

Calculate BM Unit Allocated Demand Volume:
Produce Profiled Consumption and Disconnection
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Overview / How to read

The aim of this section is to build the profile coefficient or 'fraction of demand' most suited to the Settlement Period (e.g. by factoring in seasons, time of day, etc.) and apply it to each consumption data item provided by Data Aggregators on behalf of Suppliers.

Start with the inputs at the bottom of the model and follow the calculations to the outputs at the top.

Key steps:

Use the relevant variables and coefficients to create the Estimated Regional Average Demand Per Customer (energy).

Divide this by the Group Average Annual Consumption to create the Basic Period Profile Coefficient for the Settlement Period.

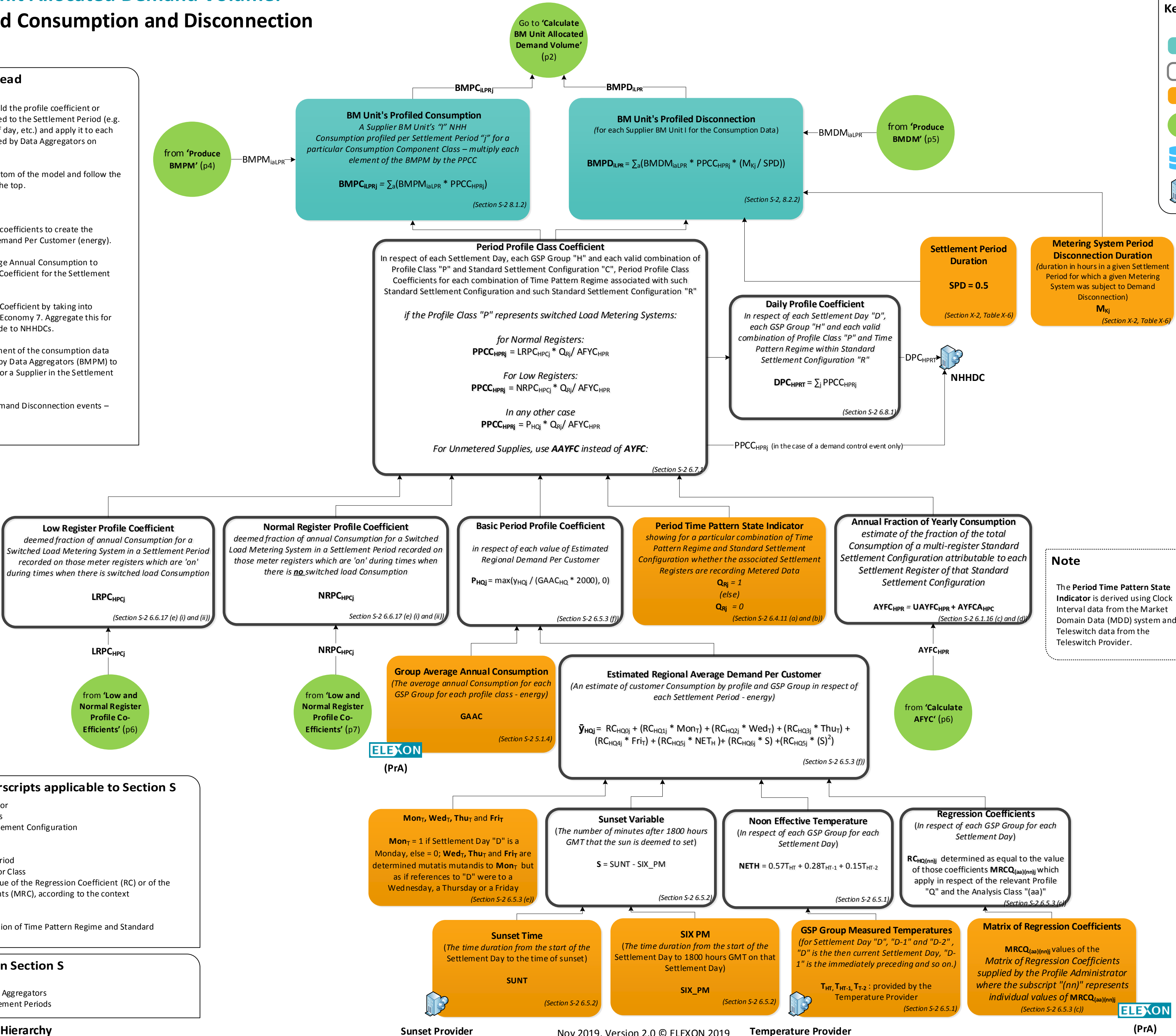
Create the Period Profile Class Coefficient by taking into account multiple registers e.g. Economy 7. Aggregate this for each Settlement day and provide to NHHDCs.

Multiply the PPCC by each element of the consumption data (e.g. EACs, AAs, etc.) provided by Data Aggregators (BMPM) to get the Profiled Consumption for a Supplier in the Settlement Period.

