Reconciliation Manager

Functional Specification

June 2023
Version 15.1

Version control

Version	Date amended	Comments
1.0 to 9.0	September 2006 to May 2008	Archived revisions. Can be found in the RM functional specifications with version number 9.5 or earlier.
9.1	1 November 2010	Updated for transition to Electricity Authority and amendments to parts E and J of the rules
9.2	16 February 2011	Additional reports added
9.3	11 March 2011	Updated with AV-160: Automated Trade Notifications
9.4	01 June 2012	Correction to spelling
9.5	15 January 2013	Updated format and numbering
9.6	31 January 2014	Changes as a result of the Functional Specification review: 4 documents merged into 1. New manual processes section added into which the purely manual processes have been moved. New manual processes PT-010, PT-020, PT-030 and NT-040 added. Separation of the RM interface to the Registry isolated from RS-030 into new process RG-010. Clarifications added to RS-030, NT-010, NT-020, NT-030, AV-020, AV-150 and GR-180. Various formatting corrections particularly to Figure 1 and process maps. Global change of “retailer” to “trader”.
9.7	April 2014	Changes for the dispatchable demand project
9.8	May 2014	Changes following the dispatchable demand audit
9.9	June 2014	Changes for automatic generation of EG1 and PV1 profiles
9.10	July 2014	Authority DD comments
9.20	August 2014	Revised to include scaling factor changes

Version	Date amended	Comments
9.21	June 2015	Updated GR-225's I En Np Quantity column to I En X Np Quantity. Changes resulting from the automation of outage constraints
9.22	April 2016	Updates to AV-060, AV-070, AV-180 and NT-050
9.23	May 2016	Addition of GR-045
9.24	July 2016	Addition of ERM interface in section 2.5
9.25	August 2016	Revised wording of GR-045
9.26	September 2016	Update to file naming conventions and file headers (sections 2.4 & 2.5)
9.27	March 2017	Update to GR-310, AV-010, AV-150, GR-290, GR-300, NT-010, AV-165, PT-030. Included section for public access. NT-020 and NT-040 have been merged into NT-050.
9.28	July 2017	Update to AV-180, PT-010 and GR-170 Creation GR-330 and GR-340.
9.29	October 2018	Additional Report GR-265 for the Authority
10.0	May 2020	Report added. Annual Consumption Report (GR-190) ICP Submissions Aggregate (GR-145)
11.0	October 2022	Report GR-220 updated with extra column added Comments on GR-220, GR-225 and GR-230 added
12.0	March 2021	Additional report GR-350 added Updated GR-265 from process map.
13.0	May 2021	Additional report GR-065 added. GR-280 report destination update
14.0	May 2022	• Additional report GR-235 added. • Update to GR-130 to include additional attributes, NSP and Grid NSP. • Daylight saving TPR trading period run technique been updated to AV-040, MR-010, MR-020 and Reconciliation management process 6.4.
15.0	Sep 2022	Real Time Pricing project changes on AV-030.

Version	Date amended	Comments
15.1	30/06/2023	Updated EA's logo

Contents

Tables

Figures

Executive Summary

(a) This document specifies the functional requirements of the reconciliation management system. This document should be read in conjunction with the associated Reconciliation Operational Requirements.

(b) The purpose of the reconciliation management system is to take information supplied by reconciliation participants, reconcile it and process it into a form suitable for subsequent use by the Clearing Manager to invoice purchasers and generators.

(c) The system must enable the Reconciliation Manager to comply with its responsibilities set out in the Electricity Industry Participation Code 2010 (Code), which include:

- checking that submission information is complete and accurate;
- reconciling submission information by:
    - adjusting for inaccuracies by applying an ICP days factor and scorecard;
    - allocating non-half-hourly submissions into half-hours by applying profiles;
    - applying loss factors;
    - calculating unaccounted for electricity (UFE);
    - balancing within balancing areas;
    - allocating UFE and consumed electricity to purchasers; and
    - allocating generated electricity to generators;
- producing reconciled generation and consumption information for reconciliation participants and the Clearing Manager; and
- producing aggregated dispatchable load information for the Clearing Manager; and
- producing reports for all participants and for the Authority.

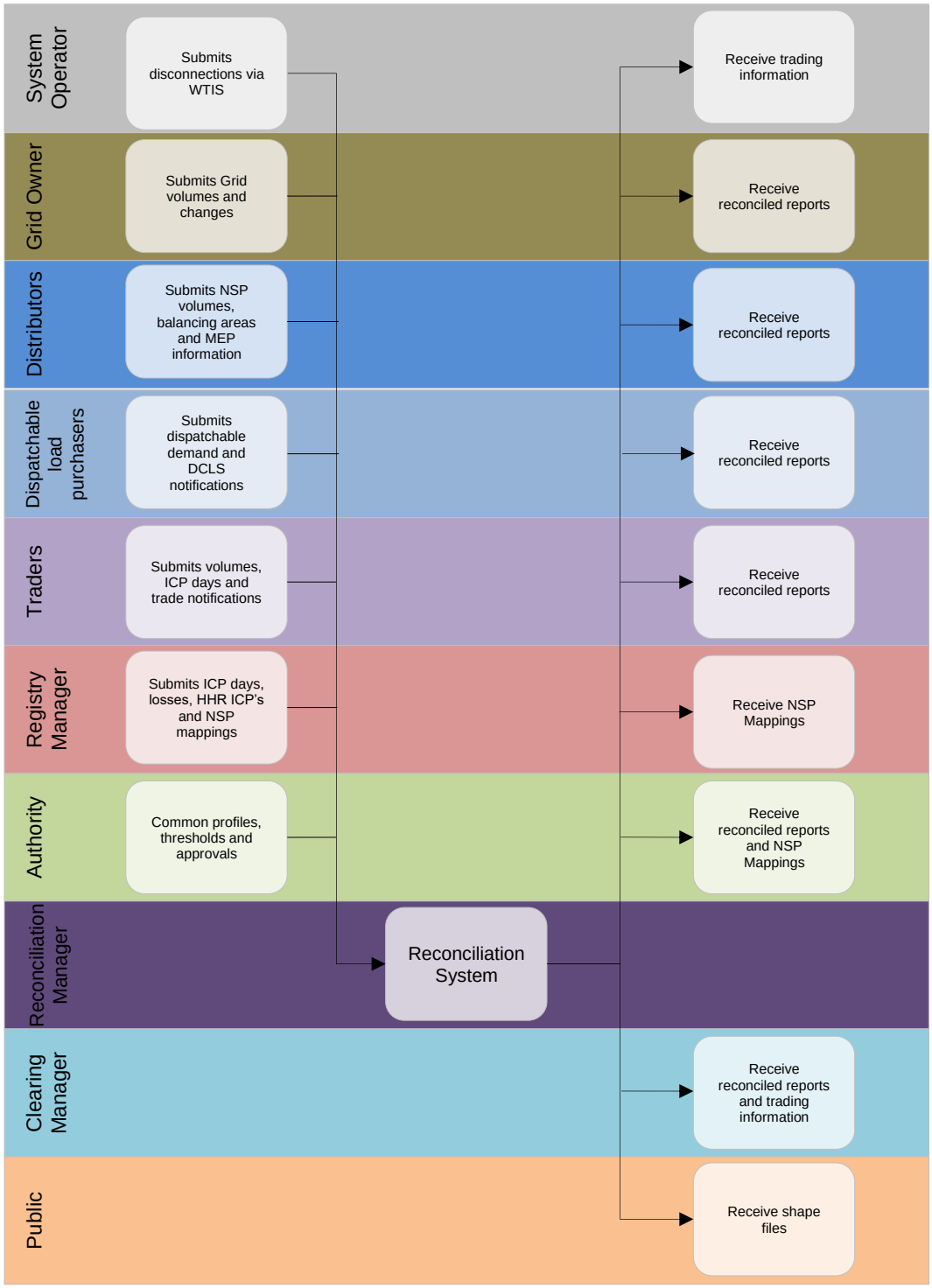
(d) This specification is based on the requirements of the Code as at 1 November 2010.

(e) If there are any conflicts between this document and the Code, the Code takes precedence.

The electricity industry

A view of the interactions between the Reconciliation Manager, participants and other service providers is outlined in the diagram below.

Figure 1 Industry overview diagram



Glossary of abbreviations and terms

Act	The Electricity Industry Act 2010
Authority	The Electricity Authority
Authority	The Authority of the Electricity Authority
Code	Electricity Industry Participation Code 2010
Date of transition	The date that part J of the Electricity Governance Rules 2003 (now Part 15 of the Code), which provides for global reconciliation and provides that incumbent traders no longer exist for reconciliation purposes, came into effect
Direct consumer	A consumer with a point of connection to the grid
From the Code	Please refer to Part 1 of the Code for definitions of Code terms used in this document.
POC	Point of connection. POC is a code that identifies the grid injection point, grid exit point or the connection point between an embedded network and its parent network.
Purchaser	A class that includes traders and direct purchasers
Scorecard rating application date	The date when the Authority notifies participants that the scorecard rating must be calculated and applied in accordance with clauses 17 and 18 of Schedule 15.4 of the Code. Until that date, the scorecard rating must be set to 1 for all participants

1. Key participants of reconciliation management

The Reconciliation Manager receives information from and distributes information to various participants in the electricity industry. The main participants and their responsibilities in the reconciliation process are detailed in this section.

1.1. Grid owners

1.1.1. The Code refers to grid owners – plural. There is one main owner of the grid, Transpower; however, a small part of the grid is currently owned by another entity. The grid owned and operated by Transpower is the high-voltage electricity transmission network, which transmits electricity throughout New Zealand over more than 12,000km of transmission lines, from generators to distributors and major industrial users. It is also referred to as the national grid.

Reconciliation responsibilities

1.1.2. Grid owners are reconciliation participants because they are network owners (network owners are included in the definition of "reconciliation participant" in Part 1 of the Code).

1.1.3. Each grid owner must:

- notify the Reconciliation Manager of any changes that the grid owner intends to make to the grid that will affect reconciliation; and
- deliver volume information for each of their grid exit points to the Reconciliation Manager.

1.1.4. The Reconciliation Manager must provide each grid owner with whatever information it requires to calculate its charges.

1.2. The Authority

1.2.1 The Electricity Authority (Authority) is established by section 12 of the Electricity Industry Act 2010 (Act). It comprises between 5 and 7 members who have been recommended by the Minister.

1.2.2 The Authority publishes reports it receives from participants and from the Reconciliation Manager, approves participants, approves profiles, approves balancing areas, provides formats and schedules for the delivery of information between participants and systems, undertakes audits, sets minimum reporting thresholds, approves daylight saving techniques and approves codes. This information is published on the Authority's website.

Reconciliation responsibilities

1.2.3 The Reconciliation Manager delivers to the Authority:

- notifications of any changes that a grid owner intends to make to the grid that will affect reconciliation;
- monthly reports concerning Code breaches; and
- monthly surveillance reports for each consumption period.

1.3. Registry

1.3.1 The Registry is a national database that contains information on every point of connection on the local and embedded networks to which electricity is supplied. These points of connection are referred to as installation control points (ICPs). Each ICP has a unique identifier assigned to it by the network owner to which the ICP is connected (an ICP identifier). The Registry is the electricity industry's *database of record* of all ICPs. Against each ICP the Registry records information such as the ICP identifier of the ICP, the address of the ICP, the trader responsible for the ICP, the distributor, the network supply point (NSP) identifier, the profile code, the loss category code, the distributor pricing category, the submission type and other related information. ICP information is maintained by traders and distributors. Distributors also maintain a reference table of loss factors that are applicable to their loss categories in the Registry.

1.3.2 Through the use of ICP identifiers, the Registry helps manage both the customer switching and reconciliation processes. Part 11 of the Code provides for the management of information held by the Registry and outlines the process for switching IPCS between traders and distributors.

Reconciliation responsibilities

1.3.3 The Registry must provide the Reconciliation Manager with:

- ICP days information;
- a list of all half-hour ICPs owned by each trader and direct purchaser;
- loss factors for each loss category; and
- balancing area details provided in the NSP mapping table.

1.3.4 The Reconciliation Manager must maintain the NSP mapping table that is held in the Registry.

1.4. System operator

1.4.1 The System Operator is responsible for scheduling and dispatching electricity with the aim of avoiding fluctuations in frequency and disruption of supply.

Reconciliation responsibilities

1.4.2 The System Operator must notify the Reconciliation Manager via WITS, of the points of connection to the grid that were disconnected during each consumption period, and all trading periods in that consumption period during

which a point of connection to the grid was disconnected or supplied from an alternative point of connection (i.e. outage constraints).[1]

1.4.3 If the Reconciliation Manager is given notice by a trader that the trader will commence or cease trading electricity at a point of connection using a profile with a profile code other than HHR, RPS, UML, EG1, or PV1, the Reconciliation Manager must give a copy of that notice to the System Operator.[2]

1.5. Clearing manager

1.5.1 The Clearing Manager pays generators for their generation and invoices all purchasers for their offtake. The Reconciliation Manager must provide the Clearing Manager with reconciled quantities for each participant. Prices used for settlement are determined half-hourly at each grid injection point (GIP) and grid exit point (GXP), in the wholesale market. Settlement occurs on the 20th day of the month for the previous consumption period. Settlement also occurs for prior consumption periods, where revised quantities are provided to the Clearing Manager by the Reconciliation Manager.

Reconciliation responsibilities

1.5.2 The Reconciliation Manager must:

- provide the Clearing Manager with a copy of the notice of any changes which the grid owner intends to make to the grid that will affect reconciliation;
- if the Reconciliation Manager is given notice by a trader that the trader will commence or cease trading electricity at a point of connection using a profile with a profile code other than HHR, RPS, UML, EG1, or PV1, the Reconciliation Manager must give a copy of that notice to the Clearing Manager;[3]
- deliver to the Clearing Manager the reconciliation information applicable to each generator or purchaser, so the Clearing Manager can calculate the amounts payable to each generator and by each purchaser;
- deliver to the Clearing Manager loss adjusted dispatchable demand information, so that the Clearing Manager can calculate constrained on and constrained off amounts for each dispatch capable load station.

[1] Clause 15.15 of the Code.

[2] Clause 15.3 of the Code

[3] Clause 15.3 of the Code

- if the Reconciliation Manager corrects information under clause 15.26 or 15.29(12) of the Code, the Reconciliation Manager must provide the corrected information to the Clearing Manager.

1.6. Reconciliation participants

1.6.1 Reconciliation participants comprise traders, generators, network owners, distributors, and direct purchasers. Reconciliation participants have many common responsibilities and some that are role-specific.

Common reconciliation responsibilities

1.6.2 In general, all reconciliation participants must provide the Reconciliation Manager with:

- complete and accurate submission information for all points of connection for which the reconciliation participant is recorded in the Registry as having traded electricity during the current consumption period;
- revised submission information, when available, for all points of connection for which the reconciliation participant is recorded in the Registry as having traded electricity during any previous consumption period;
- engineered or statistically sampled profile shapes, when required; and
- any additional information requested in respect of any consumption period.

1.6.3 The Reconciliation Manager must:

- check all submission information for completeness and consistency;
- deliver surveillance reports to all reconciliation participants for each consumption period;
- deliver notifications of outage constraints to all reconciliation participants;
- reassess the rearrangement of network groupings made as a result of an outage constraint on request by an affected reconciliation participant; and
- provide (by arrangement) information to reconciliation participants concerning the quantity of electricity conveyed at any point of connection.

1.6.4 A reconciliation participant may use an agent to discharge its obligations.

1.6.5 There are additional specific responsibilities of reconciliation participants depending on their roles:

Generators

1.6.6 A generator generates electricity and injects it into a network. A generator may be connected directly to the grid (grid-connected generator) or to a local or

embedded network (embedded generator). All generation is sold to the Clearing Manager either directly or via a trader. As reconciliation participants, all generators, both grid-connected and embedded, must deliver submission information for each of their points of connection to the Reconciliation Manager.

Role-specific reconciliation responsibilities

1.6.7 The Reconciliation Manager must deliver the following additional information to the generator concerned:

- half-hourly profile shape data.

1.6.8 A generator who is an embedded generator must notify the Reconciliation Manager in respect of an embedded generating station if the embedded generator will not receive payment from the Clearing Manager or any other person for any electricity generated by the relevant embedded generating station.[4]

Traders

1.6.9 For the purposes of the reconciliation system, a trader purchases electricity from the Clearing Manager and sells it to consumers or other traders. As reconciliation participants, traders must deliver submission information for each of their points of connection to the Reconciliation Manager and in addition:

Role-specific reconciliation responsibilities

1.6.10 Each traders must deliver the following additional information to the Reconciliation Manager:

- ICP days information for each consumption period;
- electricity supplied (billing) information;
- half-hourly metered monthly ICP aggregates; and.
- The ICP# which is to be assigned the residual load in an embedded network which is reconciled using differencing.

1.6.11 The Reconciliation Manager must deliver the following additional information to the trader concerned:

- information detailing the trader's ICP days scaling factors, UFE factors, scorecard rating, market share, missing and erroneous submission information;
- the daily seasonal adjustment shape; and
- half-hourly profile shape data.

[4]Clause 15.13 of the Code.

Direct purchasers and direct consumers

1.6.12 A direct purchaser purchases electricity from the Clearing Manager but uses it for its own consumption, ie does not on-sell. Direct consumers are connected directly to the grid and can purchase from the Clearing Manager as a trader.

1.6.13 As reconciliation participants, direct purchasers must deliver submission information for each of their points of connection to the Reconciliation Manager, however grid owners provide submission information for direct consumers. In addition:

Role-specific reconciliation responsibilities

1.6.14 The Reconciliation Manager must deliver the following additional information to the direct purchaser concerned:

- half-hourly profile shape data, where relevant.

Distributors/network owners

1.6.15 Distributors own and/or operate local networks and embedded networks. They are responsible for the maintenance of ICP information and loss factors, applicable to their networks in the Registry. In the instances where they own embedded networks and/or have points of connection to other local networks (interconnection points) they have the common responsibilities of all reconciliation participants and the following specific responsibilities:

Role-specific reconciliation responsibilities

1.6.16 Each embedded network owner/distributors must deliver volume information for each point of connection between the network owner's/distributor's network and the parent local network, to the Reconciliation Manager.

1.6.17 Each local network owner/distributor must deliver volume information for each of its interconnection points that inject and/or extract electricity from other local networks (i.e. not the grid), to the Reconciliation Manager.

1.6.18 Each distributor must notify the Reconciliation Manager of any changes to the arrangement of its points of connection.

1.6.19 The Reconciliation Manager must deliver to each distributor a trading report detailing:

- electricity traded for each trader trading on the distributor's network,
- electricity supplied information for each trader trading on the distributor's network, and
- submission information for each trader trading on the distributor's network.

1.7. Dispatchable load purchaser

1.7.1 A dispatchable load purchaser purchases electricity for dispatch capable load stations. A dispatch capable load station is an electricity consuming device or group of devices which are available for dispatch by the system operator on the basis of bids submitted by the dispatchable load purchaser.

1.7.2 Dispatchable load purchasers must deliver dispatchable load information for each dispatch capable load station for which they have purchased electricity to the Reconciliation Manager.

1.7.3 The Reconciliation Manager must provide loss adjusted dispatchable demand information to the Clearing Manager. This information is used by the Clearing Manager to calculate constrained on and constrained off amounts for dispatch capable load stations. Dispatchable load purchasers are also provided with their own dispatchable demand information so that this may be verified by them.

1.8. Public

1.8.1 The Reconciliation Manager must be able to make certain information available to the public through a publicly accessible website.

Table 1 Summary of information provided to the Reconciliation Manager

Information input	Source	Classification
Changes to grid	Grid owners	Notice
Code changes and reporting thresholds	Market administrator	Notice
Outage constraints	System operator via WITS	Notice
Latest loss codes and loss factors	Registry	Registry information
Balancing area mappings	Registry	Registry information
Registry ICP days	Registry	Registry information
List of HHR ICPs	Registry	Registry information
Non-half-hour submission Information	Reconciliation participants	Submission
Half-hour submission information	Reconciliation participants	Submission
Profile shape submission information	Reconciliation participants	Submission
ICP days	Purchasers (excluding direct consumers)	Submission
Electricity supplied information	Traders	Submission
NSP volume information	Grid owners, embedded network owners, grid-connected generators, local network owners	Submission
Monthly half-hour ICP aggregates	Purchasers and generators (excluding direct consumers)	Submission
NSP and balancing area changes	Distributors	Notice
SB ICP# of embedded networks	Traders	Notice
Changes to dispatch capable load stations	System Operator	Notice
Dispatchable load information	Dispatchable load purchasers	Submission
NSP trade notification	Traders	Notice

Table 2 Summary of information provided by the Reconciliation Manager

Information output	Destination	Classification
Reconciliation information	Generators, purchasers and Clearing Manager	File
Half-hourly profile shape data	Generators,purchasers and public	File
Daily seasonal adjustment shape information	Purchasers and public	File
Profiled NHH and HHR data	Purchasers and generators. Authority	File
Distributor trading reports	Distributors	File
UFE factors	Purchasers	File
Scorecard ratings and market share information	Purchasers	File
ICP days scaling	Purchasers	File
Missing HHR ICPs	Purchasers	File
ICP days comparison	Purchasers	File
Switched ICPs	Purchasers	File
UFE summary	Authority and reconciliation participants	File
Comparison between electricity supplied and submissions	Authority and reconciliation participants	File
Missing HHR ICPs	Authority and reconciliation participants	File
ICP days comparison (Registry vs purchasers)	Authority and reconciliation participants	File
Average NHH kWh	Authority and reconciliation participants	File
Submission accuracy	Authority and reconciliation participants	File
Code breaches	Authority	Report
Annual consumption list	Authority and Public	Report

Information output	Destination	Classification
Grid owner charging information	Grid owners	File
Participant trading information changes	Clearing Manager and System Operator	Notice
Grid change information	Clearing manager and Authority	Notice
Outage constraints	Reconciliation participants	Notice
NSP mapping table information	Registry	Registry information
Loss adjusted and summarised dispatchable load information	Clearing Manager and dispatchable load purchasers	Report

2. Data transfer requirements

2.1. Overview

2.1.1 A number of data transfers are required to and from the Reconciliation Manager in order for the reconciliation process to take place. These data flows are specified in the Reconciliation management process maps section of this document. Data flows must take place in a secure and predictable manner. To ensure this happens in practice the Reconciliation Manager must implement secure data transfer protocols and standardised file formats for the transfer of data, and enforce adherence to prescribed schedules.

2.2. Calendar view of monthly reconciliation process

2.2.1 The diagram on the next page outlines the prescribed timelines which must be managed and adhered to by reconciliation participants and the Reconciliation Manager.

Table 3 Reconciliation process timeline

Business day, time	1st, 16:00	4th, 16:00 R0	7th, 16:00	9th, 13:00	13th, 16:00 R1, R3, R7, R14	Last, 12:00
Grid owners, generators network owners, grid-connected generators, local network owners		Provide NSP volume information			Provide revised NSP volume information	
Reconciliation participants		Provide HHR submission information, NHH submission information, and profile shape information			Provide revised submission and profile shape information	
Registry		Provide ICP days, loss factors, HHR ICP identifier, and balancing area information			Provide revised ICP days, loss factors, HHR ICP, and balancing area information	
Purchasers (excluding direct consumers)		Provide ICP days information and HHR ICP aggregates			Provide revised ICP days information and HHR ICP aggregates	
Traders		Provide electricity supplied information			Provide revised electricity supplied information	
Dispatchable load purchasers		Provide dispatchable load information			Provide dispatchable load information	
System operator via WITS	Outage report					
Reconciliation Manager			Complete reconciliation Produce reports			Complete reconciliation for revisions Produce reports from revised information

2.3. File naming conventions

2.3.1 The main business requirements for the file naming conventions are:

- the filename should easily identify the type of information it contains;
- the filename should identify the reconciliation participant that is responsible for providing the information; and
- the filename should allow for versioning, so the same information may be resubmitted should corrections be required.

2.4. File headers

2.4.1 For all files transferred to and from the Reconciliation Manager (with the exception of the Clearing, Extended Reserve and Registry Managers) files are required to have the following file header:

Table 4 File Headers

Description	Type	Required	Validation
Header record type	Char (3)	Y	Must be "HDR"
File type	Char (10)	Y	Defined by the Reconciliation Manager for each interface
Sending participant	Char (4)	Y	Must be the participant that is responsible for providing the information. Note that this should not be the agent acting on behalf of the responsible participant. This will be 'NZRM' for reports from the RM to reconciliation participants
Receiving participant	Char (4)	Y	Must be the participant identifier of the recipient. This will be 'NZRM' for submissions from reconciliation participants to the RM.
File creation date	DD/MM/YYYY	Y	Valid date
File creation time	HH:MM:SS	Y	Valid time
Daylight Saving Adjustment Technique	Char (4)	Y	Must be "TPR"
Number of detail records	Number (8)	Y	Number of detail records after the header
User reference	Char (32)	N	Free text carried through to output files

2.5. System interfaces

2.5.1 In order to enable the transfer of data the Reconciliation Manager is required to maintain the following interfaces:

Table 5 System interfaces

Interface	Direction	Details
Submission data interface	Inward to Reconciliation Manager	This interface enables the receipt of submission information from reconciliation participants. This is currently provided via three secure transfer systems. A web portal, SFTP and Web Services.
Interface with the Registry	Inward to Reconciliation Manager and outward to the Registry	This interface enables information to be sent to and retrieved from the Registry. A separate file transfer protocol has been agreed between the Reconciliation Manager and the Registry Manager.
Interface with the Extended Reserve Manager	Outward from Reconciliation Manager	This interface enables information to be provided to the Extended Reserve Manager. A separate file transfer has been agreed between the Reconciliation Manager and the Extended Reserve Manager.
Interface with the Clearing Manager	Outward from Reconciliation Manager	This interface enables information to be provided to the Clearing Manager. A separate file transfer protocol has been agreed between the Reconciliation Manager and the Clearing Manager.
Reconciliation data publication interface	Outward from Reconciliation Manager	This interface enables the publication of reconciliation and related information to reconciliation participants. There is also the ability to give public access to relevant information. This is currently provided via three secure transfer systems: a web portal, SFTP and Web Services.

2.6. **Agents**

2.6.1 A reconciliation participant may appoint another party as an agent for the purposes of providing submission information and any other information required to be provided on the reconciliation participant's behalf. However, the responsible reconciliation participant must be clearly identified in all submission information (and headers). The appointment of an agent is the responsibility of reconciliation participant. An agent can be appointed only in respect of a reconciliation participant's responsibilities to submit and receive information.

3. Submission information

The Code defines "submission information" as being volume information aggregated in accordance with clause 8 of Schedule 15.3 (and as including profile shapes or control times associated with a profile). Clause 8 of Schedule 15.3 requires that submission information provided by each reconciliation participant to the Reconciliation Manager must be aggregated to the following level:

- NSP code:
- reconciliation type:
- profile:
- loss category code:
- flow direction:
- dedicated NSP:
- trading period for half hour metered ICPs and consumption period or day for all other ICPs.

Table 6 Submission information

Type of information that is submission information	Description	Source	Classification in this document
Non-half-hour (NHH) submission information	Non-half-hourly metered quantities are usually provided for a whole month although daily quantities may also be provided. They are aggregate figures.	Reconciliation participants	NHH submission
Half-hour (HH) submission information	Half-hourly metered quantities are provided per trading period (half-hour) for each day in the consumption period (month).	Reconciliation participants	HHR submission
Profile shape submission information	Profile shape quantities describe a particular half-hourly pattern to be used to split non-half-hourly aggregates into quantities per half-hour.	Reconciliation participants	Profile shape
ICP days	These are provided per NSP and aggregated for HHR and NHH submissions. They indicate the total number of active ICP days included in NHH submissions.	Purchasers (excluding direct consumers)	ICP days

Type of information that is submission information	Description	Source	Classification in this document
Electricity supplied information	Historical billing and other electricity supplied information.	Traders	Electricity supplied
Monthly half-hour ICP aggregates	This is equivalent to the HHR submission information that is aggregated per ICP for the whole month (not half-hourly).	Purchasers (excluding direct consumers)	Monthly half-hour ICP aggregates
NSP volume information	NSP volume quantities are provided in the same format as the HHR submissions. These include grid-connected, gateway and interconnection point NSP volumes (see next section for details).	Grid owners, embedded network owners, grid-connected generators, local network owners	NSP volumes

Submission information (HHR and NHH) must be aggregated per time period (trading period, day or month) by:

- NSP code;
- reconciliation type;
- profile;
- loss category code;
- flow direction;
- dedicated NSP; and
- trading period for half hour metered ICPs and consumption period or day for all other ICPs.

3.1. NSP

3.1.1 An NSP is the supply point from which a network owner (distributor) transmits electricity into their network. An NSP is identified by appending the network identifier to the appropriate POC identifier. Each NSP identifier is unique, however the same POC identifier can occur with different network owner combinations.

3.2. Reconciliation type

3.2.1 All HHR, NHH and NSP volume submissions must include an attribute, reconciliation type that indicates either the type of network connection, or the type of processing to be undertaken.

3.2.2 For HHR and NHH submissions the appropriate codes are:

GN—Grid exit/injection: indicates that the information is provided by a purchaser for consumption or generation within a local network.

EN—Embedded network: indicates the information is provided by a purchaser for consumption or generation within an embedded network.

SB—Embedded network residual load: indicates the information is provided by a trader for the Reconciliation Manager to calculate the quantity by differencing (described later in this document). The submission (NHH only) will not contain any quantity information (value will be zero).

3.2.3 For NSP volume submissions the appropriate codes are:

GN—Point of connection to the grid. The volume information for the point of connection to the grid must be provided by the grid owner.

EN—Embedded network: The volume information for the gateway NSP point of connection to another network (local or embedded) must be provided by the embedded network owner.

GD—Direct consumer: indicates the information is provided for a grid-connected direct consumer. The volume information is provided by the grid owner.

GG—Generator: indicates the information is provided for and by a grid-connected generator.

NP—NSP volume information for interconnection NSPs. The volume information is provided by the network owner who initiates the interconnection.

3.2.4 Other valid reconciliation types are LE (embedded network gateway) and SI (shared unmetered load). However, there should be no submissions or NSP volumes for these reconciliation types. (They are only found in the Registry and are described here for information purposes only and completeness.)

3.3. Profile code

3.3.1 Profiling is a process whereby a single quantity for a period such as a month is divided into half-hour periods in a manner that maintains a pre-defined pattern (shape) of quantities over time. The pattern is provided either in the profile shape information provided with submissions or calculated from the initial residual profile shape of a balancing area that is calculated as part of the reconciliation process. Further usage details are provided in the next section of this document.

3.4. Loss category code

3.4.1 Losses arise when electricity is transported across a network. Submission and NSP volume information is provided without any losses being applied. However, a loss category is provided. Loss categories are maintained by distributors in respect of each ICP in the Registry. They are used by traders and direct purchasers to prepare their submission information. Each distributor must also maintain a table of loss factors for each of its loss categories in the Registry, which is provided to the Reconciliation Manager.

3.5. Flow direction indicator

3.5.1 All HHR and NHH submissions include an attribute called flow direction that indicates whether the submission is for consumption, with a flow direction of exit (X), or for injection, with a flow direction of injection (I). The flow direction is always in relation to the electricity flowing to (injection) or from (exit) the supplying NSP.

3.6. Dedicated NSPs

3.6.1 For each ICP recorded on the Registry, the responsible distributor must record as an attribute whether the ICP can be allocated to a different NSP during an outage or not. If not, the submission information for the ICP must be submitted separately, and the reconciliation process isolates them during the balancing process.

