



**NMI ALLOCATION PROCEDURE
FOR THE WESTERN AUSTRALIA
ELECTRICITY MARKET**

Date Printed: 14/04/2006

ABOUT THIS DOCUMENT

Document Version History

Version	Date	Amendment
1.0	12/04/2006	Final version

Related / Referenced Documents

Document Title	Author	Document ID
National Metering Identifier Procedure (NMI) http://www.nemmco.com.au/meteringandretail/me_gn059V004.pdf	NEMMCO	DMS2119102
National Electricity Market Transmission Node Identities (TNI) http://www.nemmco.com.au/meteringandretail/me_gn060v013.pdf	NEMMCO	DMS2042589

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1 INTRODUCTION

With the advent of market reform in the Western Australian Electricity Market comes the need to identify all meter points using a common meter point identification system which is not only unique to each meter point but is also unambiguous in its use.

A number of reform projects across Western Power Networks have been undertaken in preparation, which includes systems developments such as the Metering Business System (MBS) delivered under project Metron. The intention is to utilise the National Metering Identifier (NMI) numbering system developed and implemented across the National Electricity Market. The NMI is constructed to a defined set of parameters that determine information about the meter point and can be used by all market participants as a unique reference number.

The Metron project will be implemented using the NMI for communications across all interfaces and data streams in the market. In conjunction with this project, the NMI system used in the NEM, will be implemented across the WA Electricity Market. Changes will be made, where necessary, to ensure that the market differences are catered for.

Chapter 2 of this document covers the NMI definition, NMI rules as used by NEMMCO and additional rules required to cater for Western Australian specific cases.

The NMI datastream suffixes are explained and covered in chapter 3, with the additional Western Australian specific values for consumption energy data also explained.

Chapter 4 covers examples of how NMIs will be allocated for existing configurations and how changes of meter configurations impact the NMI configuration.

2 NMI ALLOCATION RULES

2.1 INTRODUCTION

NEMMCO has written a National Metering Identifier (NMI) Procedure document ([DMS2300202T](#)) which explains the NMI concept and the rules on how NMIs are allocated and maintained. The following are excerpts taken from this document:

The National Metering Identifier (NMI) provides a unique identifier for each connection point within the NEM. It provides an index against which other essential data can be managed and is crucial to the accurate management of customer registration, customer transfer, connection point change control, data aggregation and data transfer. *{Page 5}*

The NMI is a ten (10) character identifier assigned by Local Network Service Providers (LNSPs) in accordance to this procedure. The publication of this procedure and assignment of NMIs is authorised by the National Electricity Code at clause 7.3.1.

The NMI may be used in conjunction with other identifiers or suffixes. These include:

- The NMI checksum, a single numeral used to assist with data validation when the NMI is passed manually between parties within the NEM.
- The NMI datastream suffix, used to identify a particular data stream associated with a connection point. *{Page 6}*

The key attributes of the NMI are:

1. The NMI must embody only numeric characters except as explicitly provided within this document and must not contain spaces.
2. Characters 'O' and 'I' are not permitted in order to avoid confusion with numbers 0 and 1.
3. 'W' is a reserved character to be used as the fifth digit of the Allocated Identifier for wholesale transmission connection metering points only. It may only be used if the NMI is allocated from an alphanumeric block.
4. Embedded characters or meanings should not be used in allocating NMIs.
5. Where NEMMCO has allocated a block of NMIs to an LNSP, the LNSP must only use numeric characters in the NMIs allocated to the market unless NEMMCO has directed the block to be alphanumeric.
6. Where NEMMCO has allocated a block of NMIs to an LNSP, and directed the block to be alphanumeric, the LNSP may use all-numeric or alphanumeric characters in the NMIs allocated to the market. *{Page 6}*

Western Power Networks, as the Local Network Service Provider of the WA market, will be responsible for allocating and maintaining a register of all NMIs in the WA market. The NMI allocation will be in accordance with the NEMMCO NMI procedure.

NEMMCO has given Western Power Networks a range of NMIs to be allocated to the WA market. The NMI range is **8001000000** to **8020999999**.

Section 2.2, below, summarises the NMI rules, as they will be applied in WA. Section 2.3 holds clarifications on NEM rules, which are proposed for the Western Australian Electricity Market.