Follow a similar process for Demand Disconnection events – these are infrequent events.

Key

- Final calculation / output
- Calculation
- Data input
- Reference to a particular page on a Settlement Calculation Hierarchy model
- System
- Agent/Party Agent/ external organisation



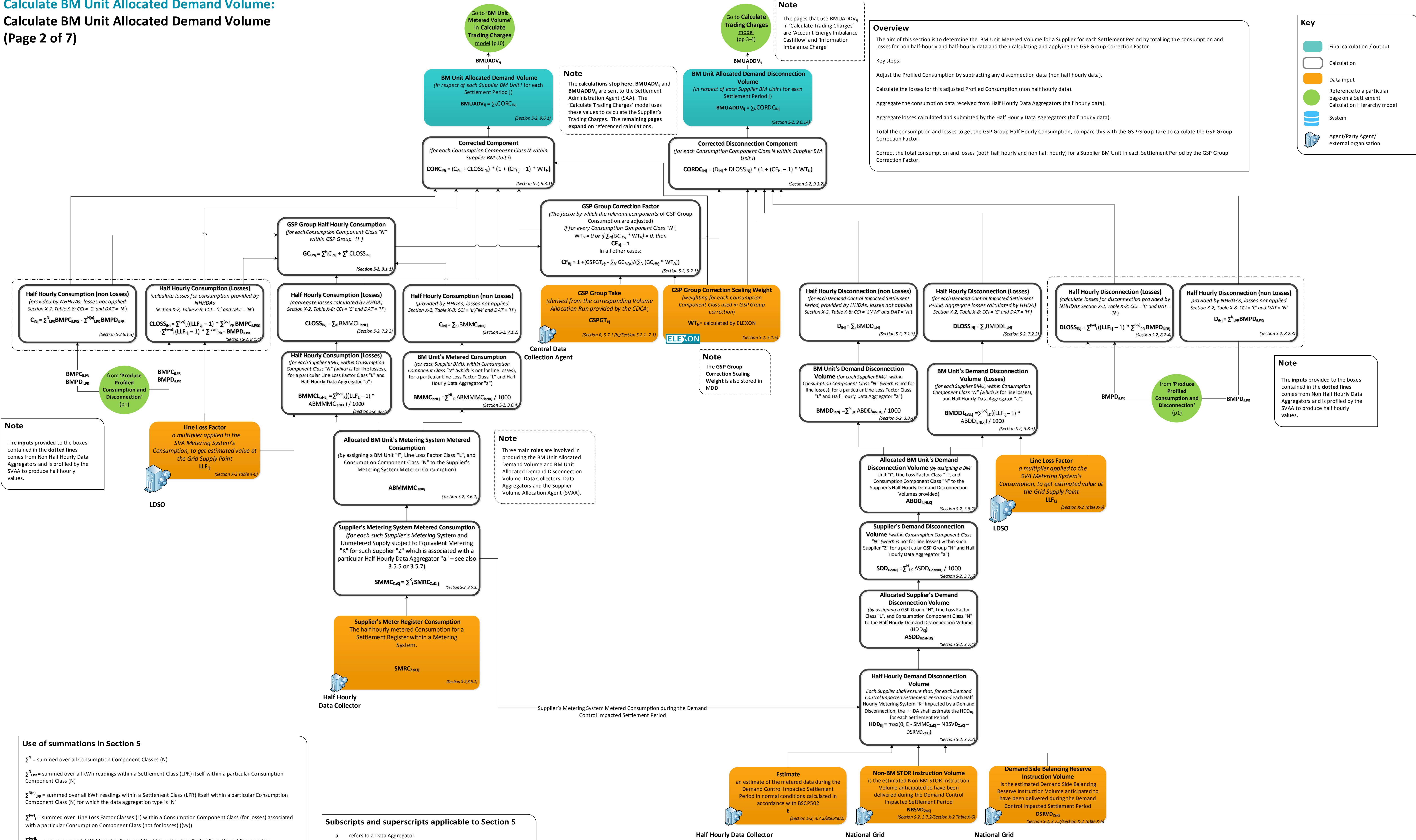
Subsripts and superscripts applicable to Section S

- a refers to a Data Aggregator
- (aa) refers to an Analysis Class
- C refers to a Standard Settlement Configuration
- H refers to a GSP Group
- i refers to a BM Unit
- j refers to a Settlement Period
- L refers to a Line Loss Factor Class
- (nn) refers to an individual value of the Regression Coefficient (RC) or of the Matrix of Regression Coefficients (MRC), according to the context
- P refers to a Profile Class
- Q refers to a Profile
- R refers to a valid combination of Time Pattern Regime and Standard Settlement Configuration

