours per day in local time, an issue exists with duplicated and missing hours as local time changes between time standards. In general, the clock

change occurs in the early hours (at 01:00 GMT) on a Sunday. The nature of the Operational Day (05:00 to 05:00 local time) means that the clock change occurs towards the end of the Saturday Operational Day. As a result of the clock change, a Short Day (23hrs) occurs in spring and a Long Day (25hrs) occurs in autumn.

On the basis of these assumptions, the following table describes the mechanism used to generate default data where gaps exist in the data submitted. The table defines the mechanism for each of the Operational Days before, during and after each clock change. The last column defines, for each day, the source of data for any gaps in that Operational Day for which defaulting is done. Note that all times shown in the table are in local time.

The method adopted preserves the local time profiles for data from Operational Days before to those after the Operational Day in which the clock change falls. However, on the clock change Operational Days themselves, there is a shift in data for part of the day. In the case of the spring clock change, periods after the clock change are shifted one hour later according to local time. In the case of the autumn clock change, periods before the clock change are shifted one hour later according to local time.

Clock Change	Operational Day	Day Type	When Defaulted	Default Mechanism
Spring	Friday	GMT	11:00 Thursday	Copy data from period 24 hours earlier
	Saturday	Short Day	11:00 Friday	Copy data from period 24 hours earlier
	Sunday	BST	11:00 Saturday	For periods from 05:00 to 04:00: Copy data from period 23 hours earlier For periods from 04:00 to 05:00: Copy data from period 47 hours earlier
Autumn	Friday	BST	11:00 Thursday	Copy data from period 24 hours earlier
	Saturday	Long Day	11:00 Friday	Copy data from period 25 hours earlier
	Sunday	GMT	11:00 Saturday	Copy data from period 24 hours earlier

Table 32 - Defaulting and Clock Change days

5.3 Default Rules for Physical Notifications

Rule Number	Description
C	If no Physical Notification submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.

Z	If no Physical Notification submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day.

Table 33 - Default Rules for Physical Notifications

5.4 Default Rules for Quiescent Physical Notifications

Rule Number	Description
C	If no Quiescent Physical Notification submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.
Z	If no Quiescent Physical Notification submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day.

Table 34 - Default Rules for Quiescent Physical Notifications

5.5 Default Rules for Maximum Export Limit

Rule	Description
C	If no Maximum Export Limit submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.
Z	If no Maximum Export Limit submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day

Table 35 - Default Rules for Maximum Export Limit

5.6 Default Rules for Maximum Import Limit

Rule Number	Description
C	If no Maximum Import Limit submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.
Z	If no Maximum Import Limit submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day

Table 36 - Default Rules for Maximum Import Limit

5.7 Default Rules for Stable Export Limit

Rule Number	Description
C	If no Stable Export Limit submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.
Z	If no Stable Export Limit submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day

Table 37 - Default Rules for Stable Export Limit

5.8 Default Rules for Stable Import Limit

Rule Number	Description
C	If no Stable Import Limit submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.
Z	If no Stable Import Limit submission, or a partial submission, has been made by 11:00 a zero profile will be applied to fill gaps in data for the next Operational Day

Table 38 - Default Rules for Stable Import Limit

5.9 Default Rule for Bid-Offer Data

Rule	Description
BOD	If no Bid-Offer submission, or a partial submission, has been made by 11:00 the data for the current Operational Day will be copied forward to fill gaps in the next Operational Day.

Table 39 - Default Rule for Bid-Offer Data

6 Initial Data

There are no initial data values populated for a BM Unit when it is first registered with National Grid. Instead, once the BM Unit has been registered with National Grid. Instead, for those BM Units that wish to actively participate in the Balancing Mechanism, the associated Trading Point/Control Point should submit appropriate values using the communication methods specified in Grid Code BC1.4.1(a) [2].

Document Status

AMENDMENT RECORD

Issue	Draft	Date	Author	Description of changes
10	2	27/06/2019	RDG	Add validation & consistency rules for RRB submissions
10	1	18/10/18	RDG	Include changes for TERRE; Removal of EDT*
9		14/07/16	SCR	Authority approval of Issue 9 draft 5 changes
9	5	24/01/14	RJP	Updated following comments from GC0068 Consultation review
9	4	31/10/13	RJP	Updated following comments from GCRP members in preparation for industry consultation
9	3	11/10/13	RJP	Updated following review at the EBSG Workgroup for circulation to GCRP for comments
9	2	18/09/13	RJP	Updated following internal review for circulation to EBSG Workgroup
9	1	23/08/13	RJP	Changes for EBS including adding the section on EDT*
8	3	25/01/12	RDG	Add validation rule D_BOD_2; update introduction. Update initial NDZ to 2 minutes in line with NTO & NTB
8	2	2/11/11	RDG	Updates after review Update value for N
8	1	24/10/11	RDG	Add validation rule V_BOD_11 Add Section 6: Initial values
7		11/10/04	PH	Authority approval of Issue 7 draft 1 changes

7	1	3/11/03	PH	Replace Generation Capacity with Connection Entry Capacity or equivalent.
6		25/05/04	RDG	Authority approval of Issue 6 draft 1 changes
6	1	19/11/02	RDG	Introduce D_PN_2, D_QPN_1, D_MEL_1, D_MIL_1 as alternative rules for data defaulting. Modify Gate Closure parameter from 3.5 to 1 hours
5		19/12/00	DJB	Include comments from internal review.
5	1	06/12/00	DJB	Include notes on how clock change affects defaulting rules and other clarifications. Removed rules: D_BOD_2; D_BOD_3; D_BOD_4. NGC Events: 2540, 2539, 2744
4		24/05/00	JMW	Included comments from internal reviews. Added new rule C_BOD_6. Added clarification for rule V_GEN_5 and V_BOD_6
4	1	17/05/00	MBD	Included new rules V_GEN_5, V_MEL_6 and V_MIL_6. Added clarification for rule C_BOD_4.
3		14/03/00	MBD	Final comments included before issued
2		10/02/00	MBD	Final changes before release to PDO
1		28/01/00	MBD	Included final internal review comments

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