4. The network

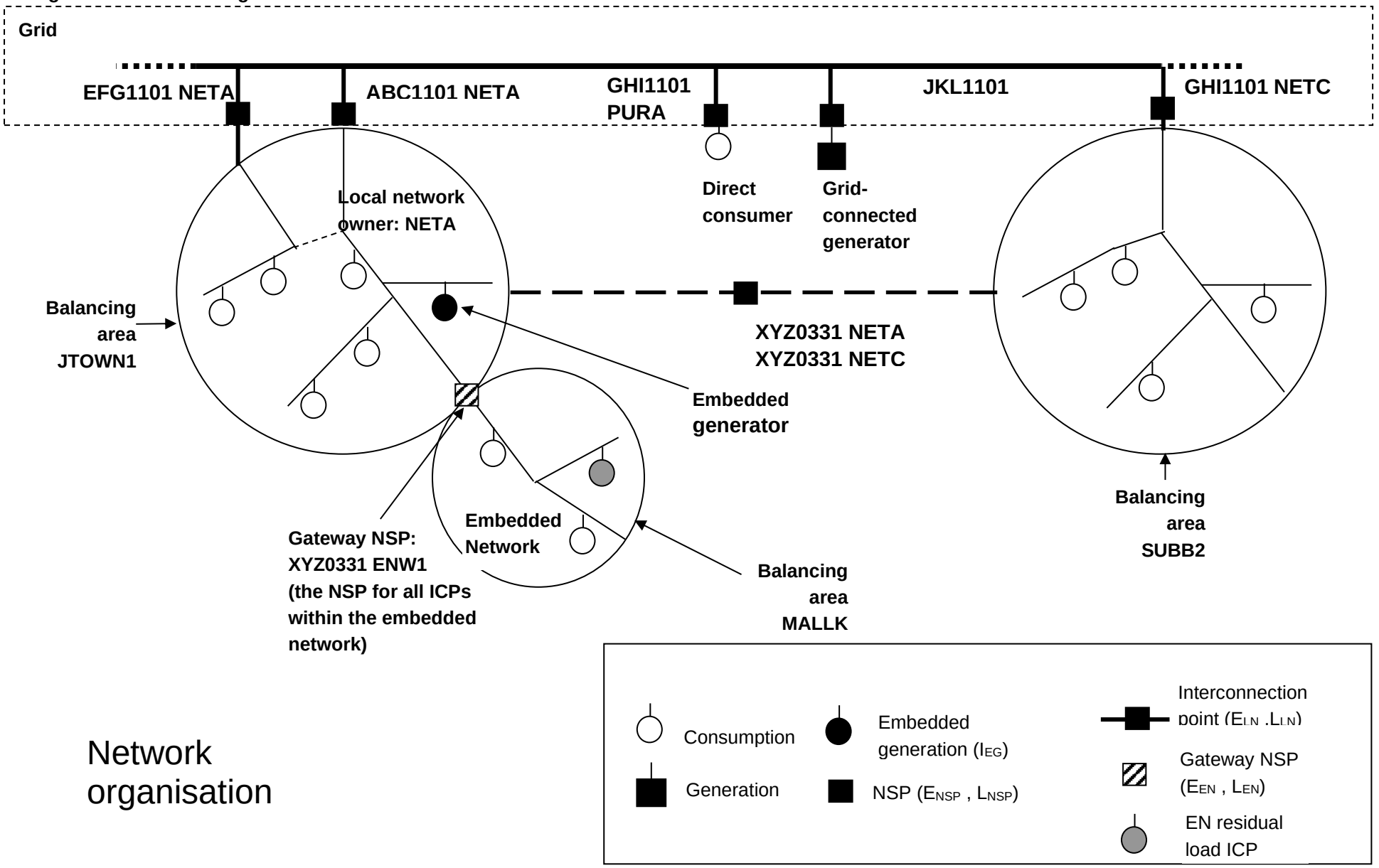
The following section is intended to provide information about the organisation of the network and to help explain the reasoning behind aspects of the reconciliation process. The diagram overleaf gives a schematic view of all the different elements of the network and its connections.

Table 7 The network

Connection type	Description
NSP	The NSP identifier is a unique two-part field combining the POC and the network ID. This is a metered connection point between a local network, a grid-connected generator or a grid-connected consumer **and the grid**. Both the injection and extraction quantities are metered per half-hour. In the Code this term often includes interconnection point NSPs and gateway NSPs unless stated otherwise. This is how this term is used in this document. NSP volume information for grid-connected NSPs is provided by grid owners and grid-connected generators.
Interconnection point NSP	An interconnection point NSP identifier is a unique two-part field combining the POC and the network ID. This is a metered connection point between different balancing areas. Both the injection and extraction quantities are metered per half-hour. Due to the need to record the information per balancing area, there are two entries in the NSP mapping table for this type of connection, ie one for each balancing area. However, only one set of NSP volume information (injection and extraction) is required to be provided by one of the local network owners. The extraction and injection quantities will be reversed for the other NSP by the reconciliation process.
Gateway NSP	A gateway NSP identifier is a unique two-part field combining the POC and the network ID. This is a metered connection point between an embedded network and a local or another embedded network. Both the injection and extraction quantities are metered per half-hour. Gateway NSP volume is provided by embedded network owners.

Connection type	Description
Consumption	In the majority of cases, consumption is metered at each ICP either by a half-hour or non-half-hour meter. However some consumption is un-metered and, instead, a daily kWh quantity is derived (being the daily average unmetered load in kWh) and recorded in the Registry. The consumption information is provided to the Reconciliation Manager in traders' and direct purchasers' HHR and NHH submission information. Their NSP code is the NSP code of the local or embedded network to which they are connected. For NHH consumption submissions, there will be an associated profile shape provided separately.
Generation (grid-connected)	Generation is metered at each NSP by a half-hour meter. The injection information is provided to the Reconciliation Manager in generators' HHR submission information.
Embedded generation	Embedded generation is metered at ICPs that connect the embedded generator to a local or embedded network. The NSP code of embedded generation is a grid connected or gateway NSP. It is metered either by a half-hour or non-half-hour meter. The injection information is provided to the Reconciliation Manager via traders or directly by embedded generators' HHR and NHH submission information. If NHH generation submission information is provided, an associated profile shape must be provided separately. Embedded generation submissions must be 'dedicated'. This implies the ICP must be ‘dedicated’
Embedded network residual load ICP	The owner of an embedded network can elect to have some or all of its consumption calculated by the Reconciliation Manager as the remainder of the total injection into the embedded network less any quantity extracted for which submission information has been provided. This remaining quantity is the 'residual load'. This requirement is indicated by the existence of an EN Residual ICP number against the gateway NSP in the NSP mapping table.

Figure 2 Network organisation



Network organisation

4.1. Balancing area

4.1.1 All connections points (ICPs) are assigned to a single local or embedded network (via an NSP code). However, a distributor can move connections from one NSP to another temporarily in the event of outages. For various reasons, traders are unable to track these changes in their submissions accurately and therefore can provide consumption information for the wrong NSP. By performing reconciliation at the balancing area level, the reconciliation process can re-align the consumption.

4.1.2 The following business rules apply to balancing areas, local networks and embedded networks:

A balancing area must consist of one local network, or one embedded network, or one grid-connected consumer or one grid-connected generator.

Each local network, embedded network, grid-connected consumer and grid-connected generator must belong to one, and only one, balancing area. The relationship is maintained in the NSP mapping table on the Registry and provided to the Reconciliation Manager.

A local network can have one or more NSPs that connect it to the grid.

Each embedded network is a balancing area in its own right and must not be included in the balancing area of its parent network.

An embedded network must be treated as having only one connection to one local network but a local network may have more than one embedded network connected to it.

An embedded network may be connected to another embedded network.

A grid-connected consumer can extract electricity from one or more NSPs.

A grid-connected generator can inject electricity into one or more NSPs.

An NSP, gateway NSP and interconnection point NSP can only belong to one balancing area.

4.2. Gateway NSPs and embedded networks

4.2.1 For embedded networks, any generation into or consumption from the local network to which the embedded network is connected will be metered at a gateway NSP. There will be an entry in the NSP mapping table for this gateway NSP and it will contain a reference to its parent NSP – the local network.

4.2.2 If an embedded network is connected to another embedded network, the connection will also be metered via a gateway NSP and its entry in the NSP mapping table will contain a reference to the parent embedded network.

4.2.3 The embedded network owner is also the distributor in respect of the embedded network, and therefore must provide volume information for the gateway NSP.

4.2.4 There will also be HHR and/or NHH submission information for the embedded network consumption and/or generation (with the same NSP code as the gateway NSP) that must be submitted by traders, embedded generators and direct purchasers with the reconciliation type of EN.

4.2.5 There will be an ICP in the Registry which represents the same point of connection, but from the perspective of the parent network, for the gateway NSP. It must be managed by the embedded network owner (as distributor) and have a reconciliation type of LE, but it will not be switchable and will not contain any trader information. Submission information is not required to be submitted in respect of an ICP with the reconciliation type LE.

4.2.6 Embedded networks have two roles in the reconciliation process dependent on whether the embedded network itself is being reconciled (within its own balancing area) or whether the embedded network owner is a 'consumer' on the parent network.

4.2.7 Reconciliation of the embedded network as a balancing area: The gateway NSP is treated in the same way as an NSP in a local network. The injection quantity is the injection quantity out of the embedded network into the parent network, and the exit quantity is the extraction quantity from the parent network.

4.2.8 Reconciliation of the parent balancing area: The gateway NSP volume is treated as if it were HHR submission information. The embedded network owner in this instance is simply another consumer – the injection quantity being the generation quantity into the parent network, the exit quantity being the consumption of the embedded network. Also, for the purposes of allocating UFE, a gateway NSP is treated as any other consumer NSP on the parent network – the consumer being the embedded network owner. Any UFE consumption allocated is, however, subsequently reallocated to the purchasers within the embedded network.

4.3. Embedded network residual load

4.3.1 An embedded network owner can assign one of its ICPs in the Registry as having a reconciliation type of embedded network residual load (SB). This indicates that submission information will be provided for it with a zero quantity (and a profile code "DFP"). The reconciliation process then calculates the net difference between the total injection into the embedded network and the total of any quantity extracted that has been provided in submission information. This will, in effect, be the unaccounted for electricity (UFE) to be allocated to the owner of the ICP.

4.3.2 Not all embedded networks will have an EN residual load ICP as it is not mandatory for all embedded networks to have the residual load on the

embedded network calculated by differencing. If not, UFE is to be calculated for the embedded network areas in the standard way, i.e. as for any other balancing area.

4.3.3 The entry in the NSP mapping table for this embedded network will contain the EN residual load ICP, if differencing applies to this embedded network. This particular ICP in the Registry is switchable and will have a single trader.

4.4. Embedded generation

4.4.1 Submissions (HHR and or NHH) for embedded generation must be provided with a reconciliation type of GN or EN and the ICP must be recorded in the Registry as being 'dedicated'.

4.4.2 All embedded generation is assumed to be consumed within a local network or embedded network to which it is connected, with any excess injected out of the local or embedded network via the respective NSP or gateway NSP.

4.4.3 All embedded generation for which payments are to be received by the generator must be sold to the Clearing Manager either directly or via a trader.

4.4.4 All reconciliation submissions for consumption for a local network or embedded network must include portions of the embedded generation. Therefore, all calculations involving injection into the local or embedded network must include embedded generation submission information for the network.

4.4.5 The ICP identifier of the ICP at which the embedded generation connects to a network must be recorded on the Registry.

4.5. Interconnection NSP

4.5.1 It is possible for there to be connections between networks which could be in different balancing areas. In such cases, the NSP mapping table will have two entries for the interconnection NSP; one for each network. The parent NSP will indicate the NSP in the other network from which electricity is being extracted. The balancing area, however, is inherited from the (child) NSP rather than the parent, as is the usual case.

4.5.2 Only NSP volume information will be provided for these NSPs and only by one of the networks involved. The system must calculate the volumes for the other balancing area by reversing the quantities, i.e. injection into balancing area A is the extraction from balancing area B.

4.5.3 The ICP identifier of the ICP for this point of connection must not be recorded on the Registry.

4.6. Direct consumer

4.6.1 Direct consumers do not provide consumption information to the Reconciliation Manager directly. It is provided for them by the relevant grid owner within the direct consumer's NSP volume submissions. The NSP

volume submissions will have a reconciliation type of GD. The ICP identifier of the ICP for this point of connection must not be recorded on the Registry.

4.7. Grid-connected generators

4.7.1 Grid-connected generators do not provide HHR submission information to the Reconciliation Manager. They only provide NSP volume information. Therefore, these 'balancing areas' do not need to be processed in the same manner as the others as there is no submission information to 'reconcile'. Their NSP volumes are used to generate their reconciliation information.

4.7.2 Their NSP mapping table entry must have the grid-connected generator's identifier as the network identifier.

4.7.3 The ICP identifier of the ICP for this point of connection must not be recorded on the Registry.

5. Dispatchable Load Information

Dispatchable load information is defined in the Code as volume information for dispatch capable load stations aggregated in accordance with Clause 15.5C. Clause 15.5C requires that dispatchable load information is aggregated to the following level:

- NSP code
- Dispatch capable load station identifier
- Loss category code
- Trading period

NSP code, loss category code are as defined above. A dispatch capable load station is an electricity consuming device or group of devices that is capable of being dispatched. It is identified by a unique five letter code.

6. The reconciliation management process

6.1. Objective of the reconciliation process

6.1.1 The purpose of the reconciliation process is to reconcile submission information provided by reconciliation participants against NSP volumes within a balancing area and provide it to the Clearing Manager, so that it can be used to prepare invoices for payers and payees. The process must ensure that all electricity consumption is allocated to reconciliation participants accurately and fairly so that, within each balancing area, the electricity quantities consumed balance with the metered (NSP volumes) quantities extracted.

6.1.2 The process involves:

- adjusting for inaccuracies by the application of an ICP days scaling factor;
- allocating non-half-hourly submissions into half-hours by applying profiles;
- applying loss factors to half-hourly data;
- calculating unaccounted for electricity (UFE);
- calculating a scorecard rating for purchasers;
- allocating UFE and consumed electricity to purchasers;
- balancing;
- producing reconciled generation and consumption information for reconciliation participants and the Clearing Manager; and
- producing reports for all participants and the Authority.

6.2. Applying ICP days scaling

6.2.1 The ICP days scaling factor is a ratio of the ICP days count provided by the Registry to the ICP days count provided by all purchasers except direct consumers. The ICP days counts are provided per participant, NSP and aggregated for both NHH and HHR ICPs per month. Only the days the ICPs were active during the month are aggregated. For direct consumers, a scaling factor of 1 is applied. The ICP days count reflects the number of ICP days for which the participant included consumption information in their HHR and NHH submission files. The ICP days count should match the registry ICP days count, especially since the Registry is the 'database of record' for ICPs with respect to ownership and their active/inactive status. If participants' ICP days differ, the scaling ratio will effectively 'scale up' the submission quantities to reflect the quantities that should have been provided based on the registry ICP days. Where a purchaser fails to submit an ICP days count the system calculates a penalty quantity to be added to their submission.

6.2.2 Only consumption HHR and NHH submission information is scaled.

6.2.3 When processing consumption periods prior to the date of transition, all purchasers are assigned an ICP scaling factor of 1.

6.2.4 On instruction from the Authority, all purchasers can be assigned a universal scaling factor (initially set to 1). Also and in accordance with Schedule 15.4 7(1)(b), the Authority may impose a cap on the ICP scaling factor.

6.3. Applying loss factors

6.3.1 Losses arise when electricity is transported across a network. HHR and NHH submission information and NSP volumes are provided without any losses being applied. However a loss category code is provided.

6.3.2 The reconciliation process applies the appropriate factor (either consumption or injection) from the loss factor table that is provided by the Registry.

6.3.3 The loss category code provided with the submission information applies only to the losses within the local network or embedded network, i.e. from the immediate NSP or gateway NSP. The loss category code for NSP volume information provided by the grid owner must be "GRID". The Reconciliation Manager will maintain this loss code within the reconciliation system and assign associated loss factors of 1.

6.3.4 The loss factors are applied directly to the HHR submissions after the ICP scaling has been completed. For NHH submissions, loss factors can only be applied after they have been profiled, i.e. split into half-hours (as there may be different loss factors applied to different sets of trading periods such as day and night loss factors).The half-hourly quantity is multiplied by the appropriate consumption or generation factor. Special consideration is required when applying losses to embedded networks:

When reconciling embedded network areas, on completion of the reconciliation process, additional loss factors of all the upstream networks need to be applied to all reconciliation information. The appropriate loss category codes must be obtained from the intervening gateway NSP volume information.

When reconciling balancing areas in which there are embedded networks connected, the embedded networks owners are treated as 'consumers' within the balancing area. Therefore in all calculations of injection and extraction into the balancing area, the gateway NSP volumes are treated as if they were HHR submissions and therefore losses need to be applied prior to their use in any calculations, using the loss category code recorded with the gateway NSP volume details.

6.3.5 Where the system is required to generate submission information (for creation of missing submissions see process RS-040) a default loss factor code of 'DEF' will be assigned by the system. An associated default loss factor, assigned by the Authority, will be applied to these submissions.

6.4. Treatment of loss factors on daylight saving start and end days:

6.4.1 The trading periods in the loss factor table - start and end - signify the commencement time of the trading period on a normal 48 trading period day i.e. trading period 16 is the half hour commencing 0730 hours. When daylight saving begins there are only 46 trading periods and the half hour commencing 0730 hours is trading period 14 (as clocks forward so 2:00am becomes 3:00am). When daylight savings ends there are 50 trading periods (as 2:00am becomes 1:00am) therefore the trading period commencing 0730 hours is trading period 18. The reconciliation system will apply the appropriate loss factors based on the time associated with the Start and End trading periods in the loss factor table.

6.5. Profiling

6.5.1 Profiling is a process whereby a single quantity for a period, such as a month, is divided into half-hours in a manner that maintains a pre-defined pattern (shape) of quantities over time. The pattern is obtained either in the profile shape information provided with submissions or calculated from the initial residual profile shape or final residual profile shape of a balancing area.

6.6. Four types of profiles

6.6.1 There are four types of profile:

- engineered;
- statistically sampled;
- NSP derived; and

- residual profile shape.

6.6.2 For engineered and statistically sampled profiles, profile shape information is provided with the submissions for each consumption period.

6.6.3 The NSP derived profiles use two sets of information: the initial residual profile shape calculated during the reconciliation process (see RS-070) for each balancing area and assigned to each NSP within the balancing area; and 'on and off times'. For NSP derived profiles, only a subset of a pattern is used to allocate its non-half-hour quantity, i.e. not the full day's pattern, only some of the trading periods. The particular trading periods are indicated by an associated 'on and off times' file provided by the profile owners (i.e. static times are stored in the reference data, variable times are provided in submission files).

6.6.4 Many of the NHH submissions will have residual profile shape profiles. The profile shape (quantities per half-hour) must be calculated using the final residual profile shape of each balancing area and assigned to each NSP within the balancing area during the reconciliation process (see RS-080).

6.7. Specific profile code usage and defaults

6.7.1 The zero quantity submission information provided for the residual load ICPs on each embedded network should have a profile code of 'DFP', which will have a profile type of 'residual profile shape' assigned. Where the submission information is missing and the system is required to generate submission information (see RS-060), the system will assign the profile code 'DFP'.

6.7.2 For other missing NHH consumption submissions where the system is required to generate submission information (see RS-040) the default profile code of 'NHP' is to be assigned. This profile code will have a profile type of residual profile shape assigned.

6.7.3 N.B. HHR submissions should all have a profile code of 'HHR', which indicates no profiling is required. Where the system is required to generate submission information (see RS-040), the default code of 'HHR' should be assigned by the system.

6.7.4 Profiling is performed at different stages of the reconciliation process.

6.7.5 The profiling of NHH submission information is dependent on the profile type of the submission:

- Embedded generation (EG) submissions (non-scaled) are profiled using the profile shape information provided with submissions. The applicable loss factors can then be applied. (See RS-050).
- Engineered and statistically sampled profiled consumption is profiled using the profile shape information provided with submissions and can be

processed immediately after ICP days scaling has been applied. The applicable loss factors can then be applied. (See RS-050).

- NHH consumption (ICP scaled) that has NSP derived profile types is profiled once the initial residual profile shape has been derived (see RS-080). The applicable loss factors can then be applied.
- All the remaining NHH consumption (ICP scaled) is profiled once the final residual profile shape has been derived (see RS-090). The applicable loss factors can then be applied.

6.8. Process of splitting non-half-hour quantities into half-hours

6.8.1 The pattern is defined as a quantity per:

- profile (pattern type);
- day; and
- trading period (half-hour).

6.8.2 To allocate a NHH submission quantity into half-hours:

calculate the total quantity from the profile for the period of the submission (usually a month)*; and then for each day and trading period, the half-hourly consumption is calculated as:

- the particular trading period quantity from the profile (pattern) divided by
- the total quantity of the profile (A) multiplied by the submission quantity.

6.8.3 For NSP derived profiles, only the profile quantities of the trading periods indicated by the 'on times' are used to calculate this value.

Example applicable to engineered profile types

Submission quantity = 50,000kWh for a month of 31 days.

6.8.4 The following table shows a possible profile shape or pattern for day 1, and assumes that the pattern is the same for every day thereafter:

Table 8 Example applicable to engineered profile types

Trading period	kWh		Trading period	kWh		Trading period	kWh
1	3		18	22		35	31
2	2		19	25		36	33
3	2		20	24		37	28
4	2		21	23		38	23

Trading period	kWh		Trading period	kWh		Trading period	kWh
5	2		22	22		39	19
6	2		23	25		40	14
7	2		24	26		41	13
8	2		25	27		42	12
9	2		26	28		43	9
10	1		27	26		44	8
11	1		28	24		45	7
12	1		29	22		46	6
13	7		30	23		47	3
14	13		31	20		48	3
15	15		32	19		**TOTAL**	**713**
16	17		33	26			
17	20		34	28			

6.8.5 Calculation of the NHH monthly submission quantity for trading period 1 is:

Total quantity for the day for the profile is 713.

Total quantity for the period of the submission, i.e. a month (assuming the pattern for each day is the same) is 713 * 31 = 22103.

The quantity of the submission allocated to trading period 1 will be 3 / 22103 * 50000 = 6.78.

That is, profile shape for trading period 1/total quantity for the period of the submission * NHH submission quantity.

6.8.6 Calculation of the NHH monthly submission quantity for trading period 2 is:

2 / 22103 * 50000 = 4.52 etc.

6.9. Scorecard rating

6.9.1 A trader's scorecard rating is a measure of the accuracy of the trader's consumption submissions. It is based on the trader's historical monthly billing information (electricity supplied) against their monthly submission information, over a period of 12 months. The rating calculation also includes a scorecard threshold, set by the Authority, which compensates for the differences in the time alignment (lag) between the two sets of information. The scorecard rating is only applied from the 7-month revision cycle onwards, which gives traders an opportunity to correct their earlier submissions which would have a high proportion of estimates.

6.9.2 When processing information about a trader's consumption periods before the scorecard rating application date, the scorecard rating of each participant must be 1.

6.10. Unaccounted for electricity (UFE)

6.10.1 The UFE is calculated per balancing area and is the difference between the amount of electricity injected into the balancing area less all the electricity extracted from the balancing area. The calculation of injection involves the aggregation of injection quantities via all metered NSP volumes, gateway NSP volumes, interconnection NSP volumes and embedded generation loss-adjusted submissions. The calculation of extraction involves the aggregation of extraction quantities via any metered NSP volumes, gateway NSP volumes, interconnection NSP volumes, and consumption submissions (adjusted for losses and ICP days). The difference is the UFE that is allocated to all purchasers within the balancing area using a factor applied to each purchaser which incorporates their scorecard rating and market share.

6.10.2 There is a further readjustment step in the allocation of UFE as a result of balancing NSP volumes against the total consumption. This is due to the possible misallocation of consumption in submission information to the wrong NSP, for instance as a result of outages.

6.10.3 Balancing is not performed in balancing areas that have the reconciliation type EN, i.e. for embedded networks, because they only have a single (gateway) NSP.

6.10.4 For the historical transitional revision periods, all UFE will be assigned to the incumbent trader of the balancing area as indicated in the list maintained by the Reconciliation Manager.