Use of summations in Section S

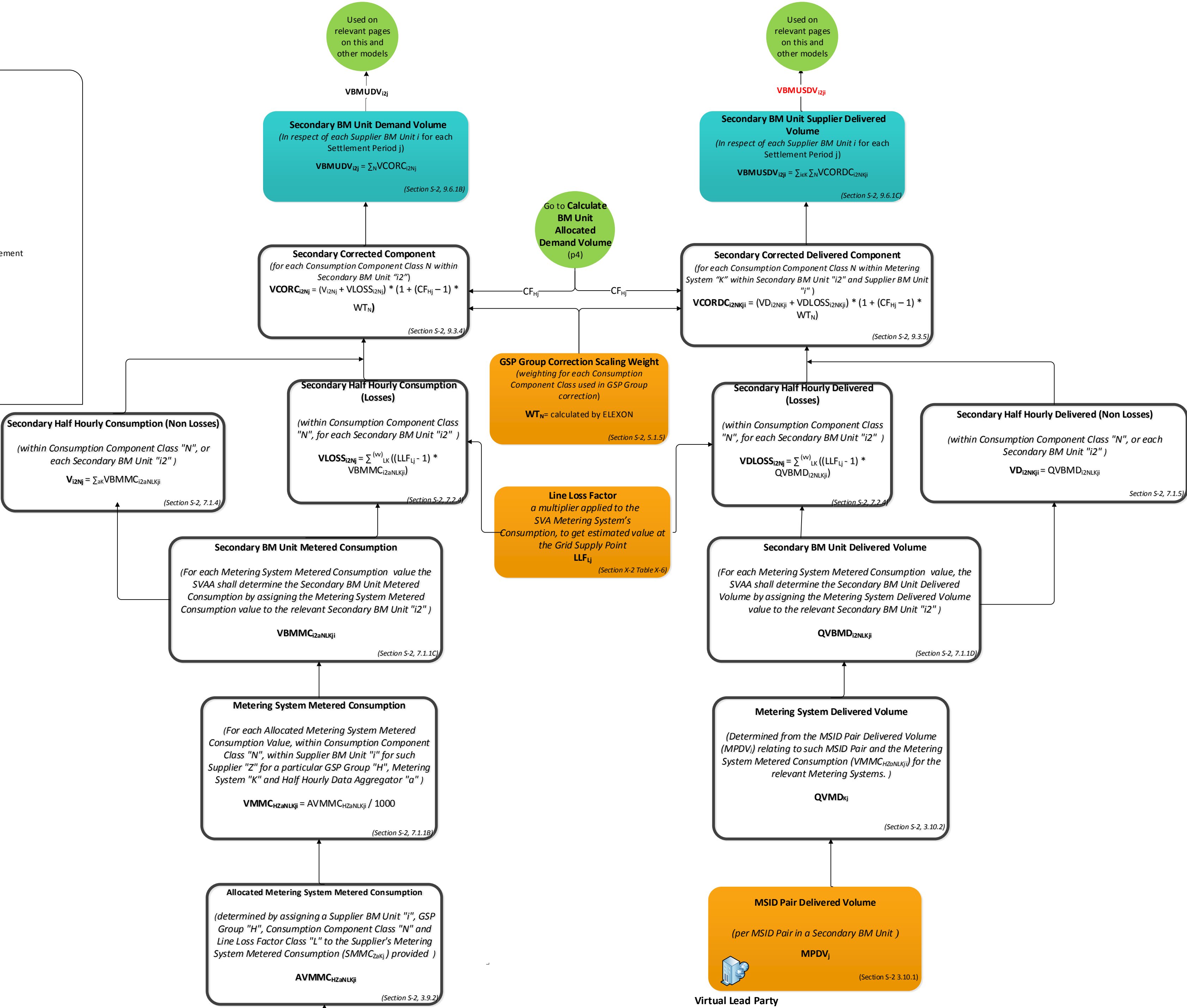
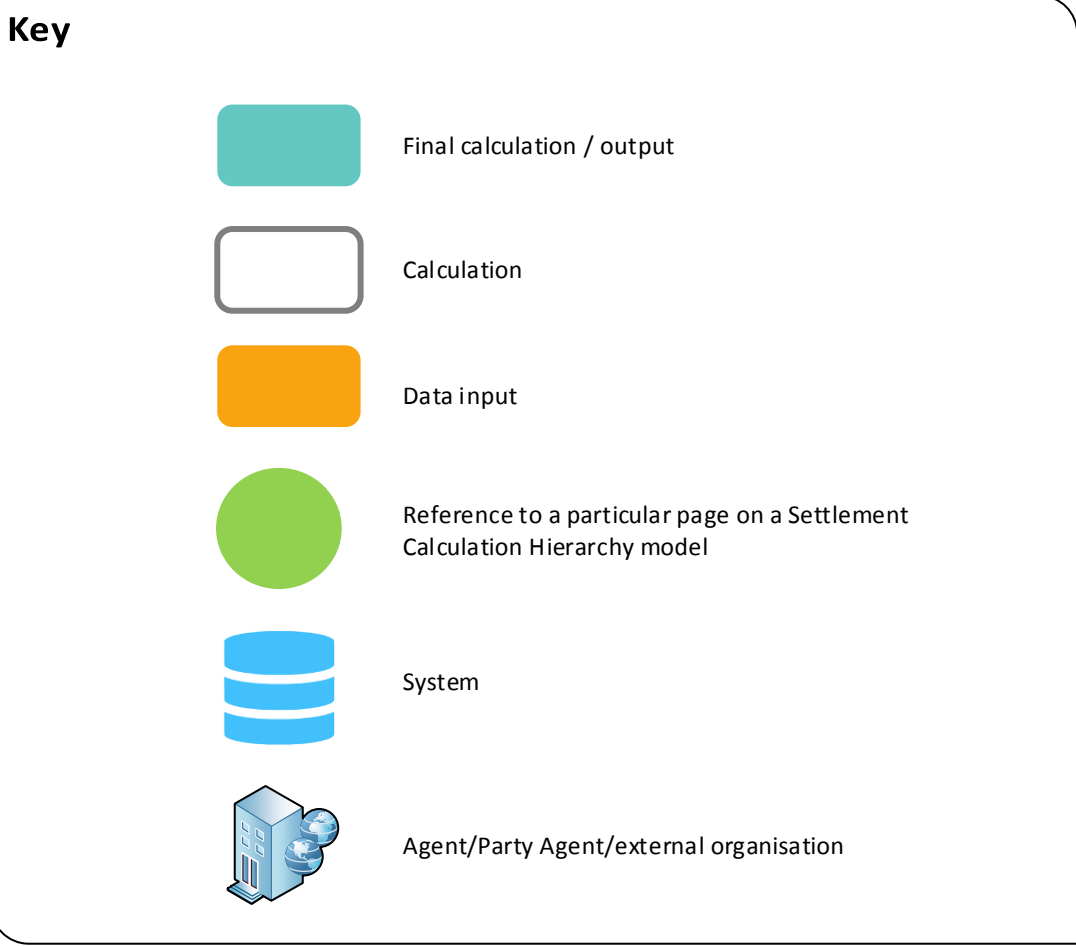
- $\sum_a$ = summed over all Data Aggregators
- $\sum_j$ = summed over all Settlement Periods