2.2 NMI RULES IN THE NEM

The following rules have been taken from chapter 8 “NMI rules” of NEMMCO’s document NMI procedure and applied to the WA market:

1. Western Power Networks as the Local Network Service Provider will allocate all NMIs to customer connection points for WA. The NMI must be associated to a transmission node identity (TNI). The TNI is a four digit alphanumeric code, which starts with a W for Western Australia. (*See Referenced documents.*)
2. Western Power Networks will not embed information within the allocated NMIs. This means that there will be no range of NMI allocated for the South West Interconnected System (SWIS) and no different ranges for the North West Interconnected System (NWIS) and the regional areas.
3. A NMI cannot be reassigned to another connection point. The NMI remains constant throughout its market life. If a connection point is abolished the NMI becomes extinct, and hence each NMI has a start date as well as an end date and associated change control. (The status of a NMI can be active, de-energised, extinct or green field site.)
4. The NMI is not changed with a change of consumer, consumer details or registration details.
5. All communications to and from Market Participants and WP Networks will include the NMI identifier.
6. The metering business system MBS of WP Networks will have NMIs attached to all connection point records and will be the primary database search key for processing purposes.
7. Transfer of all data to WP Networks will be in an agreed format that includes NMI identification.

Besides these rules some additional rules are extracted from the NEMMCO document:

- A maximum of 33 meters (of the same type) can be assigned to one NMI (1-9 and A-Z except ‘I’ and ‘O’);
- Interval meters and basic consumption meters will not be allocated to the same NMI at the same time. The reason is the data streams suffixes are different and the data formats are different NEM12 for interval and NEM13 for basic consumption data. *{NMI procedure document, page 24}*

2.3 WA CLARIFICATIONS ON NEM RULES

1. The general rule is: “A NMI will be allocated at the exit point or entry point”.
2. If meters in an embedded network are read by WP Networks and are likely to measure consumption for customers individually, these meters will be allocated their own NMI and will be marked as child NMIs to a parent NMI on the master meter. Otherwise, one NMI will be allocated to all the meters.

In the Meter Business System the embedded (Sub) meters are setup as assets and are assigned to a NMI.

(NEM document: LNSPs should take a pragmatic approach to allocating NMIs at a multi storey site such as this if it is expected that regular changes in tenancies may make allocation of separate NMIs per floor (or other tenanted area) more efficient.)

3. The algorithm that is used to derive the NMI checksum is the same as described in the NEMMCO document (page 7).

3 DATASTREAM NMI SUFFIXES

To identify a particular data stream associated with a connection point, NMI suffixes have been defined. The data stream suffix allows differentiation of measurement quantities at a metering point, and differentiation of quantities between different measurement elements at a connection point. The NMI suffix is two alpha-numeric characters:

- NMI data stream suffix one indicates the unit of measure. There is a different set of values for interval meters and consumption energy (basic) meters.
- NMI data stream suffix two indicates the number of the meter in the meter configuration on the NMI. The values are 1-9 and then A-Z.

In table 1, the different values are shown for interval metered data, while paragraph 3.2 holds the values for the basic metered data streams.

3.1 INTERVAL METERED DATA

The following table is copied from NEMMCO’s NMI procedure document *{page 9}*:

Table 1: NMI Suffixes for interval metered data

	First Character				Second Character
	AVE	MASTER	CHECK	NET	
IMPORT kWh	A	B	C	N	Meter Numbers of measuring elements are to be 1 – 9 then A-Z
EXPORT kWh	D	E	F		
IMPORT kvarh	J	K	L	X	
EXPORT kvarh	P	Q	R		
KVAh	S	T	U		
Power Factor pF	G				
Q Metering Qh		H	Y		
Par Metering parh		M	W		
VOLTS (or V2h)		V	Z		

Note: Import kWh is electricity generated at site and fed into the network, while export kWh is electricity provided from the network to the site.

Remarks:

- The B, E, K and Q will be the norm in the WA market (instead of N and X).
- The I and O are not used as second character in the NMI Suffix (due to confusion with the number 1 and 0).
- Examples are listed in chapter 4.

3.2 CONSUMPTION ENERGY DATA

The following table is copied from NEMMCO’s NMI procedure document *{page 10}*. Western Power Networks has defined the time bands that are related to the different registers:

Table 2: NMI Suffixes for consumption energy data

First Character ↓		Time band	Second Character ↓
0	Register Unspecified (placeholder)		<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: auto;"> Meter Numbers of measuring elements are to be 1 – 9 then A-Z </div>
1	First register	Anytime	
2	Second register	Peak	
3	Third register	Off Peak	
4	First controlled load register	High Shoulder	
5	Second controlled load register	Low Shoulder	
6	Third controlled load register	Maximum Monthly Demand	
7	First LNSP defined register	Cumulative Demand	
8	Second LNSP defined register		
9	Third LNSP defined register		

Note: The time band is programmed in the meter for this register.

Remarks:

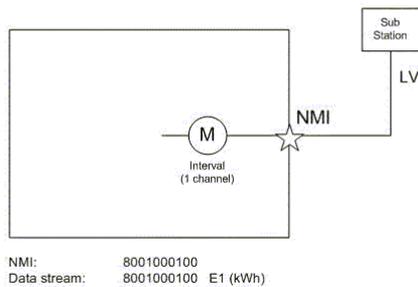
- The time bands that apply in the WA market are listed on Western Power Networks website.
- The I and O are not used as second character in the NMI Suffix.
- Examples are listed in chapter 4.