7. Reconciliation management process maps

Figure 3 Process map – Accept and validate information

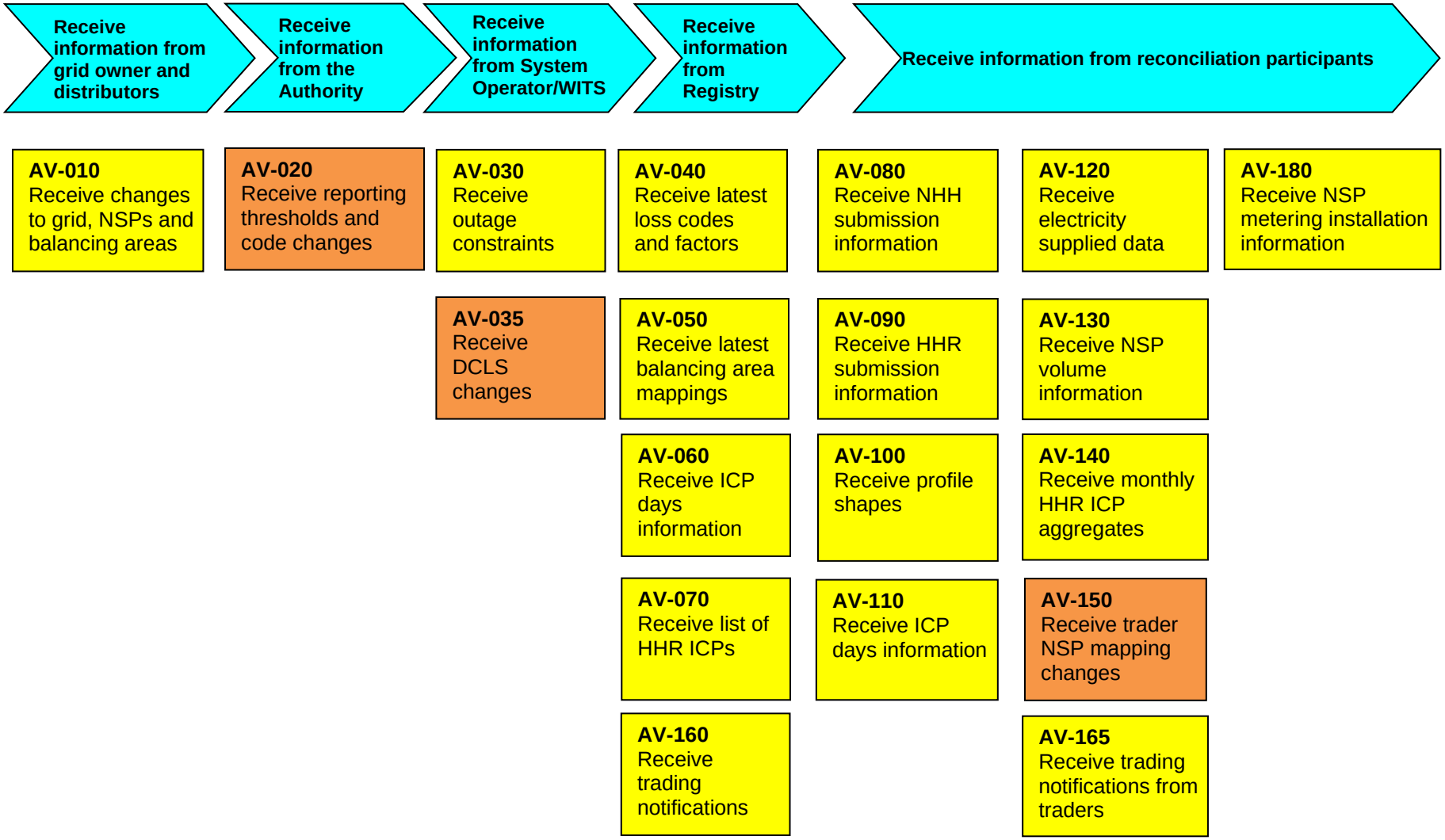


Figure 3(b) Process map – Accept and validate information

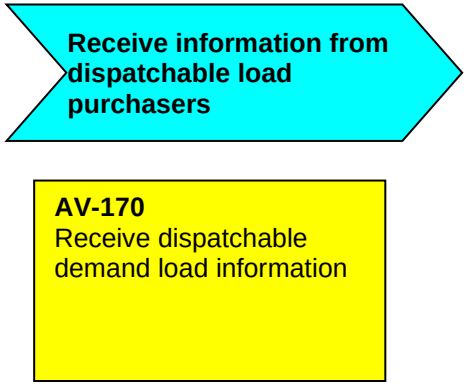


Figure 4 Process map – Reconcile submission information

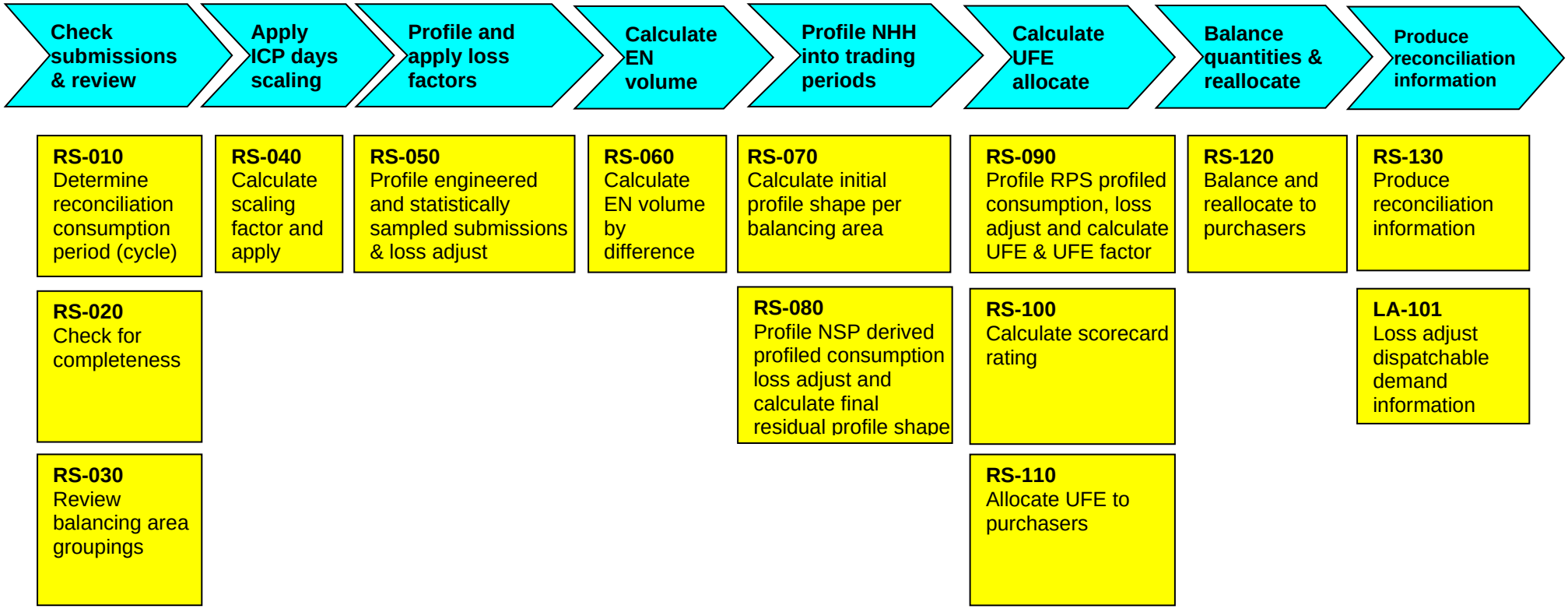


Figure 5(a) Process map – Generate reports

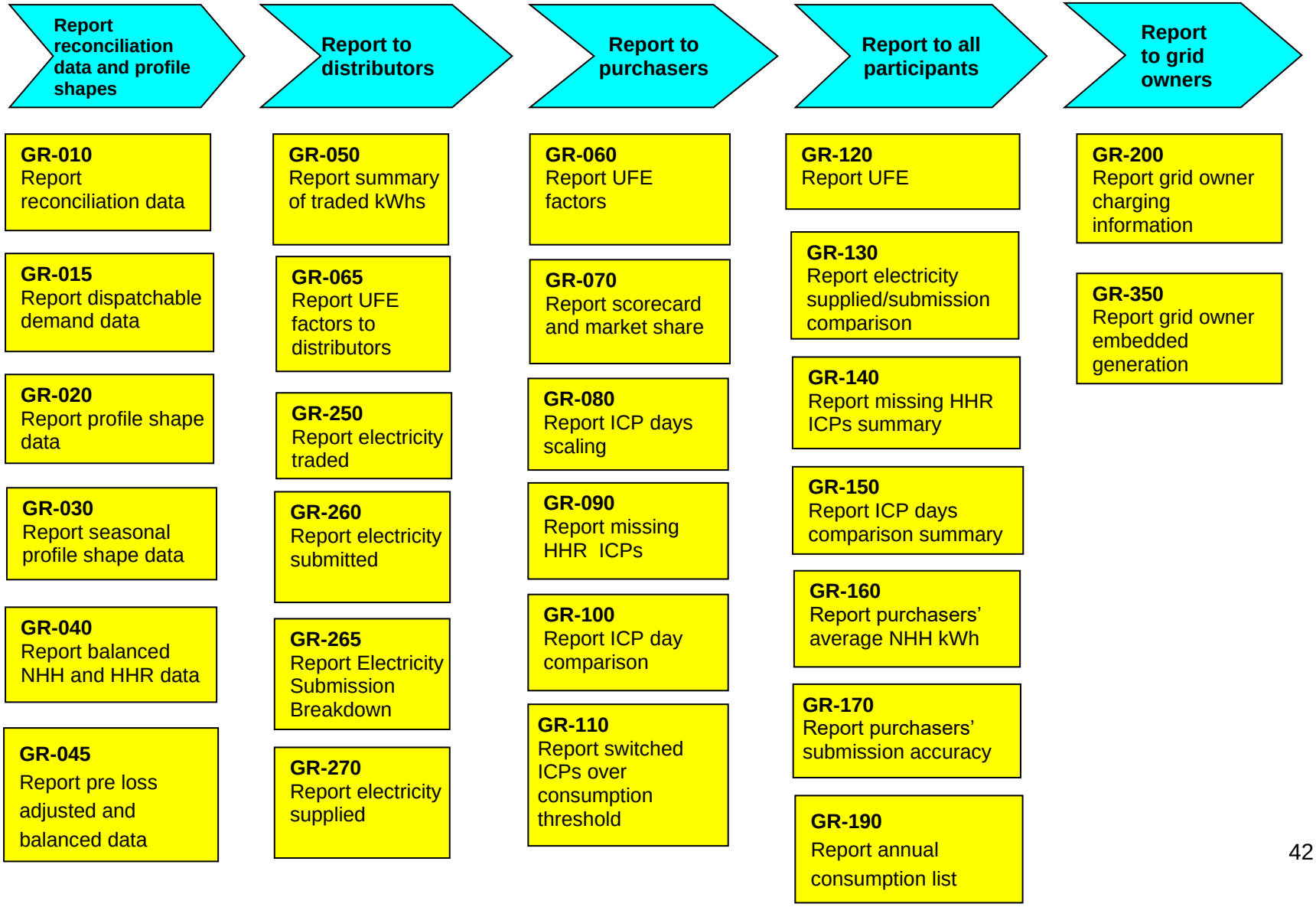


Figure 5(b) Process map – Generate reports

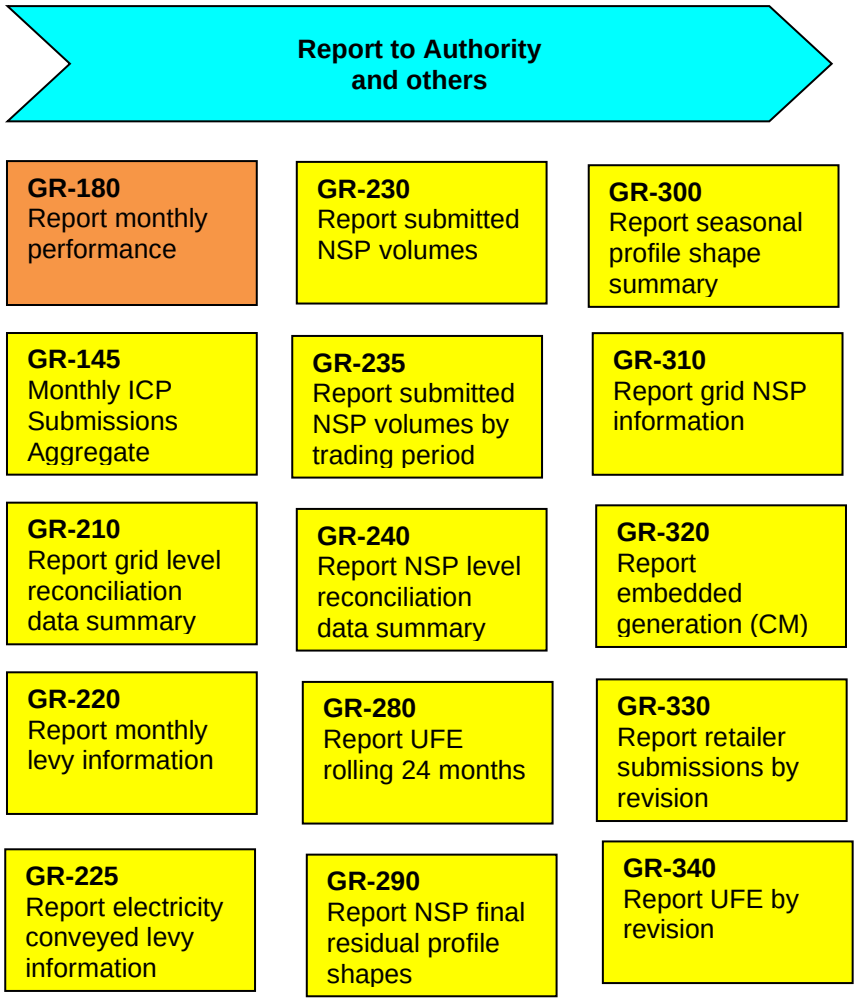
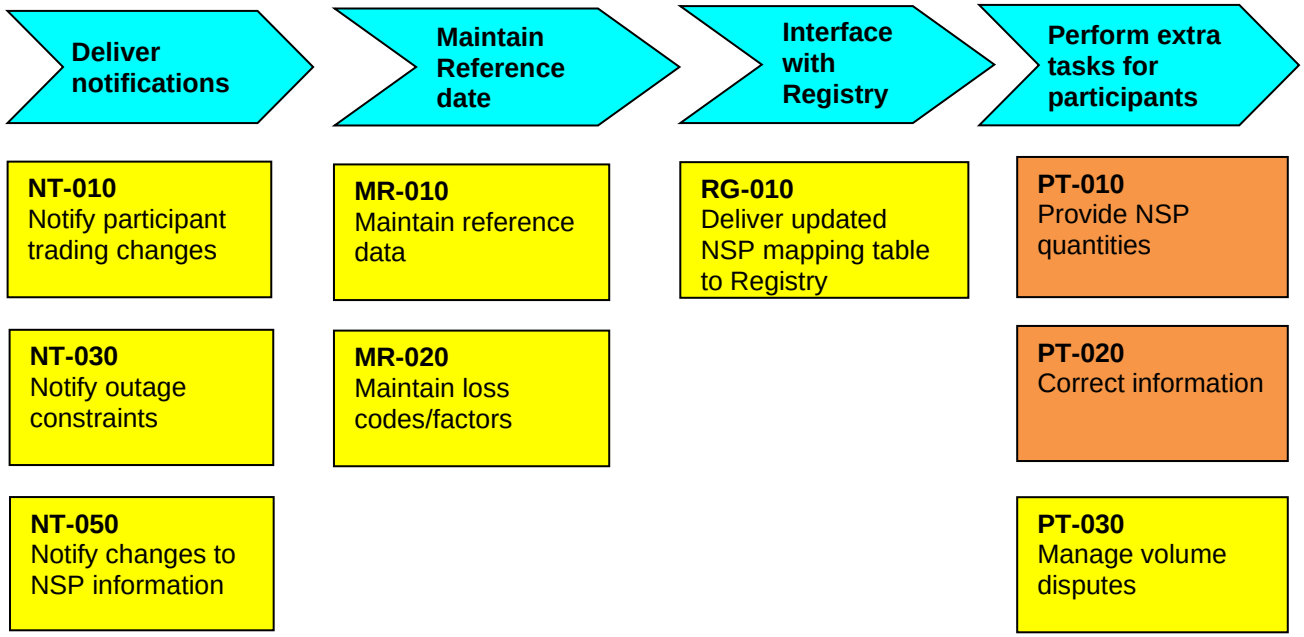


Figure 6 Process map – Deliver notifications, maintain reference data and perform other miscellaneous tasks



8. Automated processes

The processes described in this section are those which are implemented as part of the Reconciliation Manager's software system and as such are subject to software audit requirements.

8.1. AV-010 Receive changes to grid, NSPs and balancing areas

Sub-process:	AV-010 Receive changes to grid, NSPs and balancing areas
Process:	Accept and validate information
Source:	Grid owners, distributors, embedded network owners
Code references:	Clause 15.14, clause 24 of Schedule 11.1, clauses 26 and 28 of Schedule 11.1 and clause 3 of Schedule 15.4
Dependencies:	AV-150

Description:

The Reconciliation Manager must be notified of changes to the grid, NSPs and balancing areas that affect the reconciliation process by:

- Grid owners who must notify any changes that the grid owner intends to make to the grid that will affect reconciliation, particularly changes to NSPs.
- Local and embedded network owners who must notify the creation or decommissioning of interconnection points between two local networks or two embedded networks respectively.
- Embedded network owners must notify the creation or decommissioning of an embedded network gateway NSP and where relevant the SB ICP identifier.
- Local and embedded network owners who must notify changes to the balancing areas associated with an NSP supplying a network for which they, the distributor, are the owner or operator.

The Reconciliation Manager may use this information to change the balancing area mappings and other NSP information in the NSP mapping table for use in the reconciliation process.

Business requirements:

1. Grid owners must give notice of any intended change to an existing point of connection to the grid and of the commissioning of any new point of connection to the grid. Grid owners must give any such notice at least one calendar month before making the intended change.
2. Local and embedded network owners must give notice of any intended change to, or addition or deletion of a point of connection to their network. The network owner that initiated this change, addition or deletion must give any notice to the reconciliation manager at least one calendar month before making the intended change.

3. Local and embedded network owners must notify the Reconciliation Manager of the establishment of or changes to a balancing area associated with an NSP supplying their network. The notice must be provided no later than 3 business days after the change takes effect.
4. Local and embedded network owners must notify the Reconciliation Manager if they acquire all or part of an existing network. At least one month notice must be given to the reconciliation manager before any intended change takes effect.
5. The notice of any change must include the date and trading period from which the change took or is to take effect.
6. The reconciliation manager must allocate a unique NSP identifier, taking into consideration the suggestion made by the participant in question, to each point of connection or interconnection point in accordance with Schedule 11.4, Clause 28.

Data inputs:

All values are mandatory unless stated as optional.

- **NSP change request**

Attributes	Format	Validation rules
POC	Char (7)	The combination of POC & Network (the NSP identifier) must be unique when adding a new NSP or it must be an existing NSP when modifying. Only grid owners can add new NSPs connected to their grid. The format must be AAANNNN where A is a character and N is a number.
Network	Char (4)	Must be the participant identifier of an existing local or embedded network owner, grid-connected generator or direct consumer. The type of network selected must be consistent with the reconciliation type. Grid owners must only make NSP change requests for local networks, grid-connected generators and direct consumers connected to their grid. This can be at new or existing NSPs. Distributors must only make NSP change requests for new interconnection points (Reconciliation Type NP) that are connected to their own networks. Embedded network owners must only make NSP change requests for new embedded networks (Reconciliation Type EN) and interconnection

		points (Reconciliation Type NP) that are connected to their own networks. Where participants have recorded relationships with other distributors and embedded network owners, they are able to make NSP change requests on their behalf.
Reconciliation type	Char (2)	Must be one of GN, EN, NP, GG, GD. Grid owners must only make NSP change requests for reconciliation types GN, GG and GD. Distributors must only make NSP change requests for Reconciliation Type NP. Embedded network owners must only make NSP change requests for Reconciliation Types EN and NP.
Flow direction “X”	Char (1)	Must be either Y(es) or N(o). For Reconciliation Types of EN and NP it must be Y, On other NSPs it must represent the metering configuration.
Flow direction “I”	Char (1)	Must be either Y(es) or N(o). For Reconciliation Types of EN and NP it must be Y, On other NSPs it must represent the metering configuration.
Start date	DD/MM/YYYY	Valid date
Start trading period	Number (2)	1-50
End date	DD/MM/YYYY	Valid date, combination of end date and trading period must be greater than starting date and trading period.
End trading period	Number (2)	1-50
Address	Char (32)	Free text.
Balancing area	Char (12)	Must be in the format specified by the Market Administrator. Can only be included by distributors and embedded network owners. The format is the concatenation of the NSP Code and either an E, where the Reconciliation Type is EN, or concatenated with a G.
Parent NSP	Char (11)	Must be an existing NSP (POC and Network combination) and cannot be the NSP code of this request. Only applicable to Reconciliation Types of EN and NP.
LE ICP	Char (15)	Optional and is only applicable for Reconciliation Types of EN and NP.

Reconciliation method	Char (12)	Must be either “global” or “differencing”. The differencing method is only applicable for Reconciliation Types of EN.
SB retailer	Char (4)	Optional and is only applicable for Reconciliation Types EN where the Reconciliation Method is by differencing. It must be an existing trader participant identifier.
SB ICP	Char (15)	Optional and is only applicable for Reconciliation Types EN where the Reconciliation Method is by differencing.
Island	Char (1)	N (North) or S (South).
Comments to the RM	Char (4000)	Optional - free text containing further clarification for the RM.

Processing:

The system:

1. Validates the information and stores it together with audit details, as a valid NSP change request, for approval by the Reconciliation Manager.
2. Provides the requester with a receipt of their requested change.
3. Maintains a log of all NSP change requests and the current progress state of each request.
4. Displays the log of all NSP change requests to any of the interested participants.
5. Permits the Reconciliation Manager to edit a current outstanding NSP change request.
6. Permits the Reconciliation Manager to approve or reject a current outstanding NSP change request.
7. Permits the requestor to view the proposed changes to the NSP mapping table that will be made as a result of the NSP change request to edit an existing NSP.

   Where the date range of an edit NSP change request overlaps existing NSP entries and the differences are to both (one or more) of their NSP attributes and to their start and/or end dates, the system will modify the affected existing entries appropriately to include (add) the new request. This could involve the removal of entries where the new entry spans their date range and splitting existing entries to have new start or end dates.

   Where the date range of an edit NSP change request overlaps existing NSP entries and the differences are to either (one or more) of their NSP attributes or to their start and/or end dates, the existing entries will be modified (updated) to reflect the edit request.

   Otherwise, where the date range of an edit NSP change request does not overlap any existing NSP entries, a new entry will be added to reflect the edit request.
8. Updates the NSP mapping table with the details of any approved outstanding change request. This may involve end-dating existing entries and creating new entries.

Data outputs:
NSP change request history – same as input but includes audit details and progress state. Receipt to requestor. Updated NSP mapping table.

Exceptions:
The Reconciliation Manager is required to report a breach to the Authority if: • A local or embedded network owner notifies a change to a balancing area within 3 business days of the change taking effect, • A local or embedded network owner notifies the creation or decommissioning of an interconnection point within 10 business days before the NSP is electrically connected, • For all other NSP changes at least one calendar month before the NSP is electrically connected or the ICP transferred. The Reconciliation Manager checks the information and may add or change any of the information provided. A trader notifies the Reconciliation Manager with SB information separately at any time. (AV-150) On creation of a Reconciliation Type NP, the Reconciliation Manager will update the NSP Mapping Table for both parties involved.

8.2. AV-030 Receive outage constraints

Sub-process:	AV-030 Receive outage constraints
Process:	Accept and validate information
Source:	WITS
Code references:	Clause 15.15, 15.16, and 15.17
Dependencies:	

Description:

No later than two hours after the publication of the final prices for any consumption period, WITS must notify the Reconciliation Manager of all points of connection that were disconnected in the consumption period, and all trading periods during which each of the affected points of connection was disconnected or supplied from an alternative point of connection. The Reconciliation Manager receives these notifications from WITS.

Business requirements:

1. The Reconciliation Manager must agree with the WITS manager for the transmission of this information
2. WITS must deliver outage constraint information to the Reconciliation Manager no later than two hours after the publication of the final prices for any consumption period.
3. The Reconciliation Manager must check that the information has been received each month by the required time and that it contains the required information.

Data inputs:

Outage constraint information

Attributes	Format	Comments
POC	Char (7)	Valid POC code.
Start date	DD/MM/YYYY	Mandatory.
Start period	Number (2)	Mandatory.
End date	DD/MM/YYYY	Mandatory.
End period	Number (2)	Mandatory.

Processing:

The system:

1. Validates the outage constraint information.
2. Maps the POC to a network ID and reconciliation type for the given start and end trading dates and periods using the NSP mapping table and updates its own database accordingly.

Data output:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files. Updated NSP mapping table.

Exceptions:
If the information has not been received by the time specified, the Reconciliation Manager requests WITS to re-send the information and reports the situation to the Authority in the Code breaches report (see GR-180). If the information received cannot be validated properly, the Reconciliation Manager rejects the whole file and requests WITS to re-send it. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180). The reconciliation manager manually: 1. Checks for submission information that coincides with each outage; and 2 Possibly updates the NSP mapping table to reflect the outage constraint and alternative point of connection information notified by the System Operator.

8.3. AV-040 Receive latest loss codes and factors

Sub-process:	AV-040 Receive latest loss codes and factors
Process:	Accept and validate information
Source:	Registry
Code references:	Clauses 15.20B, 15 of Schedule 15.4, and 11.26(b) of the Code
Dependencies:	

Description:
The Reconciliation Manager receives loss factors for each loss category code from the Registry.

Business requirements:
4. The Reconciliation Manager must agree the mechanism with the registry service provider for the delivery of this information. 5. The Registry must deliver the latest loss factor information to the Reconciliation Manager for the prior consumption period by 1600 hours on the 4th business day of the current reconciliation period. 6. The Registry must deliver the latest revised loss factor information to the Reconciliation Manager for the 14 consumption periods prior to the current reconciliation period by 1600 hours on the 13th business day of the current reconciliation period. 7. The Reconciliation Manager must check that the information has been received each month by the required time and that it contains the required information.

Data inputs:

Loss factors file format

Attributes	Format	Comments
Network code	Char (4)	Valid network.
Loss category code	Alphanumeric (7)	Mandatory.
Loss factor consumption	Number (4,3)	Mandatory.
Loss factor generation	Number (4,3)	Mandatory.
Start date	DD/MM/YYYY	Mandatory.
End date	DD/MM/YYYY	If missing, denotes that loss factors are valid until further notice.
Start period	Number (2)	1 to 48. Defaults to 1. 46/50 for daylight saving start/end days.
End period	Number (2)	1 to 48. Defaults to 48. 46/50 for daylight saving start/end days.

Date and time of last change	DD/MM/YYYY HH:MM:SS	Date and time when information was last updated or inserted.

Processing:
The system: 1. Validates the loss factor data and updates its own database accordingly.

Data output:
Updated loss factors.

Exceptions:
If the information has not been received by the time specified, the Reconciliation Manager requests the Registry to re-send the information and reports the situation to the Authority in the Code breaches report (see GR-180). If the information received cannot be validated properly, the Reconciliation Manager rejects the whole file and requests the Registry to re-send it. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.4. AV-050 Receive latest balancing area mappings

Sub-process:	AV-050 Receive latest balancing area mappings
Process:	Accept and validate information
Source:	Registry
Code references:	Clauses 2 of Schedule 15.4, and 11.26(c) of the Code
Dependencies:	

Description:
The Reconciliation Manager receives balancing area information from the Registry.

Business requirements:
1. The Reconciliation Manager must agree the mechanism with the registry service provider for the delivery of this information. 2. The Registry must deliver the latest information to the Reconciliation Manager for the prior consumption period by 1600 hours on the 4th business day of the current reconciliation period. 3. The Registry must deliver the latest revised information to the Reconciliation Manager for the 14 consumption periods prior to the current reconciliation period by 1600 hours on the 13th business day of the current reconciliation period. 4. The information must detail the balancing area to which each NSP belongs as recorded by the Registry for all trading periods during the immediate preceding 14 calendar months. 5. The Reconciliation Manager must check that the information has been received each month by the required time and that it contains the required information.

Data inputs:		
NSP mapping table report format		
Attributes	**Format**	**Comments**
Registry NSP POC	Char (7)	Mandatory.
Registry NSP network	Char (4)	Mandatory. Valid network.
Registry NSP description	Char (32)	Mandatory.
Network type	Char (1)	G—grid, E—embedded, I—interconnection point.
Network connection status	Char (1)	Y - active, N - inactive
Parent NSP POC	Char (7)	Blank if grid connected.
Parent NSP network	Char (4)	Blank if grid connected.

Balancing area	Char (12)	Mandatory.
Start date	DD/MM/YYYY	Mandatory.
Start trading period	Number (2)	Mandatory. (1..50)
End date	DD/MM/YYYY	Optional.
End trading period	Number (2)	(1..50) If end date missing, then this field will also be missing.
ICP# of SB ICP	Char (15)	Optional.
Audit input date/time	DD/MM/YYYY HH:MM:SS	
Input by (user name)	Char (15)	
Audit deletion date/time	DD/MM/YYYY HH:MM:SS	
Deleted by (user name)	Char (15)	

Processing:

The system:

1. Validates the balancing area mappings and updates its database accordingly.

Data outputs:

Updated NSP mapping table.

Exceptions:

If the information has not been received by the time specified, the Reconciliation Manager requests the Registry to re-send the information and reports the situation to the Authority in the Code breaches report (see GR-180).

If the information received cannot be validated properly, the Reconciliation Manager rejects the whole file and requests the Registry to re-send it. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.5. AV-060 Receive Registry ICP days information

Sub-process:	AV-060 Receive Registry ICP days information
Process:	Accept and validate information
Source:	Registry
Code references:	Clauses 2 of Schedule 15.4, and 11.26(a) of the Code
Dependencies:	

Description:

The Reconciliation Manager receives ICP days information from the Registry.

Note that where an ICP has both half-hour and non-half-hour submission types, the ICP days is counted for each submission type. For the purposes of this report, prepaid and un metered ICPs are included in the non-half-hour category.

Business requirements:

1. The Reconciliation Manager must agree the mechanism with the registry service provider for the delivery of this information.
2. The Registry must deliver the information to the Reconciliation Manager for the prior consumption period by 1600 hours on the 4th business day of the current reconciliation period.
3. The Registry must deliver the information to the Reconciliation Manager for the 14 consumption periods prior to the current reconciliation period by 1600 hours on the 13th business day of the current reconciliation period.
4. The report must identify the number of ICP days that were active at the same time the NSP was active, per NSP, differentiated by submission type, attributable to each trader in respect of each of the immediate preceding 14 calendar months. NB: The term 'trader' also includes direct purchasers.
5. The Reconciliation Manager must check that the information has been received each month by the required time and that it contains the required information.

Data inputs:

ICP days file format

Attributes	Format	Comments
Month	MM/YYYY	Mandatory. One of the previous 14 calendar months.
Participant identifier	Char (4)	Mandatory. Valid participant identifier.
Submission type	Char (3)	Mandatory. ‘NHH’ or ‘HHR’. 'NHH' includes submission types of non-half-hourly, pre-paid and unmetered.

NSP	Char (11)	Mandatory. Valid NSP code – network and POC.
ICP days	Number (12)	Mandatory. Total number of days the ICPs were active when the NSP was also active

Processing:

The system:

1. Validates the ICP days information and updates its own database accordingly.

Data outputs:

Updated registry ICP days information.

Exceptions:

If the information has not been received by the time specified, the Reconciliation Manager requests the Registry to re-send the information and reports the situation to the Authority in the Code breaches report (see GR-180).

If the information received cannot be validated properly, the Reconciliation Manager rejects the whole file and requests the Registry to re-send it. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.6. AV-070 Receive list of half-hour ICPs

Sub-process:	AV-070 Receive list of half-hour ICPs
Process:	Accept and validate information
Source:	Registry
Code references:	Clauses 2 of Schedule 15.4, and 11.26(d) of the Code
Dependencies:	

Description:
The Reconciliation Manager receives a list of half-hour ICPs from the Registry.

Business requirements:
1. The Reconciliation Manager must agree the mechanism with the registry service provider for the delivery of this information. 2. The Registry must deliver the information to the Reconciliation Manager for the prior consumption period by 1600 hours on the 4th business day of the current reconciliation period. 3. The Registry must deliver the information to the Reconciliation Manager for the 14 consumption periods prior to the current reconciliation period by 1600 hours on the 13th business day of the current reconciliation period. 4. The Reconciliation Manager must check that the information has been received each month by the required time and that it contains the required information.

Data inputs:

HHR ICP list format

Attributes	Format	Comments
Month	MM/YYYY	Mandatory. Valid consumption period.
Participant identifier	Char (4)	Mandatory. Valid participant identifier.
POC	Char (7)	Mandatory. Valid POC.
ICP number	Char (15)	Mandatory.
Start date	DD/MM/YYYY	Mandatory. First day in month that ICP was owned by the participant and was active.
End date	DD/MM/YYYY	Mandatory. Last day in month that ICP was owned by the participant and was active. Validated to be greater than or equal to start date
ICP days	Number (12)	Mandatory. Validated to be a number between zero and the number of days between start date and end date.

Processing:
The system: 1. Validates the list of half-hour ICPs and updates its own database accordingly.

Data outputs:
Updated half-hour ICP list information.

Exceptions:
If the information has not been received by the time specified, the Reconciliation Manager requests the Registry to re-send the information and reports the situation to the Authority in the Code breaches report (see GR-180). If the information received cannot be validated properly, the Reconciliation Manager rejects the whole file and requests the Registry to re-send it. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.7. AV-080 Receive NHH submission information

Sub-process:	AV-080 Receive NHH submission information
Process:	Accept and validate information
Source:	Reconciliation participants
Code references:	Clauses 15.4, 15.5, 8 of Schedule 15.3, and 2 of Schedule 15.4 of the Code
Dependencies:	

Description:

The Reconciliation Manager receives NHH (non-half-hour) submission information for the latest and previous consumption periods from reconciliation participants. NHH consumption and injection quantities are usually provided as monthly totals, although some participants may provide daily totals which will be aggregated into monthly totals.

Business requirements:

1. The Reconciliation Manager must receive all submission information for the latest consumption period from reconciliation participants by 1600 hours on the 4th business day of the current reconciliation period.
2. The Reconciliation Manager must receive all revised submission information relating to previous consumption periods from reconciliation participants by 1600 hours on the 13th business day of the current reconciliation period.
3. The Reconciliation Manager must check that all required information has been received each month by the set times.
4. The Reconciliation Manager must allow reconciliation participants to deliver submission information in multiple files.
5. The Reconciliation Manager must validate the information received against the validation rules.
6. If daily totals are provided, then the file must contain entries for every day in the month or where a trading notification has been started/ended during the month, from/to the start/end trading period of the notification, for the same NSP, reconciliation type, participant, profile, loss category, flow direction and dedicated NSP.
7. The Reconciliation Manager must return a time-stamped confirmation to the submitter for all valid and accepted files.
8. The Reconciliation Manager must allow the reconciliation participant to correct errors in data and resubmit it, with version control.

Data inputs:

Non-half-hour submission format: formerly known as ‘N’ file format.

All values are mandatory – no null values are allowed.

Attributes	Format	Validation rules
POC	Char (7)	Valid POC code.
Network code	Char (4)	Valid network code.
Reconciliation type	Char (2)	GN—point of connection to the grid. EN—Embedded network. SB—Embedded network residual load.
Reconciliation participant	Char (4)	Valid reconciliation code for participant.
Profile	Char (3)	Valid profile code.
Loss category code	Char (7)	Valid loss category code.
Flow direction	Char (1)	X—Load (exit). I—Injection.
Dedicated NSP	Char (1)	Y or N.
Month or day	MM/YYYY or DD/MM/YYYY	
Quantity in kWh	Number (14,2)	For reconciliation type of SB, this value will/must be zero.
Quantity of historical estimate in kWh	Number (14,2)	Indicates the amount of the quantity that was estimated including any un metered load. Same validation as for quantity above but in addition this value must be less than or equal to the value in the quantity field.

Processing:

The system:

1. Verifies the reconciliation participant's non-half-hour submission information and, if it is valid, stores it for further processing,
2. Aggregates any daily totals into monthly totals.

Data outputs:

Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If the reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.8. AV-090 Receive HHR submission information

Sub-process:	AV-090 Receive HHR submission information
Process:	Accept and validate information
Source:	Reconciliation participants
Code references:	Clauses 15.4, 15.5, 8 of Schedule 15.3, and 2 of Schedule 15.4 of the Code
Dependencies:	

Description:

The Reconciliation Manager receives HHR (half-hour) submission information from a reconciliation participant. HHR consumption and injection quantities are provided per trading period per day in the consumption month.

Business requirements:

1. The Reconciliation Manager must receive all submission information for the latest consumption period from reconciliation participants by 1600 hours on the 4th business day of the current reconciliation period.
2. The Reconciliation Manager must receive all revised submission information relating to previous consumption periods from reconciliation participants by 1600 hours on the 13th business day of the current reconciliation period.
3. The Reconciliation Manager must check that the required information has been received each month by the set times.
4. The Reconciliation Manager must allow reconciliation participants to deliver submission information in multiple files.
5. The Reconciliation Manager must validate the information received against the validation rules.
6. There should be entries for every trading period in the month or where a trading notification has been started/ended during the month from/to the start/end trading period of the notification, for the same NSP, reconciliation type, participant, profile, loss category, flow direction and dedicated NSP.
7. For all valid and accepted files, the Reconciliation Manager must return a time-stamped confirmation to the submitter.
8. The Reconciliation Manager must allow the reconciliation participant to correct errors in data and resubmit it, with version control.

Data inputs:		
All values are mandatory – no null values allowed.		
Half-hour submission format: formerly known as ‘T/U/V’ file format		
Attributes	**Format**	**Validation rules**
POC	Char (7)	Valid POC code.
Network code	Char (4)	Valid network code.
Reconciliation type	Char (2)	GN—point of connection to the grid. EN—Embedded network.
Reconciliation participant	Char (4)	Valid reconciliation code for participant.
Profile	Char (3)	‘HHR’.
Loss category code	Char (7)	Valid loss category code.
Flow direction	Char (1)	X—Load (exit). I—Injection.
Dedicated NSP	Char (1)	Y or N.
Date	DD/MM/YYYY	
Trading period quantity 1 to 48 (46/50 for daylight saving) in kWh	Number (14,2)	Currently a series of comma delimited values. Allow for 0, 1 or 2 decimal places. For reconciliation type of SB, this value will/must be zero.
Checksum	Number (14,2)	Allow for 0, 1 or 2 decimal places. Must be the sum of the row trading period quantities.

Processing:
The system: 1. Verifies the reconciliation participant's half-hour submission information and, if it is valid, stores it for further processing; and 2. Checks that the appropriate number of trading period quantity values are present for daylight saving change days, i.e. 46 and 50.