Calculate BM Unit Allocated Demand Volume:
Calculate BM Unit Allocated Demand Volume
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Settlement Calculation Hierarchy

Calculate BM Unit Allocated Demand Volume:
Calculate Secondary BM Unit Demand Volume
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Subscripts and superscripts applicable to Section S

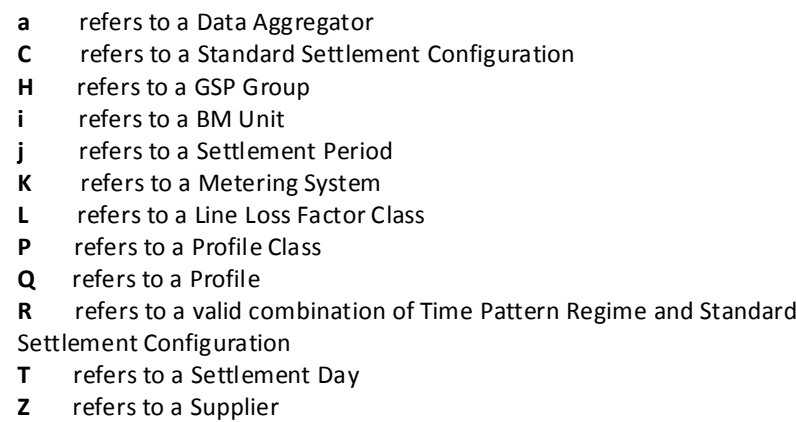
- a** refers to a Data Aggregator
- H** refers to a GSP Group
- i** refers to a BM Unit
- j** refers to a Settlement Period
- L** refers to a Line Loss Factor Class
- N** refers to a Consumption Component Class
- P** refers to a Profile Class
- R** refers to a valid combination of Time Pattern Regime and Standard Settlement Configuration
- (wv)** refers to a Consumption Component Class (not for line losses) associated with Consumption Component Class N
- Z** refers to a Supplier
- i2** refers to a Secondary BM Unit
- k** refers to a Bid-Offer Acceptance Number

Use of summations in Section S

- $\sum_N$ Summation by Node within a Zone
- $\sum_{i \in K}$ is the summation over all SVA Metering Systems allocated to Supplier BM Unit " i ".
- $\sum_{PR}^{(wv)}$ summed over all Profile Classes (P) and Time Pattern Regimes within Standard Settlement Configuration (R) within a Consumption Component Class (for losses) associated with a particular Consumption Component Class (not for losses) (wv)
- $\sum_{aK}$ means summation across all HHDA's and Half Hourly SVA Metering Systems belonging to a given Virtual BM Unit.

