

# WEM Standalone Calculations

Australian Energy Market Operator

Applicable Trading Days: 1 October 2021

Version 1.1

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## Version Control

A major version change occurs when the WEM Rules or Market Procedures require changes to the equations from a particular Trading Day onward.

A minor version change may occur for editorial changes, manifest errors or implementation changes that will apply to the same Trading Day period as dictated by the major version.

Version	Changes	Author(s)	Approver
1.0	Original formulation consistent with WEM Rules effective 1 October 2021.	Stuart MacDougall	Mark Katsikandarakis
1.1	Correction of Priority Payments formulae for Short Payments related to Non-STEM invoices.	Stuart MacDougall	Nicholas Nielsen

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# 1 Introduction

The purpose of this document is to:

- outline standalone calculations, separate to the main WEM Metering, Settlement and Prudential calculations, as equations;
- provide additional context or structure equations in such a way that assists in understanding.

This document defines many variables that are used in equations. Each variable will have the following attributes stated to assist in understanding:

Attribute	Explanation	Example
Variable	The name of the variable	<i>STEMP_G_I</i>
Units	\$, {}, MW, MWh, \$/MW, \$/MWh, Flag, °C, MW/min, min	\$/MWh
Scope (SC)	Tranche (T), Channel (CH), NMI (N), Contract(C), Capacity Credit Allocation (A), Participant-Facility (PF), Facility (F), Participant (P), Global (G)	G
Granularity (GR)	Trading Interval (I), Trading Day (D), Trading Week (W*), Trading Month (M), Capacity Year (CY), Financial Year (FY)	I
Rule	WEM Rule reference	6.9.7
Description	A description of the variable	STEM Clearing Price for Trading Interval i
Ref	Either the equation number where it is defined in this document, or 'I' to denote an input	I

\* Trading Week granularity will include a numeric suffix that indicates on which day of the week the Trading Week commences on i.e. 0 = Sunday, 1 = Monday, ... 4 = Thursday etc. This suffix will be included where the granularity is used but not in the variable name e.g. *ESTIMATIONFlag\_G\_W(w)* and not *ESTIMATIONFlag\_G\_W0(w)*.

Granularity has a strict hierarchy: a Capacity Year is comprised of Trading Months, which are comprised of Trading Days which are comprised of Trading Intervals. These hierarchies are represented below:

- $I \in D \in M \in CY$ ; or
- $I \in D \in M \in FY$ .

When defining a variable, it will always be defined for its granularity. For example, The variable  $CS\_P\_M(p, m)$  is defined for a particular Trading Month m. It will only be defined by variables with a granularity of Trading Month or coarser. However, when the variable is used to define other equations it may be expressed using a granularity argument more fine than its defined granularity, for example  $CS\_P\_M(p, i)$ . When the variable is expressed like this, it is implicit that it refers to the Trading Month m, in which Trading Interval i falls.

A similar hierarchy (and convention) is adopted for scopes.

## 2 Defined Terms, Sets and Associations

Defined terms are used throughout the rules. These defined terms often convey specific information, for example the term Scheduled Generator requires the facility to be registered with AEMO as outlined in the definition. Similarly, some specific calculations only apply, or are interpreted based on these defined terms. In the implementation, these defined terms are often represented as a set of Facilities (or Participants) that meet the definition of the defined term. Furthermore, there are often associations between defined terms within the rules, for example Facilities are associated to participants through registration.

This document defines all sets with the following conventions:

- The definition of each set variable is always Global and for a Trading Day and therefore the variable name omits information about scope and granularity. For example the set of Scheduled Generators in Trading Day  $d$  is represented as  $SG(d)$ , rather than being named  $SG\_G\_D(d)$ .
- Subsets are defined by adding a scope argument. For example  $SG(p, d)$  represents the subset of  $SG(d)$  associated with participant  $p$ .

### 2.1 Participant Sets

#### 2.1.1 Axiomatic Participant Sets in AEMO systems

Calculations defined in the rules depend on different sets of participants. The participant sets outlined below are considered to be axiomatic, or the base sets, upon which all other sets will be created. These base sets are defined in terms of how AEMO's systems have been created. Sets which are calculated later are often sets of participants which are defined in the rules, and in these instances the rule reference is provided.

Variable	Units	SC	GR	Rule	Description	Ref
WEMS_MG(d)	{}	G	D		Set of participants with MG participant class in WEMS in Trading Day $d$	I
WEMS_MC(d)	{}	G	D		Set of participants with MC participant class in WEMS in Trading Day $d$	I
WEMS_ASP(d)	{}	G	D		Set of participants with ASP participant class in WEMS in Trading Day $d$	I
WEMS_NO(d)	{}	G	D		Set of participants with NO participant class in WEMS in Trading Day $d$	I
WEMS_SO(d)	{}	G	D		Set of participants with SO participant class (excluding System Management) in WEMS in Trading Day $d$	I
WEMS_PREG(d)	{}	G	D		Set of participants registered in WEMS in Trading Day $d$	I

Variable	Units	SC	GR	Rule	Description	Ref
CP12M(d)	{}	G	D	6.6.3, 7A.2.19, 7B.2.17	Set of Trading Days within the previous full 12 Trading Months prior to the Trading Month in which Trading Day $d$ falls	I
OFF_P(d)	{}	G	D		Set that should contain only the offending Participant that paid the Civil Penalty to AEMO on Trading Day $d$	I