Data outputs:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If the reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.9. **AV-100 Receive profile shape submission information**

Sub-process:	AV-100 Receive profile shape submission information
Process:	Accept and validate information
Source:	Reconciliation participants
Code references:	Clauses 15.4, 15.5, 8 of Schedule 15.3, 2 of Schedule 15.4, and 2(1)(d) and 3 of Appendix 1 of Schedule 15.5 of the Code
Dependencies:	

Description:

The Reconciliation Manager receives profile shape information from the 'owner' of the profile or the approved user, and, 'on and off times' for NSP derived profiles where the 'on and off times' are variable i.e. not static which are provided as reference data. The profile shape information is used to allocate NHH (non-half-hour) data into individual trading periods. One profile shape is used for all participants' NHH submissions using the particular profile code and NSP.

Where a profile is an NSP derived profile with variable 'on and off times' then the trading period 'on and off times' can be submitted using this file.

The reconciliation participant authorised by the profile owner to submit profile shape information of engineered and statistically sampled profile types to the Reconciliation Manager, may request NZX to act as their agent and to automatically generate the submission on their behalf.

Business requirements:

1. The Reconciliation Manager must receive all profile shape information for the latest consumption period from reconciliation participants by 1600 hours on the 4th business day of the current reconciliation period.
2. The Reconciliation Manager must receive all revised profile shape information relating to previous consumption periods from reconciliation participants by 1600 hours on the 13th business day of the current reconciliation period.
3. The Reconciliation Manager must check that the information has been received each month by the required time.
4. The Reconciliation Manager must validate the information received against the validation rules.
5. There should be entries for every day in the month for the same NSP, participant and profile.
6. The Reconciliation Manager must return a time-stamped confirmation to the submitter for all valid and accepted files.
7. A profile shape submission must only be provided by the 'owner' of the profile that is recorded in the reference data or by the user approved by the 'owner'.

8. The profile shape submission must only be provided for a valid profile code that was approved by the Authority.
9. The Reconciliation Manager must allow the reconciliation participant to correct errors in profile shape data and resubmit it, with version control.
10. On and off times are to be provided for each trading period in terms of the number of minutes switched on. e.g. if the equipment was switched on for a whole trading period then the value would be 30; if for only 5 minutes, then 5. If switched off for the whole trading period then 0 would be submitted.

Data inputs:

All values are mandatory – no null values allowed.

Profile shape information formerly known as 'C' file format.

Attributes	Format	Validation rules
POC	Char (7)	Valid POC code.
Network code	Char (4)	Valid network code.
Approved profile submitter	Char (4)	Valid reconciliation participant identifier.
Profile	Char (3)	Valid profile code for profile owner.
Date	DD/MM/YYYY	
Trading period quantity 1 to 48 (46/50 for daylight saving)	Number (8)	Currently a series of comma delimited values.
Checksum	Number (10)	Must be the sum of the row quantities.

Processing:

The system:

1. Checks that the submitter is either the 'owner' of the profile or the user approved to submit it.
2. Checks that the appropriate number of trading period quantity values are present for daylight saving change days, ie 46 and 50.
3. Checks that for NSP derived profiles with variable on and off times the maximum value in any trading period is 30.
4. Verifies the reconciliation participant's profile shape information and, if it is valid, stores it for use in further processing.

Data outputs:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If the reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180). If the reconciliation participant fails to send valid data by the time required, the reconciliation process must use the final residual profile shape of the balancing area to profile the associated submission information.

8.10. **AV-110 Receive ICP days information**

Sub-process:	AV-110 Receive ICP days information
Process:	Accept and validate information
Source:	Traders and direct purchasers (excluding direct consumers)
Code references:	Clause 15.6 of the Code
Dependencies:	

Description:
The Reconciliation Manager receives a report from each trader and direct purchaser (excluding direct consumers) detailing the number of ICP days for each NSP that the submission information contains. Only ICPs with Installation Types of 'Load' and 'Both' are included. Note that where an ICP has both half-hour and non-half-hour submission types, the ICP days will have been counted for each submission type. Also, for the purposes of this report, prepaid and un metered ICPs are to be included in the non-half-hour category.

Business requirements:
1. The Reconciliation Manager must receive a report in respect of submission information for the latest consumption period by 1600 hours on the 4th business day of the current reconciliation period from all traders and direct purchasers. 2. The Reconciliation Manager must receive a report by 1600 hours on the 13th business day of each reconciliation period in respect of any revised submission information for prior consumption periods. 3. The Reconciliation Manager must check that the information has been received each month by the required time. 4. System should validate the information received against the validation rules. 5. The Reconciliation Manager must return a time-stamped confirmation to the submitter for all valid and accepted files. 6. The Reconciliation Manager must allow submitters to correct errors in ICP days data and resubmit it.

Data inputs:		
All values are mandatory – no null values allowed.		
ICP Days Information		
Attributes	**Format**	**Validation rules**
POC	Char (7)	Valid POC code.
Network code	Char (4)	Valid network code.
Consumption period	MM/YYYY	Valid month.

Submission type	Char (3)	HHR or NHH.
Reconciliation participant	Char (4)	Valid reconciliation participant identifier for the trader or direct purchaser but not direct consumers.
Active ICP days	Number (8)	

Processing:

The system:

- Verifies the participants' ICP days information and, if it is valid, stores it for use in calculating the ICP days scaling factor for the participants.

Data outputs:

Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:

If a trader or direct purchaser fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.11. AV-120 Receive electricity supplied data

Sub-process:	AV-120 Receive electricity supplied data
Process:	Accept and validate information
Source:	Traders
Code references:	Clauses 15.7, and 17 of Schedule 15.4 of the Code
Dependencies:	

Description:
The Reconciliation Manager receives details of the electricity supplied and billed i.e invoiced by a trader to its customers during the previous consumption period per NSP. These will be non-loss-adjusted quantities.

Business requirements:
1. The Reconciliation Manager must receive a report in respect of the electricity supplied information for the latest consumption period by 1600 hours on the 4th business day of the current reconciliation period from all traders. 2. The Reconciliation Manager must receive a report by 1600 hours on the 13th business day of each reconciliation period in respect of any revised electricity supplied information for prior consumption periods. 3. The Reconciliation Manager must check that the information has been received each month by the required time. 4. The Reconciliation Manager must validate the information received against the validation rules. 5. The Reconciliation Manager must return a time-stamped confirmation to the submitter for all valid and accepted files. 6. The Reconciliation Manager must allow the trader to correct errors in electricity supplied and resubmit it. 7. The Reconciliation Manager must be able must be able to reallocate quantities across reconciliation months if the quantities appear unreasonable.

Data inputs:		
Trader electricity supplied format		
Attributes	**Format**	**Validation rules**
POC	Char (7)	Valid POC code.
Network code	Char (4)	Valid network code.
Consumption period	MM/YYYY	Valid (invoiced) month.
Reconciliation participant	Char (4)	Valid reconciliation participant identifier for a trader.

Actual sales kWh	Number (12)	

Processing:

The system:

1. Verifies the trader's electricity supplied information and, if it is valid, stores it for use in calculating the trader's scorecard rating.

Data outputs:

Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:

If a trader fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.12. **AV-130 Receive NSP volume information**

Sub-process:	AV-130 Receive NSP volume information
Process:	Accept and validate information
Source:	Grid owners, embedded network owners, grid-connected generators, local network owners
Code references:	Clauses 15.9 to 15.11 of the Code
Dependencies:	

Description:
The Reconciliation Manager receives volume information for each of its NSPs from network owners.

Business requirements:

1. The Reconciliation Manager must receive NSP volume information for the latest consumption period by 1600 hours on the 4th business day of the current reconciliation period from all grid owners, embedded network owners, grid-connected generators and local network owners.
2. The Reconciliation Manager must receive revised NSP volume information by 1600 hours on the 13th business day of each reconciliation period for prior consumption periods.
3. The Reconciliation Manager must check that the information has been received each month by the required time.
4. The Reconciliation Manager must validate the information received against the validation rules.
5. The Reconciliation Manager must create an opposite NSP volume submission for the 'other' network of each NSP submission received for interconnection NSPs.
6. There must be entries for every trading period in the month or where a trading notification has been started/ended during the month, from/to the start/end trading period of the notification, for the same NSP, reconciliation type, reconciliation participant, profile, loss category, flow direction and dedicated NSP.
7. For all valid and accepted files, the Reconciliation Manager must return a time-stamped confirmation to the submitter.
8. The Reconciliation Manager must allow the reconciliation participant to correct errors in NSP volume data and resubmit it.

Data inputs:

NSP volume information format (same as HHR submission format)

Attributes	Format	Validation rules
POC	Char (7)	Valid POC code of the NSP.

Network code	Char (4)	Valid NSP identifier.
Reconciliation type	Char (2)	NP—Network interconnection point. GN—Grid exit. GD—Grid connected direct consumer. GG—Generator. EN—Embedded network.
Reconciliation participant (network owner)	Char (4)	Valid reconciliation participant identifier of the network owner (grid owner, embedded network owner, grid-connected generator or local network owner). For GD and GN submissions, this will be the grid owner. For GG submissions this will be the grid-connected generator. For EN submissions this will be the embedded network owner.
Profile	Char (3)	'HHR'.
Loss category	Char (7)	Valid loss category of the reconciliation participant. This will be "GRID" for submissions from the grid owner.
Flow direction	Char (1)	X—Load (exit). I—Injection.
Dedicated NSP	Char (1)	Must be 'Y'.
Date	DD/MM/YYYY	
Trading period quantity in kWh – 1 to 48 (46/50 for daylight saving)	Number (14,2)	Currently a series of comma delimited values.
Checksum	Number (14,2)	Must be the sum of the row trading period quantities.

Processing:

The system:

1. Verifies the NSP volume information and, if it is valid, stores it for use later in the reconciliation processing.
2. Checks that the appropriate number of trading period quantity values are present for daylight saving change days, i.e. 46 and 50.

Data outputs:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If a reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.13. AV-140 Receive monthly HHR ICP aggregate

Sub-process:	AV-140 Receive monthly HHR ICP aggregates
Process:	Accept and validate information
Source:	Traders and direct purchasers (excluding direct consumers)
Code references:	Clause 15.8 of the Code
Dependencies:	

Description:
The Reconciliation Manager receives from each trader and direct purchaser (excluding direct consumers) their total monthly kWh for each half-hourly metered ICP for which they provided submission information for the latest consumption period.

Business requirements:
1. The Reconciliation Manager must receive a report in respect of the HHR ICP aggregate information for the latest consumption period by 1600 hours on the 4th business day of the current reconciliation period from all traders and direct purchasers (excluding direct consumers). 2. The Reconciliation Manager must receive a report by 1600 hours on the 13th business day of each reconciliation period in respect of any revised HHR ICP aggregate information for prior consumption periods. 3. The Reconciliation Manager must check that the information has been received each month by the required time. 4. The Reconciliation Manager must validate the information received against the validation rules. 5. For all valid and accepted files, the Reconciliation Manager must return a time-stamped confirmation to the submitter. 6. The Reconciliation Manager must allow the reconciliation participant to correct errors in the aggregates data and resubmit it.

Data inputs:		
All values are mandatory – no null values allowed.		
Monthly HHR ICP aggregates by ICP		
Attributes	**Format**	**Validation rules**
Participant identifier	Char (4)	Valid trader or direct purchaser participant identifiers.
Consumption period	MM/YYYY	Valid month.
ICP number	Char (15)	

POC	Char (7)	Valid POC code.
Network	Char (4)	Valid network code.
Flow direction	Char (1)	X—Load (exit). I—Injection.
Monthly quantity in kWh	Number (14,2)	

Processing:
The system: 1. Verifies the participant's monthly half-hour aggregate information and, if it is valid, stores it for use in checking the participant's half-hourly submission information (see GR-090).

Data outputs:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If a purchaser (excluding direct consumers) fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The Reconciliation Manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.14. **AV-160 Receive trading notifications from Registry**

Sub-process:	AV-160 Receive trading notifications from Registry
Process:	Accept and validate Information
Source:	Registry
Rule references:	Rule 24.2.5 of Part E and subsequently Rule 3.1 of Part J, effective 30 September 2010
Dependencies:	

Description:
In order to allow the Reconciliation Manager to accurately maintain trading notifications records, the Registry supplies the Reconciliation Manager with a file indicating the first and last dates at which participants were present at each NSP. The file is compared with the existing records in the system and the discrepancies are merged.

Business requirements:
1. The Registry must deliver the file to the Reconciliation Manager daily by 0900 hours. This is to ensure trading notifications are always up to date when participants make submissions.

Data inputs:		
Automated trading notifications report format		
Attributes	**Format**	**Comments**
POC Code	Varchar (7)	Valid point of connection
Network Code	Varchar (4)	Valid network code
Reconciliation Type Code	Varchar (2)	Valid reconciliation type
Participant Code	Varchar (4)	Valid participant code
Contract Type	Varchar (1)	(L)oad (G)eneration (B)oth
Profile Code	Varchar (3)	Valid profile code
Start Date	DD/MM/YYYY	
End Date	DD/MM/YYYY	Null for a current record

Processing:
The system: 1. Validates the following fields:Start and end dates

- Participant
- NSP

2. For each NSP, reconciliation type, participant, contract type and profile code, compares records in the RM system with those supplied in the Registry file and makes them match by updating the RM system.
3. Detects start and end dates and trading periods for each range of continuous RM records.
4. Detects start and end dates and trading periods for each range of continuous Registry records (Using a start trading period of 1 and for the end trading period, the maximum trading period for the end date)
5. Does not insert, update or delete records where the reconciliation type is not GN or EN
6. A 14 day change window is observed when making adjustments to trading notifications, whereby if a difference occurs 14 days prior to the current date, or after the current date, the change is not applied. This is to ensure that changes do not proliferate, particularly for very old changes or those where the only difference is between, say, an end date of 31-Dec-9999 and 31-Dec-2025. This does not apply to records which exist only in the RM system or only in the Registry.
7. Where records exist in the RM system but no record at all exists in the Registry, shortens or deletes records in the RM system.
8. Where records exist in the Registry system but no record exists in the RM system , then creates a record in the RM system using the default contract code for the participant for the contract type (Purchasing or Generating)
9. Where the profile code is one of the default profile codes owned by the EA (HHR,RPS,UML,EG1,PV1), matches trading notifications in the RM system with those in the file.
10. Where the profile code is none of these, does not create new records in the RM system.
11. Records an audit log of any changes made
12. When a new trading notification is created, it will be associated with the participant's appropriate default contract. Initially, these will set up in the form PPPPG (generation) and PPPPP (purchasing), where PPPP is the participant code. Participants may nominate another contract as their default contract for purchasing or generation. The RM will routinely email participants with details of trading notifications set up under default contracts.

Data outputs:
Depending on the constraints outlined, • Updates to trading notifications • Audit log

Exceptions:
If the information has not been received by the time specified, the Reconciliation Manager requests the Registry to re-send the information.

8.15. **AV-165 Receive trading notifications from traders**

Sub-process:	AV-165 Receive trading notifications from traders
Process:	Accept and validate Information
Source:	Traders
Rule references:	15.3
Dependencies:	

Description:
Participants must have trading notifications in place in order to submit volume information at a given NSP. This information is used by the Reconciliation Manager for completeness checks. Traders are able to directly manage their trading notifications lodged with the Reconciliation Manager.

Business requirements:
1. Traders must only be able to access their own trading notifications. 2. Traders must only be able to insert, amend and delete trading notification related to NSPs with a reconciliation type of GN or EN. 3. Traders must not be able to insert or amend a trading notification for an NSP that would overlap the time period of any of their existing notifications for that NSP.

Data inputs:		
Trading notifications		
Attributes	**Format**	**Comments**
Contract	Char (20)	Valid contract code. Must have previously been set up in the system by RM.
POC	Char (7)	Valid point of connection (e.g. CPK0331).
Network Code	Char(4)	Valid network code (e.g. CKHK).
Reconciliation Type	Char(2)	Must be either GN or EN.
Metering Type	Char (3)	Must be either NHH or HHR.
Start Date	DD/MM/YYYY	Valid date. Start Date and Start Trading Period must not be within time period of any existing trading notification for NSP.
Start Trading Period	Number (2)	1-50.
End Date	DD/MM/YYYY	Valid date. End Date and End Trading Period must not be within time period of any existing trading notification for NSP.
End Trading Period	Number (2)	1-50.

Processing:
The system: 1. Validates the information and stores it with the identity of the trader in the database.

Data outputs:
New or updated trading notifications

Exceptions:
If the notice is received within 5 business days of the change taking effect, the Reconciliation Manager must report the situation to the Authority as a breach. Any required updates to trade notifications for NSPs where the reconciliation type is GG or GD must be manually completed by an RM analyst using the internal system.

8.16. **AV-170 Receive dispatchable demand information**

Sub-process:	Receive dispatchable demand information
Process:	Accept and validate information
Source:	Dispatchable load purchasers
Code references:	Clauses 15.5A, and 15.5D of the Code
Dependencies:	

Description:
The reconciliation manager receives HHR (half-hour) dispatchable demand information from a dispatchable load purchaser. HHR consumption quantities are provided per trading period per day in the consumption month.

Business requirements:

1. The reconciliation manager must receive all dispatchable demand information for the latest consumption period from dispatchable load purchasers by 1600 hours on the 4th business day of the current reconciliation period.
2. The reconciliation manager must receive all revised dispatchable demand information relating to previous consumption periods from dispatchable load purchasers by 1600 hours on the 13th business day of the current reconciliation period.
3. The reconciliation manager must check that the required information has been received each month by the set times.
4. The reconciliation manager must allow dispatchable load purchasers to deliver submission information in multiple files.
5. The reconciliation manager must validate the information received against the validation rules.
6. There should be entries for every day in the month or where a bidding notification to the system operator has been started/ended during the month from/to the start/end trading period of the notification, for the same NSP, dispatchable load station identifier and loss category.
7. For all valid and accepted files, the reconciliation manager must return a time-stamped confirmation to the submitter.
8. The reconciliation manager must allow the reconciliation participant to correct errors in data and resubmit it, with version control.

Data inputs:		
All values are mandatory – no null values allowed.		
HH dispatchable demand information - Half-hour submission format		
Attributes	**Format**	**Validation rules**
POC	Char 7	Valid POC code.
Network code	Char 4	Valid network code.
Reconciliation type	Char 2	GD—grid direct consumer point of connection to the grid. GN—point of connection to the grid. EN—Embedded network.
Reconciliation participant	Char 4	Valid reconciliation code of the dispatchable load purchaser.
Dispatch capable load station identifier	Char 5	'DDRON'.
Loss category code	Char 7	Valid loss category code for the point of connection that dispatchable demand has been bid (either "GRID" for grid connected customers or as contained in the registry for ICPs)
Date	DD/MM/YYYY	
Trading period quantity 1 to 48 (46/50 for daylight saving) in kWh	Numeric 12.2	Currently a series of comma delimited values. Allow for 0, 1 or 2 decimal places.
Checksum	Numeric 12.2	Allow for 0, 1 or 2 decimal places. Must be the sum of the row trading period quantities.

Processing:
Reconciliation manager: • verifies the reconciliation participant's dispatchable demand information and, if it is valid, stores it for further processing; and • checks that the appropriate number of trading period quantity values are present for daylight saving change days, ie 46 and 50.

Data outputs:
Time-stamped confirmations for all valid and accepted files; error reports for all invalid and rejected files.

Exceptions:
If the reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the reconciliation manager estimates missing information and reports the situation to the Authority in the Code breaches report (see GR-180). If an error is detected in the data, the whole file is rejected and an error report returned to the submitter. The reconciliation manager also reports the situation to the Authority in the Code breaches report (see GR-180).

8.17. **AV-180 Receive NSP metering installation information**

Sub-process:	AV-180 Receive metering installation information
Process:	Accept and validate information
Source:	Grid owners, Distributors
Code references:	10.18, 10.22, 10.25, 10.26, 10.27, 10.30
Dependencies:	MR-010

Description:

The Reconciliation Manager is notified by grid owners and distributors responsible for NSP metering installations of changes to the metering installation information (MEP and certification expiry date).

The information can be provided by either NSP identifier alone or by NSP identifier and metering installation identifier. If a responsible participant wishes to submit their information at the metering installation identifier level, they must notify the reconciliation manager beforehand.

If the responsible participant has an exemption from providing metering for an NSP, they must provide the reconciliation manager with the date the exemption expires.

Business requirements:

1. The Reconciliation Manager must be able to accept submissions of metering installation information from a responsible participant using both the NSP identifier and metering installation identifier or by NSP identifier alone.
2. The Reconciliation Manager must allow participants to delete and update their information.
3. The Reconciliation Manager must allow participants to record their exemption expiry dates for NSPs where they have been granted an exemption from metering by the Authority.
4. The Reconciliation Manager must allow participants to submit metering installation information for decommissioned NSPs.
5. If a participant changes their submission level from providing information at the metering installation level to the summary level, the Reconciliation Manager must delete all the participant's records before permitting the participant to re-submit their metering installation information at the new submission level.

Data inputs:

Participants' submission level indicator (MR-010).

NSP Metering installation information:

Attributes	Format	Validation rules
NSP	Char (11)	Valid NSP code – POC and Network.
Responsible Participant	Char (4)	Valid participant code.

Metering Equipment Provider Participant	Char (4)	When input must be a valid participant identifier and, if applicable, must be the same for every installation of the NSP. *For insertions and updates:* Mandatory where Metering Certification Expiry Date is not null. Must be null when the Exemption Expiry Date is not null. *For deletions:* Null.
Metering Installation	Char (20)	An alphanumeric string that uniquely identifies an installation at the NSP. *For insertions and updates:* Mandatory where the Metering Certification Expiry Date is not null and the Responsible Participant submits at the metering installation level. *For deletions:* If the Responsible Participant submits at the metering installation level and a value is submitted, the value must match an existing entry for the same Metering Installation at the NSP in order for it to be deleted, or Null. This indicates all entries for the NSP are to be deleted.
Metering Certification Expiry Date	DD/MM/YYYY	The metering certification expiry date of an individual installation if the Metering Installation is provided, or, the metering certification expiry date of the NSP. *For insertions and updates:* Mandatory where Metering Exemption Expiry Date is null. Must be null when the Metering Exemption Expiry Date is not null. *For deletions:* Null.
Metering Exemption Expiry Date	DD/MM/YYYY	Expiry date of the exemption to provide metering installation information for the NSP by the Responsible Participant.

		For insertions and updates: If Metering Equipment Provider Participant, Metering Installation and Metering Certification Expiry Date are null, then mandatory. *For deletions:* Null.

Processing:

The system:

Validates the metering installation information. If there are no errors, accepts the file. If there are errors, rejects the whole file and provides error messages to the submitter and also reports the occurrence to the Authority in the Code Breaches report (see GR-180).

1. For each record in a valid file:
   a. if either of the two expiry dates is present,
      i. if there is a match in the database at the NSP and Metering Installation level (even if null), updates the existing record otherwise adds the information to the database.
   b. if neither of the two expiry dates is present,
      i. if there is a match in the database on the NSP and Metering Installation (even if null), deletes the matching record(s).
2. Removes the NSPs existing expiry date(s) where an update is to record a different type of expiry date e.g. when the metering installation currently has a certification expiry date but the metering installation is being updated with an exemption expiry date, and vice versa.

Data outputs:

New or updated NSP metering installation information.

Exceptions:

If the reconciliation participant fails to send valid data by the required time or provides data late or provides corrected information, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

8.18. **RS-010 Determine reconciliation consumption period**

Sub-process:	RS-010 Determine reconciliation consumption period
Process:	Reconcile submission information
Code references:	Clauses 15.4 to 15.12, 15.27, and 2 of Schedule 15.4 of the Code
Dependencies:	

Description:
The Reconciliation Manager starts the reconciliation of submission information for a specific consumption period. The consumption period may be 1, 3, 7 or 14 months prior to the current reconciliation period. N.B. In practice consumption and reconciliation periods equate to calendar months. The current reconciliation period is the current month and the latest consumption period is the month before it. Consumption periods 1, 3, 7 and 14 months prior are re-processed if revised information is received for them by the Reconciliation Manager.

Business requirements:
1. Each reconciliation period the Reconciliation Manager must commence reconciliation processing of submission information for the previous consumption period after 1600 hours on the 4th business day of the reconciliation period and complete processing by 1600 hours on the 7th business day of the period. 2. Each reconciliation period the Reconciliation Manager must commence reconciliation processing of revised submission information for the consumption periods 1, 3, 7 and 14 months prior to the current reconciliation period (if available) after 1600 hours on the 13th business day of the reconciliation period and complete processing by 1200 hours on the last business day of the period.

Data inputs:
A valid consumption period (1, 3, 7, 14).

Processing:
The system: 1. Starts the reconciliation process for a valid consumption period.

Data outputs:
Consumption period and revision cycle.

8.19. **RS-020 Check for completeness**

Sub-process:	RS-020 Check for completeness
Process:	Reconcile submission information
Code references:	Clauses 15.4 to 15.12 of the Code
Dependencies:	

Description:
The Reconciliation Manager checks the data submitted by reconciliation participants for a specified consumption period. The reconciliation process can proceed and complete successfully even without any HHR and NHH submission information, provided NSP volumes, registry ICP days, the loss factors table and NSP mapping table are available. However, this minimum requirement would only occur in a disaster situation. It is expected that the Reconciliation Manager will check that all the required information has been received from all reconciliation participants and is complete before proceeding.

Business requirements:
1. The Reconciliation Manager must ensure that, as a minimum, the following information is complete: • NSP volume information from grid owners; • ICP days information from the Registry; • loss factors from the Registry; and • NSP mapping table. 2. The Reconciliation Manager should check that all inputs described in processes AV-040 to AV-140 have been received and are complete and consistent. As part of the check, the Reconciliation Manager should run reports GR-070 to GR-110. 3. Where information is missing or inconsistent, the Reconciliation Manager is required to contact the reconciliation participants involved to request that they send or re-send revised information.

Data inputs:
Selected consumption period. Submission information for that period submitted by reconciliation participants.

Processing:
For each consumption period being processed, the system: 1. Checks the NSP volume information from grid owners is complete by verifying that there is NSP volume information for every currently active NSP entry in the NSP mapping table; 2. Checks the ICP days information from the Registry is complete against the trader information provided by the trader to the RM. The trader information details the NSPs at which the trader intends to trade; 3. Checks there are up-to-date loss factors for all NSPs from the Registry; 4. Checks the NSP mapping table is up to date; and 5. Runs and checks reports GR-070 to GR-110 looking for missing information or large variances.

Data outputs:
For each consumption period: • valid information; and • error reports detailing invalid or missing information.

Exceptions:
If the sanity checking fails, the reconciliation process for the related consumption period will not be able to proceed. If the information has not been received by the time specified or has had to be re-sent, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

8.20. **RS-030 Review balancing area groupings**

Sub-process:	RS-030 Review balancing area groupings
Process:	Reconcile submission information
Code references:	15.16, 15.17, Schedule 15.4(3), Schedule 11.1
Dependencies:	

Description:
The Reconciliation Manager uses the information notified to it under clause 24 of Schedule 11.1 of the Code to establish, in consultation with the relevant distributor, any changes that may be required to balancing area groupings for each NSP that has been affected by an outage constraint. The Reconciliation Manager uses the information notified to it under Schedule 15.4(3) of the Code to ensure the NSP mapping table correctly identifies which embedded networks are reconciled using differencing by recording the SB ICP number, provided by the trader, against its NSP identifier. If the Reconciliation Manager makes any changes to the NSP mapping table, these changes must be notified to the Registry (see RG-010).

Business requirements:
1. The Reconciliation Manager must review balancing area groupings prior to running the reconciliation process whenever there has been an outage in a balancing area and make the appropriate changes to the NSP mapping table. 2. The Reconciliation Manager must ensure the NSP mapping table correctly identifies all embedded networks that are reconciled using differencing.

Data inputs:
Changes to NSP mappings.

Processing:
The Reconciliation Manager: 1. Updates the NSP mapping table.

Data outputs:
Updated NSP mapping table.

Exceptions:
If the information has not been delivered by the time specified, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

8.21. **RS-040 Calculate and apply scaling factor**

Sub-process:	RS-040 Calculate and apply scaling factor
Process:	Reconcile submission information
Code references:	Clauses 15.25(1), and 5 to 8 of Schedule 15.4 of the Code
Dependencies:	AV-020, AV-060, AV-110, AV-080, AV-090

Description:

The Reconciliation Manager adjusts each purchaser's submitted consumption information by calculating and applying an appropriate ICP scaling factor.

ICP days scaling is applied directly to the figures received in HHR and NHH consumption submissions. Embedded generation submissions are excluded (as are any NSP volumes).

Business requirements:

1. The ICP scaling factor must be 1 for all participants before the scorecard rating application date.
2. The Reconciliation Manager must adjust each purchaser's submitted consumption information by a factor determined from the number of ICP days submitted via the ICP days report (AV-110) compared to the number of ICP days recorded in the Registry report (AV-060), except under certain circumstances.
3. The Reconciliation Manager must calculate separate scaling factors for non-half-hour and half-hour metered ICPs per balancing area and consumption period for each purchaser:
4. If the calculated factor is less than 1, then the Reconciliation Manager must set the scaling factor to 1.
5. If the ICP days value from the Registry is 0, then the Reconciliation Manager must set the scaling factor to 1.
6. For direct consumers, the Reconciliation Manager must set the scaling factor to 1.
7. If the ICP days value from a purchaser is missing but the value exists from the Registry, then a submission file must always be created for that participant that includes a flat kWh quantity (penalty consumption) which is then added to the purchaser's consumption information with a profile code. For NHH, 25kWhs per registry ICP days must be added. For HH, 40 kWhs per trading period for each registry ICP days must be added.
8. If consumption information is missing, the Reconciliation Manager must create a submission entry for the penalty consumption with default values for the profile, loss category code and NSP code.
9. If the purchaser ICP days provided is 0 then the scaling factor of 1 must be assigned.
10. The universal scaling factor flag must only be switched on when instructed by the Authority. When switched on, the ICP scaling factor for all participants must be set to the universal scaling factor, and also no additional submissions to add penalty consumption must be created.

11. The Authority may impose a cap on the calculated scaling factor.

Data inputs:

ICP days per purchaser per NSP per submission type as reported by the Registry in AV-060.

ICP days per purchaser per NSP per submission type for as reported by each purchaser in AV-110.

NSP mapping table – for association between balancing area and NSPs.

HHR and NHH submission information provided in AV-080 and AV-090.

Universal ICP scaling factor and universal scaling factor flag.

Consumption period being processed.

Processing:

For each consumption period and balancing area, the system:

1. Sets the ICP scaling factor, for all purchasers, to the universal scaling factor if the universal scaling factor flag is set (on).
2. Calculates the ICP scaling factor provided the universal scaling factor flag is not set. The basis for the ICP days scaling calculation is received both from purchasers (see AV-110) and the Registry (see AV-060) for each purchaser, NSP, submission type, i.e. HHR or NHH. Both figures must first be aggregated per participant per submission type to the balancing area level then the registry ICP days aggregate is divided by the associated purchaser ICP days aggregate to obtain the scaling factor. However, the system must modify the ICP scaling factor as follows:
    - Sets the scaling factor to 1 where:
        - the calculated factor is less than 1 or the registry ICP days value is missing or zero.
        - the participant is a direct consumer.
3. Uses the HHR or NHH balancing area scaling factor (multiplies) all of that purchaser's HHR or NHH consumption submissions (as applicable) for the balancing area.
4. Calculates penalty consumption when the ICP days aggregate value from a purchaser is missing or zero but the aggregate value exists from the Registry, provided the universal scaling factor flag is not set. A flat kWh quantity is simply added to the purchaser's consumption information as follows:
    - For NHH submissions, 25 kWh multiplied by NHH registry ICP days is added to the monthly quantity.
    - For HHR submissions, 40 kWh per trading period per HHR registry ICP days is added.
5. Creates a system-generated submission entry provided the universal scaling factor flag is not set. If submission information is missing, the flat kWh quantities are to be included in a system-generated submission entry with default values as follows:

- For NHH submissions, the default profile will be ' NHP', the loss category ‘DEF’ and the NSP code will be obtained from the registry ICP days information.
- For HHR submissions, the default profile will be ‘HHR’, the loss category ‘DEF’ and the NSP code will be obtained from the registry ICP days information.