Supporting page - Produce BM Unit Purchase Matrix (BMPM)
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The SVAA extracts data from the SPM for each BM Unit. SPM data is calculated and provided by Non Half Hourly Data Aggregators for all MSIDs at all times (even during demand control events).



$\sum_{K}^{HZIPLPR}$ = summed over all non half hourly SVA Metering Systems (K) by Settlement Class (HLPR) for a particular Supplier (Z)
 $\sum_{T}^{HP}$ = summed over all Settlement Days (T) for Profile Class (P) within GSP Group (H).
 $\sum_{C}^{HP}$ = summed over all Standard Settlement Configurations (C) for Profile Class (P) within GSP Group (H) for Settlement Day (T)
 $\sum_{R}^{HPTC}$ = is the summation of all Standard Settlement Configuration and Time Pattern Regime combinations "R" valid for Standard Settlement Configuration "C" in Profile Class "P" within GSP Group "H" for Settlement Day "T"
 $\sum_{ZL}^{HPC}$ = is the summation over all Suppliers and Line Loss Factor Classes for any one valid combination of Standard Settlement Configuration and Time Pattern Regime for Standard Settlement Configuration "C" and Profile Class "P" within GSP Group "H"
 $\sum_{ZL}^{HPR}$ = is the summation over all Suppliers and Line Loss Factor Classes for Standard Settlement Configuration and Time Pattern Regime combination "R" in Profile Class "P" within GSP Group "H"

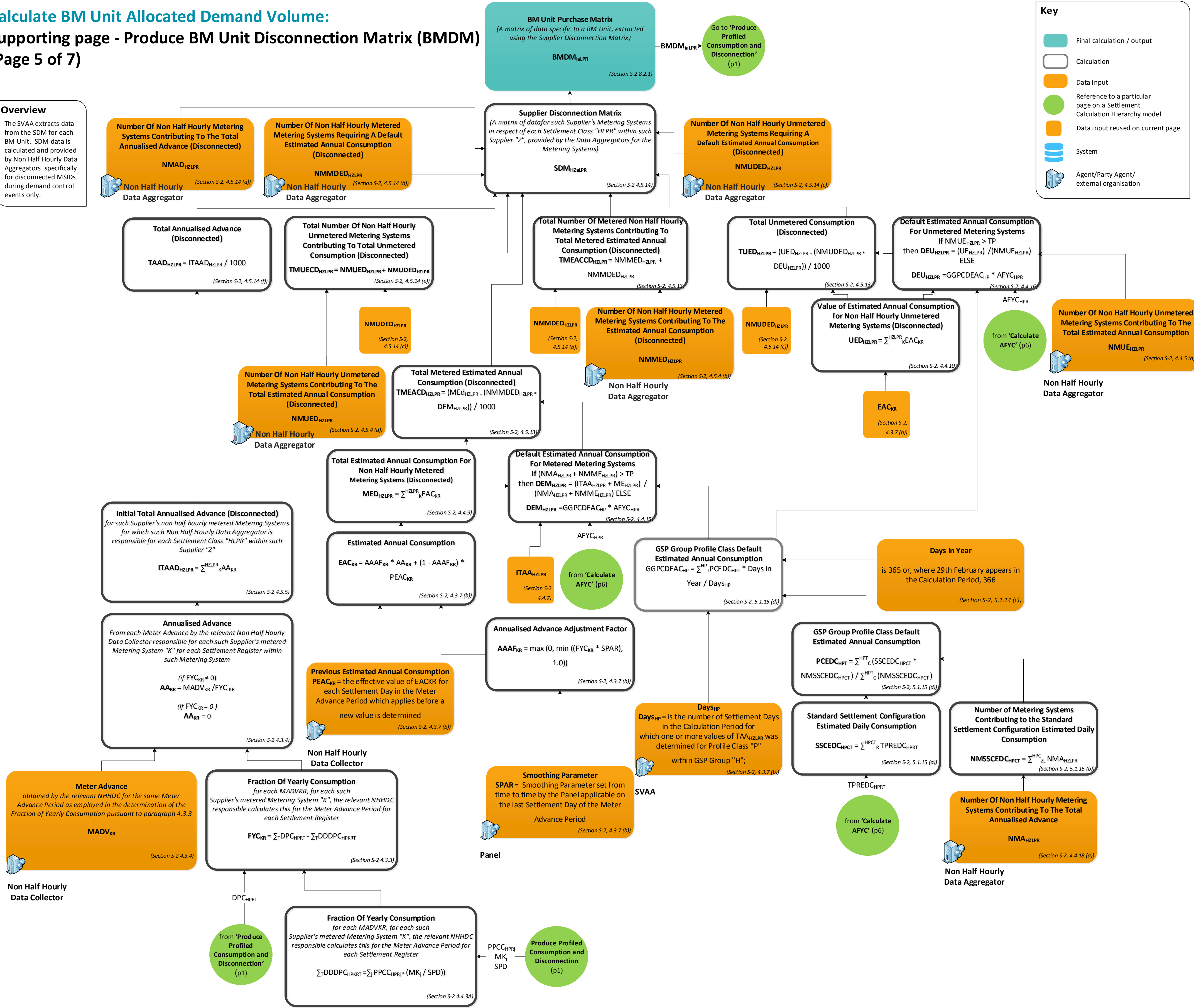
Calculate BM Unit Allocated Demand Volume:
Supporting page - Produce BM Unit Disconnection Matrix (BMDM)
(Page 5 of 7)

