

ESB Smart Metering Project

Impact on Current Electricity Market Processes

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List of Abbreviations

Agg	Aggregation
C/kWh	Cent per Kilowatt hour
CBA	Cost Benefit Analysis
CER	Commission for Electricity Regulation
COLE	Change Of Legal Entity
COS	Change of Supplier
DE	De-Energisation
DR	Discussion Request
DSO	Distribution System Operator
DUoS	Distribution Use of System
ESBN	Electricity Supply Board Networks
EUF	Estimated Usage Factor
HH	Half Hourly
IHD	In Home Display
IT	Information Technology
kV	Kilo Volts
kVA	Kilo Volt Amperes
kW	Kilo Watt
kWh	Kilo Watt Hour
LV	Low Voltage
MCC	Meter Configuration Code
MCR	Market Change Request
MD	Max Demand
MEC	Maximum Export Capacity
MIC	Maximum Import Capacity
MPD	Market Process Document
MPRN	Meter Point Reference Number
MRSO	Meter Registration System Operator
mV	Medium Voltage
mW	Mega Watts
NA	Not Applicable
NPA	Non Payment of Account
NQH	Non Quarter Hourly
PPM	Prepayment Meter
PSO	Public Service Obligation
QH	Quarter Hourly
RE	Re-Energisation
ROI	Republic Of Ireland
SEMO	Single Electricity Market Operator
SOLR	Supplier of Last Resort
SSAC	Supplier Sub-Aggregation Code
TCC	Tariff Configuration Code
TOU	Time Of Use
TSO	Transmission System Operator

1 Executive Summary

The purpose of this document is to commence the process by which the electricity industry will eventually agree the changes to the retail market design that will be necessary to deliver the benefits of smart metering. There are many critical policy decisions yet to be made around tariffs, prepayment and customer information; however this is an initial high level impact assessment focusing on the market processes.

Based on the benefits identified in the CBA, the changes smart metering will deliver can be covered under four broad categories –

- **Smart services** - Smart meters can potentially bring greater flexibility and automation to many of the existing services provided by ESB Networks to the electricity market. Delivering such flexibilities will require changes to market systems. The services affected include meter reading, de-energisation/re-energisation and changing tariffs. In addition, remote meter reading can lead to changes in processes that require the supplier to provide a read or request ESN to do a site visit to read the meter.
- **Enabling a range of new tariffs** - Smart metering will be required to support new time of use tariffs. These could be enabled either through new non interval MCCs to support the tariffs being delivered on the meter, or collecting half hourly (HH) interval data and using the IT systems to calculate the tariff. The introduction of new non interval MCCs will affect the market processes and messages. Alternatively, using HH interval data to create ToU tariffs on the supplier systems would have a major impact on the central market system and message volumes. New MCCs will drive changes in the data aggregation process with the potential of using the HH data for settlement. Changes will also be required in DUoS billing. Based on the roll out phasing decisions the impact on the central market system and market processes will vary considerably from medium (new non interval MCC) to very high (HH data only).
- **Supporting prepayment and the relative impacts of thick v thin models** - The thin prepayment solution will require collecting daily reads to support the calculation of credit/debit balances and will also lead to an increase in the messaging for remote de-energise / re-energise or remote load limiting activation / deactivation. A new process may be required to facilitate suppliers sending credit/debit balance information to the IHD.

For thick prepayment top-up money amounts paid by the customer to the supplier will have to be communicated via the central market system to the smart meter in 'real time'. Whether these could be accommodated in existing market processes or are separated to new processes will need to be agreed. For thick prepayment a mechanism will be required to enable the price information associated with the different time of use bands (MCCs) to be passed to the meter. The concept of a Tariff Configuration Code similar to that used in the Northern Ireland retail market would have to be introduced. A number of market processes would be more complex e.g. COS.

- Mandatory in home display** - The IHD may be required to display cost information. If it is a requirement to support the price being communicated from the supplier's system to the meter, via the central market system, then new market processes and the introduction of the concept of a tariff configuration code will be required. In addition, a new market process may be required to facilitate passing supplier text messages to the IHD. Preventing a new customer accessing the previous customer's data on an IHD will impact the COLE process.