4 NMI EXAMPLES

4.1 SIMPLE ONE METER ON ONE CONNECTION

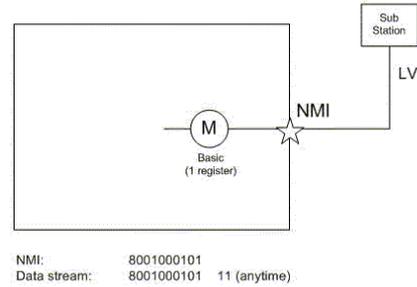
Below two simple configurations are shown, where one meter is measuring the total load of the site. Figure [1] is an interval-metered site, while [2] has a consumption (basic) meter on site. One NMI is allocated at the connection point.

1 Site, 1 Connection point, 1 Interval meter => 1 NMI



[1]

1 Site, 1 Connection point, 1 Basic Meter => 1 NMI

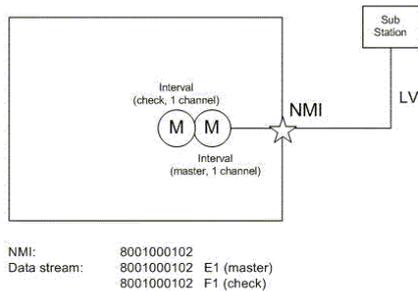


[2]

4.2 MULTIPLE METERS ON ONE CONNECTION

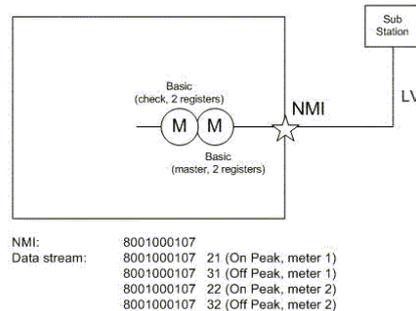
The examples below show multiple meters on one connection point. Figures [3] and [4] show a configuration of two meters in series – measuring the same load – as a master and check meter. Figure [3] shows interval meters, while figure [4] shows two basic meters that record the load on the site.

1 Site, 1 Connection point, 2 Interval Meters (in series)
=> 1 NMI



[3]

1 Site, 1 Connection point, 2 Basic Meters (in series)
=> 1 NMI

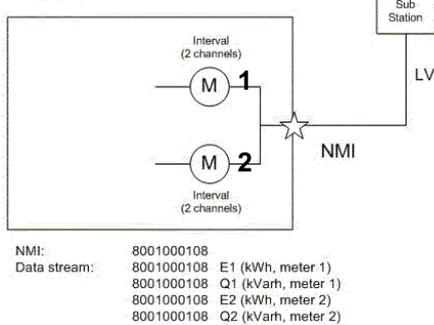


[4]

In the WA market only readings of one of the basic meters will be sent out to the market (conform the NEM standards).

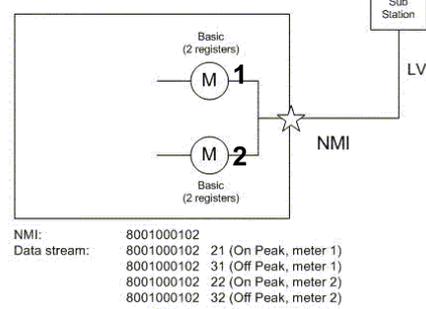
Figures [5] and [6] show a configuration of two meters in parallel – measuring together the total load. Figure [5] shows interval meters, while figure [6] shows two basic meters that record together the total load on the site.

1 Site, 1 Connection point, 2 Interval Meters (in parallel)
=> 1 NMI



[5]

1 Site, 1 Connection point, 2 Basic Meters (in parallel)
=> 1 NMI

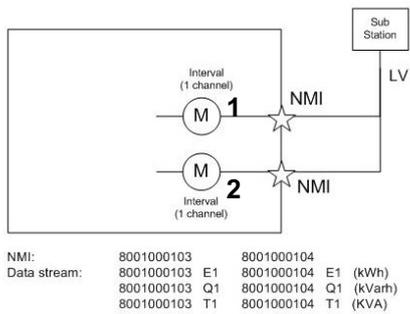


[6]

4.3 MULTI METERS ON MULTI CONNECTIONS

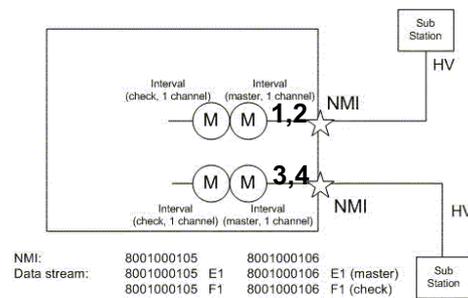
This paragraph shows some multi meter – multi connection point configurations. Figure [7] and [8] show two connection points; each having one interval meter or two interval meters. Both result in two NMIs. Figure [9] shows one connection point and a backup supply with both being interval meters. Both supply points are allocated a separate NMI, resulting in two NMIs on site.