Overview

The SVAA extracts data from the SDM for each BM Unit. SDM data is calculated and provided by Non Half Hourly Data Aggregators specifically for disconnected MSIDs during demand control events only.

Key

- Final calculation / output
- Calculation
- Data input
- Reference to a particular page on a Settlement Calculation Hierarchy model
- Data input reused on current page
- System
- Agent/Party Agent/external organisation



Subscripts and superscripts applicable to Section 5

- a refers to a Data Aggregator
- C refers to a Standard Settlement Configuration
- H refers to a GSP Group
- i refers to a BM Unit
- j refers to a Settlement Period
- K refers to a Metering System
- L refers to a Line Loss Factor Class
- P refers to a Profile Class
- Q refers to a Profile
- R refers to a valid combination of Time Pattern Regime and Standard Settlement Configuration
- T refers to a Settlement Day
- Z refers to a Supplier

Use of summations in Section 5

- $\sum_{k=1}^{H_{ZLPR}}$ = summed over all non half hourly SVA Metering Systems (K) by Settlement Class (HLPR) for a particular Supplier (Z)
- $\sum_{t=1}^{H_{PT}}$ = summed over all Settlement Days (T) for Profile Class (P) within GSP Group (H).
- $\sum_{c=1}^{H_{PT}}$ = summed over all Standard Settlement Configurations (C) for Profile Class (P) within GSP Group (H) for Settlement Day (T)
- $\sum_{r=1}^{H_{PT}}$ = is the summation of all Standard Settlement Configuration and Time Pattern Regime combinations "R" valid for Standard Settlement Configuration "C" in Profile Class "P" within GSP Group "H" for Settlement Day "T"
- $\sum_{z=1}^{H_{PT}}$ = is the summation over all Suppliers and Line Loss Factor Classes for any one valid combination of Standard Settlement Configuration and Time Pattern Regime for Standard Settlement Configuration "C" and Profile Class "P" within GSP Group "H"
- $\sum_{z=1}^{H_{PT}}$ = is the summation over all Suppliers and Line Loss Factor Classes for Standard Settlement Configuration and Time Pattern Regime combination "R" in Profile Class "P" within GSP Group "H"

Calculate BM Unit Allocated Demand Volume:

Supporting page - Calculate AFYC (annual)

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Overview

The AFYC is used during profiling consumption where registers for different time pattern regimes are involved, e.g. Economy 7.

The AFYC calculation involves three different roles:

Non Half Hourly Data Collectors calculate and provide the Annualised Advance

Non Half Hourly Data Aggregators calculate and provide Total Annualised Advances

The SVAA uses the above to calculate the remaining parts leading up to the AFYC. It does so using data already provided by Non Half Hourly Data Collectors and Aggregators.

Annual Fraction of Yearly Consumption

estimate of the fraction of the total Consumption of a multi-register Standard Settlement Configuration attributable to each Settlement Register of that Standard Settlement Configuration

(for the Time Pattern Regime and Standard Settlement Configuration combination "R" that has the largest value of Unadjusted Annual Fraction of Consumption (UAFYCHPR) for each Profile Class "P" and Standard Settlement Configuration "C" within a GSP Group "H")

$AFYC_{HPR} = UAYFC_{HPR} + AFYCA_{HPC}$

(for each Time Pattern Regime and Standard Settlement Configuration combination "R" for Profile Class "P" and Standard Settlement Configuration "C" within GSP Group "H" other than the above)

$AFYC_{HPR} = UAFYC_{HPR}$

(Section S-2 5.1.16 (c) and (d))

Note

The AFYC value is also stored in **MDD**

Key

Final calculation / output

Calculation

Data input

Reference to a particular page on a Settlement Calculation Hierarchy model

System

Agent/Party Agent/external organisation

Unadjusted Annual Fraction of Consumption

for each Profile Class "P" and Standard Settlement Configuration and Time Pattern Regime combination "R" within each GSP Group "H"

$UAFYC_{HPR} = \max((TPREAC_{HPR} / \sum^HPC_R TPREAC_{HPR}), 0.000001)$

(Section S-2 5.1.16 (a))

Annual Fraction of Yearly Consumption Adjustment

for each Profile Class "P" and Standard Settlement Configuration "C" within GSP Group "H"