Data outputs:
For each consumption period: • ICP scaled half-hour consumption information; • ICP scaled non-half-hour consumption information; and • scaling factors per purchaser, balancing area and submission type.

8.22. RS-050 Profile engineered and statistically sampled submissions & loss adjust

Sub-process:	RS-050 Profile engineered and statistically sampled submissions & loss adjust
Process:	Reconcile submission information
Code references:	Clause 15 of Schedule 15.4 of the Code
Dependencies:	AV-040, AV-080, AV-090, RS-040

Description:
There are 3 places in the reconciliation process where NHH submission information is profiled. Once profiled it can be loss adjusted. All NHH submission information that does **not** require the initial residual profile shape or the final residual profile shape for profiling are profiled (split into half hours) and loss adjusted first i.e. prior to the commencement of process RS-070. All HRR submission information can also loss adjusted at this stage. Therefore the following information can be processed at this stage: NHH embedded generation information; NHH engineered and statistically sampled profiled consumption (ICP scaled); HHR generation information; and HHR consumption information (ICP scaled). All submission information contains a loss category code that indicates the applicable loss factor. The Reconciliation Manager obtains the loss factors for each loss category code from the Registry and applies them to all consumption (scaled) and generation (non-scaled) information.

Business requirements:
1. The Reconciliation Manager must profile NHH submissions with engineered and statistically sampled profile types. 2. The Reconciliation Manager must only apply consumption loss factors to half-hourly consumption information that has been appropriately scaled by ICP days. 3. The Reconciliation Manager must apply generation loss factors to half-hourly generation information that will not have been scaled by ICP days.

Data inputs:
Half-hour consumption (ICP scaled) output from RS-040. Half-hour generation (not ICP scaled) output from AV-090. NHH embedded generation output (not ICP scaled) from AV-080. NHH engineered and statistically sampled profiled consumption (ICP scaled) output from RS-040.

Profile shapes (AV-100).

Loss factor table.

NSP mapping table.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Profiles NHH embedded generation information and the NHH engineered and statistically sampled profiled consumption (ICP scaled) and output as half-hour generation and consumption information; and
2. For all half-hour consumption and generation information (including HHR submissions) apply appropriate loss factors. To apply the loss factors, the system retrieves the appropriate loss factor indicated by the original's submission loss category, flow direction and trading period, and multiplies the consumption or generation quantity by it.

Data outputs:

For each consumption period:

- ICP half-hour consumption information adjusted for losses and ICP days (includes both HHR and profiled NHH engineered and statistically sampled profiled information); and
- half-hour generation information adjusted for losses and ICP days.

8.23. **RS-060 Calculate EN volume by difference**

Sub-process:	RS-060 Calculate EN volume by difference
Process:	Reconcile submission information
Code references:	Schedule 15.4 (3)
Dependencies:	RS-050, RS-070 to RS-120

Description:
One ICP on an embedded network may optionally be designated by the relevant trader, using the codes as determined by the Authority, to have its volume information calculated by difference. In this instance, the Reconciliation Manager calculates the volume information for that ICP as the difference between: • the embedded network gateway NSP net quantity (exit less injection) plus any embedded generation, and • the sum of the consumption information for all other ICPs connected to the embedded network. These calculations are performed on consumption submission information that has been scaled, profiled and loss adjusted internal to the embedded network, however the gateway NSP quantities will not have been adjusted for losses and ICP days.

Business requirements:
1. An embedded network residual load ICP must have a reconciliation type of SB on the Registry. The submission information for this NHH ICP will contain a zero quantity indicating that the Reconciliation Manager must calculate its volume by differencing. Its profile code must be 'DFP'. 2. The Reconciliation Manager must check that the NHH submission information (of zero) is provided for the EN residual load ICP with reference to the NSP mapping table. 3. If the zero submission is missing but an EN residual load ICP exists in the NSP mapping table, the Reconciliation Manager must create a submission with default values for the profile code (DFP), loss category code (DEF) and NSP code (the gateway NSP) and calculate its volume by differencing. 4. For an ICP designated as an EN residual load ICP, the Reconciliation Manager must calculate the quantity per half-hour in exactly the same manner as for the calculation of the UFE (see RS-070 to RS-090). The resultant half-hourly UFE quantities are assigned to this submission as reconciled quantities. There will also be no UFE left to balance. 5. If an EN residual load ICP does not exist in the NSP mapping table, the Reconciliation Manager must ignore any submission for it and proceed to calculate UFE in the usual way as described in RS-070 to RS-120.

Data inputs:
See input format of RS-070.

Processing:
See processing in RS-070 to RS-110.

Exceptions:
If the zero submission is missing but an EN residual load ICP exists in the NSP mapping table, the Reconciliation Manager must report the situation to the Authority in the Code breaches report (see GR-180).

8.24. **RS-070 Calculate initial residual profile shape**

Sub-process:	RS-070 Calculate initial residual profile shape
Process:	Reconcile submission information
Code references:	Clauses 15 to 17 of Schedule 15.5 of the Code
Dependencies:	RS-040, RS-050, AV-080, AV-100, AV-130

Description:
The Reconciliation Manager calculates the initial residual profile shape.

Business requirements:
1. The initial residual profile shape must only be calculated after the completion of the ICP days scaling process and once loss factors have been applied to: • profiled NHH embedded generation information; • profiled NHH engineered and statistically profiled consumption (ICP scaled); • HHR generation information; and • HHR consumption information (ICP scaled).

Data inputs:
NSP volumes (AV-130). ICP half-hour consumption output adjusted for losses from RS-050. Half-hour generation output adjusted for losses from RS-050. NSP mapping table. Loss factor table (relating to interconnection NSPs and gateway NSPs). Consumption period being processed.

Processing:
For each consumption period and balancing area, the system: 1. Determines total balancing area load. The formula in the Code is described in terms of the flow of electricity entering and leaving the balancing area and not in terms of 'exit' or 'injection'. There is a translation required between the Code formula and the terms used in submission and volume information, which is detailed below. Note that the term 'network type' here is a reference to an indicator in the NSP mapping table and indicates the type of NSP connection.

To calculate the total balancing area load, the following variables are calculated separately using NSP volume information and half-hour embedded generation information adjusted for losses. Aggregate per trading period and balancing area, where the network mapping table indicates the NSP belongs to the balancing area:

ENSP – from NSP volumes where the network type is 'grid' and where the flow direction is exit (i.e. leaving the grid and entering this balancing area). For embedded network areas the NSP concerned is the gateway NSP connecting it to the parent balancing area where the network type is 'embedded' and the flow direction is exit (i.e. leaving the parent balancing area and entering this embedded network balancing area).

ELN – from NSP (interconnection) volumes where network type is 'interconnection', and the flow direction is exit (i.e. leaving the balancing area of another local network and entering this balancing area). The volumes must be adjusted for losses, indicated by the loss category provided with the NSP volume information.

EEN – from NSP (gateway) volumes of any embedded networks acting as 'consumers' of the balancing area, where network type is 'embedded', and the flow direction is injection (i.e. leaving the child embedded network balancing area and entering this balancing area). The relevant gateway NSP is identified in the NSP mapping table by virtue of its parent NSP being one of the NSPs of the balancing area. The volumes must be adjusted for losses, indicated by the loss category provided with the gateway NSP volume information.

EEG – from embedded generator half-hour generation information adjusted for losses where the flow direction is ‘injection’ i.e. entering this balancing area from embedded generators injecting into this balancing area.

LNSP – from NSP volumes where the network type is 'grid' and where the flow direction is injection (i.e. leaving this balancing area and entering the grid). For EN balancing areas the NSP is the gateway NSP connecting it to the parent balancing area where the network type is 'embedded' and the flow direction is injection i.e. leaving this embedded network balancing area and entering the parent balancing area).

LLN – from NSP (interconnection) volumes where network type is 'interconnection', and the flow direction is injection (i.e. leaving this balancing area and entering the balancing area of another local network). The volumes must be adjusted for losses, indicated by the loss category provided with the NSP volume information.

LEN – from NSP (gateway) volumes of embedded networks acting as 'consumers' of the balancing area, where the network type is 'embedded', and the flow direction is exit (i.e leaving this balancing area and entering the child embedded network balancing area). The relevant gateway NSP is identified in the NSP mapping table by virtue of its parent NSP being one of the NSPs of the balancing area. The volumes must be adjusted for losses, indicated by the loss category provided with the gateway NSP volume information.

2. Then for each trading period the total balancing area load is:

   (ENSP + ELN + EEN + EEG) - (LNSP +LLN + LEN)

   Calculate the initial residual profile shape by subtracting the ICP adjusted half-hour consumption adjusted for losses.

NB: At this point the engineered and statistically profiled NHH submissions have been ICP scaled, profiled and adjusted for losses (in RS-050) and can be aggregated with the HHR ICP scaled consumption information and this aggregate can be subtracted from the total balancing area load in one operation.

3. Aggregates the ICP half-hour consumption adjusted for losses where their NSPs are in the balancing area, per trading period and where the flow direction is exit (X). Subtract this aggregated value from the total balancing area load per trading period.

   The resultant remaining quantities of the total balancing area load is the initial residual profile shape. There will be a quantity for each balancing area per trading period.

Seasonal adjustment shape/initial residual profile shape

The initial residual profile shape is used as the basis of the seasonal adjustment profile shape (GR-030) which the Reconciliation Manager delivers to each purchaser that provides submission information for the NSP.

Note: the initial residual profile shape applies to every NSP within the balancing area.

Data outputs:
For each consumption period: • total balancing area load per balancing area and trading period; • initial profile shape quantities per balancing area and trading period; and • initial profile shape quantities per NSP and trading period.

8.25. RS-080 Profile NSP derived profiled consumption, loss adjust and calculate final residual profile shape

Sub-process:	RS-080 Profile 'NSP derived' profiled consumption, loss adjust and calculate final residual profile shape
Process:	Reconcile submission information
Code references:	Clause 18 of Schedule 15.5 of the Code
Dependencies:	RS-070, RS-040

Description:
Using the initial residual profile shape of the balancing area calculated in RS-070, the Reconciliation Manager calculates, half-hour by half-hour, the final residual profile shape for each balancing area. The calculation involves 'profiling' non-half-hour ICP scaled consumption with profile types of 'NSP derived' then reducing the initial residual profile shape by these quantities. What remains is the final residual profile shape. The profiled half-hour submissions (adjusted for losses and ICP days) of non-half-hour ICP scaled consumption with 'NSP derived' profile types, is also output from this process.

Business requirements:
1. The Reconciliation Manager must calculate the final residual profile shape.

Input data:
Initial residual profile shapes per balancing area (output from RS-070). NSP derived profile 'on and off times'. ICP scaled non-half-hour consumption that has profile codes of the type 'NSP derived' – from RS-040. NSP mapping table. Loss factor table. Consumption period being processed.

Processing:
For each consumption period and balancing area, the system: 1. Profiles the scaled non-half-hour consumption that has profile codes of the type 'NSP derived' using the initial residual profile shape and the 'on and off times'; 2. Applies losses to these 'profiled' (half-hourly) NHH consumption quantities; 3. Outputs the half-hourly ICP consumption adjusted for losses and ICP days of these 'profiled' scaled non-half-hour submissions;

4. Using the half-hourly consumption (adjusted for losses and ICP days) calculated above, aggregates and subtract their quantities from the initial residual profile shape. The remains of the initial residual profile shape is the final residual profile shape; and
5. The final residual shape of a balancing area is the same for all NSPs in the balancing area.

Data outputs:
For each consumption period: • final residual profile shapes per balancing area and trading period; • final residual profile shapes per NSP and trading period; and • half-hour consumption adjusted for losses and ICP days (of 'NSP derived', profiled, scaled non-half-hour consumption).

8.26. RS-090 Profile RPS profiled consumption, loss adjust and calculate UFE and UFE factor

Sub-process:	RS-090 Profile RPS profiled consumption, loss adjust and calculate UFE and UFE factor
Process:	Reconcile submission information
Code references:	Clause 16 of Schedule 15.4 of the Code
Dependencies:	RS-040, RS-050, RS-070, RS-080

Description:
The UFE (unaccounted for energy) is the amount of electricity for which there are no consumption submissions. It is calculated by using the final residual profile shape and subtracting the remaining non-half-hour consumption that has profile types of RPS (or where profile shape information was not submitted) and is converted to half-hourly quantities by 'profiling' using the final residual profile shape. The remaining quantities of the final residual profile shape are the UFE quantities per trading period per balancing area. The UFE factor in respect of each balancing area and trading period is calculated as follows: • (total balancing area load) **divided by** (total of all the half-hour ICP consumption adjusted for losses and ICP days)

Business requirements:
1. Calculate the UFE and the UFE factor for each balancing area and trading period.

Data inputs:
Total balancing area load per balancing area and trading period from RS-070. Final residual profile shape per balancing area and trading period output from RS-080. ICP scaled non-half-hour consumption (ie remaining un-profiled but ICP scaled NHH submissions) from RS-040. ICP half-hour consumption output adjusted for losses and ICP days from RS-050 and RS-080. Loss factor table. Consumption period being processed.

Processing:
For each consumption period and balancing area, the system: 1. Profiles and loss adjusts remaining NHH consumption and calculate UFE.

2. Using the final residual profile shape, profiles all the remaining ICP scaled non-half-hour consumption that has not been split into trading periods (usually with the profile codes of type RPS) using the final residual profile shape as the profile pattern.
3. Once profiled, adjusts for losses and ICP days and output.
4. Aggregates these half-hourly quantities per trading period and subtracts result from the final residual profile shape. The remaining quantities of the final residual profile shape are the UFE.
5. Calculates the UFE factor.
6. Calculates the UFE factor in respect of each balancing area and trading period as follows:
    - (total balancing area load) **divided by** (total of all the half-hour consumption adjusted for losses and ICP days plus the loss adjusted NSP gateway volumes)
    - Where the 'total of all the ICP scaled loss-adjusted half-hour consumption' is the half-hourly consumption outputs of RS-050, RS-080 and this process.

Data outputs:
For each consumption period: • UFE per balancing area and trading period; • UFE factor per balancing area and trading period; and • ICP half-hour consumption adjusted for losses and ICP days (of mainly RPS profiled scaled non-half-hour submissions calculated in number 1 above).

8.27. **RS-100 Calculate scorecard rating**

Sub-process:	RS-100 Calculate scorecard rating
Process:	Reconcile submission information
Code references:	Clauses 17 and 18 of Schedule 15.4 of the Code
Dependencies:	RS-040, AV-120, AV-020

Description:

The scorecard rating is an assessment of a trader's submissions' quality per balancing area. It is used as part of the calculation to apportion UFE.

This rating is a ratio of trader's actual electricity supplied quantities over their submission information over a 12-month period per balancing area. The formula also includes a scorecard threshold factor that is published by the Authority. This compensates for the time lag of the different 12-month periods between the electricity supplied quantities and the submissions.

The scorecard rating is only used for the revision processes 7-month and later but is calculated for every consumption period.

Business requirements:

1. When processing consumption periods prior to the scorecard rating application date, the scorecard rating of each purchaser must be 1.
2. The scorecard rating is calculated for every consumption period but only applied to scorecard calculations for the 7-month and later revisions.
3. If the result of the calculation is less than 1, a scorecard rating of 1 must be assigned.
4. The scorecard rating is based on each trader's electricity supplied information and ICP scaled consumption information for a period of 12 months. If any month's information is missing, the scorecard rating of 1.25 will be assigned to the trader.
5. The scorecard rating of direct purchasers must be 1.
6. The scorecard rating of gateway NSPs, when being treated as consumers for the allocation of UFE in the parent balancing area, must be 1.
7. The scorecard rating must be 1 when a balancing area structure changes mid consumption period.

Data inputs:

ICP scaled half-hour and non-half-hour consumption, i.e. no losses applied (see output of RS-040).

Electricity supplied information, i.e. billed quantities (see AV-120).

Scorecard threshold (see AV-020).

NSP mapping Table.

Consumption period being processed.

Scorecard rating application date.

Processing:

For each consumption period, balancing area and purchaser, the system:

1. When processing consumption periods prior to the scorecard rating application date, the scorecard rating of each purchaser must be 1.
2. If there are no electricity supplied quantities provided by the trader, the scorecard rating is 1.25. For direct purchasers or a gateway NSP or where the balancing area structure has changed during the consumption month, the scorecard rating is 1.

   Otherwise:

   - Aggregates 12 months of electricity supplied information for each trader; twelve months prior to and including the month of the consumption period. For example, if the consumption period is May 2005, 12 months will start with May 2005 and go back to June 2004.
   - Aggregates 12 months of each trader's consumption information (ICP scaled), up to and including the prior consumption period. For example, if the consumption period is May 2005, 12 months will start with April 2005 and go back to May 2004.
   - If electricity supplied quantities are less than the consumption quantities, then the scorecard rating is 1.

     Otherwise:

     - Scorecard rating = MAX(aggregate electricity supplied/(aggregate ICP scaled consumption * scorecard threshold), 1).

3. If the UFE is negative, a scorecard rating of 1 is used.

Data outputs:

For each consumption period:

- scorecard rating for each trader and direct purchaser per balancing area.

8.28. **RS-110 Allocate UFE to purchasers**

Sub-process:	RS-110 Allocate UFE to purchasers
Process:	Reconcile submission information
Code references:	Clauses 19 to 21 of Schedule 15.4 of the Code
Dependencies:	RS-050, RS-080, RS-090, RS-100

Description:
UFE is allocated to all purchasers and embedded networks (in the role of consumers) connected to a balancing area. The allocation is based on these participants' market share weighted by their scorecard rating. Any allocation to an embedded network connected to the balancing area is distributed to the purchasers within the embedded network in proportion to their market share/scorecard rating within the embedded network. The basis of the following calculations is the consumption information which has been adjusted for losses and ICP days and profiled, ie output from RS-050, RS-080 and RS-090. For embedded networks acting as 'consumers' with respect to the parent network being reconciled, their gateway NSP volumes are treated as half-hour consumption. The exit quantity is the amount leaving the balancing area (entering the embedded network); the injection quantity is the amount entering the balancing area (leaving the embedded network). These quantities must first be loss-adjusted by the loss category provided with the gateway NSP information. For local networks where approved by the Authority, or embedded networks where an SB ICP has been allocated by the embedded network owner, UFE is to be allocated to the residual volume trader.

Business requirements:
1. Prior to the date of transition the market share proportion of each balancing area's incumbent trader must be 1, and for all other purchasers must be 0.

Data inputs:
Scorecard ratings (output from RS-100). ICP half-hour consumption (after profiling) output adjusted for losses and ICP days from RS-050, RS-080, RS-090. UFE for each balancing area per trading period output from RS-090. Gateway NSP volumes. Loss factors. Consumption period being processed.

Processing:
For each consumption period and balancing area, the system: 1. Obtains the scorecard rating. The scorecard rating is output from RS-100 and is per participant and balancing area for the consumption period. 2. After the date of transition, calculates the market share. This is the proportion of each participant's ICP half-hour consumption for adjusted for losses and ICP days within an NSP, over all participants' ICP scaled loss-adjusted half-hour consumption of the whole balancing area adjusted for losses and ICP days. It is calculated for each participant per NSP and trading period. Example: If purchaser A's total consumption quantity is 500kWhs at NSP A, and the total of all consumption for the balancing area is 4,500kWh, then their market share is 500/4,500 for NSP A. 3. Allocates unaccounted for energy. The allocation of UFE to each participant at each NSP (within the balancing area) per trading period is calculated as: • UFE * participant's market share * participant's scorecard rating/sum of all participants (market share * scorecard rating) The allocation is then added to each participant's ICP half-hour consumption adjusted for losses and ICP days. However, where the 'consumer' is either a local network approved by the Authority or an embedded network, the allocation is apportioned to the purchasers that trade within that network (including any other gateway NSPs) in proportion to their market share, weighted by their scorecard rating as calculated above, within that network. The allocation is then added to each network's purchaser ICP half-hour consumption information adjusted for losses and ICP days.

Data outputs:
For each consumption period: • market share per participant, balancing area, NSP, trading period; • ICP adjusted for losses and ICP days and UFE inclusive half-hour consumption; and • quantity of UFE per participant, balancing area, NSP, trading period (required for UFE report GR-060 and GR-120).

8.29. **RS-120 Balance and reallocate to participants**

Sub-process:	RS-120 Balance and reallocate to participants
Process:	Reconcile submission information
Code references:	Clause 22 of Schedule 15.4 of the Code
Dependencies:	RS-110, AV-130

Description:

As the final step in the reconciliation calculations, the Reconciliation Manager will balance the UFE inclusive, ICP half-hour consumption (adjusted for losses and ICP days) such that the sum of all reconciliation participants' quantities for an NSP equals each NSP metered quantity (NSP volumes), per trading period.

This step is required because network outages result in consumption submission being mistakenly attributed to the wrong NSP and to compensate for load-switching imbalances.

The participants in this process are traders, direct purchasers and embedded networks that are acting in the role of consumers within the balancing area.

Where participants' total consumption at an NSP is greater than the NSP volume, the consumption quantities are reduced in proportion to their market share at that NSP, so that they balance. The over-allocated quantities for all over-allocated NSPs are summed per participant and distributed to the under-allocated NSPs, in proportion to the NSPs' proportion of under-allocation.

Only non-dedicated consumption (which can be connected to another NSP) is re-allocated to other NSPs.

The outputs from this process are ICP UFE inclusive balanced half-hour consumption information (adjusted for losses and ICP days).

For embedded network areas, a further round of adjustment is required prior to the output of their reconciliation information.

Loss factors applicable to all upstream balancing areas need to be applied to all reconciliation information.

Business requirements:

1. Balancing involves consumption quantities that can be redirected to another NSP, indicated by a submission's 'Dedicated NSP' value (Y - dedicated, N - non-dedicated). Any dedicated NSP submissions are removed from the balancing process in both the submission quantities and the net NSP quantities.

2. In the event that the sum of all participants' dedicated NSP quantities exceeds the amount of electricity conveyed at the NSP in any trading period, the net NSP total volume will be apportioned to the relevant participants in proportion to their dedicated NSP quantities. The excess will then be treated as non-dedicated consumption. The NSPs within a balancing area, that have been over-allocated electricity, will be identified by comparing the sum of the non-dedicated quantities for each participant with the net NSP quantity. The non-dedicated quantities for each participant will be adjusted in order to achieve balance as follows:

Business requirements:
$Q_{BAL\ i} = Q_{ILUN\ i} \times TOT_{ND} / SUM(Q_{ILUN\ 1}, ..., Q_{ILUN\ n})$ Where: • **$Q_{BAL\ I}$** is the quantity of fully adjusted, non-dedicated electricity allocated to each participant after balancing to match the NSP total; • **$Q_{ILUN\ i}$** is the quantity of non-dedicated electricity attributed to each participant which has been adjusted for losses and ICP days, and is UFE inclusive; and • **TOT_{ND}** is the quantity of non-dedicated electricity conveyed at the NSP (after allowing for relevant balancing area injection and extraction quantities). 3. The quantities of electricity by which the over-allocated NSPs have been reduced will be identified by participant, and re-allocated to the corresponding under-allocated NSPs within the balancing area using the formulae as above. 4. For embedded networks acting as 'consumers' within the balancing area, their gateway NSP volumes are treated as half-hourly submissions. The exit quantity is their consumption; the injection quantity is their generation into the balancing area. These quantities must first be adjusted for losses and ICP days by the loss category provided with the gateway NSP information. They are to be treated as dedicated submissions.

Data inputs:
ICP (adjusted for losses and ICP days) and UFE inclusive half-hour consumption output from RS-110 – pre-balanced consumption. NSP volumes (AV-130) – specifically gateway NSP volumes. Loss factors. Consumption period being processed.

Processing:
(NB: The term 'participant' is used in what follows as a collective name for traders, direct purchasers and embedded networks acting as 'consumers'.) For each consumption period, balancing area, and trading period, the system: in turn, for each NSP and gateway NSP (for embedded networks) within the balancing area (excluding interconnection NSPs and gateway NSPs acting in the role of 'consumer'): 1. Summarises the dedicated consumption per NSP per participant. 2. Summarises the non-dedicated consumption per NSP per participant. 3. Calculates the non-dedicated NSP net volume (per NSP): *Non-dedicated NSP net volume = NSP total volume - sum of all participants' dedicated consumption at this NSP* Where: *NSP total volume* is calculated as follows:

- sum the extraction quantities less the injection quantities from the NSP and all the dependent child interconnection-point NSP volume information;
- subtract the extraction quantities and add the injection quantities of any loss-adjusted gateway NSPs acting in the role of 'consumer' where this NSP is the parent;
- add any embedded generation quantities.

(See formula for the calculation of total balancing area load in RS-070 noting that this calculation relates to individual NSPs, not the balancing area).

If the result is negative, each participant's dedicated submissions are to be reduced in proportion to their dedicated NSP quantities so that they all add up to the NSP total volume. The *non-dedicated NSP net volume* will therefore be zero from this point onwards. Also, the difference between the original quantities of dedicated consumption and the reduced quantities is treated (isolated) as non-dedicated consumption at this NSP for each participant and processed as such in the following steps*.

Step 1:

Aggregates all participants' non-dedicated consumption for this NSP*.

Step 2:

Evaluates whether there is an over-allocation or under-allocation at the NSP by comparing the total of all participants' non-dedicated consumption* against the *non-dedicated NSP net volume*.

If the total of all participants' non-dedicated consumption* is greater than the *non-dedicated NSP net volume* then there is an over-allocation at this NSP (the amount of over allocation is the difference), otherwise there is an under-allocation.

Step 3:

Finds all the over-allocated NSPs in the balancing area and process each in turn. Reduces the over-allocated NSPs' non-dedicated consumption* per participant in proportion to the amount of over-allocation. For example, if the *non-dedicated NSP net volume* was 500kWhs and the total over-allocation was 50kWh, each participant's non-dedicated consumption* would be multiplied by 500/550.

Step 4:

Calculates the total amount of over-allocation that was assigned to each per participant for all over-allocated NSPs and:

Redistributes the total amount of over-allocation per participant to under-allocated NSPs in proportion to the NSPs' under-allocation. For example, if 70 per cent of the under-allocation was for NETG and 30 per cent for NETJ, purchaser A's total over-allocation amount of 150kWh will be split: 105kWh to NETG and 45kWh to NETJ (being 70 per cent and 30 per cent of 150kWh respectively); and

Adjusts the pre-balanced consumption quantities accordingly. If participants had no submissions at NSPs where their over-allocation was re-distributed, the system will

need to create default reconciliation information for the over-allocation that has been assigned to them at these NSPs.

Step 5:

For embedded networks, all reconciliation information requires a further round of adjustments:

- additional losses are to be applied – using loss factors applicable at all intervening gateway NSPs; and

The resultant information is the basis of the 'R' file output in GR-040.

Data outputs:
For each consumption period: • ICP (adjusted for losses and ICP days) UFE inclusive balanced half-hour consumption information (see GR040 for output format).

Exceptions:
If the *non-dedicated NSP net volume* is negative as a result of the dedicated quantities exceeding the *NSP total volume*, the Reconciliation Manager must report the situation to the Authority in the Code breaches report (see GR-180).

8.30. **RS-130 Produce reconciliation information**

Sub-process:	RS-130 Produce reconciliation information
Process:	Reconcile submission information
Code references:	
Dependencies:	AV-130, RS-050, RS-120

Description:
This process makes final adjustments to embedded network information and collects all the ICP adjusted for losses and ICP days UFE inclusive balanced half-hour consumption information together with the half-hour generation information adjusted for losses and ICP days for processing into the buyer and seller files required by the Clearing Manager. The information relating to embedded networks requires further adjustment. Any gateway NSP codes used need to be changed to the parent NSP codes at the grid.

Data inputs:
ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption information output from RS-120. Half-hour generation information output from RS-050 adjusted for losses and ICP days. Gateway NSP volume information output from AV-130. Loss factors. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Aggregates the ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption information and the half-hour generation information, and formats it in GR-010 format. 2. For consumption and generation information within embedded networks, also: • changes the NSP code to the grid-connected NSP code of the parent network. If the parent NSP code is not a local network, find its parent etc., until a local network is found. The NSP of the local network will be grid-connected.

Data outputs:
For each consumption period: • reconciliation information in GR-010 format.

8.31. LA-101 Produce loss adjust dispatchable demand information

Sub-process:	LA-101 Loss adjust dispatchable demand information
Process:	Reconcile submission information
Code references:	Clause 15.20B.1 of the Code
Dependencies:	AV-040, MR-020, AV-170

Description:

HHR (half-hour) dispatchable demand information must be adjusted for losses before being delivered to the Clearing Manager and dispatchable demand purchasers.

HHR (half-hour) dispatchable demand information contains a loss category code that indicates the applicable loss factor. The Reconciliation Manager obtains the applicable trading period consumption loss factor for each loss category code from the loss factor (reference) information and applies it to the relevant trading period's dispatchable demand information.

For embedded networks, the loss factors applicable at all intervening gateway NSPs are also applied and the loss-adjusted dispatchable demand information is output with the applicable grid-connected NSP.

Business requirements:

1. The reconciliation manager must apply the appropriate trading period consumption loss factor to the half-hourly dispatchable demand information.
2. For embedded networks, additional losses must be applied using loss factors applicable at all intervening gateway NSPs.
3. For embedded networks, the NSP of the HHR (half-hour) dispatchable demand information must be included to reflect the NSP code of the associated grid-connected NSP code.
4. If a loss factor cannot be found, a system default must be used.

Data inputs:

HH dispatchable demand information provided in AV-170.

Loss factor table.

NSP mapping table.

Consumption period being processed.

Default loss factors for consumption

Processing:

For each consumption period, the system:

1. Retrieves the appropriate loss factor indicated by the original's submission loss category and trading period, and multiplies the quantity by it.
2. If the HHR (half-hour) dispatchable demand information is for an embedded network, the loss factor of the applicable loss category code applicable at the gateway NSP is also applied. If

the parent network is also an embedded network then the loss factor of its gateway NSP is also applied, and so on, until a local network is reached.

3. The loss adjusted Half-hour dispatchable demand information is stored together with the NSP of the local network (which will be a grid-connected NSP).

Data outputs:

For each consumption period:

Half-hour dispatchable demand information adjusted for losses together with the associated grid-connected NSP code.

8.32. **GR-010 Report reconciliation data**

Sub-process:	GR-010 Report reconciliation data
Process:	Generate reports and files
Destination:	Reconciliation participants and Clearing Manager
Code references:	Clause 28(a) and (c) of Schedule 15.4 of the Code
Dependencies:	RS-130

Description:

The Reconciliation Manager provides the Clearing Manager with the reconciliation information it needs to calculate the amount payable to each payee and the amount receivable from each payer. The Reconciliation Manager also provides payees and payers with the subset of that same information pertaining to them so they can verify their own reconciliation information.

Business requirements:

1. The Reconciliation Manager must deliver this information to the Clearing Manager and each relevant purchaser and generator by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must send each payee and payer the reconciliation information that pertains to their own energy purchases and sales but must provide the Clearing Manager with information for all payees and payers.
3. The reconciliation information must be for points of connection to the grid as final prices are only provided at grid exit and grid injection points.