1 Site, 2 Connection points, 2 Interval meters => 2 NMIs



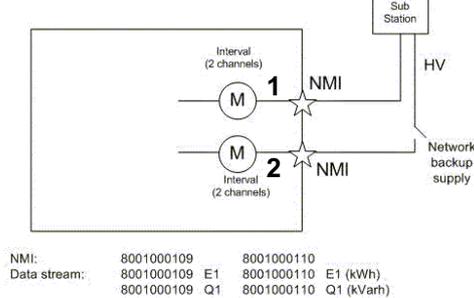
[7]

1 Site, 2 Connection points, 4 Interval Meters => 2 NMIs



[8]

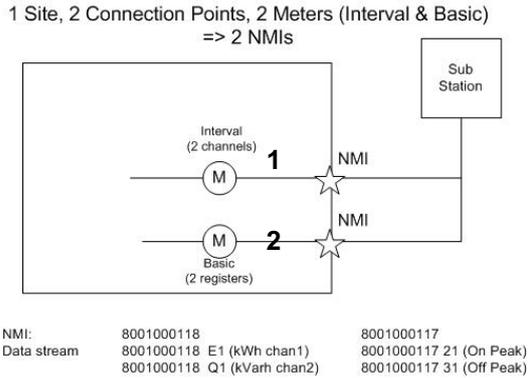
1 Site, 2 Connection points, 2 Interval Meters (backup supply)
=> 2 NMIs



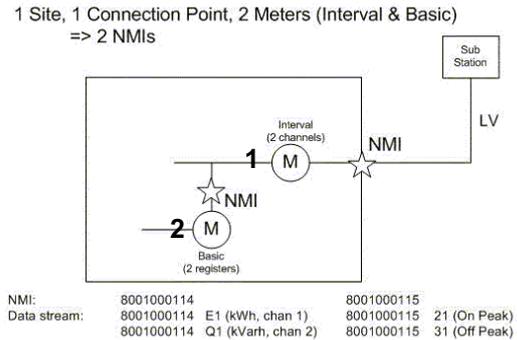
[9]

4.4 DIFFERENT METER TYPES ON A SITE

These examples show some examples of different meter types on the same site. Figure [10] and [11] show two meters - one interval and one basic meter - located on the different connection points. Figure [10] shows the two meters in parallel, while figure [11] shows the interval meter recording the full load, while the basic meter measuring a part of the load. Because different meter types are not mixed on the same NMI, a separate NMI has been allocated for the basic meter. In figure [11] the NMI with the basic meter is set up as an embedded network behind the NMI with the interval meter.



[10]

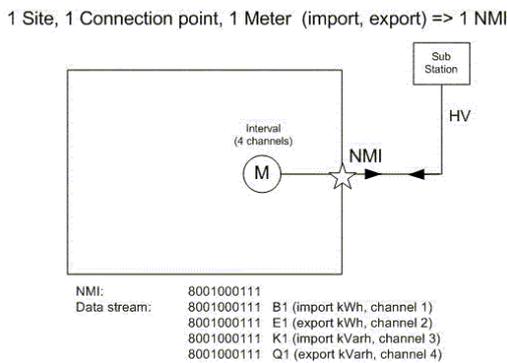


[11]

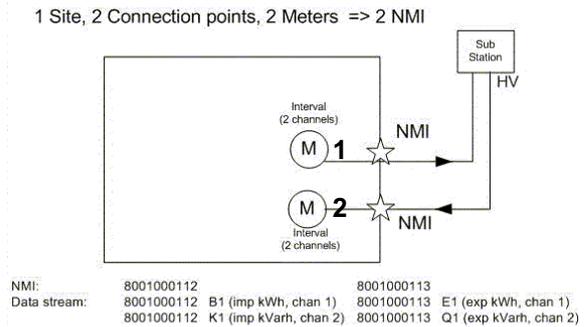
Note: in figure [11] NMI 8001000114 is the parent NMI of the embedded network which contains NMI 8001000115.

4.5 IMPORT & EXPORT CONFIGURATIONS

Below some examples are shown on import and export on the same site. Import is classified as energy generation on site and transferred to the network, while export is energy transferred from the network to the site.