$AFYCA_{HPC} = 1 - \sum^HPC_R UAFYC_{HPR}$

(Section S-2 5.1.16 (b))

Time Pattern Regime Average Estimated Annual Consumption

for each Profile Class "P", Standard Settlement Configuration and Time Pattern Regime combination "R" in each GSP Group "H"

$TPREAC_{HPR} = \sum^HPR_T TPREDCHPRT$

(Section S-2 5.1.14 (b))

GSP Group Profile Class Average Estimated Annual Consumption

for each Profile Class "P", Standard Settlement Configuration "C" in each GSP Group "H"

$GGPCEAC_{HPC} = (\sum^HPC_R TPREAC_{HPR}) * \text{Days in Year} / \text{Days}_{HP}$

(Section S-2 5.1.14 (c))

Note

The **GGPCEAC_{HPC}** value is used for the initial EAC value for new customers until data is available to carry out the EAC calculations (see 'Produce BMPN').

Time Pattern Regime Estimated Daily Consumption

for each Profile Class "P" and Standard Settlement Configuration and Time Pattern Regime combination "R" in each GSP Group "H" for each Settlement Day "T"

$TPREDCHPRT = (\sum^HPR_{ZL} TAA_{HZLPR}) * DPC_{HPRT} * 1000 / (\sum^HPR_{ZL} NMA_{HZLPR})$

(Section S-2 5.1.14 (a))

Produce Profiled Consumption and Disconnection

(p1)

Subscripts and superscripts applicable to Section S

C refers to a Standard Settlement Configuration

H refers to a GSP Group

j refers to a Settlement Period

K refers to a Metering System

L refers to a Line Loss Factor Class

P refers to a Profile Class

R refers to a valid combination of Time Pattern Regime and Standard Settlement Configuration

T refers to a Settlement Day

Z refers to a Supplier

Total Annualised Advances

for such Supplier's non half hourly metered Metering Systems for which such Non Half Hourly Data Aggregator is responsible for each Settlement Class "HLPR" within such Supplier "Z"

$TAA_{HZLPR} = ITAA_{HZLPR} / 1000$

(Section S-2 4.4.7)

Number Of Non Half Hourly Metering Systems Contributing To The Total Annualised Advance

in respect of each Settlement Class "HLPR" within such Supplier "Z", NHHDCs will submit this as part of the Supplier Purchase Matrix

NMA_{HZLPR}

(Section S-2 4.4.18)

Produce BMPM

(p4)

Initial Total Annualised Advance

for such Supplier's non half hourly metered Metering Systems for which such Non Half Hourly Data Aggregator is responsible for each Settlement Class "HLPR" within such Supplier "Z"

$ITAA_{HZLPR} = \sum^{HZLPR}_K AA_{KR}$

(Section S-2 4.4.7)

Annualised Advance

From each Meter Advance by the relevant Non Half Hourly Data Collector responsible for each such Supplier's metered Metering System "K" for each Settlement Register within such Metering System

(if $FYC_{KR} \neq 0$)

$AA_{KR} = MADV_{KR} / FYC_{KR}$

(if $FYC_{KR} = 0$)

$AA_{KR} = 0$

(Section S-2 4.3.4)

Fraction Of Yearly Consumption

for each $MADV_{KR}$, for each such Supplier's metered Metering System "K", the relevant NHHDC responsible calculates this for the Meter Advance Period for each Settlement Register

$FYC_{KR} = \sum_T DPC_{HPRT} - \sum_T DDDPC_{HPKRT}$

(Section S-2 4.3.3)

Use of summations in Section S

$\sum^{HZLPR}_K$ = summed over all non half hourly SVA Metering Systems (K) by Settlement Class (HLPR) for a particular Supplier (Z)

$\sum_j$ = summed over all Settlement Periods

$\sum^HPC_R$ = summed over all Standard Settlement Configuration and Time Pattern Regime combinations (R) valid for Standard Configuration (C) and Profile Class (P) within GSP Group (H)

$\sum^HPR_T$ = summed over all Settlement Days (T) contained within the Calculation Period for which one or more values of TAA_{HZLPR} was determined for Standard Settlement Configuration and Time Pattern Regime combination (R) in Profile Class (P) within GSP Group (H)

$\sum^HPR_{ZL}$ = summed over all Suppliers (Z) and Line Loss Factor Classes (L) for Standard Settlement Configuration and Time Pattern Regime combination (R) in Profile Class (P) within GSP Group (H)

$\sum_T$ = summed over all Settlement Days (T) in a particular Meter Advance Period

Meter Advance

obtained by the relevant NHHDC for the same Meter Advance Period as employed in the determination of the Fraction of Yearly Consumption pursuant to paragraph 4.3.3

$MADV_{KR}$

(Section S-2 4.3.4)