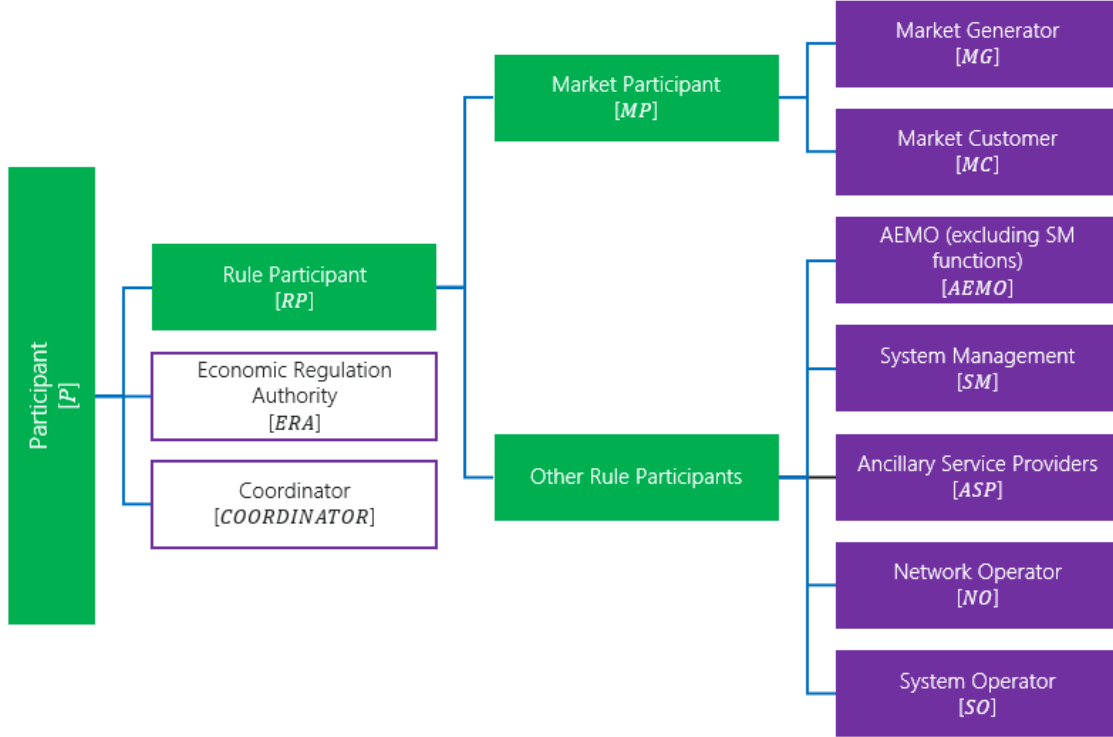
#### 2.1.2 Sets of Rule Participant classes

The following are classes of Rule Participants [MR 2.28.1]:

- Network Operator (NO)
- Market Generator (MG)
- Market Customer (MC)
- Ancillary Service Provider (ASP)
- System Management (SM)
- System Operator (SO)

- AEMO (AEMO)

The diagram below shows the relationship between Rule Participant classes (purple) and other sets of participants (green).



These sets are defined as follows.

$$P_M(m) = \bigcup_{d \in D(m)} P(d) \quad (1)$$

$$P(d) = COORDINATOR(d) \cup ERA(d) \cup RP(d) \quad (2)$$

$$COORDINATOR(d) = \{COE\} \quad (3)$$

$$ERA(d) = \{ERA\} \quad (4)$$

$$RP(d) = MG(d) \cup MC(d) \cup ASP(d) \cup NO(d) \cup AEMO(d) \cup SM(d) \cup SO(d) \quad (5)$$

$$MP(d) = MG(d) \cup MC(d) \quad (6)$$

$$MG(d) = WEMS\_PREG(d) \cap WEMS\_MG(d) \quad (7)$$

$$MC(d) = WEMS\_PREG(d) \cap WEMS\_MC(d) \quad (8)$$

$$AEMO(d) = \{IMOWA\} \quad (9)$$

$$SM(d) = \{SM\} \quad (10)$$

$$ASP(d) = WEMS\_PREG(d) \cap WEMS\_ASP(d) \quad (11)$$

$$NO(d) = WEMS\_PREG(d) \cap WEMS\_NO(d) \quad (12)$$

$$SO(d) = WEMS\_PREG(d) \cap WEMS\_SO(d) \quad (13)$$

Variable	Units	SC	GR	Rule	Description	Ref
P_M(m)	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month m	(1)
P(d)	{}	G	D		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Day d	(2)
COORDINATOR(d)	{}	G	D	11	Set containing the Coordinator	(3)
ERA(d)	{}	G	D	11	Set containing the ERA	(4)
RP(d)	{}	G	D	11	Set of Rule Participants in Trading Day d	(5)
MP(d)	{}	G	D	11	Set of Market Participants in Trading Day d	(6)
MG(d)	{}	G	D	11	Set of Market Generators in Trading Day d	(7)
MC(d)	{}	G	D	11	Set of Market Customers in Trading Day d	(8)
AEMO(d)	{}	G	D	11	Set containing the AEMO	(9)
SM(d)	{}	G	D	11	Set containing System Management	(10)
ASP(d)	{}	G	D	11	Set of Ancillary Service Providers in Trading Day d	(11)
NO(d)	{}	G	D	11	Set containing Network Operators in Trading Day d	(12)
SO(d)	{}	G	D	11	Set System Operators in Trading Day d	(13)
WEMS_MG(d)	{}	G	D		Set of participants with MG participant class in WEMS in Trading Day d	I
WEMS_MC(d)	{}	G	D		Set of participants with MC participant class in WEMS in Trading Day d	I
WEMS_ASP(d)	{}	G	D		Set of participants with ASP participant class in WEMS in Trading Day d	I
WEMS_NO(d)	{}	G	D		Set of participants with NO participant class in WEMS in Trading Day d	I
WEMS_SO(d)	{}	G	D		Set of participants with SO participant class (excluding System Management) in WEMS in Trading Day d	I
WEMS_PREG(d)	{}	G	D		Set of participants registered in WEMS in Trading Day d	I
D(m)	{}	G	M		Set of Trading Days in Trading Month m	I

### 2.1.3 Other Participant Sets

The following sets of Participants are required for the calculations.

$$P_W(w) = \bigcup_{d \in D_W(w)} P(d) \quad (14)$$

$$MC_{12}(d) = \bigcup_{j \in CP_{12M}(d)} MC(j) \quad (15)$$

$$MP_{12}(d) = \bigcup_{j \in CP_{12M}(d)} MP(j) \quad (16)$$

Variable	Units	SC	GR	Rule	Description	Ref
P_W(w)	{}	G	W4		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Week W4	(14)