[12]



[13]

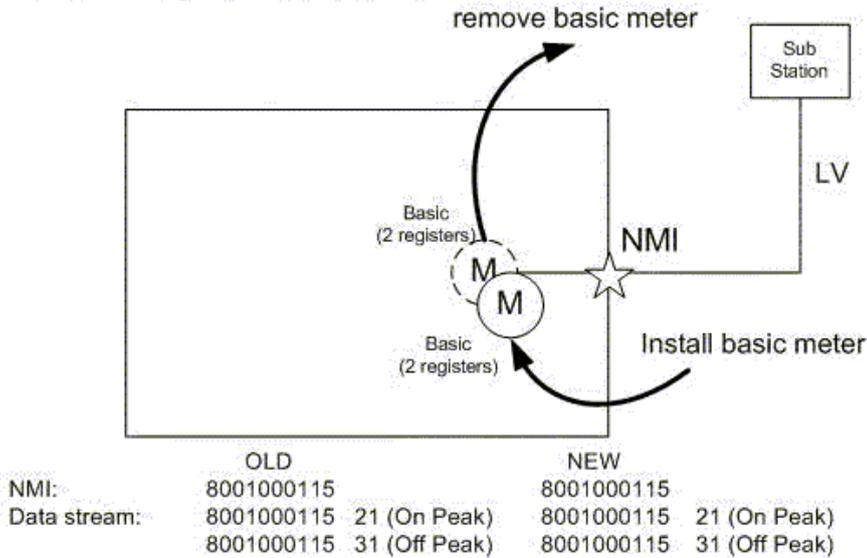
Configuration in figure [13] results in two NMIs because of the two connection points.

4.6 CHANGING METER CONFIGURATIONS

4.6.1 Changing a basic meter for same type of basic meter

If a basic meter is exchanged for the same meter type, the NMI and the NMI suffixes will not change.

Changing a basic meter to a same type basic meter
=> no change for the NMI suffix

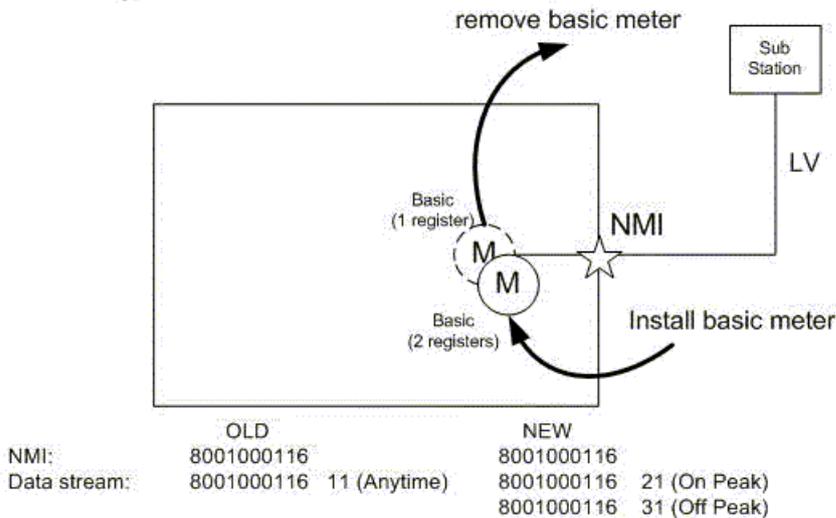


[14]

4.6.2 Changing a basic meter for a different type of basic meter

If a basic meter is exchanged for a different meter type, the NMI stays the same, but the NMI suffix 1 will change.

Changing a basic meter to a different type basic meter
=> change for the NMI suffix

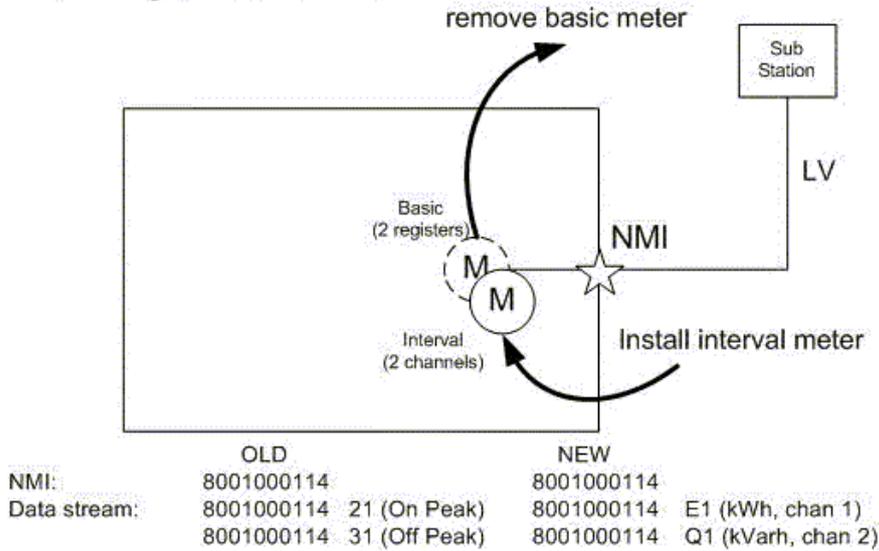


[15]

4.6.3 Changing a basic meter for an interval meter

If a basic meter is exchanged for an interval meter, the NMI will not change, but the NMI suffix 1 will change.