Data inputs:

Reconciliation information output from RS-130.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Aggregates separately both consumption and generation reconciliation information by reconciliation participant, NSP, trading date and trading period. For consumption, the seller is the Clearing Manager and the buyer is the reconciliation participant, whereas for generation it is the opposite way around.

Data outputs:

For each consumption period:

For participants: Report row layout for the separate buyer and seller files (formerly known as the 'B' and 'S' files). (The buyer file is where the Buyer is the purchaser i.e. buying from the Clearing Manager).

Attributes	Format	Description
POC	Char (7)	From the NSP identifier.
Network ID	Char (4)	From the NSP identifier.
Buyer	Char (4)	Either a purchaser or the Clearing Manager.
Seller	Char (4)	Either a generator or the Clearing Manager.
Contract number	Char (5)	From the reference data.
Trading date	DD/MM/YYYY	
Trading period values in kWh (1…46/48/50)	Number (8)	Normally 48 values comma delimited but 46 or 50 at daylight saving.
Checksum	Number (10)	Calculated. Sum of all the trading period values.

For the Clearing Manager: Report row layout for the separate buyer and seller files (formerly known as the 'B' and 'S' files)

Attributes	Format	Description
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Contract number	Char (5)	From the reference data.
Buyer	Char (4)	Either a purchaser or the Clearing Manager.
Seller	Char (4)	Either a generator or the Clearing Manager.
Unit	Char (3)	"kW".
Status	Char (1)	"F"
Trading date	DD/MM/YYYY	
Trading period values in kW (1…46/48/50)	Number (8)	Normally 48 values comma delimited but 46 or 50 at daylight saving. System will need to perform an additional calculation to the quantities given to participants ie. multiply the kWh values by 2.
Checksum	Number (10)	Calculated. Sum of all the trading period values.

8.33. GR-015 Report processed dispatchable demand data

Sub-process:	GR-015 Report dispatchable demand data
Process:	Generate reports, files and notices
Destination:	Dispatchable load purchasers, clearing manager
Code references:	Clause 15.20B and 15.20C of the Code
Dependencies:	LA-010

Description:

The reconciliation manager provides the clearing manager with the loss adjusted dispatchable demand information it needs to calculate the amount payable to each payee that has submitted dispatchable demand information. The reconciliation manager also provides payees with the subset of that same information pertaining to them so they can verify their own dispatchable demand information.

Business requirements:

1. The Reconciliation Manager must deliver this information to the Clearing Manager and each relevant purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must send each payee the reconciliation information that pertains to their own energy purchases but must provide the Clearing Manager with information for all payees.
3. The dispatchable demand information must be for points of connection to the grid as final prices are only provided at grid exit points.

Data inputs:

For each consumption period:

Half-hour dispatchable demand information adjusted for losses together with the associated grid-connected NSP code

Processing:

For each consumption period, the system:

1. Aggregates the loss adjusted dispatchable demand information by reconciliation participant, grid-connected NSP, trading date and trading period.
2. For the Clearing Manager report, multiplies the loss adjusted quantity (provided in kWh) by 2 to convert it to kW.
3. Outputs the information in the appropriate format to dispatchable demand purchasers and the Clearing Manager.

Data outputs:		
For each consumption period: **For participants**: Report row layout for the separate dispatchable demand seller files.		
Attributes	**Format**	**Description**
POC	Char 7	From the grid-connected NSP identifier.
Network ID	Char 4	From the grid-connected NSP identifier.
Buyer	Char 4	The clearing manager identifier.
Seller	Char 4	The reconciliation participant identifier.
Dispatch capable load station identifier	Char 5	From the dispatchable demand information.
Trading date	Date	DD/MM/YYYY
Trading period values in kWh (1…46/48/50)	Numeric 8	Normally 48 values comma delimited but 46 or 50 at daylight saving loss adjusted to the POC.
Checksum	Numeric 10	Calculated. Sum of all the trading period values.

For the Clearing Manager:

Attributes	**Format**	**Description**
POC	Char 7	From the grid-connected NSP code.
Network ID	Char 4	From the grid-connected NSP code.
Dispatch capable load station identifier	Char 6	From the dispatchable demand information.
Buyer	Char 4	The clearing manager identifier.
Seller	Char 4	The reconciliation participant identifier.
Unit	Char 3	"kW".
Status	Char 1	"F"
Trading date	Date	DD/MM/YYYY
Trading period values in kW (1…46/48/50)	Numeric 8	Normally 48 values comma delimited but 46 or 50 at daylight saving. System will need to perform an additional calculation to the quantities given to participants ie. multiply the kWh values by 2.
Checksum	Numeric 10	Calculated. Sum of all the trading period values.

8.34. GR-020 Report profile shape data

Sub-process:	GR-020 Report profile shape data
Process:	Generate reports and files
Destination:	Generators and purchasers
Code references:	Clause 28(e) of Schedule 15.4 of the Code
Dependencies:	AV-100, RS-070, RS-080

Description:

The Reconciliation Manager provides the half-hourly profile shape information to generators and purchasers. There are three types of profile shapes included:

- the profile shapes provided with submissions;
- the initial residual profile shapes of each NSP output from RS-070; and
- the final residual profile shapes of each NSP output from RS-080.

This report will output a subset of the relevant initial profile shape indicated by the 'on and off times'.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant generator and purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must publish the half-hourly profile shape information for profiles.
3. The profile shape values for the initial residual profile shape and the final residual profile shape will be the kWh values, i.e. not normalised.
4. Profile shapes are not recalculated after the 7-month revision cycle. This means that there will be no profile shape files output for revision cycles greater than 7 months.

Data inputs:

Profile shape information (including variable 'on and off times') from AV-100

NSP derived profile 'on and off times' from the reference data.

Initial profile shape – quantities per NSP and trading period output from RS-070.

Final residual profile shape – quantities per NSP and trading period output from RS-080.

NSP mapping table.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Extracts profile shape information from the profile shape information provided with submissions (see AV-100);
2. For each 'initial residual profile shape', the profile code will be 'NSP';
3. For each NSP derived profile, calculates/derives the appropriate initial profile shape indicated by the 'on and off times';
4. For each 'final residual profile shape', the profile code will be ' RPS'; and
5. Outputs to each generator and purchaser only the profile shape information at NSPs where they supplied submission information.

Data outputs:

For each consumption period:

Report row layout: formerly known as the ‘Q’ file

Attributes	Format	Description
POC	Char (7)	From the NSP.
Network ID	Char (4)	From the NSP.
Profile	Char (3)	Profile code from original submission. NSP—'Initial residual profile shape'. RPS—'Final residual profile shape'.
Trading date	DD/MM/YYYY	
Trading period	Number (2)	1 to 48 (46/50 for daylight saving change days).
Shape value	Number (14,2)	The value in a trading period will be zero if the 'on and off time' indicates it was switched 'off'.

8.35. GR-030 Report seasonal profile shape

Sub-process:	GR-030 Report seasonal profile shape
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 28(d) of Schedule 15.4 of the Code
Dependencies:	RS-070, GR-020

Description:

This is a daily summary of the initial residual profile shape calculated in RS-070 and is the same for each NSP in the balancing area. The Reconciliation Manager provides the seasonal profile shape information to all traders and direct purchasers for every NSP at which they are trading and for each NSP derived profile that they supplied submission information.

NB: GR-020 is used as its basis.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The seasonal adjustment shape is not recalculated after the 7-month revision cycle. This means that there will be no seasonal adjustment file output for revision cycles greater than 7 months.

Data inputs:

Output from GR-020 but only for the initial residual profile shape.

NHH submission information.

'NSP derived' profile 'on and off times'.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Ascertains the NSPs and 'NSP derived' profiles that each purchaser provided submission information for.
2. Using the relevant initial residual profile shape, aggregates into daily totals per NSP and 'NSP derived' profile the relevant trading period quantities as indicated by the 'NSP derived' profile 'on and off times'.

3. Outputs to each purchaser the relevant aggregates that are for the supplied NHH submission information at the NSP with 'NSP derived' profiles and a seasonal profile shape for each profile the purchaser submitted.

Data outputs:

For each consumption period:

Report row layout: formerly known as the 'X' file

Attributes	Format	Description
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Profile	Char (3)	'NSP derived' profile.
Trading date	DD/MM/YYYY	
Daily value	Number (14,2)	Calculated.

8.36. GR-040 Report balanced NHH and HHR data

Sub-process:	GR-040 Report balanced NHH and HHR data
Process:	Generate reports and files
Destination:	Generators, purchasers and Authority
Code references:	Clause 28(a) of Schedule 15.4 of the Code
Dependencies:	RS-050, RS-120

Description:

This information shows participants how their non-half-hour submissions, both generation and consumption, have been profiled into trading periods. It also shows the result of ICP scaling, the application of losses, the adjustments for UFE and result of balancing. Submission information originally provided as HHR information is also reported to show the result of ICP scaling, losses, UFE and balancing.

N.B. regarding embedded network submissions:

The basis of this report is the output of RS-120 which has applied all the appropriate losses at the intervening gateway NSP's up to the point of connection to the grid. Although the information within this report is referenced to the point of connection to the grid by the application of the appropriate loss factors, and to allow identification of information attributed to EN NSP. Note that the NSP reference within the file is the submission NSP i.e. at the gateway NSP and **not** at the point of connection to the grid.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant participant by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must also deliver the report covering all participants to the Authority.

Data inputs:

ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption information output from RS-120.

The loss-adjusted half-hour generation information output from RS-050.

Consumption period being processed.

Processing:

The system:

1. Formats the input data for the consumption period.

Data outputs:		
For each consumption period: Report row layout: formerly known as the 'R' format		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP from the original submission or the NSP created during the balancing process.
Network ID	Char (4)	From the NSP from the original submission or the NSP created during the balancing process.
Reconciliation type	Char (2)	From the original submission
Participant identifier	Char (4)	Participant identifier from the original submission.
Profile	Char (3)	Profile code from the original submission.
Loss category code	Char (7)	From the original submission
Flow direction	Char (1)	X—Load (exit) I—Injection From the original submission.
Dedicated NSP	Char (1)	Y/N from the original submission
Trading date	DD/MM/YYYY	
Trading period value (1…46/48/50)	Number (8)	Normally 48 values but 46 or 50 at daylight saving.
Checksum	Number (10)	Calculated.

8.37. GR-045 Report balanced against pre loss adjusted NHH and HHR data

Sub-process:	GR-045 Report balanced against pre loss adjusted NHH and HHR data
Process:	Generate reports and files
Destination:	Authority
Code references:	Clause 28(f) of Schedule 15.4 of the Code
Dependencies:	AV-080, AV-090, RS-040, GR-020, GR-040

Description:

This report shows how participants' non-half-hour submissions for both generation and consumption have been profiled into trading periods after the application of any ICP days scaling of consumption. Two sets of information are provided taken from different locations in the reconciliation process as follows

a) For each participant submission the report shows the resultant reconciliation information i.e. after the effects of: the application losses, the adjustments for UFE and the result of balancing. This is the same information as detailed in GR-040. Any entries in GR-040 for which there are corresponding entries are included in the report.

b) For each participant submission the report shows the profiled information after the application of ICP days scaling, but prior to the application of losses, balancing and UFE.

Note that the NSP reference within this file is the submission NSP as in GR-040 i.e. at the gateway NSP of embedded networks and **not** at their point of connection to the grid.

Business requirements:

1. The Reconciliation Manager must deliver this report to the Authority by 1600 hours on the 7th business day of each calendar month and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:

Half-hour consumption (ICP scaled) output from RS-040.

Half-hour generation (not ICP scaled) output from AV-090.

NHH consumption (ICP scaled) output from RS-040.

NHH generation (not ICP scaled) output from AV-080.

Profile shapes output from GR-020.

ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption and generation information output from GR-040.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Profiles the NHH generation and the NHH (ICP scaled) consumption using the appropriate profile shapes as indicated in the submission files (and from submissions created as a result of ICP days scaling), and produces pre-loss-adjusted half-hour generation and consumption information.
2. Appends the associated ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption and generation information output from GR-040 to the pre-loss adjusted half-hour information, matching on all attributes except the volume and checksum values.
3. If there is no match, sets the balanced values and associated checksum to null. Where there are entries in the GR-040 output file for which there is no matching pre-loss-adjusted half-hour information, these entries are included in the report and the pre-loss-adjusted values and checksum values are set to null.
4. Formats the report and delivers it to the Authority.

Data outputs:

For each consumption period:

Report row layout: (known as the 'R' format)

Attributes	Format	Description
POC	Char (7)	From the NSP from the original submission or the NSP created during the balancing process.
Network ID	Char (4)	Asset owner participant identifier for the NSP from the original submission or the NSP created during the balancing process.
Reconciliation type	Char (2)	From the original submission
Participant identifier	Char (4)	Trader participant identifier from the original submission.
Profile	Char (3)	Profile code from the original submission.
Loss category code	Char (7)	From the original submission
Flow direction	Char (1)	X—Load (exit) I—Injection From the original submission.
Dedicated NSP	Char (1)	Y/N from the original submission
Trading date	DD/MM/YYYY	

Trading period value – final balanced (1…46/48/50)	Number (8)	Normally 48 values but 46 or 50 at daylight saving.
Checksum of final balanced values	Number (10)	Calculated
Trading period value – pre loss adjusted (1…46/48/50)	Number (8)	Normally 48 values but 46 or 50 at daylight saving.
Checksum of pre loss adjusted values	Number (10)	Calculated

8.38. GR-050 Report summary of traded kWhs

Sub-process:	GR-050 Report summary of traded kWhs
Process:	Generate reports and files
Destination:	Distributors
Code references:	Clause 26 of Schedule 15.4 of the Code
Dependencies:	RS-050 RS-120

Description:

The Reconciliation Manager sends a report containing a summary of traded kWh by each trader per NSP to each distributor.

Each distributor receives only information for NSPs that are connected to their networks.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant distributor by 1600 hours on the 7thbusiness day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:

The loss-adjusted half-hour generation information output from RS-050.

ICP scaled loss-adjusted UFE inclusive balanced half-hour consumption information output from RS-120.

Processing:

The system:

1. Summarises for each distributors NSPs the input data by NSP, reconciliation type, participant, loss category, flow direction for each consumption period.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Reconciliation type	Char (2)	From the original submission
Participant identifier	Char (4)	Participant identifier.
Loss category code	Char (7)	From the original submission
Flow direction	Char (1)	X—Load (exit) I—Injection from the original submission.
Consumption period	MM/YYYY	
Total kWh	Number (14,2)	Calculated.

8.39. GR-060 Report UFE factors

Sub-process:	GR-060 Report UFE factors
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 25(a) of Schedule 15.4 of the Code
Dependencies:	RS-110, RS-090 (possibly RS-050, RS-070, RS-080)

Description:

The Reconciliation Manager makes the UFE factors report available to each purchaser trading on the network detailing their proportion of the UFE. There are three reports to be provided at various levels of detail to each trader and direct purchaser:

- a report detailing their UFE factor per balancing area and trading period;
- a summary for the consumption period, i.e. sum of the trading periods; and
- a summary detailing the previous 12 consumption periods.

Business requirements:

1. The Reconciliation Manager must deliver these reports to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:

Quantity of UFE per participant, NSP, trading period output from RS-110.

UFE per balancing area and trading period from RS-090;

UFE factor per balancing area and trading period from RS-090;

(Possibly ICP scaled loss-adjusted half-hour consumption (after profiling) output from RS-050, RS-080, RS-090 depending on calculation used);

Consumption period being processed.

Processing:

For each consumption period balancing area, NSP and participant, the system:

1. Produces the three reports as detailed below.
2. Delivers them to each purchaser; the reports containing only their own figures.
3. Calculates the balancing area UFE factor for the consumption period report:

   UFE factor formula is, for each trading period in the balancing area:

total balancing area load **divided by** total consumption (that has been ICP scaled and loss-adjusted)

4. For the consumption period report, the individual trading period figures need to be aggregated to the consumption period level, then the formula is applied.
5. The individual trading period figures can be obtained either:

   Option 1

   from the total balancing area load output from RS-070; and

   the ICP scaled loss-adjusted half-hour consumption (after profiling) output from RS-050, RS-080, RS-090; or

   Option 2

   they can be derived from RS-090 where:

   - total consumption = UFE of the balancing area in kWh **divided by** (UFE factor of the balancing area - 1); and
   - total balancing area load = total consumption + UFE of the balancing area in kWh.

6. UFE allocated to embedded networks acting as a consumer in a balancing area is reported as UFE in the embedded network and is not included in the parent networks UFE value.

Data outputs:		
Report row layouts		
Trading period report:		
Attributes	**Format**	**Validation/calculations**
Consumption period	Month	MM/YYYY.
Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Trading date	DD/MM/YYYY	
Trading period	Number (2)	Trading period – 1 to 48 (46 or 50 for daylight savings).
UFE factor for the balancing area	Number (3,1)	Obtained from RS-090 for the balancing area and trading period.

Total UFE of balancing area in kWh	Number (14,2)	UFE for balancing area and trading period obtained from RS-090.
Total UFE of NSP in kWh	Number (14,2)	Sum of all participants' UFE for the NSP and trading period within the balancing area.
Total UFE of participant in kWh	Number (14,2)	This participant's UFE for the NSP and trading period within the balancing area.

Monthly summary report:		
This report uses the trading period report as its basis but aggregates the trading period information to produce consumption period totals. It is also used as the basis for the GR-120 report.		
Attributes	**Format**	**Validations/calculations**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
UFE factor for the balancing area	Number (3,1)	Calculated. See Processing section.
Total UFE of balancing area in kWh	Number (14,2)	Sum of the trading period UFE for the balancing area obtained from RS-090.
Total UFE of NSP in kWh	Number (14,2)	Sum of all participants' UFE for the NSP within the balancing area.
Total UFE of participant in kWh	Number (14,2)	This participant's UFE for the NSP within the balancing area.
12-monthly summary report:		
This is calculated and has the same format as the monthly summary except all prior 12 consumption periods are reported and only the latest revision cycle is extracted.		

8.40. GR-065 Report UFE factors to distributors

Sub-process:	GR-065 Report UFE factors to distributors
Process:	Generate reports and files
Destination:	Distributors
Code references:	NA
Dependencies:	RS-110, RS-090 (possibly RS-050, RS-070, RS-080) (Same dependencies as GR-060)

Description:

The Reconciliation Manager makes the UFE factors report available to each distributor detailing the proportion of UFE attributed to each retailer/generator on their network(s) per trading period, balancing area and consumption month.

Business requirements:

1. The Reconciliation Manager must deliver the report to each relevant distributor by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs(same as the inputs for GR-060):

Quantity of UFE per participant, NSP, trading period output from RS-110.

UFE per balancing area and trading period from RS-090;

UFE factor per balancing area and trading period from RS-090;

(Possibly ICP scaled loss-adjusted half-hour consumption (after profiling) output from RS-050, RS-080, RS-090 depending on calculation used);

Consumption period being processed.

Processing:

For each consumption period balancing area, NSP and participant, the system:

1. Produces the report as detailed below.
2. Delivers the report to each distributor, the report containing only the details on their network(s).
3. Calculates the balancing area UFE factor for the consumption period report:

UFE factor formula is, for each trading period in the balancing area:

total balancing area load **divided by** total consumption (that has been ICP scaled and loss-adjusted)

4. The trading period figures can be obtained either:

Option 1

from the total balancing area load output from RS-070; and

the ICP scaled loss-adjusted half-hour consumption (after profiling) output from RS-050, RS-080, RS-090; or

Option 2

they can be derived from RS-090 where:

5. total consumption = UFE of the balancing area in kWh **divided by** (UFE factor of the balancing area - 1); and
6. total balancing area load = total consumption + UFE of the balancing area in kWh.

UFE allocated to embedded networks acting as a consumer in a balancing area is reported as UFE in the embedded network and is not included in the parent networks UFE value.

Data outputs:		
Report row layouts. (In the same format as the trading period report of GR-060)		
Trading period report:		
Attributes	**Format**	**Validation/calculations**
Consumption period	Month	MM/YYYY.
Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Trading date	DD/MM/YYYY	
Trading period	Number (2)	Trading period – 1 to 48 (46 or 50 for daylight savings).
UFE factor for the balancing area	Number (3,1)	Obtained from RS-090 for the balancing area and trading period.
Total UFE of balancing area in kWh	Number (14,2)	UFE for balancing area and trading period obtained from RS-090.

Total UFE of NSP in kWh	Number (14,2)	Sum of all participants' UFE for the NSP and trading period within the balancing area.
Total UFE of participant in kWh	Number (14,2)	This participant's UFE for the NSP and trading period within the balancing area.

8.41. GR-070 Report scorecard and market share

Sub-process:	GR-070 Report scorecard and market share
Process:	Generate reports and files
Destination:	Traders and Direct Purchasers
Code references:	Clause 25(b) of Schedule 15.4 of the Code
Dependencies:	RS-100, RS-110

Description:

The Reconciliation Manager produces the scorecard rating and market share report for purchasers at each NSP. This report is based on the outputs from RS-100 and RS110.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must report to each trader and direct purchaser their scorecard and market share for each balancing area and consumption period.

Data inputs:

Scorecard rating for each balancing area and trader and direct purchaser output from RS-100.

Market share per purchaser, NSP, trading period output from RS-110.

Consumption period being processed.

Processing:

The system:

1. Extracts required attributes from the data inputs and produces report.

Data outputs:

Report row layout

Attributes	Format	Description
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.

Participant code	Char (4)	Participant code of purchaser.
Trading date	DD/MM/YYYY	
Trading period	Number (2)	Trading period – 1 to 48 (46 or 50 for daylight savings).
Scorecard rating	Number (3.2)	At the balancing area level
Market share	Number (4.2)	

8.42. GR-080 Report ICP days scaling

Sub-process:	GR-080 Report ICP days scaling
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 25(c) of Schedule 15.4 of the Code
Dependencies:	RS-040

Description:
The Reconciliation Manager reports ICP days scaling factors to those traders and direct purchasers from whom it received submission information.

Business requirements:
1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month. 2. The Reconciliation Manager must report the non-half-hour and half-hour ICP days scaling factors for each NSP and each trader and direct purchaser for each consumption period.

Data inputs:
Scaling factors per purchaser, NSP and submission type output from RS-040. Consumption period being processed.

Processing:
The system: 1. Extracts required Attributes from the data inputs and produces report.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.

Submission type	Char (3)	NHH or HHR.
Scaling factor	Number (7,5)	

8.43. GR-090 Report missing HHR ICPs

Sub-process:	GR-090 Report missing HHR ICPs
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 25(d) of Schedule 15.4 of the Code
Dependencies:	AV-070, AV-140

Description:

The Reconciliation Manager reports missing half-hour ICPs to traders and direct purchasers. Discrepancies are detected by comparing the HHR list of ICPs provided by the Registry (AV-070) against the monthly half-hour ICP aggregates (AV-140). Where there are discrepancies, traders and direct purchasers are expected to submit corrected information in the next revision cycle. The aim of the report is to help traders and direct purchasers reduce their discrepancies over time.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must report to each trader and direct purchaser their own half-hour metered ICPs for which submission information has not been received.

Data inputs:

List of HHR ICPs from the Registry provided in AV-070.

Monthly half-hour ICP aggregates provided in AV-140.

Consumption period being processed.

Processing:

The system:

1. Compares the HHR ICP list from the Registry against the monthly half-hour ICP aggregates to find missing ICPs.

Data outputs:

Report row layout (NB: this information is further summarised in GR-140.)

Attributes	Format	Description
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.

Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Discrepancy type	Char (1)	R = ICP missing in Registry list. A = ICP missing in monthly aggregates.
ICP#	Char (15)	

8.44. GR-100 Report ICP days comparison

Sub-process:	GR-100 Report ICP days comparison
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 25(e) of Schedule 15.4 of the Code
Dependencies:	AV-060, AV-110

Description:

The Reconciliation Manager makes the ICP days comparison report available to each trader and direct purchaser trading on the network in respect of both the initial month and each revision cycle.

The report compares the two sets of ICP days figures provided by the Registry (AV-060) and traders and direct purchasers (AV-110). Where the ICP days do not match, traders and direct purchasers are expected to submit corrected information in the next revision cycle.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must report to each trader and direct purchaser the difference between their total number of ICP days as obtained from the Registry and as supplied by them, and give that difference as a percentage.

Data inputs:

ICP days from the Registry (AV-060).

ICP days from the purchasers (AV-110).

Consumption period being processed.

Processing:

The system:

1. Calculates:

   difference = registry ICP days - ICP days (from purchasers).

2. Calculates the difference as a percentage.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Submission type	Char (3)	HHR or NHH.
Registry ICP days	Number (9)	
ICP days	Number (9)	
Difference (registry - purchaser)	Number (10)	Calculated.
Percentage difference	Number (6,2)	Calculated.

8.45. GR-110 Report switched ICPs over consumption threshold

Sub-process:	GR-110 Report switched ICPs over consumption threshold
Process:	Generate reports and files
Destination:	Traders and direct purchasers
Code references:	Clause 25(f) of Schedule 15.4 of the Code
Dependencies:	AV-140, AV-020, AV-070

Description:

The report compares the monthly half-hour ICP aggregates of the previous 2 months and identifies ICPs that do not appear in both months for the same trader and direct purchaser throughout i.e. only those that have switched. It compares the consumption between the losing and gaining purchaser of each ICP to identify missing data or erroneous processing. Only those differences outside a threshold set by the Authority (AV-020) are reported and investigated by the Reconciliation Manager.

Business requirements:

1. The Reconciliation Manager must deliver this report to each relevant trader and direct purchaser by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The Reconciliation Manager must only report and investigate those differences outside the threshold set by the Authority (AV-020).

Data inputs:

Monthly HHR ICP aggregates from AV-140.

Threshold set in AV-020.

Consumption period being processed.

The number of days an ICP is active for each trader within a consumption period from AV-070.

Processing:

The system:

1. Extracts the appropriate 2 months from the monthly HHR ICP aggregates.
2. For each ICP, compares the trader codes in each month. If there is more than one trader code in a month or the trader codes differ from one month to the next, then the ICP has been switched.
3. Extracts from the Registry report AV-070 the active number of ICP days each ICP belonged to each trader within each consumption period being processed.

4. Calculates the average daily consumption of each trader using the active ICP days from AV-070 and the monthly HHR ICP aggregates and includes in the report only those over the threshold.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
POC	Char (7)	From NSP code.
Network ID	Char (7)	From NSP code.
ICP#	Char (15)	
Losing trader	Char (4)	Trader code.
Gaining trader	Char (4)	Trader code.
Average daily consumption of losing trader	Number (14,2)	If missing, percentage variance will be 100%.
Average daily consumption of gaining trader	Number (14,2)	If missing, percentage variance will be 100%.
Percentage variance	Number (5,1)	Calculated.

8.46. GR-120 Report unaccounted for electricity

Sub-process:	GR-120 Report unaccounted for electricity
Process:	Generate reports and files
Destination:	Authority and participants
Authority references:	Clause 27(a) of Schedule 15.4 of the Code
Dependencies:	GR-060

Description:

This report details the total amount of unaccounted for energy per NSP by trader and direct purchaser for the consumption period.

Summary reporting will allow trends of UFE over time to be identified by revision calculations.

The basis of this report is the monthly summary report detailed in GR-060 except that information for ALL participants is reported.

Business requirements:

1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7thbusiness day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:

See GR-060.

Consumption period being processed.

Processing:

Processing is the same as for the monthly summary report of GR-060.

Data outputs:

See monthly summary report output of GR-060.

8.47. GR-130 Report electricity supplied/submitted comparison

Sub-process:	GR-130 Report electricity supplied/submitted comparison
Process:	Generate reports and files
Destination:	Authority and participants
Code references:	Clause 27(b) of Schedule 15.4 of the Code
Dependencies:	AV-120, AV-080, AV-090, AV-010

Description:

This report identifies discrepancies between consumption submitted by traders for reconciliation (AV-080 and AV-090) and actual sales from electricity supplied information (AV-120). Grid NSPs are calculated from updated NSP mapping (AV-010).

Summary reporting will allow trends to be detected over time. Adverse trends may indicate the need for audit and compliance action.

NB: The electricity supplied information is assumed to exclude any adjustment for losses.

Business requirements:

1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:

HH submission information from AV-090.

NHH submission information from AV-080.

NSP mapping including updates from AV-010.

Electricity supplied information received from the traders from AV-120.

Consumption period being processed.

Processing:

For each consumption period, the system:

1. Calculates Grid NSP from NSP mapping as at the first trading period of the consumption period.
2. Summarises information from the HHR and NHH submission files by trader and NSP for the consumption period.
3. Summarises information from the electricity supplied files by trader and NSP for the consumption period.
4. Calculates the sales/submission difference in kWh.

5. Calculates the sales/submission ratio.
6. Generates the report, including the Grid NSP and Balancing area information as well.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM-YYYY	
Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24
NSP	Char (12)	POC Code (7) "-" Network Code (4)
Grid NSP	Char (12)	Grid Level Parent NSP POC Code (7) "-" Network Code (4)
Balancing area	Char (12)	Balancing area code
Participant identifier	Char (4)	Participant identifier of trader
Total trader consumption from submissions	Number (14,2)	Total trader consumption per NSP from submissions
Total trader sales (electricity supplied)	Number (14,2)	Total trader sales per NSP of electricity supplied
Difference kWh	Number (14,2)	Total trader sales minus Total trader consumption
Sales/submission ratio	Number (6,4)	Total trader sales divided by Total trader consumption

8.48. GR-140 Report missing HHR ICPs summary

Sub-process:	GR-140 Report missing HHR ICPs summary
Process:	Generate reports and files
Destination:	Authority and participants
Code references:	Clause 27(c) of Schedule 15.4 of the Code
Dependencies:	GR-090

Description:
This report summarises the number of half-hour ICPs for which submissions were missing. It is a higher-level report than GR-090 on which it is based. Adverse trends may indicate the need for audit and compliance action.

Business requirements:
1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
Outputs from GR-090. Consumption period being processed.

Processing:
For each purchaser, the system: 1. Counts the number of discrepancies appearing in the input (output from GR-090) for the given consumption and revision cycle. Only those ICPs missing in the HHR aggregates file are required to be counted.

Data outputs:

Report row layout

Attributes	Format	Description
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Participant identifier	Char (4)	Participant identifier of purchaser.
Number (of discrepancies (i.e. count of input rows per purchaser)	Number (8)	Calculated.

8.49. GR-145 Report Monthly ICP Submissions Aggregate

Sub-process:	GR-145 Monthly ICP Submissions Aggregate
Process:	Generate reports and files
Destination:	Authority
Code references:	Clause 27(d) of Schedule 15.4 of the Code
Dependencies:	AV-140

Description:

This report shows total monthly kWh for each half-hourly metered ICP from traders and direct purchasers (excludes direct consumers) provided within the submission reports per consumption period.

The Reconciliation Manager receives from each trader and direct purchaser (excluding direct consumers) their total monthly kWh for each half-hourly metered ICP for which they provided submission information for the latest consumption period.

Business requirements:

The Reconciliation Manager must deliver a report by 1600 hours on the 13th business day of each reconciliation period in respect of any revised HHR ICP aggregate information for prior consumption periods.

Data inputs:

Monthly HHR ICP aggregated kWh consumption output from AV-140

Processing:

The system:

1. Verifies the participant's monthly half-hour aggregate submission from AV-140 and, if it is valid, stores it for use in checking the participant's half-hourly submission information (see GR-090).
2. Consolidates data from all participant submissions, formats to a single report and delivers to the Authority.

Data outputs:

ICP submissions aggregate report in csv format for each consumption period.