The following table summarises the areas where these categories may have an impact on the current market processes.

1.1 High Level Summary of Impact of Changes

MPD No.	MPD Name	Areas of Impact					
		1. Smart Services	2. ToU and New MCCs	3. Prepayment		4. Mandated IHD	
				Thick	Thin		
MPD 01	CoS NQH	High	Medium	High	Low	High	
MPD 03	Objections and Cancellations	Medium/High	Medium	High	N/A	High	
MPD 04	SoLR	Medium/High	Medium	High	N/A	High	
MPD 05	New NQH Metered Connection	Low	High	High	Low	High	
MPD 08 1.1	Changes to Connection Characteristics	Low	Medium	Low	Low	High	
MPD 09	De-Energisation	Medium	Medium	Low	Low	N/A	
MPD 10	Re-Energisation	Medium	Medium	Low	Low	Medium	
MPD 11	Changes to Meter Configuration	High	High	High	Low	High	
MPD 12	Meter Problems and Damage	Medium	Low	Low	Low	Medium	
MPD 14	Readings Processing Non QH	High/Very High	Medium	Low	High	N/A	
MPD 16	Data Aggregation	High	Medium/High	N/A	N/A	N/A	
MPD 17	Adjustments to consumption	Low	N/A	N/A	N/A	High	
MPD 18	Special Read Request	Low	Low	N/A	N/A	N/A	
MPD 22	Customer Data Request	Low	N/A	N/A	N/A	N/A	
MPD 23	Supplier Data Requests	Low	N/A	N/A	N/A	N/A	
MPD 24	Change of Customer Details	N/A	Low	Low	N/A	Medium	
MPD 25	Change of Legal Entity	High	Medium	Medium	N/A	High	
MPD 34	DUoS, Transaction & PSO Payment Process	High	High	N/A	Low	N/A	
MPD 35	Change of Metering NQH to QH	Low	Medium	N/A	N/A	N/A	

Next Steps

CER workshops will be arranged in the first quarter of 2013 to agree policy and implementation decisions for smart metering in Ireland. Further workshops with all stakeholders will be arranged to review the changes resulting from the introduction of smart metering into the market design. The output of these workshops will be an agreed final market design for smart metering. The DR/MCR process can then be initiated to fully assess the impact and implement the agreed market design changes to the central market systems and supplier systems.

2 Smart Metering: Major functional areas and change implications overview

The introduction of a smart meter brings new functionality which allows a review of a number of key Business and Retail Market processes. The functionality can be broadly categorised under the following headings:

1. Smart Services
2. Times of Use & New MCCs
3. Prepayment
4. Mandated IHD

2.1 Smart Services

The introduction of a smart meter can potentially bring greater flexibility and automation to many of the existing services provided by ESB Networks to the electricity market. This includes moving from manual to remote reading of meters, ending estimated reads as part of the billing cycle and the potential to change the meter reading/billing cycle. Moving to more flexible planned meter reading arrangements will have an impact on the market processes and DUoS billing. There would be major impacts on the market systems and interfaces because of the increase in messages due to a more frequent meter read cycle or the sub optimal use of the system if calendarisation is adopted. Changing from bi-monthly to monthly billing (each day for 31 days) would be medium impact while changing to calendarised billing would have very high impacts on the central market system and market processes.

Remote meter reading also allows a review of the market processes which either require the supplier to provide a read or request ESBN to do a site visit to obtain a read in order for the process to continue. With remote reading ESBN will be able to obtain an actual read remotely thus allowing faster completion of some market processes. Based on the decisions on the use of remote reads the impact on the central market system and market processes will be medium to high.

The smart meter will also enable de-energisation / re-energisations to be executed remotely. This will require a review of the current policy on de-energisation, re-energisation, associated codes and their related market processes. The resulting impact on the central market systems and market processes would be medium.

Remote tariff or configuration code changes can also be automated. This impact would be medium.