Changing a basic metered site to an interval metered site
=> change for the NMI suffix

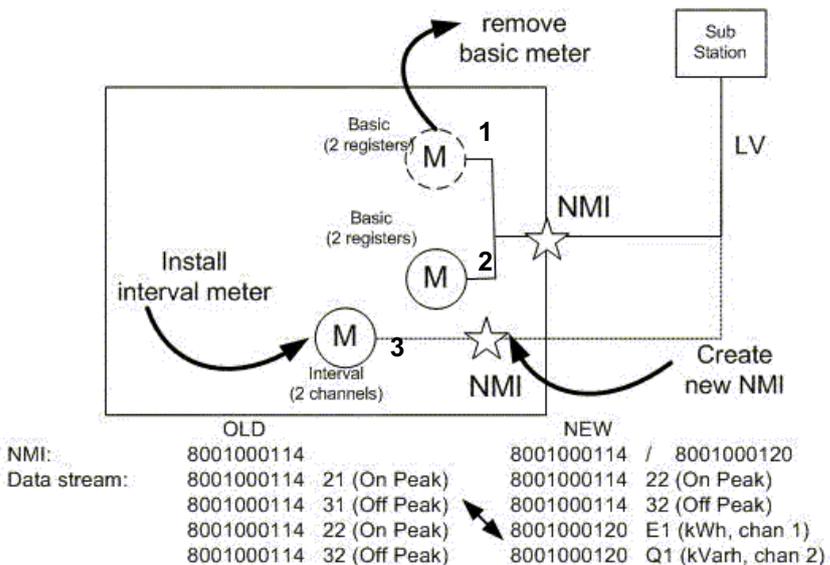


[16]

4.6.4 Changing one of two basic meters for an interval meter

If one of a set of basic meters is exchanged for an interval meter, an additional NMI will be allocated to the interval meter and the remaining basic meter will stay at the existing NMI.

Changing 1 of 2 basic meters into an interval meter
=> create a new NMI for the interval meter => 2 NMIs on the site

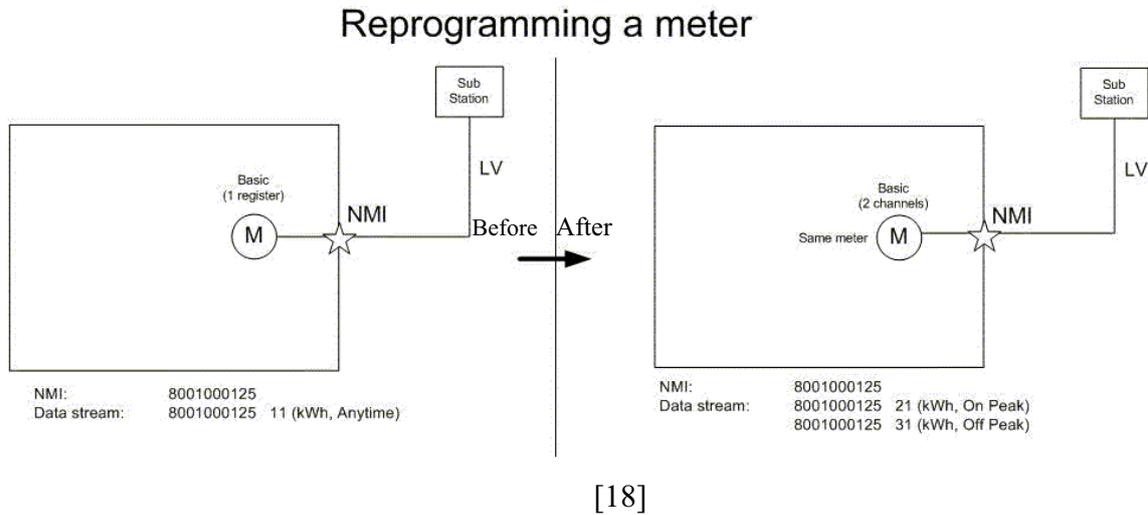


[17]

Note meter 1 is replaced by meter 3. The NMI Suffix 2 of meter 2 stays the same.