Variable	Units	SC	GR	Rule	Description	Ref
P(d)	{}	G	D		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Day d	(2)
D.W(w)	{}	G	W4		Set of Trading Days in Trading Week W4	I
MC12(d)	{}	G	D	6.6.3	Set of Market Customers in the previous full 12 Trading Months prior to the Trading Month in which Trading Day d falls	(15)
MP12(d)	{}	G	D	7A.2.19, 7B.2.17	Set of Market Participants in the previous full 12 months prior to the Trading Month in which Trading Day d falls	(16)
MC(d)	{}	G	D	11	Set of Market Customers in Trading Day d	(8)
MP(d)	{}	G	D	11	Set of Market Participants in Trading Day d	(6)
CP12M(d)	{}	G	D	6.6.3, 7A.2.19, 7B.2.17	Set of Trading Days within the previous full 12 Trading Months prior to the Trading Month in which Trading Day d falls	I

## 2.2 Facility Sets

There are no facility sets required for these calculations.

## 2.3 Associations

There are no associations required for these calculations.



### 3 Short Payments

A Payment Default occurs when a Market Participant fails to make a payment before it is due. In this situation AEMO may draw upon Credit Support to meet the payment [MR 9.24.1]. In the event that there is insufficient Credit Support to meet the payment, AEMO’s liability is limited to the total amount of funds received [MR 9.24.3], and therefore some participants must be short-paid. The calculations in this section, determine the amount each participant is short-paid, for Payment Defaults on a STEM invoice and a Non-STEM invoice.

#### 3.1 Non-STEM

##### 3.1.1 Invocation

The following table outlines the invocation for the high-level calculations.

Variable	Scope Set
$Short\_P\_M(p, m)$ for $adj\_G\_M(m)$	$\forall p \in P\_M(m)$

Variable	Units	SC	GR	Rule	Description	Ref
Short_P_M(p, m)	\$	P	M		The amount participant p is short-paid related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(17)
P_M(m)	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month m	(1)
adj_G_M(m)		G	M		Adjustment number of the Non-STEM invoice subject to a Payment Default	I

$$Short\_P\_M(p, m) = ShortP\_P\_M(p, m) + ShortNP\_P\_M(p, m) \tag{17}$$

$$ShortP\_P\_M(p, m) = IPP\_P\_M(p, m) - APP\_P\_M(p, m) \tag{18}$$

$$ShortNP\_P\_M(p, m) = NAP\_P\_M(p, m) - AAP\_P\_M(p, m) \tag{19}$$

Variable	Units	SC	GR	Rule	Description	Ref
Short_P_M(p, m)	\$	P	M		The amount participant p is short-paid related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(17)
ShortP_P_M(p, m)	\$	P	M		The amount participant p is short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(18)
ShortNP_P_M(p, m)	\$	P	M		The amount participant p is short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(19)
APP_P_M(p, m)	\$	P	M	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(20)
AAP_P_M(p, m)	\$	P	M	9.24.3A(b)	Actual non-priority payments made to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(29)

Variable	Units	SC	GR	Rule	Description	Ref
IPP_P_M(p, m)	\$	P	M	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(23)
NAP_P_M(p, m)	\$	P	M	9.24.3A(b)	Net Amount payable (after priority payments) to participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(31)

### 3.1.2 Priority Payments

$$APP\_P\_M(p, m) = APproportion\_G\_M(m) \times IPP\_P\_M(p, m) \quad (20)$$

$$APproportion\_G\_M(m) = \begin{cases} \min\left(1, \frac{TA\_G\_M(m)}{IPP\_G\_M(m)}\right) & \text{for } IPP\_G\_M(m) \neq 0 \\ 1 & \text{for } IPP\_G\_M(m) = 0 \end{cases} \quad (21)$$

$$IPP\_G\_M(m) = \sum_{p \in P\_M(m)} IPP\_P\_M(p, m) \quad (22)$$

$$IPP\_P\_M(p, m) = IPPRRSA\_P\_M(p, m) + IPPContracts\_P\_M(p, m) + IPPARA\_P\_M(p, m) \quad (23)$$

$$IPPRRSA\_P\_M(p, m) = \max(0, MFSASinv\_P\_M(p, m)) + \max(0, SFSASinv\_P\_M(p, m)) + \max(0, RFSASinv\_P\_M(p, m)) + \max(0, CFSASinv\_P\_M(p, m)) \quad (24)$$

$$IPPContracts\_P\_M(p, m) = \min((1 + GST\_G\_M(m)) \times (IPPSUPCAP\_P\_M(p, m) + IPPASC\_P\_M(p, m)), \max(0, TOTNSTEMinv\_P\_M(p, m))) \quad (25)$$

$$IPPARA\_P\_M(p, m) = \max(0, (1 + GST\_G\_M(m)) \times ARASinv\_P\_M(p, m)) \quad (26)$$

$$IPPSUPCAP\_P\_M(p, m) = \max(0, SUPCAPSASinv\_P\_M(p, m)) \quad (27)$$

$$IPPASC\_P\_M(p, m) = \max(0, CASSRinv\_P\_M(p, m)) + \max(0, CASLinv\_P\_M(p, m)) + \max(0, CASRinv\_P\_M(p, m)) + \max(0, CASDinv\_P\_M(p, m)) \quad (28)$$

Variable	Units	SC	GR	Rule	Description	Ref
APP_P_M(p, m)	\$	P	M	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(20)
APproportion_G_M(m)		G	M	9.24.3A(a)	Proportion of intended priority payments that can actually be made related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(21)
IPP_G_M(m)	\$	G	M	9.24.3A(a)	Intended priority payment related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(22)