Fraction Of Yearly Consumption

for each $MADV_{KR}$, for each such Supplier's metered Metering System "K", the relevant NHHDC responsible calculates this for the Meter Advance Period for each Settlement Register

$\sum_T DDDPC_{HPKRT} = \sum_j PPCC_{HPRj} * (MK_j / SPD)$

(Section S-2 4.4.3A)

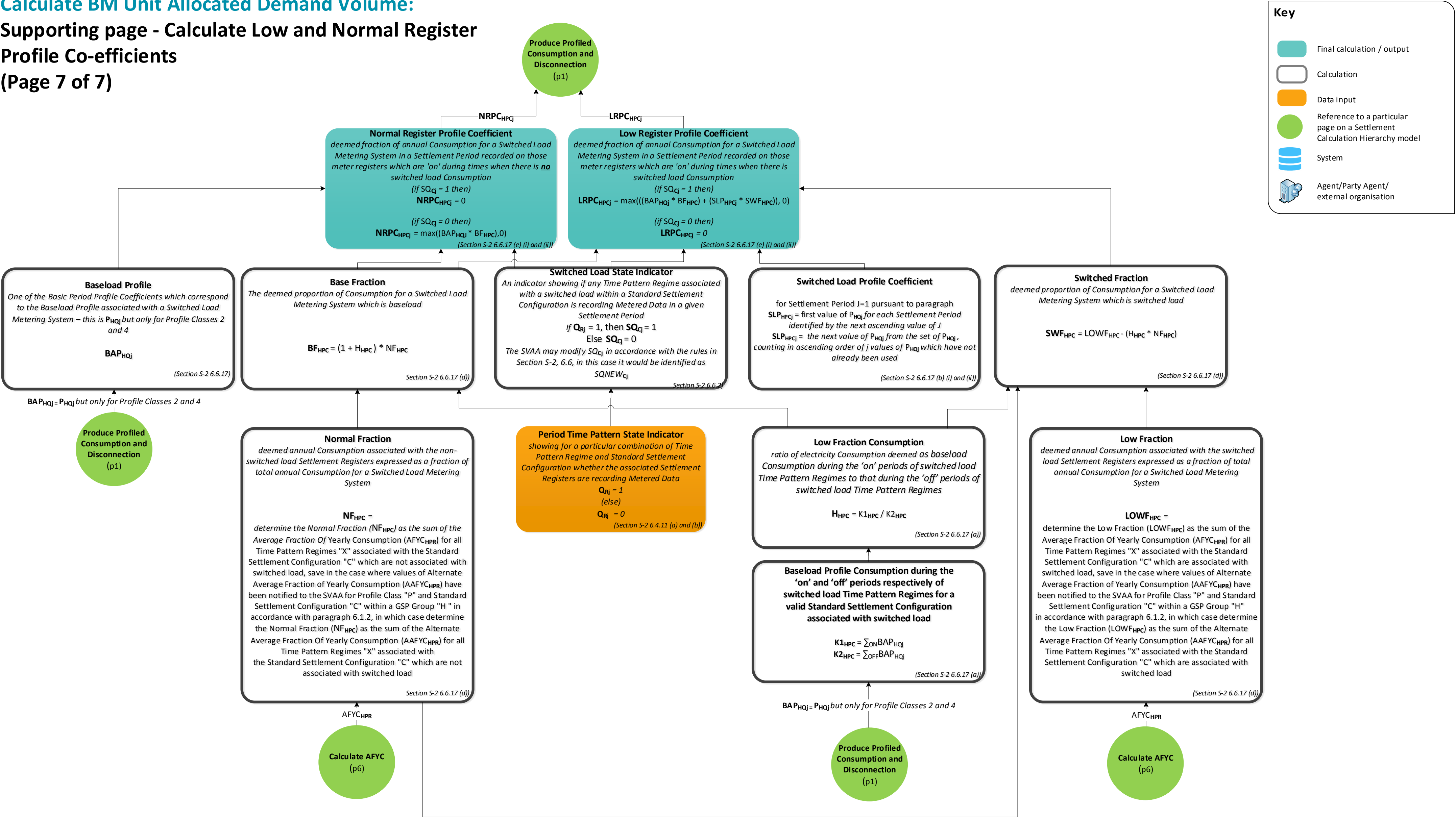
Produce Profiled Consumption and Disconnection

(p1)

Calculate BM Unit Allocated Demand Volume:

Supporting page - Calculate Low and Normal Register Profile Co-efficients

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Subscripts and superscripts applicable to Section S

C refers to a Standard Settlement Configuration
H refers to a GSP Group
j refers to a Settlement Period
P refers to a Profile Class
Q refers to a Profile

Use of summations in Section S

$\sum_{ON}$ = is the summation over all Settlement Periods in the Settlement Day for which $SQ_{NEW_{Cj}} = 1$
 $\sum_{OFF}$ = is the summation over all Settlement Periods in the Settlement Day for which $SQ_{NEW_{Cj}} = 0$