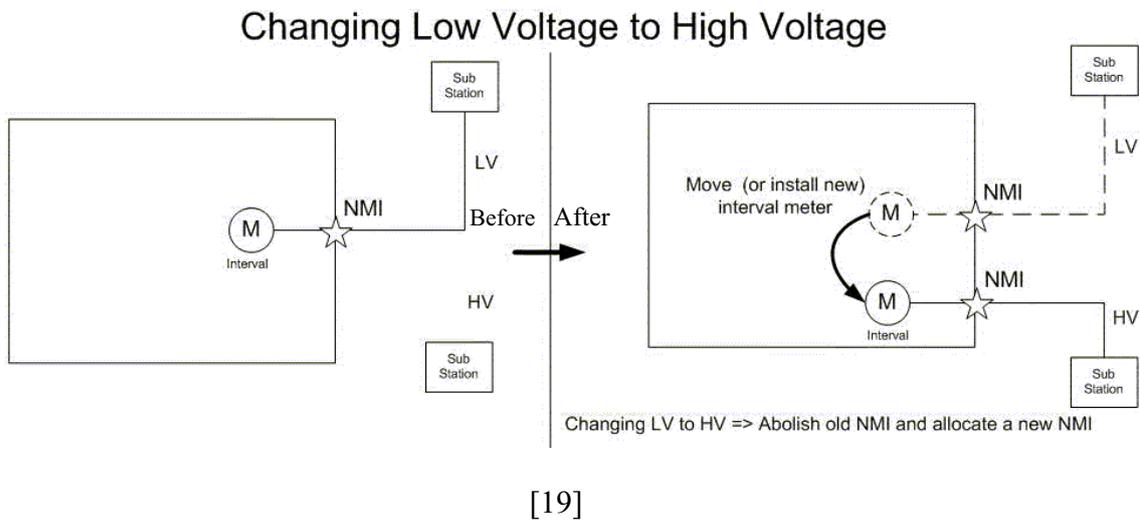
4.6.5 Reconfigure a basic meter from one to two registers

If a basic meter is reprogrammed from one register to two registers, the NMI and the NMI Suffix two stay the same, , but the NMI Suffix 1 changes.



4.7 CHANGING A CONNECTION POINT FROM LOW VOLTAGE TO HIGH VOLTAGE

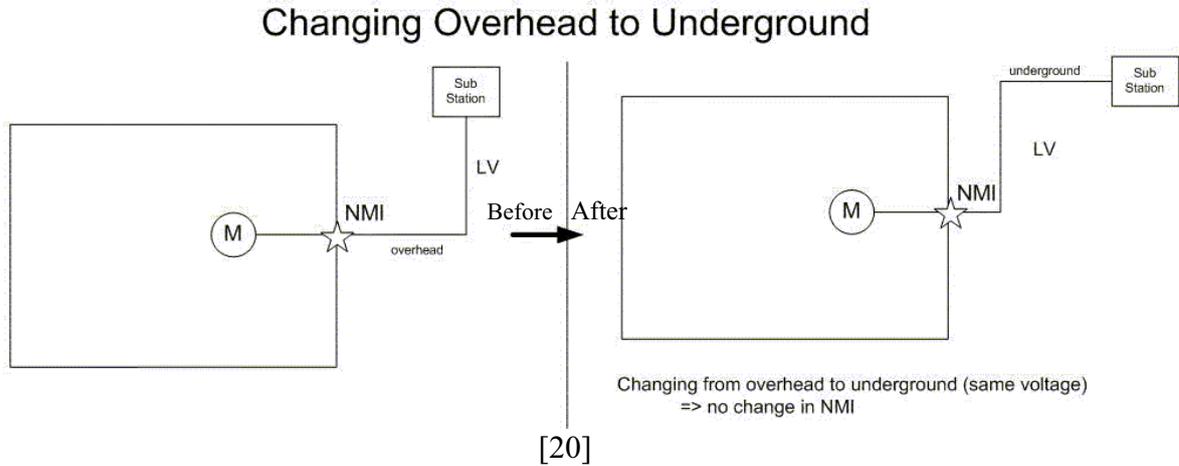
If a connection point is upgraded from Low Voltage to High Voltage, the old NMI will be abolished and a new NMI will be allocated to the new connection, see figure [19].



(In accordance to NMI rule 3)