Variable	Units	SC	GR	Rule	Description	Ref
IPP_P_M(p, m)	\$	P	M	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(23)
IPRRSA_P_M(p, m)	\$	P	M	9.24.3A(a)i	Intended priority payment for Service Fee Settlement Amounts for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(24)
IPPContracts_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Intended priority payment for contracts for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(25)
IPPARA_P_M(p, m)	\$	P	M	9.24.3A(a)iv	Intended priority payment for funds required to be repaid by AEMO to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(26)
IPPSUPCAP_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Intended priority payment for Supplementary Capacity Contracts for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(27)
IPPASC_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Intended priority payment for Ancillary Service Contracts for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(28)
MFSASinv_P_M(p, m)	\$	P	M	9.15.1	Service Fee Settlement Amount (as invoiced) paid to AEMO related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
SFSASinv_P_M(p, m)	\$	P	M	9.15.1	Service Fee Settlement Amount (as invoiced) paid to AEMO (in its capacity as System Management) related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
RFSASinv_P_M(p, m)	\$	P	M	9.15.1	Service Fee Settlement Amount (as invoiced) paid to the ERA related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
CFSASinv_P_M(p, m)	\$	P	M	9.15.1	Service Fee Settlement Amount (as invoiced) paid to the Coordinator related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
ARAINV_P_M(p, m)	\$	P	M	9.24.2(b)	Repaid Amount (as invoiced) that AEMO disgorges in addition to returning Credit Support for Market Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I

Variable	Units	SC	GR	Rule	Description	Ref
SUPCAPSAinv_P_M(p, m)	\$	P	M	9.7.1	Payment (as invoiced) to be made under Supplementary Capacity Contracts to Market Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
CASSRinv_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Payment (as invoiced) for the provision of contracted Spinning Reserve Services for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
CASLinv_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Payment (as invoiced) for the provision of contracted Load Rejection Services for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
CASRinv_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Payment (as invoiced) for the provision of contracted System Restart Services for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
CASDinv_P_M(p, m)	\$	P	M	9.24.3A(a)ii	Payment (as invoiced) for the provision of contracted Dispatch Support Services for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
TA_G_M(m)	\$	G	M	9.24.3	Total amount (including applicable GST) received by AEMO in cleared funds related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
TOTNSTEMinv_P_M(p, m)	\$	P	M		Total settlement amount for Non-STEM (including GST and interest) for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
GST_G_M(m)		G	M		GST rate for Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
P_M(m)	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month m	(1)

### 3.1.3 Remaining Payments

$$AAP\_P\_M(p, m) = \begin{cases} \frac{NAP\_P\_M(p, m)}{NAP\_G\_M(m)} \times MAA\_G\_M(m) & \text{for } NAP\_G\_M(m) \neq 0 \\ 0 & \text{for } NAP\_G\_M(m) = 0 \end{cases} \quad (29)$$

$$NAP\_G\_M(m) = \sum_{p \in P\_M(m)} NAP\_P\_M(p, m) \quad (30)$$

$$NAP\_P\_M(p, m) = \max(0, TOTNSTEMinv\_P\_M(p, m)) - IPP\_P\_M(p, m) \quad (31)$$

$$MAA\_G\_M(m) = TA\_G\_M(m) - APP\_G\_M(m) \quad (32)$$

$$APP\_G\_M(m) = \sum_{p \in P\_M(m)} APP\_P\_M(p, m) \quad (33)$$

Variable	Units	SC	GR	Rule	Description	Ref
AAP_P_M(p, m)	\$	P	M	9.24.3A(b)	Actual non-priority payments made to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(29)
NAP_G_M(m)	\$	G	M	9.24.3A(b)	Net Amount payable (after priority payments) related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(30)
NAP_P_M(p, m)	\$	P	M	9.24.3A(b)	Net Amount payable (after priority payments) to participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(31)
TOTNSTEMinv_P_M(p, m)	\$	P	M		Total settlement amount for Non-STEM (including GST and interest) for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
IPP_P_M(p, m)	\$	P	M	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(23)
APP_P_M(p, m)	\$	P	M	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(20)
APP_G_M(m)	\$	G	M	9.24.3A(a)	Actual priority payments made related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(33)
MAA_G_M(m)	\$	G	M	9.24.3A(b)	Remainder of the Total Amount (after priority payments) related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(32)
TA_G_M(m)	\$	G	M	9.24.3	Total amount (including applicable GST) received by AEMO in cleared funds related to the Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
P_M(m)	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month m	(1)

## 3.2 STEM

### 3.2.1 Invocation

The following table outlines the invocation for the high-level calculations.

Variable	Scope Set
$Short\_P\_W(p, w)$ for $adj\_G\_W(w)$	$\forall p \in P\_W(w)$

Variable	Units	SC	GR	Rule	Description	Ref
Short_P_W(p, w)	\$	P	W4		The amount participant p is short-paid related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(34)
P_W(w)	{}	G	W4		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Week W4	(14)
adj_G_W(w)		G	W4		Adjustment number of the STEM invoice subject to a Payment Default	I

$$Short\_P\_W(p, w) = ShortP\_P\_W(p, w) + ShortNP\_P\_W(p, w) \quad (34)$$

$$ShortP\_P\_W(p, w) = IPP\_P\_W(p, w) - APP\_P\_W(p, w) \quad (35)$$

$$ShortNP\_P\_W(p, w) = NAP\_P\_W(p, w) - AAP\_P\_W(p, w) \quad (36)$$

Variable	Units	SC	GR	Rule	Description	Ref
Short_P_W(p, w)	\$	P	W4		The amount participant p is short-paid related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(34)
ShortP_P_W(p, w)	\$	P	W4		The amount participant p is short-paid related to the priority payments of Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(35)
ShortNP_P_W(p, w)	\$	P	W4		The amount participant p is short-paid related to the non-priority payments of Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(36)
APP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(37)
AAP_P_W(p, w)	\$	P	W4	9.24.3A(b)	Actual non-priority payments made to Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(39)
IPP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(38)
NAP_P_W(p, w)	\$	P	W4	9.24.3A(b)	Net Amount payable (after priority payments) to participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(41)