Attributes	Format	Description
Participant identifier	Char(4)	Valid trader or direct purchaser participant identifiers.
Consumption period	MM/YYYY	Valid month

ICP number	Char(15)	
POC	Char (7)	Valid point of connection code
Network Code	Char (4)	Valid network code
Flow direction	Char (1)	X—Load (exit) I—Injection
Quantity (kWh)	Number (14,2)	Monthly quantity in kWh

8.50. GR-150 Report ICP days comparison summary

Sub-process:	GR-150 Report ICP days comparison summary
Process:	Generate reports and files
Destination:	Authority and participants
Code references:	Clause 27(d) of Schedule 15.4 of the Code
Dependencies:	GR-100

Description:
This report summarises the differences between the registry ICP days and the ICP days information provided by traders and direct purchasers. It is a higher-level report than GR-100 on which it is based.

Business requirements:
1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
Output from GR-100. Consumption period being processed.

Processing:
The system: 1. Selects only non-half-hour information. 2. Aggregates registry ICP days per purchaser. 3. Aggregates ICP days per purchaser (excluding direct consumers). 4. Aggregates differences (registry ICP days - ICP days) per purchaser.

Data outputs:

Report row layout

Attributes	Format	Description
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Participant identifier	Char (4)	Participant identifier of purchaser.
Submission type	Char (3)	NHH or HHR.

Difference (registry - purchaser)	Number (9)	

8.51. GR-160 Report purchasers' average NHH kWh

Sub-process:	GR-160 Report purchasers' average NHH kWh
Process:	Generate reports and files
Destination:	Authority and participants
Code references:	Clause 27(e) of Schedule 15.4 of the Code
Dependencies:	AV-090, AV-110

Description:
The purpose of this report is to enable errors in non-half-hour kWh submissions to be picked up by comparing the average daily non-half-hour kWh in each trader's and direct purchaser's submission per NSP, against the average daily non-half-hour kWh of all traders' and direct purchasers' submissions per NSP.

Business requirements:
1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month. 2. The report must calculate and show for each balancing area the difference between the daily average non-half-hour kWh submitted by each trader and direct purchaser by NSP, and the daily average non-half-hour kWh submitted by ALL purchasers by NSP.

Data inputs:
NHH submissions received from purchasers (AV-090). ICP days information received from purchasers (AV-110). Consumption period being processed.

Processing:
The system: 1. Summarises NHH submissions by NSP, by purchaser. Calculate the daily average, i.e. divide by the relevant number of ICP days for the purchaser. 2. Summarises NHH submissions by NSP (i.e. for all purchasers) and calculate the daily average, i.e. divide by the number of ICP days (of all purchasers).

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	

Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
All purchasers' average daily NHH kWh	Number (14,2)	Calculated.
Participant identifier	Char (4)	Participant identifier of purchaser.
Purchaser average daily NHH kWh	Number (14,2)	Calculated.
Percentage variation	Number (5,2)	Calculated.

8.52. GR-170 Report purchasers' submission accuracy

Sub-process:	GR-170 Report purchasers' submission accuracy
Process:	Generate reports and files
Destination:	Authority and participants
Code references:	Clause 27(f) of Schedule 15.4 of the Code
Dependencies:	AV-080, AV-090, AV-020

Description:

Two reports are to be produced: one for HHR submissions and one for NHH data submissions.

These reports use the information from the HHR and NHH submission information comparing the initial submissions against subsequent revisions, thereby providing an analysis of the initial submission quality and the proportion of historical estimates included in submissions.

There is a requirement to only report those NSP/purchaser combinations whose overall monthly total volumes (i.e. HHR and NHH together) are greater than a threshold. This is a parameter is set by the Authority (in AV-020). Information for ALL participants is reported, however only where an initial submission was made for each combination of NSP/purchaser.

Business requirements:

1. The Reconciliation Manager must deliver the report to all participants and the Authority by 1600 hours on the 7thbusiness day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.
2. The report must calculate and show separately for non-half-hour and half-hour the difference between the quantity of electricity in the initial and the quantity of electricity in each subsequent information submission for each NSP and each trader and direct purchaser.

Data inputs:

HHR submission files for the relevant consumption period and all its revisions from AV-080.

NHH submission files for the relevant consumption period and all its revisions from AV-090.

Submission accuracy threshold from AV-020.

Consumption period being processed.

Processing:

The system:

1. Aggregates submissions by purchaser, submission type, NSP, revision cycle and consumption period.

2. Only processes consumption submissions (not generation), where the initial submission was greater than zero.
3. Only reports where the purchaser's total monthly submission volume is greater than the submission accuracy threshold parameter.

Data outputs:		
Report row format for each report		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7 and 14.
Balancing area	Char (12)	Balancing area code.
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Participant identifier	Char (4)	Participant identifier of purchaser.
Submission type	Char (3)	HHR or NHH.
Total monthly submission volume	Number (14,2)	Calculated.
Total monthly historical estimate volume	Number (14,2)	Calculated.
Percentage of historical estimate in this revision's submission	Number (5,2)	Calculated.
Percentage variation of this revision's submission volume against the initial revision cycle	Number (5,2)	Calculated. Percentage increase or decrease.
Percentage variation of this revision's historical estimate against the historical estimate in the initial revision cycle	Number (5,2)	Calculated. Percentage increase or decrease.

8.53. GR-190 Report annual consumption list

Sub-process:	GR-190 Report annual consumption list
Process:	Generate reports and files
Destination:	Market administrator
Code references:	Clause 13.188 of the Code
Dependencies:	GR-010

Description:

The annual consumption list is generated monthly and when published is made available to all participants, including the Authority. This will be via the public pages of the external portal and any other mechanisms participants have. .

Business requirements:

1. The reconciliation manager must deliver to the Authority a consumption list at least every 6 months, and publish the list within 1 business day of providing it to the Authority
2. The list will rank in descending order the annual consumption of all grid exit points and grid injection points with annual consumption greater than 300GWh for the 12-month period ended 3 months prior to the date the list is due.

Data inputs:

Historical reconciliation information delivered to reconciliation participants and the Clearing Manager in GR-010.

Processing:

The system:

1. Summarises the consumption information by grid exit or injection point for the 12-month period ended 3 months prior to the date the list is due.
2. Extracts only those with summarised quantities greater than 300GWhs.
3. Sorts in the grid exit and injection points in descending summary quantity order.

Data outputs:

Annual consumption list in csv format.

Attributes	Format	Description
POC	Char (7)	Point Of Connection – from Grid Exit/Injection Point code
Network Code	Char (4)	Network Code – from Grid Exit/Injection Point code

Flow direction	Char (1)	X—Load (exit)
Consumption (GWh)	Number (8,0)	Calculated – Total annual consumption at node over report period

8.54. GR-200 Report grid owner charges

Sub-process:	GR-200 Report grid owner charges
Process:	Generate reports and files
Destination:	Grid owners
Code references:	Clause 28(b) of Schedule 15.4 of the Code
Dependencies:	AV-130

Description:
This report provides each grid owner with the information they require to calculate their charges. Currently, grid owners use grid exit and grid injection point NSP volumes as the basis of their charges. Most of the volume information is collected by grid owners themselves, however some generation NSP volumes are provided directly to the Reconciliation Manager. The Reconciliation Manager is therefore required to deliver the generation NSP volumes to the grid owners.

Business requirements:
1. The Reconciliation Manager must deliver the NSP volumes obtained directly from generators to grid owners by 1600 hours on the 7th business day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
NSP volume information received in process AV-130.

Processing:
The system: 1. Extracts generation NSP volumes and deliver to relevant grid owners. 2. Only reconciliation types with GG are required to be extracted but flow directions are required to be reported separately.

Data outputs:

NSP generation and consumption volume information.

Attributes	Format	Description
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Reconciliation type	Char (2)	From the original submission
Participant identifier	Char (4)	Participant identifier of purchaser.

Flow direction	Char (1)	X—Load (exit) I—Injection from the original submission.
Trading date	DD/MM/YYYY	
Trading period values in kWh (1…46/48/50)	Number (8)	Normally 48 values comma delimited but 46 or 50 at daylight saving.
Checksum	Number (10)	Calculated. Sum of all the trading period values.

8.55. GR-210 Report grid level reconciliation data summary

Sub-process:	GR-210 Report grid level reconciliation data summary
Process:	Generate reports and files
Destination:	Authority
Rule references:	Not Applicable
Dependencies:	

Description:
This report is based on the Clearing Managers GR-010 report. The report provides a summary of the reconciled data, consumption and generation, for all participants at all NSPs, summarised to the grid level.

Business requirements:
1. The Reconciliation Manager must deliver the report to the Authority by 1600 hours on the 7th business day of each calendar month.

Data inputs:
Reconciliation information output from RS-130. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Aggregates both consumption and generation reconciliation information by reconciliation participant, NSP, trading date and trading period. For consumption, the seller is the Clearing Manager and the buyer is the reconciliation participant, whereas for generation it is the opposite way around. 2. Aggregates the pre-loss-adjusted quantity (modified by scaling factor) and the total balanced quantity for each combination of POC, network, participant, flow direction and profile type.

Data outputs:		
Report row format for each report		
Attributes	**Format**	**Description**
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Participant code	Char (4)	Participant code of purchaser / supplier
Flow direction	Char (1)	X or I
Profile Type	Char (10)	Profile type
Input quantity	Number (14,2)	Calculated
Output quantity	Number (14,2)	Calculated

8.56. GR-220 Report monthly levy information

Sub-process:	GR-220 Report monthly levy information
Process:	Generate reports and files
Destination:	Authority
Rule references:	Not Applicable
Dependencies:	RS-130

Description:

This report provides the Electricity Authority with the information they require to calculate the Generation Levy.

The levy is, in some cases is allocated on a pro-rata basis to participants based on electricity generated. Under the regulations, electricity generated is defined as

.."in relation to a generator - (a) means the quantity of electricity sold by the generator to the Clearing Manager or to a trader;

but (b) does not include the quantity of electricity generated by an embedded generating station that has a rated electricity generating capacity of less than 10 MW in the station's asset capability statement."

Both consumption and generation are shown on the report.**Generation**
Includes:

- Embedded generation from stations rated 10Mw or greater (including any generation calculated by differencing)
- All GG and GD generation

Excludes:

- Negative UFE
- Embedded generation from stations rated less than 10Mw

Consumption

- *Includes:*
- All consumption including positive UFE
- Negative UFE is netted off

Note:
For parent NSPs, both consumption and generation of any embedded networks are included.
For embedded networks, consumption and generation on the embedded network are shown.
This means that consumption and generation on embedded networks are reported twice – once at the parent NSP and once at the child NSP.

Business requirements:
1. The Reconciliation Manager must deliver the report to the Authority by 1600 hours on the 7th business day of each calendar month. 2. The Reconciliation Manager must be able to deliver the report covering the prior 12 consumption periods to the Authority on request. The latest submission revisions for the annual report must be used. Notes: **Any changes to this report must first be approved by the Manager Market Analytics of the Electricity Authority. There is a downstream dependency on the Levy Calculation Application which must be managed effectively.**

Data inputs:
Reconciliation information output from RS-130. Consumption period being processed. Reconciliation run ID Up-to-date list of embedded generators and stations calculated by differencing.
Processing:

For the specified consumption period and reconciliation run ID, the system:

1. Classifies data into 14 sets:

Set ID	Description
XUPA	Positive UFE on a parent network
XUCH	Positive UFE on a child network
XENK	X flow on an embedded network belonging to the network owner (always 0)
ENCN	Consumption on an embedded network
CONS	Consumption on a parent network
IENK	I flow on an embedded network belonging to the network owner (always 0)
EGPA	Embedded generation (or generation calculated by differencing) of 10Mw and above, on a parent network.
EGCH	Embedded generation (or generation calculated by differencing) of 10Mw and above, on a child network.
NLEV	Embedded generation (or generation calculated by differencing) of less than 10Mw.
GGGD	Generation at GG and GD NSPs
NUFE	Negative UFE
XUFE	Flow direction of X, RTYP_CODE of SB
UNKN	All remaining I Flow, e.g. embedded micro generation, not recorded in the embedded generators table.
ERRR	No records (Error)

X and I flow are calculated as follows:

X Flow

X Flow = CONS + XUPA + XUCH + ENCN – NUFE

I Flow

I Flow = EGPA + EGCH + GGGD

Data outputs:		
Report row format for each report		
Attributes	**Format**	**Description**
Consumption period	YYYYMM	
Reconciliation Run ID	Number(10)	Unique run indicator
Participant code	Char (4)	Participant code of purchaser / supplier
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Reconciliation Type	Char(2)	Reconciliation type
X Flow	Number (14,2)	Calculated
I Flow	Number (14,2)	Calculated

8.57. GR-225 Report electricity conveyed levy information

Sub-Process:	GR-225 Report electricity conveyed levy information
Process:	Generate reports and files
Destination:	Authority
Code References:	Electricity (Levy of Industry Participants) Regulations 2005
Dependencies:	AV-080, AV-090, AV-130

Description:

The Reconciliation Manager provides a report detailing all electricity conveyed at each NSP for each prior consumption period or for 12 prior consumption periods. Electricity conveyed is the quantity of electricity entering a network via grid exit points, points of connection with embedded networks and interconnection points.

N.B. Refer to RS-070 Processing section for an interpretation of “entering a network”.

Business Requirements:

1. The Reconciliation Manager must deliver the report for the prior consumption period to the Authority by 1600 hours on the 7th business day of each calendar month. Revisions for the monthly report beyond the initial submission are not required or desired.
2. The report must show all electricity conveyed at each NSP including: consumption at the NSP, all consumption from child interconnection NSPs plus injection from all child embedded networks (gateway NSPs) and all submitted embedded generation.
3. The Reconciliation Manager must be able to deliver the report covering the prior 12 consumption periods to the Authority on request. The latest submission revisions for the annual report must be used.

   Notes: Any changes to this report must first be approved by the Manager Market Analytics of the Electricity Authority. There is a downstream dependency on the Levy Calculation Application which must be managed effectively

Data Inputs:

HHR submission files for the relevant consumption periods for the relevant consumption periods and all their revisions from AV-080.
NHH submission files for the relevant consumption periods for the relevant consumption periods and all their revisions from AV-090.
NSP volume information for the relevant consumption periods and all their revisions from AV-130.
NSP mapping table.
Consumption period(s) being processed.

Processing:

For each consumption period, the system:

1. For each NSP, with the exception of interconnections, aggregates X(exit) flow from NSP

Volumes (AV-130) submissions. (X_QTY).

2. For each NSP, uses the NSP mapping table to identify all embedded networks (gateway NSPs) embedded under the NSP, and all interconnection NSPs connecting to the NSP. For all interconnection and gateway NSPs beneath the NSP, aggregates the I(injection) flows from the gateway NSPs and X(exit) flows for interconnection NSPs, from NSP Volumes submissions. (I_EN_X_NP_QTY).
3. For each NSP, aggregates I(injection) flow from NHH (AV-080) and HHR (AV-090) submissions. This represents embedded generation at the NSP. (EMBEDDED_GENERATION).
4. Sums together X_QTY, I_EN_X_NP_QTY and EMBEDDED_GENERATION values generated above. (TOTAL).

Data Outputs:

For each consumption period:

Attributes	Format	Description
Consumption ID	Char (6)	Consumption Period
Run ID	Number(10)	Run identifier
POC Code	Char (7)	Point of connection
Network Code	Char (4)	Network code
Reconciliation Type Code	Char (4)	Reconciliation Type Code
Exit Quantity	Number (14,2)	Amount of exit load from NSP Volumes submission. (X_QTY).
Embedded Generation	Number (14,2)	Embedded generation (I Flows) from NHH and HHR submission data.
Quantity Of Gateway NSP Injection And Interconnection NSP Extraction	Number (14,2)	Non loss-adjusted I flows from embedded networks' gateway NSP Volumes data + X flows at interconnection NSP Volumes data, for all child NSPs of this POC/Network. (I_EN_X_NP_QTY).
Total	Number (14,2)	Exit Quantity + Quantity Of Gateway NSP Injection And Interconnection NSP Extraction + Embedded Generation.

8.58. GR-230 Report submitted NSP volumes

Sub-process:	GR-230 Report submitted NSP volumes
Process:	Generate reports and files
Destination:	Authority
Rule references:	Electricity (Levy of Industry Participants) Regulations 2005
Dependencies:	AV-130

Description:
This report provides a summary of all NSP volumes submissions by NSP and participant code.

Business requirements:
1. The Reconciliation Manager must deliver the report to the Authority by 1600 hours on the 7th business day of each calendar month. 2. The Reconciliation Manager must be able to deliver the report covering the prior 12 consumption periods to the Authority on request. The latest submission revisions for the annual report must be used. Notes: Any changes to this report must first be approved by the Manager Market Analytics of the Electricity Authority. There is a downstream dependency on the Levy Calculation Application which must be managed effectively.

Data inputs:
NSP volumes (AV130)
Consumption period being processed.

Processing:
The system: 1. Aggregates the X and I flow NSP volumes submissions for each combination of Participant and NSP.

Data outputs:		
Report row format for each monthly report		
Attributes	**Format**	**Description**
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Reconciliation Type	Char (2)	From NSP code.
Participant code	Char (4)	Participant code of purchaser / supplier

X Flow	Number (14,2)	Calculated
I Flow	Number (14,2)	Calculated
Report row format for each annual report		
Attributes	**Format**	**Description**
Consumption Period	YYYYMM	
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Reconciliation Type	Char (2)	From NSP code.
Participant code	Char (4)	Participant code of purchaser / supplier
X Flow	Number (14,2)	Calculated
I Flow	Number (14,2)	Calculated

8.59. GR-235 Report submitted NSP volumes at trading period level

Sub-process:	GR-235 Report submitted NSP volumes at trading period level
Process:	Generate reports and files
Destination:	Authority
Rule references:	
Dependencies:	AV-130

Description:
This report provides the Authority with all NSP volumes submissions per consumption period.

Business requirements:
1. The Reconciliation Manager must deliver the NSP submission volumes for the previous consumption period to the Authority by 1600 hours on the 7th business day of each calendar month, and any revisions by 1200 hours on the last business day of each calendar month.

Data inputs:
NSP volumes (AV130) Consumption period being processed

Processing:
The system: 1. For each consumption period: • Extracts NSP volumes submissions for each combination of NSP code, participant code, profile code, loss category, flow direction, dedicated NSP and trading date/trading periods. • Creates a file containing the details. • Sends the file to the Authority.

Data outputs:

File row format for each consumption period

Attributes	Format	Description
POC	Char(7)	POC code of the NSP.
Network code	Char(4)	NSP identifier.

Reconciliation Type	Char(2)	GN, GG, GD, NP, EN
Participant code	Char(4)	Reconciliation participant identifier of the network owner
Profile code	Char(4)	“HHR”
Loss Category	Char(7)	Loss category of the reconciliation participant
Flow direction	Char(1)	X—Load (exit) I—Injection.
Dedicated NSP	Char(1)	Y - Yes
Trading Date	DD/MM/YYYYY	
Trading period quantity in kWh 1 to 48 (46/50 for daylight saving)	Number(14,2)	A series of comma delimited values. 1 to 48 (46/50 for daylight saving)
Checksum	Number(14,2)	Sum of the row trading period quantities

8.60. GR-240 Report NSP level reconciliation data summary

Sub-process:	GR-240 Report NSP level reconciliation data summary
Process:	Generate reports and files
Destination:	Authority
Rule references:	N/A
Dependencies:	RS-130

Description:
This report is based on the Clearing Managers GR-010 report. The report provides a summary of the reconciled data, consumption and generation, for all participants at all NSPs.

Business requirements:
1. The Reconciliation Manager must deliver the report to the Authority by 1600 hours on the 7th business day of each calendar month.

Data inputs:
Reconciliation information output from RS-130. Consumption period being processed.

Processing:
The system: 1. Aggregates the total balanced quantity for each combination of POC, network, reconciliation type, participant, flow direction and profile type.

Data outputs:

Report row format for each report

Attributes	Format	Description
POC	Char (7)	From NSP code.
Network ID	Char (4)	From NSP code.
Reconciliation Type	Char (2)	From NSP code.
Participant code	Char (4)	Participant code of purchaser / supplier
Flow direction	Char (1)	X or I
Profile Type	Char (10)	Profile type
Input quantity	Number (14,2)	Calculated
Output quantity	Number (14,2)	Calculated

8.61. GR-250 Report electricity traded

Sub-process:	**GR-250 Report electricity traded**
Process:	Generate reports and files
Destination:	Distributors
Code references:	Rule14.2.1 of Schedule J4 of Part J
Dependencies:	RS-50, RS-120

Description:
The Reconciliation Manager sends a report which details electricity traded in kWh by trader that is ICP days scale, loss, UFE and balancing adjusted for each NSP on the distributor's network. This report has the same file format as GR-040. Each distributor receives only information for electricity that is conveyed within their network.

Business requirements:
1. The Reconciliation Manager must deliver the report to each relevant distributor by 1600 hours on the 7thbusiness day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
ICP scaled (fully) loss-adjusted UFE inclusive balanced half-hour consumption information output from RS-120. The loss-adjusted half-hour generation information output from RS-050. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Summarises information from the output of the Reconciliation Managers process by the criteria listed with the format, for the consumption period for NSP's trading on each relevant distributor's network.

Data outputs:		
For each consumption period: Report row layout: known as the ‘R’ format		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP from the original submission or the NSP created during the balancing process.
Network ID	Char (4)	From the NSP from the original submission or the NSP created during the balancing process.
Reconciliation type	Char (2)	From the original submission.
Participant identifier	Char (4)	Participant identifier from the original submission.
Profile	Char (3)	Profile code from the original submission.
Loss category code	Char (7)	From the original submission.
Flow direction	Char (1)	X—Load (exit) I—Injection from the original submission.
Dedicated NSP	Char (1)	Y/N from the original submission.
Trading date	DD/MM/YYYY	
Trading period value (1…46/48/50)	Number (8)	Normally 48 values but 46 or 50 at Daylight Saving.
Checksum	Number (10)	Calculated.

8.62. GR-260 Report electricity submitted

Sub-process:	**GR-260 Report electricity consumption submitted**
Process:	Generate reports and files
Destination:	Distributors
Code references:	Clause 26(c) of Schedule 15.4
Dependencies:	AV-080, AV-090

Description:
The Reconciliation Manager sends a report to distributors, summarising the total of their electricity consumption submissions for the consumption period, in kWh by each trader for each NSP on the relevant distributor's network.

Business requirements:
1. The Reconciliation Manager must deliver the report to each relevant distributor by 1600 hours on the 7th business day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
HH submission information from AV-090.
NHH submission information from AV-080.
Consumption period being processed.

Processing:
For each consumption period, the system:
1. Summarises information from the HHR and NHH submission files by trader and NSP for the consumption period.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24.

POC	Char (7)	From the NSP from the original submission.
Network ID	Char (4)	From NSP Code
Participant code	Char (4)	Participant code of trader.
Submission type	Char (3)	HHR or NHH.
Trading date	DD/MM/YYYY	(For monthly NHH submissions the Trading Date shown will be the first day of the Consumption Period)
Total trader submissions (electricity submitted)	Number (14,2)	

8.63. GR-265 Distributor Report Electricity Submission Breakdown

Sub-process:	**GR-265 Report electricity submitted**
Process:	Generate reports and files
Destination:	Distributors
Code references:	Clause 26(c) of Schedule 15.4
Dependencies:	AV-080, AV-090

Description:
The Reconciliation Manager sends a report to distributors, summarising the total of their electricity consumption submissions for the consumption period, in kWh by each trader for each NSP on the relevant distributor's network.

Business requirements:
1. The Reconciliation Manager must deliver the report to each relevant distributor by 1600 hours on the 7thbusiness day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
HH submission information from AV-090. NHH submission information from AV-080. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Summarises information from the HHR and NHH submission files for each distributer by POC, network, trader, submission type, loss category code, flow direction and trading date.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
Consumption period	MM/YYYY	

Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24.
POC	Char (7)	From the NSP from the original submission.
Network ID	Char (4)	From NSP Code
Participant code	Char (4)	Participant code of trader.
Submission type	Char (3)	HHR or NHH.
Trading date	DD/MM/YYYY	(For monthly NHH submissions the Trading Date shown will be the first day of the Consumption Period)
Total trader submissions (electricity submitted)	Number (14,2)	
Loss category code	Char (7)	From submission loss code
Flow direction	Char (1)	From Injection (I) or Load (X)

8.64. GR-270 Report electricity supplied

Sub-process:	**GR-270 Report electricity supplied**
Process:	Generate reports and files
Destination:	Distributors
Code references:	Rule 14.2.2 of Schedule J4 of Part J
Dependencies:	AV-120

Description:
The Reconciliation Manager sends a report which details electricity supplied in kWh by trader for each NSP on the distributor's network. NB: The electricity supplied information is referenced to customer points of connection and will exclude ICP days scaled, losses, balancing and UFE adjustments. Each distributor receives only information for electricity that is conveyed within their network.

Business requirements:
1. The Reconciliation Manager must deliver the report to each relevant distributor by 1600 hours on the 7th business day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
Electricity supplied information received from the traders from AV-120. Consumption period being processed.

Processing:
For each consumption period, the system: • Summarise information from the electricity supplied files by trader and NSP for the consumption period for NSP's trading on each relevant distributor's network.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**

Consumption period	MM/YYYY	
Revision cycle	Number (2)	0, 1, 3, 7, 14, 18 and 24.
POC	Char (7)	From the NSP from the original submission.
Network ID	Char (4)	From NSP Code
Participant code	Char (4)	Participant code of trader.
Total electricity supplied	Number (14,2)	

8.65. GR-280 Report UFE rolling 24 months

Sub-process:	**GR-280 Report UFE rolling 24 months**
Process:	Generate reports and files
Destination:	Authority, participants and the public
Rule references:	
Dependencies:	RS-50, RS-070, RS-090, RS-110

Description:
The Reconciliation Manager must forward to the Authority, participants and the publica report for UFE with the following, Rolling 24 months of Balancing Area UFE, Total Balancing Area Load, and NSP UFE by GXP and month for the latest available revision cycle for each consumption period reported.

Business requirements:
1. The Reconciliation Manager must deliver the report to the Authority, participants and the public by 1600 hours on the 7th business day of each calendar month.

Data inputs:
Quantity of UFE per participant, NSP, trading period output from RS-110. UFE per balancing area and trading period from RS-090. Total Balancing Area Load from RS-070. Consumption period being processed.

Processing:
The system: 1. Identifies the latest reconciliation run with the highest revision cycle for each of the previous 24 consumption periods. Except for the most recent revision 0 run, all other reconciliation runs must be the latest *published* run with the highest revision cycle: 2. For each consumption period, balancing area and NSP: • aggregates UFE per balancing area (from RS-090) to the consumption period total, • aggregates UFE per NSP (from RS-110) to the consumption period total, and • aggregates total balancing area load (from RS-070) to a consumption period total. 3. Makes the information available to the Authority, participants and the public.

Data outputs:		
Report row layout		
Attributes	**Format**	**Validations/calculations**
Consumption Period	MM/YYYY	
Revision Cycle	Number (2)	0, 1, 3, 7, 14.
Balancing Area	Char (12)	Balancing area code
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Total UFE of balancing area in kWh	Number (14,2)	UFE for balancing area obtained from RS-090.
Total UFE of NSP in kWh	Number (14,2)	Sum of all participants' UFE for the NSP within the balancing area.
Total Balancing Area Load	Number (14,2)	The total balancing area load (calculated from RS-070)

8.66. GR-290 Report NSP final residual profile shapes

Sub-process:	**GR-290 Report NSP final residual profile shapes**
Process:	Generate reports and files
Destination:	Authority, participants and the public
Rule references:	
Dependencies:	RS-080, GR-020

Description:
The Reconciliation Manager provides a subset of the half-hourly profile shape information to the Authority, participants and the public, namely: • the final residual profile shapes of each NSP output from RS-080. Unlike the GR-020 which does not report past the 7 month revision cycle, this report will publish information for the 14 month revision cycle.

Business requirements:
1. The Reconciliation Manager must make the report available to the Authority, participants and the public by 1600 hours on the 7th business day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month. 2. The profile shape values for the final residual profile shape must be the kWh values, i.e. not normalised. 3. The public must be able to access the report through a publically available website and the Authority and participants must receive the report by secure file transfer.

Data inputs:
Final residual profile shape – quantities per NSP and trading period output from RS-080. NSP mapping table. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Outputs the final residual profile shape (with the profile code of 'RPS') for all NSPs. 2. Makes the information available to the Authority, participants and the public.

Data outputs:		
For each consumption period: Report row layout: formerly known as the ‘Q’ file		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP.
Network ID	Char (4)	From the NSP.
Profile	Char (3)	RPS—‘Final residual profile shape’.
Trading date	DD/MM/YYYY	
Trading period	Number (2)	1 to 48 (46/50 for Daylight Saving change days).
Shape value	Number (14,2)	The value in a trading period will be zero if the ‘on and off time’ indicates it was switched ‘off’.

8.67. GR-300 Report seasonal profile shape summary

Sub-process:	**GR-300 Report seasonal profile shape summary**
Process:	Generate reports and files
Destination:	Authority, participants and the public
Rule references:	
Dependencies:	RS-070, GR-020

Description:
This is a daily summary of the initial residual profile shape calculated in RS-070 and is the same for each NSP in the balancing area. The Reconciliation Manager provides the seasonal profile shape information to the Authority, participants and the public for every NSP at which there were NHH submissions. NB: GR-020 is used as its basis. This report is similar to GR-030 in that it is produced for revision cycles up to and including the 7 month revision only.

Business requirements:
1. The Reconciliation Manager must make the report available to the Authority, participants and the public by 1600 hours on the 7th business day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month. 2. The public must be able to access the report through a publically available website and the Authority and participants must receive the report by secure file transfer.

Data inputs:
Output from GR-020 but only for the initial residual profile shape. NHH submission information. Consumption period being processed.

Processing:
For each consumption period, the system: 1. Outputs the initial residual profile shapes (with a profile code of 'NSP') for every NSP where there were NHH submissions 2. Makes the information available to the Authority, participants and the public.

Data outputs:		
For each consumption period: Report row layout: formerly known as the ‘Q’ file.		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Participant code	Char (4)	‘RMPW’ – the participant identifier for the public.
Profile	Char (3)	NSP – ‘initial residual profile shape’.
Trading date	DD/MM/YYYY	
Daily value	Number (14,2)	Calculated.

8.68. GR-310 Report grid NSP information

Sub-process:	**GR-310 Report grid NSP information**
Process:	Generate reports and files
Destination:	Authority
Code references:	Not Applicable
Dependencies:	AV-130

Description:
The Reconciliation Manager sends a report which details grid owners and grid connected generators submission information by NSP, excludes embedded network and network interconnection point. This report has the same file format as AV-130.

Business requirements:
1. The Reconciliation Manager must deliver the report to the board by 1600 hours on the 7th business day of each calendar month, and, in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
NSP volume information from AV-130. Consumption period being processed.

Processing:
The system: 1. Extracts from the data input and produces report.

Data outputs:		
Report row layout		
Attributes	**Format**	**Description**
POC	Char (7)	From the NSP from the original submission.
Network ID	Char (4)	From the NSP from the original submission.
Reconciliation type	Char (2)	From the original submission.

Participant identifier	Char (4)	Participant identifier from the original submission.
Profile	Char (3)	Profile code from the original submission.
Loss category code	Char (7)	From the original submission.
Flow direction	Char (1)	X—Load (exit) I—Injection from the original submission.
Dedicated NSP	Char (1)	Y/N from the original submission.
Trading date	DD/MM/YYYY	From the original submission.
Trading period quantities (1…46/48/50)	Number (14,2)	Series of comma delimited of normally 48 values but 46 or 50 at Daylight Saving from the original submission.
Checksum	Number (14,2)	Must be the sum of the row trading period quantities

8.69. GR-320 Report Embedded Generation

Sub-Process:	GR-320 Report embedded generation
Process:	Generate reports and files
Destination:	Clearing Manager
Code References:	Not Applicable
Dependencies:	AV-080, AV-090

Description:

The Reconciliation Manager is to provide a report detailing all embedded generation at each NSP.