4.8 CHANGING A CONNECTION POINT FROM OVERGROUND TO UNDERGROUND

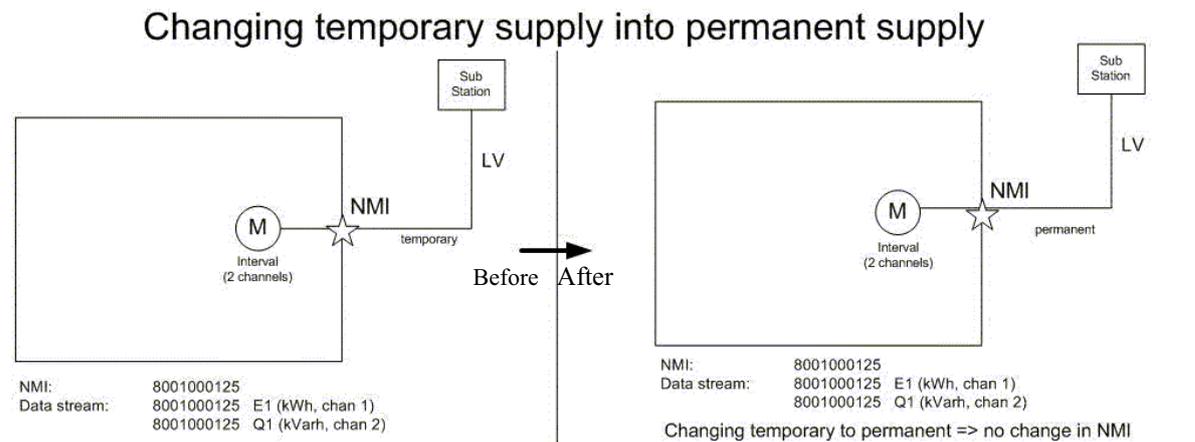
If a connection is changed from overhead to underground, there is no change on the NMI and the NMI suffixes, see figure [20].



(In accordance of NMI rule 3)

4.9 CHANGING TEMPORARY SUPPLY TO PERMANENT SUPPLY

If a new site is constructed a NMI will be allocated to a temporary connection point. After the permanent connection point has been established the same NMI can be used for this connection point, unless both connection points supply the site at the same moment in time, see figure [21]. In that case the new meter will be allocated to current NMI and after the temporary connection point is removed the temporary meter will be removed, see figure [22].

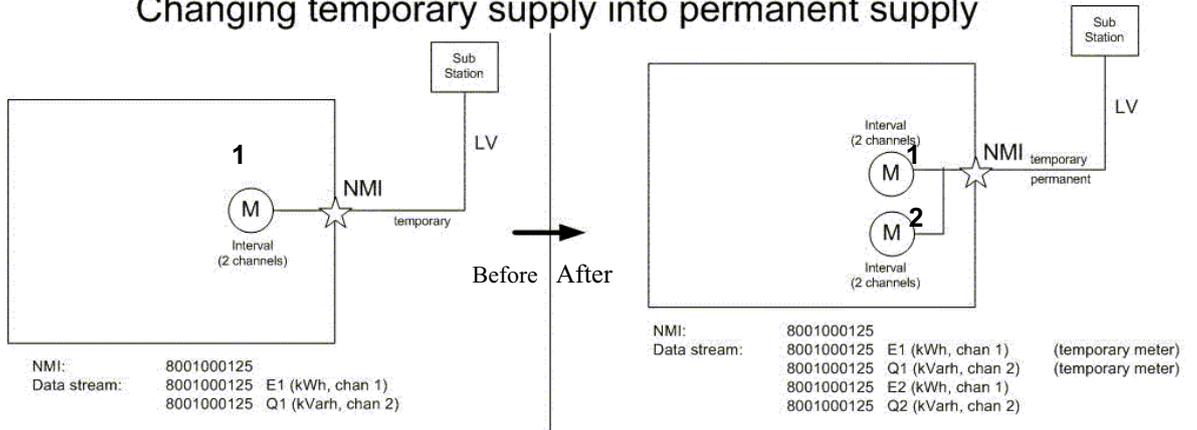


NMI: 8001000125
 Data stream: 8001000125 E1 (kWh, chan 1)
 8001000125 Q1 (kVarh, chan 2)

NMI: 8001000125
 Data stream: 8001000125 E1 (kWh, chan 1)
 8001000125 Q1 (kVarh, chan 2)

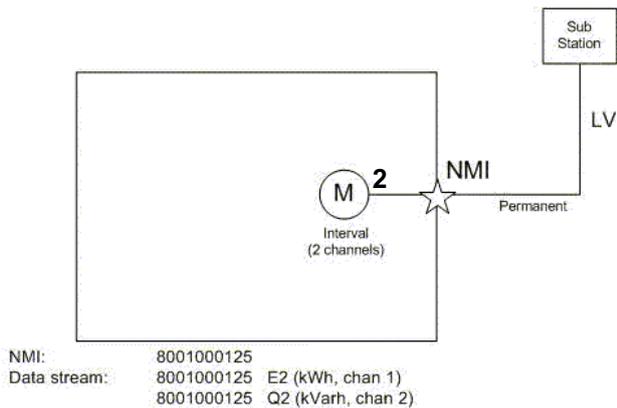
Changing temporary to permanent => no change in NMI

Changing temporary supply into permanent supply



[22]

Changing temporary to permanent => 2 meters on the same NMI if the temporary supply is still active when the permanent supply is activated. Later in time the meter of the temporary supply will be removed, see below in figure [23]:



[23]