### 3.2.2 Priority Payments

There are no priority payments in STEM.

$$APP\_P\_W(p, w) = 0 \quad (37)$$

$$IPP\_P\_W(p, w) = 0 \quad (38)$$

Variable	Units	SC	GR	Rule	Description	Ref
APP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(37)
IPP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(38)

### 3.2.3 Remaining Payments

$$AAP\_P\_W(p, w) = \begin{cases} \frac{NAP\_P\_W(p, w)}{NAP\_G\_W(w)} \times MAA\_G\_W(w) & \text{for } NAP\_G\_W(w) \neq 0 \\ 0 & \text{for } NAP\_G\_W(w) = 0 \end{cases} \quad (39)$$

$$NAP\_G\_W(w) = \sum_{p \in P\_W(w)} NAP\_P\_W(p, w) \quad (40)$$

$$NAP\_P\_W(p, w) = \max(0, TOTSTEMinv\_P\_W(p, w)) - IPP\_P\_W(p, w) \quad (41)$$

$$MAA\_G\_W(w) = TA\_G\_W(w) - APP\_G\_W(w) \quad (42)$$

$$APP\_G\_W(w) = \sum_{p \in P\_W(w)} APP\_P\_W(p, w) \quad (43)$$

Variable	Units	SC	GR	Rule	Description	Ref
AAP_P_W(p, w)	\$	P	W4	9.24.3A(b)	Actual non-priority payments made to Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(39)
NAP_G_W(w)	\$	G	W4	9.24.3A(b)	Net Amount payable (after priority payments) related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(40)
NAP_P_W(p, w)	\$	P	W4	9.24.3A(b)	Net Amount payable (after priority payments) to participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(41)
TOTSTEMinv_P_W(p, w)	\$	P	W4		Total settlement amount for STEM (including GST and interest) for Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	I
IPP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Intended priority payment for Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(38)
APP_P_W(p, w)	\$	P	W4	9.24.3A(a)	Actual priority payments made to Rule Participant p related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(37)
APP_G_W(w)	\$	G	W4	9.24.3A(a)	Actual priority payments made related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(43)

Variable	Units	SC	GR	Rule	Description	Ref
MAA_G_W(w)	\$	G	W4	9.24.3A(b)	Remainder of the Total Amount (after priority payments) related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(42)
TA_G_W(w)	\$	G	W4	9.24.3	Total amount (including applicable GST) received by AEMO in cleared funds related to the Payment Default on the STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	I
P_W(w)	{}	G	W4		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Week w	(14)



## 4 Distribution of payments after a Payment Default

If, after a Payment Default, AEMO receives:

- a late payment prior to issuing Default Levies [MR 9.24.4]; or
- Default Levies on the date they fall due [MR 9.24.8]; or
- Default Levies soon after they fall due [MR 9.24.8A]

then it must distribute this payment to those Market Participants who were short-paid.

### 4.1 Non-STEM

#### 4.1.1 Invocation

The following table outlines the invocation for the high-level calculations.

Variable	Scope Set
$Payment\_P\_M(p, m)$ for $adj\_G\_M(m)$ and $prevLPid\_G\_M(m)$	$\forall p \in P\_M(m)$
$ShortPremain\_P\_M(p, m)$ for $adj\_G\_M(m)$ and $prevLPid\_G\_M(m)$	$\forall p \in P\_M(m)$
$ShortNPremain\_P\_M(p, m)$ for $adj\_G\_M(m)$ and $prevLPid\_G\_M(m)$	$\forall p \in P\_M(m)$

Variable	Units	SC	GR	Rule	Description	Ref
$Payment\_P\_M(p, m)$	\$	P	M		The amount to be paid to Market Participant $p$ for currently short-paid payments for Trading Month $m$ , adjustment $adj\_G\_M(m)$	(54)
$ShortPremain\_P\_M(p, m)$	\$	P	M		The amount participant $p$ will remain short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Month $m$ , adjustment $adj\_G\_M(m)$	(55)
$ShortNPremain\_P\_M(p, m)$	\$	P	M		The amount participant $p$ will remain short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Month $m$ , adjustment $adj\_G\_M(m)$	(56)
$P\_M(m)$	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month $m$	(1)
$adj\_G\_M(m)$		G	M		Adjustment number of the Non-STEM invoice subject to a Payment Default	I
$prevLPid\_G\_M(m)$		G	M		ID of the previous late payment received in relation to Trading Month $m$ , adjustment $adj\_G\_M(m)$ , or NULL if there is no previous late payment	I

#### 4.1.2 Calculations

##### 4.1.2.1 Step 1

Determine the principal and interest components of the late payment.

$$IR\_G\_M(m) = \sum_{d \in INTDAY S(m)} \frac{BBR\_G\_D(d)}{365} \quad (44)$$

$$P\_G\_M(m) = \frac{LP\_G\_M(m)}{1 + IR\_G\_M(m)} \quad (45)$$

$$INT\_G\_M(m) = LP\_G\_M(m) - P\_G\_M(m) \quad (46)$$

#### 4.1.2.2 Step 2

Determine the total priority payments and non-priority payments that will be paid with this late payment.

$$ShortPcurrent\_G\_M(m) = \sum_{p \in P\_M(m)} ShortPcurrent\_P\_M(p, m) \quad (47)$$

$$ShortNPcurrent\_G\_M(m) = \sum_{p \in P\_M(m)} ShortNPcurrent\_P\_M(p, m) \quad (48)$$

$$PaymentP\_G\_M(m) = \min(ShortPcurrent\_G\_M(m), P\_G\_M(m)) \quad (49)$$

$$PaymentNP\_G\_M(m) = \min(ShortNPcurrent\_G\_M(m), P\_G\_M(m) - PaymentP\_G\_M(m)) \quad (50)$$

#### 4.1.2.3 Step 3

Determine the amount that will be paid to each Market Participant.