Business Requirements:

1. The Reconciliation Manager must deliver this report to the Clearing Manager by 1600 hours on the 7th business day of each calendar month, and in respect of the first revision only by 1200 hours on the last business day of each month.
2. The report must show all embedded generation at each NSP.

Data Inputs:

AV-080, AV-090

Processing:

For each consumption period, the system:

- For each NSP, aggregates I flow from accepted NHH (AV-080) and HHR (AV-090) submissions. This represents embedded generation at the NSP. (EMBEDDED_GENERATION)

Data Outputs:

For each consumption period:

Attributes	Format	Description
Consumption period	Char (6)	Consumption Period (format 'YYYYMM')
POC Code	Char (7)	Point of Connection
Embedded Generation	Number (14,2)	Embedded Generation: I flow from NHH and HHR submission data.

8.70. GR-330 Report retailer submissions by revision

Sub-process:	**GR-330 Report retailer submissions by revision**
Process:	Generate reports and files
Destination:	Authority
Rule references:	3.11
Dependencies:	AV-080, AV-090

Description:
The Reconciliation Manager must forward to the Authority a report on retailer submissions (both NHH and HHR) by revision cycle for the consumption period being published.

Business requirements:
1. The Reconciliation Manager must deliver this report to the Authority by 1600 hours on the 7thbusiness day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
Quantity of NHH submissions from AV-080
Quantity of HHR submissions from AV-090
Consumption period being processed.

Processing:
The system: 1. For each revision cycle, NSP and retailer, aggregates NHH and HHR submissions for the current, previous and initial revisions of the consumption period. 2. Calculates the percentage change of submissions from the current to the initial revision ([current – initial] / current)

Data outputs:		
Report row layout		
Attributes	**Format**	**Validations/calculations**
Revision Cycle	Number (2)	e.g. 0, 1, 3, 7, 14, etc.
Consumption Period	YYYYMM	e.g. 201707

POC	Char (7)	From the NSP code.
Network ID	Char (4)	From the NSP code.
Reconciliation type	Char (2)	GN—point of connection to the grid. EN—Embedded network.
Reconciliation participant	Char (4)	Valid reconciliation code for participant.
Metering type	Char (3)	NHH or HHR
Flow direction	Char (1)	X—Load (exit). I—Injection.
Total submissions of current revision	Number (14,2)	Sum of submissions
Total submissions of previous revision	Number (14,2)	Sum of submissions
Total submissions of initial revision	Number (14,2)	Sum of submissions
Percentage change of current from initial	Number (6,2)	Sum of submissions of (current – initial) / current revisions

8.71. GR-340 Report UFE by revision

Sub-process:	**GR-340 Report UFE by revision**
Process:	Generate reports and files
Destination:	Authority
Rule references:	3.11
Dependencies:	RS-050, RS-070, RS-090, RS-110, AV-150

Description:
The Reconciliation Manager must forward to the Authority a report on by revision cycle for the consumption period being published.

Business requirements:
1. The Reconciliation Manager must deliver this report to the Authority by 1600 hours on the 7thbusiness day of each calendar month, and in respect of revisions, by 1200 hours on the last business day of each month.

Data inputs:
Quantity of UFE per participant, NSP, trading period output from RS-110. UFE per balancing area and trading period from RS-090; Total Balancing Area Load from RS-070; NSP mappings from AV-150; Consumption period being processed.

Processing:
The system: 1. For each revision cycle and balancing area (for local and embedded networks only), aggregates the UFE for the current, previous and initial revisions of the consumption period. 2. Identifies if a balancing area has been reconciled by the differencing method. 3. Calculates the UFE fraction for the current and initial revisions (Total UFE / Total Balancing Area Load)

Data outputs:		
Report row layout		
Attributes	**Format**	**Validations/calculations**
Revision Cycle	Number (2)	e.g. 0, 1, 3, 7, 14, etc.
Consumption Period	YYYYMM	e.g. 201707
Balancing Area	Char (12)	Balancing area code
Reconciliation type	Char (2)	GN—Local network. EN—Embedded network.
Total balancing area load of current revision	Number (14,2)	Sum of balancing area load
Total UFE of current revision	Number (14,2)	Sum of UFE
Total UFE of previous revision	Number (14,2)	Sum of UFE
Total UFE of initial revision	Number (14,2)	Sum of UFE
Current UFE fraction	Number (5,4)	Current UFE / Total Balancing area load
Initial UFE fraction	Number (5,4)	Initial UFE / Total Balancing area load

8.72. GR-350 Report – grid owner embedded generation

Sub-process:	GR-350 Report – grid owner embedded generation data
Process:	Generate reports and files
Destination	Grid Owner
Code references:	Clause 28(b) of schedule 15.4 of the Code
Dependencies:	Reconciliation process up to and including RS-080

Description:
This report provides the Grid Owner with loss adjusted injection volumes per trading period for distribution network where trader submissions have reconciliation type GN, EN or SB.

Business requirements:
The Reconciliation Manager must deliver loss adjusted embedded generation volumes per trading period to the Grid Owner by 1600 hrs on the 7th business day of each month and for revisions by 1200 hrs on the last day of each month.

Data inputs:
HHR generation data from the output of RS-060 where reconciliation type is ‘SB’. HHR generation data from the output of RS-080 where reconciliation type is ‘GN’ or ‘EN’.

Processing:

The System:

1. Selects injection data from RS-080 where flow direction is “I” and reconciliation type is GN or EN.
2. Selects injection data from RS-060 where flow direction is “I” and reconciliation type is SB.
3. Identifies the appropriate grid level NSP for each dataset.
4. Replaces the grid level NSP reconciliation type with GN.
5. Replaces the participant code with TPNZ.
6. Replaces the profile code with HHR.
7. Identifies the loss code for each dataset. For residual load data (identified by having reconciliation type SB, profile code DFP, and loss code DEF), the original loss code is replaced with DRL. This is done to differentiate from other loss code DEF data since the profile code will not appear in the report.
8. Replaces the dedicated NSP with Y.
9. Aggregates the data for each grid NSP by
    a. Grid Point of Connection.
    b. Grid Network Participant.
    c. Grid Reconciliation Type.
    d. Loss Code - separately identifying Residual Load data from other Default loss codes

Data outputs:

For each consumption period. File in CSV (comma separated variable) format.

Attributes	Format	Validation rules
Grid level POC (Point of Connection)	Char(7)	First 7 characters of NSP identifier Grid level parent NSP of the submitted volume.
Grid level Network	Char(4)	Final 4 characters of NSP identifier Grid level parent NSP of the submitted volume.
Grid level Reconciliation type	Char(2)	GN
Grid Owner participant code	Char(4)	TPNZ

Profile	Char(3)	HHR
Loss Code	Char(7)	Loss Code Special case: DRL = Residual Load data This is recon type SB, loss code default
Flow direction	Char(1)	I – Injection
Dedicated to Grid NSP	Char(1)	Y - Yes
Trading date	DD/MM/YYYY	
Trading period values kWh(1…..46,48)	Number(14,2)	48 (46/50 on daylight savings start/end days) comma separated volumes.
Checksum	Number(14,2)	Sum of all Trading period values.

8.73. NT-010 Notify participant trading changes

Sub-process:	NT-010 Notify participant trading changes
Process:	Deliver notifications
Destination:	System Operator, Clearing Manager, Market Administrator, Traders
Code references:	15.3
Dependencies:	AV-165

Description:
The Reconciliation Manager provides access to trading notifications for the Clearing Manager, System Operator, Market Administrator and traders.

Business requirements:
1. The Reconciliation Manager must make trading notifications available to the Clearing Manager and System Operator within one business day of receiving the notification. 2. The Reconciliation Manager must make trading notifications available to traders and Market Administrator. 3. The Reconciliation Manager must only make available to a trader those trading notifications that relate to that trader.

Data inputs:
Trading notifications (AV-165)

Processing:
The system: 1. Makes trading notifications available for viewing and for download by the Clearing Manager, System Operator, Market Administrator and traders. Traders can only view and download their own trading notifications.

Data outputs:		
Trading notifications		
Attributes	**Format**	**Comments**
Contract	Char (20)	Valid contract code
Contract type	Char (10)	Either Purchase or Generation. Derived from Contract information reference data.

Participant	Char (4)	Valid Participant identifier
POC	Char (7)	Valid point of connection (e.g. CPK0331)
Network identifier	Char(4)	Valid network identifier (e.g. CKHK)
Reconciliation Type	Char (2)	Valid reconciliation type (e.g. GN/EN/GG/GD)
Metering type	Char (3)	Must be either NHH or HHR
Start Date	DD/MM/YYYY	Valid date
Start TP	Number (2)	1-50
End Date	DD/MM/YYYY	Valid date
End TP	Number (2)	1-50

Exceptions:

8.74. **NT-030 Notify outage constraints**

Sub-process:	NT-030 Notify outage constraints
Process:	Deliver notifications
Destination:	Reconciliation participants
Code references:	Clause 15.17(c) of the Code
Dependencies:	AV-030

Description:

The Reconciliation Manager passes on to reconciliation participants details of the outage constraints that affected each individual participant.

Affected participants are determined as follows:

- a reconciliation participant that trades at an NSP which had an outage; and
- a network owner that owns an NSP which had an outage; and
- a reconciliation participant with an NSP in the same Balancing Area as the outage; and
- a network owner with an NSP in the same Balancing Area as the outage.

Business requirements:

1. The Reconciliation Manager must deliver the outage constraint information to any reconciliation participant that was affected by the outage constraint, no later than 2 business days after the publication of final prices.

Data inputs:

A list of disconnections containing for each outage: the consumption period, NSP identifier, trading date and trading period of the prior consumption period.

Processing:

The system:

1. Determines which reconciliation participants should receive the outage constraint information for the consumption period.
2. Sends the appropriate outage constraint information to each of the affected participants.

Data Outputs:

For each outage constraint:

Attributes	Format	Description

NSP	Char (12)	POC and network ID concatenated.
Start Date	DD/MM/YYYY	From system operator's submission
Start Period	Number (2)	From system operator's submission
End Date	DD/MM/YYYY	From system operator's submission
End Period	Number (2)	From system operator's submission

Exceptions:
If the information was not delivered by the time specified, the Reconciliation Manager reports the situation to the Authority in the Code breaches report (see GR-180).

8.75. NT-050 Notify NSP information changes

Sub-process:	NT-050 Notify NSP information changes
Process:	Generate reports, files and notices
Destination:	Market Administrator, Authority, Clearing Manager, participants
Code references:	10.49(2), Schedule 11.1 25(1)(b), 15.14(3)
Dependencies:	AV-010, AV-150, AV-180

Description:

When there is any change to the NSP mapping information, the Reconciliation Manager notifies the Authority, Clearing Manager and affected participants. When there is any change to the NSP mapping information or to the NSP metering installation information the Reconciliation Manager notifies the Market Administrator.

Business requirements:

1. The Reconciliation Manager must give a copy of any grid change notices it receives to the Authority and Clearing Manager within one business day of receiving the notice.
2. The Reconciliation Manager must notify the market administrator and the affected participants no later than 1 business day after being advised by a participant that an NSP has been created or decommissioned.
3. The Reconciliation Manager must deliver NSP mapping and NSP metering installation information to the Market Administrator within 1 business day of receiving the changed information from a participant.

Data inputs:

NSP mapping table (AV-010, AV-150).

NSP Metering installation information (AV-180).

Processing:

The system:

1. If there has been a change to the NSP mapping information or to the NSP metering installation information, prepares a notification for the Market Administrator as follows:
    a. extracts the NSP mapping information and concatenates it with the NSP metering installation information, matching on NSP identifier;
    b. for duplicate NSPs in the NSP mapping table, the NSP metering installation information is only concatenated against the NSP mapping with the latest End Date;

c. formats and delivers the appropriate notification to the Market Administrator.

2. If there has been a change to the NSP mapping information, prepares a notification for the Authority, Clearing Manager and affected participants as follows:

   a. extracts the NSP mapping information;

   b. formats and delivers the appropriate notification to the Authority, Clearing Manager and participants.

Data outputs:

- Market Administrator notification layout:

Attributes	Format	Description
POC Code	Char (7)	POC Code of the NSP
Connecting Asset Identifier	Char (4)	Network Code of the NSP
Reconciliation Type	Char (2)	Reconciliation Type
X flow Y or N	Char (1)	Load flow (Y)es or (N)o
I flow Y or N	Char (1)	Injection flow (Y)es or (N)o.
POC name	Char (32)	POC Description from the POC reference data
Balancing Area Code	Char (12)	Balancing Area Code
Embedded Under POC Code	Char (7)	Embedded under POC Code (of Parent NSP)
Embedded Under Connecting Asset Identifier	Char (4)	Embedded under Network Code (of Parent NSP)
Start Date	DD/MM/YYYY	Start Date of the NSP mapping
Start Trading Period	Char (2)	Start Trading Period of the NSP mapping (1..50)
End Date	DD/MM/YYYY	End Date of the NSP mapping
End Trading Period	Char (2)	End Trading Period of the NSP Mapping (1..50)
SB ICP When EN Differenced Settlement	Char (15)	SB ICP identifier of the NSP Mapping
LE ICP When EN	Char (15)	LE ICP identifier of the NSP Mapping

Island Identifier	Char (2)	Island Code N or S of the NSP Mapping
Participant responsible for providing the metering installation	Char (4)	Responsible Party Code from the matching NSP metering installation information.
Metering Equipment Provider Identifier	Char(4)	Metering Equipment Provider Code from the matching NSP metering installation information.
Earliest Meter Installation Certification Expiry Date	DD/MM/YYYY	Certification Expiry Date from the matching NSP metering installation information. For multiple installations, the earliest certification expiry date is shown.
Metering Information Exemption Expiry Date	DD/MM/YYYY	Exemption Expiry Date from the matching NSP metering installation information.

- Clearing Manager, Authority and participant notification layout:

Attributes	**Format**	**Description**
POC Code	Char (7)	POC Code of the NSP
Network Code	Char (4)	Network Code of the NSP
Reconciliation Type	Char (2)	Reconciliation Type
Flow Direction	Char (1)	Must be I or X
Balancing Area Code	Char (12)	Balancing Area Code
Embedded Under POC Code	Char (7)	Embedded under POC Code (of Parent NSP)
Embedded Under Connecting Asset Identifier	Char (4)	Embedded under Network Code (of Parent NSP)
Start Date	DD/MM/YYYY	Start Date of the NSP mapping
Start Trading Period	Char (2)	Start Trading Period of the NSP mapping (1..50)
End Date	DD/MM/YYYY	End Date of the NSP mapping
End Trading Period	Char (2)	End Trading Period of the NSP Mapping (1..50)
Address	Char (32)	Free text.

8.76. **MR-010 Maintain reference data**

Sub-process:	MR-010 Maintain reference data
Process:	Maintain reference data
Code references:	
Dependencies:	

Description:

The Reconciliation Manager is required to ensure all information provided to the system is valid by the use of reference tables that contain all the valid codes and their applicable dates for the following:

- participant identifier (4 character), full company name, their roles, start and end dates, and NSP Metering Installation submission level. Valid roles are: trader, distributor – local network, distributor – embedded network, grid owner, embedded generator, grid-connected generator, direct purchaser, direct consumer, System Operator, Clearing Manager;
- profiles (3 characters) – general list of all profile codes that are approved for use in the system and includes: the profile type and the profile owner or approved 'profile shape submitter' who is the only reconciliation participant allowed to provide profile shape information with submissions;
- profiles available to individual reconciliation participants with their start and end dates – used to validate NHH submission and profile shape information;
- on/off times of NSP derived profiles; and
- participant trader information – the NSPs at which trading participants are to provide HH/NHH/volume submission information, contract code (5 chars) and profile shape information.
- Contract information – contract code, seller participant ID, buyer participant ID and default (Y/N).
- Daylight saving days (start and end) per year.
- Daylight saving adjustment technique
- Clause 15.36 of the Code requires the Authority to determine the format of submissions. This includes the determination of the daylight saving adjustment technique to be used by reconciliation participants. The implication for the Reconciliation Manager is that all trading period information transferred to and from reconciliation participants is always in time sequence and no special adjustments need occur on daylight saving change dates except for the allowance for 46 or 50 trading periods (as appropriate).

The daylight saving adjustment technique indicates the order of the trading period quantities in submission files that contain half-hourly information where the associated trading period can only be derived from its relative position in the record.

Submission information provided to, and reconciliation information provided by, the reconciliation manager must, if applicable, be adjusted for **NZDT** using the **TPR (trading period run on)** technique.

TPR – requires daylight saving adjustment periods allocated as consecutive trading periods within the relevant day, in the sequence that they occur. Going into daylight saving there are 46 trading periods; the last trading period is for the time 11:30pm to 12:00am. Going out of daylight saving there are 50 trading periods; the last trading period is for the time 11:30pm to 12:00am.

NZST – Must be used within the data transfer file when there is no adjustment made to the order of the information in the file.

- Valid units – currently only kWh is valid for submissions.
- Valid flow direction codes.
- Valid reconciliation types.
- Valid profile types.
- List of incumbent traders for each balancing area with associated start and end dates.
- Date of transition from old to new rules.
- Loss factors to be applied to submissions with default loss factor codes of 'DEF'.
- On/off times and the profile quantity for engineered and statistically sampled profiles that are required to be automatically generated by the system for every NSP

Business requirements:
1. The Reconciliation Manager must ensure that all reference information used in the reconciliation is up to date and valid.

Data inputs:
New reference data values.

Processing:
The system: 1. Validates the input and either insert a new value, or update or delete an existing one.

Data outputs:
Updated reference data values.

8.77. MR-020 Maintain loss codes and loss factors

Sub-process:	MR-020 Maintain loss codes/factors
Process:	Maintain reference data
Code references:	15.20(b)
Dependencies:	AV-040

Description:

The Reconciliation Manager is required to apply loss factors to dispatchable load information.

Where the loss category codes provided by dispatchable load purchasers in their submissions are not stored or maintained in the Registry, and therefore not included in the Registry interface to the Reconciliation Manager via AV-040, the Authority provides the associated loss factors and the Reconciliation Manager maintains them in the loss factor information tables.

Business requirements:

1. Where the Registry does not provide the Reconciliation Manager with loss factors associated with the loss category codes that the dispatchable load purchaser includes in their submissions, the Reconciliation Manager must store and apply the loss factors provided by the Authority.
2. Once loss category codes and factors are maintained by the Registry and delivered to the Reconciliation Manager via the interface, the Reconciliation Manager must not change or delete the loss factors.
3. The combination of network code, loss category code, start date and start period must be unique.
4. Each loss category code must have precisely one loss factor for every trading period in each calendar month covered by the start and end dates. N.B. There may be different loss factors for specific ranges of trading periods. This is to permit different factors to apply to day and night, for instance.

Data inputs:

- Existing Loss factor information
- New or updated non-Registry loss factor information

Attributes	Format	Comments
Network code	Char (4)	Valid network.
Loss category code	Alphanumeric (7)	Mandatory.

Loss factor consumption	Number (4,3)	Mandatory.
Loss factor generation	Number (4,3)	Mandatory.
Start date	DD/MM/YYYY	Mandatory. Must be the first day of the month.
End date	DD/MM/YYYY	If missing, denotes that loss factors are valid until further notice. If present, must be the last day of the month.
Start period	Number (2)	1 to 48. Defaults to 1. 46/50 for daylight saving start/end days.
End period	Number (2)	1 to 48. Defaults to 48. 46/50 for daylight saving start/end days.
Date and time of last change by the RM	DD/MM/YYYY HH:MM:SS	Date and time when DCLS loss factor information was last updated or inserted by the RM.

Processing:

The system:

1. Validates the new or updated non-Registry loss factor information.
2. Checks whether the new or updated loss factor information relates to loss factors maintained by the Registry. If they are not, the additions or updates are stored together with an indication that they are non-Registry loss codes and factors.
2. Checks that for each loss category code there is precisely one loss factor for every trading period in each calendar month covered by the start and end dates.

Data outputs:

Updated loss factor information

8.78. RG-010 Deliver updated NSP mapping table to Registry

Sub-process:	RG-010 Deliver updated NSP mapping table to Registry
Process:	Interface with Registry
Code references:	Clauses 24 to 30 of Schedule 11.1 of the Code.
Dependencies:	AV-050, RS-030

Description:

The Reconciliation Manager is required to ensure that the NSP and balancing area information is up to date before commencing the reconciliation process. This information is held in the NSP mapping table.

Distributors and traders are required to provide information to the Reconciliation Manager about any changes to NSPs and balancing areas – new, changes, decommissioning of NSPs, change of ownership, SB ICP#.

If the Reconciliation Manager updates the NSP mapping table with NSP and balancing area changes, these changes must be sent to the Registry so that the copy held there is also updated.

Business requirements:

1. The Reconciliation Manager must deliver to the Registry an updated NSP mapping table within 1 business day of being notified of the change.

Data inputs:

NSP and balancing area information changes (new, changes).

Current NSP mapping table (AV-050).

Processing:

The system:

3. Formats and delivers the changes NSP mapping information to the Registry using the agreed transfer mechanism.
4. Records audit information of the changes and the transfer.

Data outputs:

Updated NSP mapping table – AV-050 Data inputs section for format.

8.79. PT-030 Manage volume disputes

Sub-process:	PT-030 Manage volume disputes
Process:	Perform extra tasks for participants
Destination:	Authority, participants
Code references:	15.29
Dependencies:	AV-130, RS-130

Description:

A participant informs the Reconciliation Manager of a dispute concerning volume information via a web-based input form. The Reconciliation Manager manages the dispute initiated by the participant and endeavours to resolve it.

Business requirements:

1. The Reconciliation Manager must notify all participants affected by the dispute and the Authority of the substance of the dispute no later than 1 day after receiving notification of the dispute from the participant.
2. The Reconciliation Manager must not give notice of a dispute if an invoice based on the volume information in question has already been issued.
3. The Reconciliation manager must use reasonable endeavours to resolve the dispute.
4. The Authority may direct that no further action is taken on a dispute.

Data inputs:

- Dispute details
- RM comments
- NSP volume information received from AV-130 for the relevant consumption periods.
- Reconciliation information output from RS-130 for the relevant consumption periods.
- Authority direction

Processing:

The system:

1. Presents the logged-on user with a web-based form in which to enter details of the volume dispute. If valid, a unique dispute identifier is assigned and a receipt is presented to the user showing the input details and the audit log. The information is stored.
2. Permits the logged-on user to view a log of all the current disputes for the participant identifier, and their processing status.

3. Permits the logged-on user to view the details of each of their disputes, including any RM comments.
4. Permits the RM to view all disputes and their latest details.
5. Permits the RM add their comments to a dispute that are viewable by the participant and to add private comments.
6. Permits the RM to accept, update or reject a dispute which changes it's status. On acceptance, the system generates and sends a notification of the dispute to the Authority and all participants who may be affected by the dispute.

The Reconciliation Manager:

1. Attempts to resolve the dispute.
2. Follows the Authority's direction.

Data outputs:

- Dispute details, RM comments, status and audit log
- Notifications of a dispute
- Notification of the outcome of a dispute.

9. Manual and external processes

The sub-processes described in this section are those which are either performed manually or externally to the RM software and are therefore outside software audit requirements.

9.1. AV-020 Receive reporting thresholds and code changes

Sub-process:	AV-020 Receive reporting thresholds and code changes
Process:	Accept and validate information
Source:	Authority
Code references:	15.35, 15.36, 7, 18(1) - 18(3), Schedule 15.47(1)(b), 15.4 28, Schedule 15.5
Dependencies:	

Description:

The Authority or market administrator approves participants, profiles, agrees input and output file formats, publishes schedules for the delivery of information between participants and systems, undertakes audits, sets minimum error thresholds, sets the, universal scaling factor, and approves codes. The Reconciliation Manager needs the latest approved codes and formats in order to run the reconciliation process.

Business requirements:

1. The Reconciliation Manager must agree with the Authority the mechanism for the transmission of this information and the timeframes to allow for the relevant system changes to be made.
2. The Reconciliation Manager must always use the latest approved codes, formats and thresholds available from the Authority in accordance with any timeframes defined by the Authority or set out in the Code.

Data inputs:

One or more of the following codes and/or formats:

- a list of certified reconciliation participants and the period for which they are certified;
- persons used by certified reconciliation participants to perform information gathering processing and management tasks;
- valid profile codes, the participants authorised to use the profile code with effective start and end dates;

- the scorecard threshold which is a variable in the calculation of scorecard rating of each purchaser (RS-100) (clauses 17 and 18 of Schedule 15.4 of the Code);
- consumption threshold used in the report of switched HHR ICPs outside consumption threshold (GR-100) (clause 25(f) of Schedule 15.4 of the Code);
- submission accuracy threshold used in the analysis of submission accuracy (GR-160);
- default codes for profiles, loss categories and NSPs; and
- Universal scaling factor, and universal scaling factor flag.

Processing:
The Reconciliation Manager: 1. Updates its own database according to the information received from the Authority.

Data outputs:
Appropriately updated system data.

9.2. AV-035 Receive DCLS changes

Sub-process:	AV-035 Receive DCLS changes
Process:	Accept and validate information
Source:	System operator
Code references:	Clauses 2, 5 and 6 of Schedule 13.8 of the Code
Dependencies:	

Description:
The system operator must notify the reconciliation manager of all changes to new or existing dispatch capable load stations.

Business requirements:
1. The reconciliation manager must agree with the system operator the mechanism for the transmission of this information and the minimum timeframes to allow for the relevant system changes to be made. 2. The system operator must give any such notice at least 10 business days before making the intended change.

Data inputs:
Changes to points of connection, existing or new: DCLS (POC + DCLS ID), DCLS Name/Description, Participant, Start date, Start trading period, End Date and End trading period

Processing:
1. Reconciliation manager updates the DCLS trading notification table to reflect the changes notified by the system operator.

Data outputs:
Updated DCLS trading notification table.

Exceptions:
If the information has not been received by the time specified, the reconciliation manager reports the situation to the Authority in the Code breaches report (see GR-180).

9.3. AV-150 Receive trader NSP mapping changes

Sub-process:	AV-150 Receive trader NSP mapping changes
Process:	Accept and validate information
Source:	Traders
Code references:	Clause 3 and 4 Schedule 15.4
Dependencies:	AV-010

Description:

The Reconciliation Manager is notified by a trader when an embedded network is to be reconciled using differencing. The notice must include the ICP number that has a reconciliation type of SB in the Registry which is created by the trader for this purpose. The SB ICP must be recorded against the embedded network in the NSP mapping table.

The Reconciliation Manager is notified by the Authority when a local network is to be reconciled using differencing. The notice should include the ICP number that has a reconciliation type of SB in the Registry which is created by the network owner for this purpose. The SB ICP should be recorded against the local network in the NSP mapping table.

The Reconciliation Manager may use this information to change the NSP information in the NSP mapping table for use in the reconciliation process.

Business requirements:

1. The Reconciliation Manager should report a breach to the Authority if the notice from the trader is received within 5 business days of the change taking effect.

Data inputs:

NSP mapping table changes relating to embedded networks reconciled using the differencing method.

NSP mapping table.

Processing:

The Reconciliation Manager:

1. Updates the NSP mapping table to reflect the changes notified by the trader.

Data outputs:

Updated NSP mapping table.

Exceptions:
If the notice from the trader is received within five business days of the change taking effect the Reconciliation Manager is required to report a breach to the Authority.

9.4. GR-180 Report monthly performance

Sub-process:	GR-180 Report monthly performance
Process:	Generate reports and files
Destination:	Authority
Code references:	3.13, 3.14, 15.30, 15.31
Dependencies:	

Description:
The Reconciliation Manager provides a report to the Authority detailing: • the number and details of any breaches of the Code; • monthly performance figures; • any other matters requested by the Authority.

Business requirements:
1. The Reconciliation Manager must provide a report to the Authority detailing the number and details of any breach of the Code, in writing, by 1300 hours on the 2nd business day after the Reconciliation Manager has provided reconciliation information for a consumption period. 2. The type of breaches to be reported by the Reconciliation Manager in this report must be: • reports, files and notices not provided to the Reconciliation Manager by the due date and time specified in the Code; and • reports, files and notices not delivered by the Reconciliation Manager to the relevant participants by the due date and time as specified in the Code. 3. The report must include any information on any situations where the Reconciliation Manager breached the Code, or, in the opinion of the Reconciliation Manager, any reconciliation participant breached the Code. 4. The Reconciliation Manager must provide information concerning a breach to the relevant participant within 10 business days, if the participant requests it. 5. The Reconciliation Manager must provide a self-assessment against the performance standards contained in the service provider agreement.

Data inputs:
Audit logs of files submitted to and from the Reconciliation Manager. Consumption period being processed. Monthly system performance figures (actuals). Performance standards.

Processing:
The Reconciliation Manager: 1. Provides a report to the Authority derived from the audit logs of files submitted during the given consumption period and the system performance data. 2. If requested, provides breach information to any participant that caused a breach. 3. Each month compares the actual system performance figures against the performance standards, identifies where the performance standards were not met and publishes the results.

Data outputs:
Monthly report detailing: a) The breaches for the consumption period being processed, giving for each breach: • the time or times and, if appropriate, the consumption period or periods, during which any alleged breach took place, • the nature of the alleged breach including, in the case of late submission information or information in a form which compromises the reconciliation information, the reconciliation participant allegedly responsible for the information that has been provided, and • the reason for the alleged breach occurring including, in the case of late submission information or information in a form which compromises the reconciliation information, the reason for the delay or the inadequate form, if the Reconciliation Manager is aware of the reason; b) The system performance comparison; and c) Any other information requested by the Authority.

9.5. PT-010 Provide NSP quantities

Sub-process:	PT-010 Provide NSP quantities
Process:	Perform extra task for participants
Destination:	Participants
Code references:	15.22
Dependencies:	AV-080, AV-090, RS-130

Description:

The Reconciliation Manager provides data requested by a participant relating to the quantity of electricity conveyed at an NSP.

Business requirements:

1. The Reconciliation Manager must provide the participant with all the data it has concerning the quantity of electricity conveyed at the requested NSP for each specified consumption period by a time agreed with the participant.
2. The Reconciliation Manager must only supply data to a reconciliation participant who has purchased or sold electricity at the NSP during the specified consumption period.

Data inputs:

Request for data concerning electricity conveyed at an NSP during one or more consumption periods.
HHR submission files for the relevant consumption periods and all its revisions from AV-080.
NHH submission files for the relevant consumption periods and all its revisions from AV-090.
Reconciliation information output from RS-130for the relevant consumption periods.

Processing:

The Reconciliation Manager:

1. Extracts the pertinent data from the database and submits the CSV outputs to the system.

The System:

1. Validates the format of the file(s), compresses and stores in the database.
2. Sends the receiving participant a notification and publishes the file to the participant.

Data outputs:

Pertinent data relating to the requesting participant for the consumption period(s) requested.

9.6. PT-020 Correct information

Sub-process:	PT-020 Correct information
Process:	Perform extra tasks for participants
Destination:	Clearing Manager, Authority, participants
Code references:	15.26
Dependencies:	AV-010 to AV-150

Description:

In the instance where information is believed to be incorrect, the Reconciliation Manager attempts to establish the correct information and provides it to the Clearing Manager and participants.

Business requirements:

1. If the Reconciliation Manager receives incorrect information or estimates information incorrectly or fails to receive information, it must subsequently establish the correct reconciliation information and provide it to the Clearing Manager and any other affected participants.
2. The Reconciliation Manager must inform the Authority if it considers it has received incorrect information from a service provider or participant.
3. The Reconciliation Manager must not correct information more than 24 months after the date of issue of an invoice to which the incorrect information relates.

Data inputs:

Incorrect information. Any information in AV-010 to AV-150.

Processing:

The Reconciliation Manager:

1. Corrects the information in its database and informs the relevant parties.

Data outputs:

Corrected information.