$$PaymentP\_P\_M(p, m) = \frac{ShortPcurrent\_P\_M(p, m)}{ShortPcurrent\_G\_M(m)} \times PaymentP\_G\_M(m) \quad (51)$$

$$PaymentNP\_P\_M(p, m) = \frac{ShortNPcurrent\_P\_M(p, m)}{ShortNPcurrent\_G\_M(m)} \times PaymentNP\_G\_M(m) \quad (52)$$

$$PaymentINT\_P\_M(p, m) = \frac{PaymentP\_P\_M(p, m) + PaymentNP\_P\_M(p, m)}{P\_G\_M(m)} \times INT\_G\_M(m) \quad (53)$$

$$Payment\_P\_M(p, m) = PaymentP\_P\_M(p, m) + PaymentNP\_P\_M(p, m) + PaymentINT\_P\_M(p, m) \quad (54)$$

#### 4.1.2.4 Step 4

For each Market Participant, determine remaining priority and non-priority payments that are short-paid.

$$ShortPremain\_P\_M(p, m) = ShortPcurrent\_P\_M(p, m) - PaymentP\_P\_M(p, m) \quad (55)$$

$$ShortNPremain\_P\_M(p, m) = ShortNPcurrent\_P\_M(p, m) - PaymentNP\_P\_M(p, m) \quad (56)$$

Variable	Units	SC	GR	Rule	Description	Ref
IR_G_M(m)		G	M		The interest rate that applies to the late payment for Trading Month m, adjustment $adj\_G\_M(m)$	(44)
P_G_M(m)	\$	G	M		The principal component of the late payment for Trading Month m, adjustment $adj\_G\_M(m)$	(45)
INT_G_M(m)	\$	G	M		The interest component of the late payment for Trading Month m, adjustment $adj\_G\_M(m)$	(46)
LP_G_M(m)	\$	G	M		The total amount of money received in late payment for Trading Month m, adjustment $adj\_G\_M(m)$	I
BBR_G_D(d)		G	D		Annual Bank Bill Rate applicable to Trading Day d	I
ShortPcurrent_P_M(p, m)	\$	P	M		The amount participant p is currently short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I

Variable	Units	SC	GR	Rule	Description	Ref
ShortPcurrent_G_M(m)	\$	G	M		The total amount the market is currently short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(47)
ShortNPcurrent_P_M(p, m)	\$	P	M		The amount participant p is currently short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	I
ShortNPcurrent_G_M(m)	\$	G	M		The total amount the market is currently short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(48)
PaymentP_G_M(m)	\$	G	M		The total (principal) amount to be paid to Market Participants for currently short-paid priority payments for Trading Month m, adjustment $adj\_G\_M(m)$	(49)
PaymentNP_G_M(m)	\$	G	M		The total (principal) amount to be paid to Market Participants for currently short-paid non-priority payments for Trading Month m, adjustment $adj\_G\_M(m)$	(50)
PaymentP_P_M(p, m)	\$	P	M		The (principal) amount to be paid to Market Participant p for currently short-paid priority payments for Trading Month m, adjustment $adj\_G\_M(m)$	(51)
PaymentNP_P_M(p, m)	\$	P	M		The (principal) amount to be paid to Market Participant p for currently short-paid non-priority payments for Trading Month m, adjustment $adj\_G\_M(m)$	(52)
PaymentINT_P_M(p, m)	\$	P	M		The interest amount to be paid to Market Participant p for currently short-paid payments for Trading Month m, adjustment $adj\_G\_M(m)$	(53)
Payment_P_M(p, m)	\$	P	M		The amount to be paid to Market Participant p for currently short-paid payments for Trading Month m, adjustment $adj\_G\_M(m)$	(54)
ShortPremain_P_M(p, m)	\$	P	M		The amount participant p will remain short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(55)
ShortNPremain_P_M(p, m)	\$	P	M		The amount participant p will remain short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Month m, adjustment $adj\_G\_M(m)$	(56)
INTDAYS(m)	{}	G	M	9.1.3	Set of days from (and including) the date that payment was originally due up to (but excluding) the date that late payment for Trading Month m, adjustment $adj\_G\_M(m)$ was received by AEMO	I
P_M(m)	{}	G	M		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Month m	(1)

## 4.2 STEM

### 4.2.1 Invocation

The following table outlines the invocation for the high-level calculations.

Variable	Scope Set
$Payment\_P\_W(p, w)$ for $adj\_G\_W(w)$ and $prevLPid\_G\_W(w)$	$\forall p \in P\_W(w)$
$ShortPremain\_P\_W(p, w)$ for $adj\_G\_W(w)$ and $prevLPid\_G\_W(w)$	$\forall p \in P\_W(w)$
$ShortNPremain\_P\_W(p, w)$ for $adj\_G\_W(w)$ and $prevLPid\_G\_W(w)$	$\forall p \in P\_W(w)$

Variable	Units	SC	GR	Rule	Description	Ref
$Payment\_P\_W(p, w)$	\$	P	W4		The amount to be paid to Market Participant p for currently short-paid payments for Trading Week w, adjustment $adj\_G\_W(w)$	(67)
$ShortPremain\_P\_W(p, w)$	\$	P	W4		The amount participant p will remain short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(68)
$ShortNPremain\_P\_W(p, w)$	\$	P	W4		The amount participant p will remain short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(69)
$P\_W(w)$	{}	G	W4		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Week w	(14)
$adj\_G\_W(w)$		G	W4		Adjustment number of the Non-STEM invoice subject to a Payment Default	I
$prevLPid\_G\_W(w)$		G	W4		ID of the previous late payment received in relation to Trading Week w, adjustment $adj\_G\_W(w)$ , or NULL if there is no previous late payment	I

### 4.2.2 Calculations

#### 4.2.2.1 Step 1

Determine the principal and interest components of the late payment.

$$IR\_G\_W(w) = \sum_{d \in INTDAYS(w)} \frac{BBR\_G\_D(d)}{365} \quad (57)$$

$$P\_G\_W(w) = \frac{LP\_G\_W(w)}{1 + IR\_G\_W(w)} \quad (58)$$

$$INT\_G\_W(w) = LP\_G\_W(w) - P\_G\_W(w) \quad (59)$$

#### 4.2.2.2 Step 2

Determine the total priority payments and non-priority payments that will be paid with this late payment.

$$ShortPcurrent\_G\_W(w) = \sum_{p \in P\_W(w)} ShortPcurrent\_P\_W(p, w) \quad (60)$$

$$ShortNPrecurrent\_G\_W(w) = \sum_{p \in P\_W(w)} ShortNPrecurrent\_P\_W(p, w) \quad (61)$$

$$PaymentP\_G\_W(w) = \min(ShortPcurrent\_G\_W(w), P\_G\_W(w)) \quad (62)$$

$$PaymentNP\_G\_W(w) = \min(ShortNPrecurrent\_G\_W(w), P\_G\_W(w) - PaymentP\_G\_W(w)) \quad (63)$$

### 4.2.2.3 Step 3

Determine the amount that will be paid to each Market Participant.

$$Payment_{P\_P\_W}(p, w) = \frac{ShortP_{current\_P\_W}(p, w)}{ShortP_{current\_G\_W}(w)} \times Payment_{P\_G\_W}(w) \quad (64)$$

$$Payment_{NP\_P\_W}(p, w) = \frac{ShortNP_{current\_P\_W}(p, w)}{ShortNP_{current\_G\_W}(w)} \times Payment_{NP\_G\_W}(w) \quad (65)$$

$$Payment_{INT\_P\_W}(p, w) = \frac{Payment_{P\_P\_W}(p, w) + Payment_{NP\_P\_W}(p, w)}{P\_G\_W(w)} \times INT\_G\_W(w) \quad (66)$$

$$Payment\_P\_W(p, w) = Payment_{P\_P\_W}(p, w) + Payment_{NP\_P\_W}(p, w) + Payment_{INT\_P\_W}(p, w) \quad (67)$$

### 4.2.2.4 Step 4

For each Market Participant, determine remaining priority and non-priority payments that are short-paid.

$$ShortP_{remain\_P\_W}(p, w) = ShortP_{current\_P\_W}(p, w) - Payment_{P\_P\_W}(p, w) \quad (68)$$

$$ShortNP_{remain\_P\_W}(p, w) = ShortNP_{current\_P\_W}(p, w) - Payment_{NP\_P\_W}(p, w) \quad (69)$$

Variable	Units	SC	GR	Rule	Description	Ref
IR_G_W(w)		G	W4		The interest rate that applies to the late payment for Trading Week w, adjustment $adj\_G\_W(w)$	(57)
P_G_W(w)	\$	G	W4		The principal component of the late payment for Trading Week w, adjustment $adj\_G\_W(w)$	(58)
INT_G_W(w)	\$	G	W4		The interest component of the late payment for Trading Week w, adjustment $adj\_G\_W(w)$	(59)
LP_G_W(w)	\$	G	W4		The total amount of money received in late payment for Trading Week w, adjustment $adj\_G\_W(w)$	I
BBR_G_D(d)		G	D		Annual Bank Bill Rate applicable to Trading Day d	I
ShortP_{current\_P\_W}(p, w)	\$	P	W4		The amount participant p is currently short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	I
ShortP_{current\_G\_W}(w)	\$	G	W4		The total amount the market is currently short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(60)
ShortNP_{current\_P\_W}(p, w)	\$	P	W4		The amount participant p is currently short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	I
ShortNP_{current\_G\_W}(w)	\$	G	W4		The total amount the market is currently short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(61)

Variable	Units	SC	GR	Rule	Description	Ref
PaymentP_G_W(w)	\$	G	W4		The total (principal) amount to be paid to Market Participants for currently short-paid priority payments for Trading Week w, adjustment $adj\_G\_W(w)$	(62)
PaymentNP_G_W(w)	\$	G	W4		The total (principal) amount to be paid to Market Participants for currently short-paid non-priority payments for Trading Week w, adjustment $adj\_G\_W(w)$	(63)
PaymentP_P_W(p, w)	\$	P	W4		The (principal) amount to be paid to Market Participant p for currently short-paid priority payments for Trading Week w, adjustment $adj\_G\_W(w)$	(64)
PaymentNP_P_W(p, w)	\$	P	W4		The (principal) amount to be paid to Market Participant p for currently short-paid non-priority payments for Trading Week w, adjustment $adj\_G\_W(w)$	(65)
PaymentINT_P_W(p, w)	\$	P	W4		The interest amount to be paid to Market Participant p for currently short-paid payments for Trading Week w, adjustment $adj\_G\_W(w)$	(66)
Payment_P_W(p, w)	\$	P	W4		The amount to be paid to Market Participant p for currently short-paid payments for Trading Week w, adjustment $adj\_G\_W(w)$	(67)
ShortPremain_P_W(p, w)	\$	P	W4		The amount participant p will remain short-paid related to the priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(68)
ShortNPremain_P_W(p, w)	\$	P	W4		The amount participant p will remain short-paid related to the non-priority payments of Payment Default on the Non-STEM invoice for Trading Week w, adjustment $adj\_G\_W(w)$	(69)
INTDAYS(w)	{}	G	W4	9.1.3	Set of days from (and including) the date that payment was originally due up to (but excluding) the date that late payment for Trading Week w, adjustment $adj\_G\_W(w)$ was received by AEMO	I
P_W(w)	{}	G	W4		Set of participants (Rule Participants, ERA and the Coordinator) in Trading Week w	(14)

## 5 Civil Penalty Distribution

Where a Civil Penalty is imposed for contravention of clause 6.6.3 of the WEM Rules, the Civil Penalty amount must be distributed amongst all Market Customers [MR 6.6.3A] in proportion to their Market Fees calculated over the previous full 12 months prior to the date the Civil Penalty is received.

Where a Civil Penalty is imposed for contravention of clause 7A.2.8, 7A.2.9, 7A.2.13, 7A.2.17, 7B.2.10, 7B.2.11 or 7B.2.15 of the WEM Rules, the Civil Penalty amount must be distributed amongst all Market Participants [MR 7A.2.19 and MR 7B.2.17] in proportion to their Market Fees calculated over the previous full 12 months prior to the date the Civil Penalty is received.

### 5.1 Invocation

The following table outlines the invocation for the high-level calculations.

Variable	Scope Set
$CivPD\_P\_D(p, d)$	$\forall p \in MP12(d)$

Variable	Units	SC	GR	Rule	Description	Ref
MP12(d)	{}	G	D	7A.2.19, 7B.2.17	Set of Market Participants in the previous full 12 months prior to the Trading Month in which Trading Day d falls	(16)

### 5.2 Calculations

$$CivPD\_P\_D(p, d) = \begin{cases} CivPD\_G\_D(d) \times \frac{CP12MPFSA\_P\_D(p, d)}{CP12mcMPFSA\_G\_D(d)} & \text{if } CP663Flag\_G\_D(d) = 1 \\ & \text{and } CP12mcMPFSA\_G\_D(d) \neq 0 \\ & \text{and } p \in MC12(d) \\ CivPD\_G\_D(d) \times \frac{CP12MPFSA\_P\_D(p, d)}{CP12mpMPFSA\_G\_D(d)} & \text{if } (CP7A219Flag\_G\_D(d) = 1 \\ & \text{or } CP7B217Flag\_G\_D(d) = 1) \\ & \text{and } CP12mpMPFSA\_G\_D(d) \neq 0 \\ & \text{and } p \in MP12(d) \\ 0 & \text{otherwise} \end{cases} \quad (70)$$

$$CP12mcMPFSA\_G\_D(d) = \sum_{p \in MC12(d)} CP12MPFSA\_P\_D(p, d) \quad (71)$$

$$CP12mpMPFSA\_G\_D(d) = \sum_{p \in MP12(d)} CP12MPFSA\_P\_D(p, d) \quad (72)$$

$$CP12MPFSA\_P\_D(p, d) = \sum_{j \in CP12M(d)} MPFSA\_P\_D(p, j) \quad (73)$$

$$CivPD\_G\_D(d) = CivPC\_G\_D(d) \quad (74)$$

$$CivPC\_G\_D(d) = \sum_{p \in OFF\_P(d)} CivPC\_P\_D(p, d) \quad (75)$$

Variable	Units	SC	GR	Rule	Description	Ref
$CivPD\_P\_D(p, d)$	\$	P	D	6.6.3, 7A.2.19, 7B.2.17	Civil Penalty amount distributed to Participant p related to the Civil Penalty amount paid to AEMO on Trading Day d	(70)

Variable	Units	SC	GR	Rule	Description	Ref
CivPD_G_D(d)	\$	G	D	6.6.3, 7A.2.19, 7B.2.17	Total Civil Penalty amount distributed to all Participants related to the Civil Penalty amount paid to AEMO on Trading Day d	(74)
CivPC_G_D(d)	\$	G	D	6.6.3, 7A.2.19, 7B.2.17	Total Civil Penalty amount (excluding GST) paid to AEMO on Trading Day d	(75)
CivPC_P_D(p, d)	\$	P	D	6.6.3, 7A.2.19, 7B.2.17	Civil Penalty amount (excluding GST) paid to AEMO by Participant p on Trading Day d	I
CP12mpMPFSA_G_D(d)	\$	G	D	7A.2.19, 7B.2.17	Market Fees charged to all Market Participants for the Trading Days in CP12M(d)	(72)
CP12mcMPFSA_G_D(d)	\$	G	D	6.6.3	Market Fees charged to all Market Customers for the Trading Days in CP12M(d)	(71)
CP12MPFSA_P_D(p, d)	\$	P	D		Market Fees charged to Participant p for the Trading Days in CP12M(d)	(73)
CP663Flag_G_D(d)		G	D	6.6.3	Flag indicating a Civil Penalty amount for MR 6.6.3 was paid to AEMO on Trading Day d	I
CP7A219Flag_G_D(d)		G	D	7A.2.19	Flag indicating a Civil Penalty amount for MR 7A.2.19 was paid to AEMO on Trading Day d	I
CP7B217Flag_G_D(d)		G	D	7B.2.17	Flag indicating a Civil Penalty amount for MR 7B.2.17 was paid to AEMO on Trading Day d	I
MPFSA_P_D(p, d)	\$	P	D	9.13.1	Market Participant Fee Settlement Amount charged to Participant p for Trading Day d	I
MC12(d)	{}	G	D	6.6.3	Set of Market Customers in the previous full 12 Trading Months prior to the Trading Month in which Trading Day d falls	(15)
MP12(d)	{}	G	D	7A.2.19, 7B.2.17	Set of Market Participants in the previous full 12 months prior to the Trading Month in which Trading Day d falls	(16)
CP12M(d)	{}	G	D	6.6.3, 7A.2.19, 7B.2.17	Set of Trading Days within the previous full 12 Trading Months prior to the Trading Month in which Trading Day d falls	I
OFF_P(d)	{}	G	D		Set that should contain only the offending Participant that paid the Civil Penalty to AEMO on Trading Day d	I

### 5.3 Variable Categorisation

The table below outlines the variables that are payments from AEMO to the Market Participant or charges to be paid by the Market Participant to AEMO and whether GST is applicable. The use of the character 'X' is to denote any granularity.

Variable	Market	P or C	GST	Rule	Description
CivPC_P_X(p, x)	NSTEM	C	N		Civil Penalty amount (excluding GST) received by AEMO from Participant p on Trading Day d
CivPD_P_X(p, x)	NSTEM	P	N		Civil Penalty amount distributed to Participant p related to the Civil Penalty amount received by AEMO on Trading Day d

The table below assists in understanding how the payments and charges are related.



Category	Payments	=	Charges
Civil Penalty	CivPD_G_X(x)	=	CivPC_G_X(x)