The ability of the smart device to record events and errors will mean that some tampering events will be able to be identified quickly and an appropriate response implemented. From the central market systems and market processes point of view it allows a review of the Meter Problems & Damage and also the Adjustment in Consumption market processes. The impact would be medium.

2.2 *New Time of use tariffs – New MCCs / Use of Interval Data*

Smart metering will be required to support new time of use tariffs. The structure of these tariffs and the approach to their implementation will be decided by the CER governed ToU policy workshops in 2013. New ToU tariffs can be enabled either through the introduction of new non interval MCCs to facilitate the tariffs being calculated on the meter or collecting the interval data and suppliers using their systems to calculate the tariff. The introduction of new MCCs will affect market processes which involve the communication of register data to or from suppliers. All such market messages can accommodate multiple registers currently so the impact will be the addition of new master data e.g. MCC, registers, times of use etc. There will be a limit to the number and complexity of new MCCs.

It is also important to understand that even though two ToU tariffs have, for example, three rates – if there are different timeslots associated with these rates then different MCCs will be required to support them. These new MCCs will need new Standard Profiles to facilitate Data Aggregation. Given the novel and unpredictable nature of some of these new tariffs it may be difficult to rely on the accuracy of estimated profiles. There may be a new market process for allowing the supplier to send updates to their tariffs which would have a volume and sizing impact on the central market systems. Customer and supplier awareness of the new MCCs and additional validations for all market processes that communicate the MCC will also impact the central market systems and market processes. Finally new MCCs may require new DUoS rates to be implemented and reflected in the supporting DUoS invoice and supporting documents. The impact on the central market system and market processes would be medium to high.

If the use of half hourly (HH) interval data is the way to support ToU tariffs it is important to understand that due to the dramatic impact on volumes we do not envisage that we will replicate the current QH solution for HH interval customers. Some of the issues around dealing with the significant increase in data volumes are discussed in the ***ESB Networks Smart Metering Project Industry Portal Options*** document.

The fact that smart metering can record half hourly interval data enables the possibility of changing how aggregation is carried out. Instead of using standard profiles and usage factors to determine the profile values for aggregation, actual half hour data would be available at the meter for all 'NQH' meter points. The advantage of using actual profile data for aggregation will mean that the settlement data is more accurate while the challenge is the daily collection and processing of 48 profile values for 2.3M sites. However, that will involve considerable upgrades and a very high impact to the central market system.

As well as supporting supplier tariffs and settlement, HH data could also be used for DUoS billing based on a DUoS tariff which may be structured differently to the supplier tariffs. Based on the phasing decisions the impact on the central market system and market processes will vary considerably from medium (new non interval MCCs) to very high (HH data only)

2.3 Prepayment

The prepayment solution chosen will also have an impact on the central market systems and market processes. The thin solution will require collecting and sending daily reads from the meter to the supplier to support the supplier's calculation of credit/debit balances and will also see an increase in the messaging for remote de-energise / re-energise or remote load limiting activation / deactivation. It may also be required to facilitate text messaging to the IHD with supplier updates for the customer.

Thick prepayment on the other hand will require the meter to know the supplier tariff - cost per kWh per register - and keep the credit/debit balance. All top-up money amounts paid by the customer to the supplier will have to be communicated via the central market system to the smart meter in 'real time'. Whether these could be accommodated in existing market processes or are separated to new processes will need to be agreed. For thick prepayment a mechanism would be required to enable the prices associated with the different time of use bands (MCCs) to be calculated, the concept of a Tariff Configuration Code similar to that used in the Northern Ireland retail market could to be introduced. For prepayment the thin solution would have a medium impact on the central market system by virtue of the requirement of daily reads while the thick solution would be deemed high by virtue of the need to provide the meter with timely top-ups to prevent the meter from self de-energising.

2.4 Mandated IHD

The IHD will be required to display cost information. There are a number of options to get the cost information onto the display. These include the customer imputing it manually on the IHD or the cost being communicated from the supplier's system to the e-meter via the central market system using current market processes. In the case of the latter then the concept of a tariff configuration code needs to be defined and implemented.

The potential capabilities of the IHD can be summarised as:

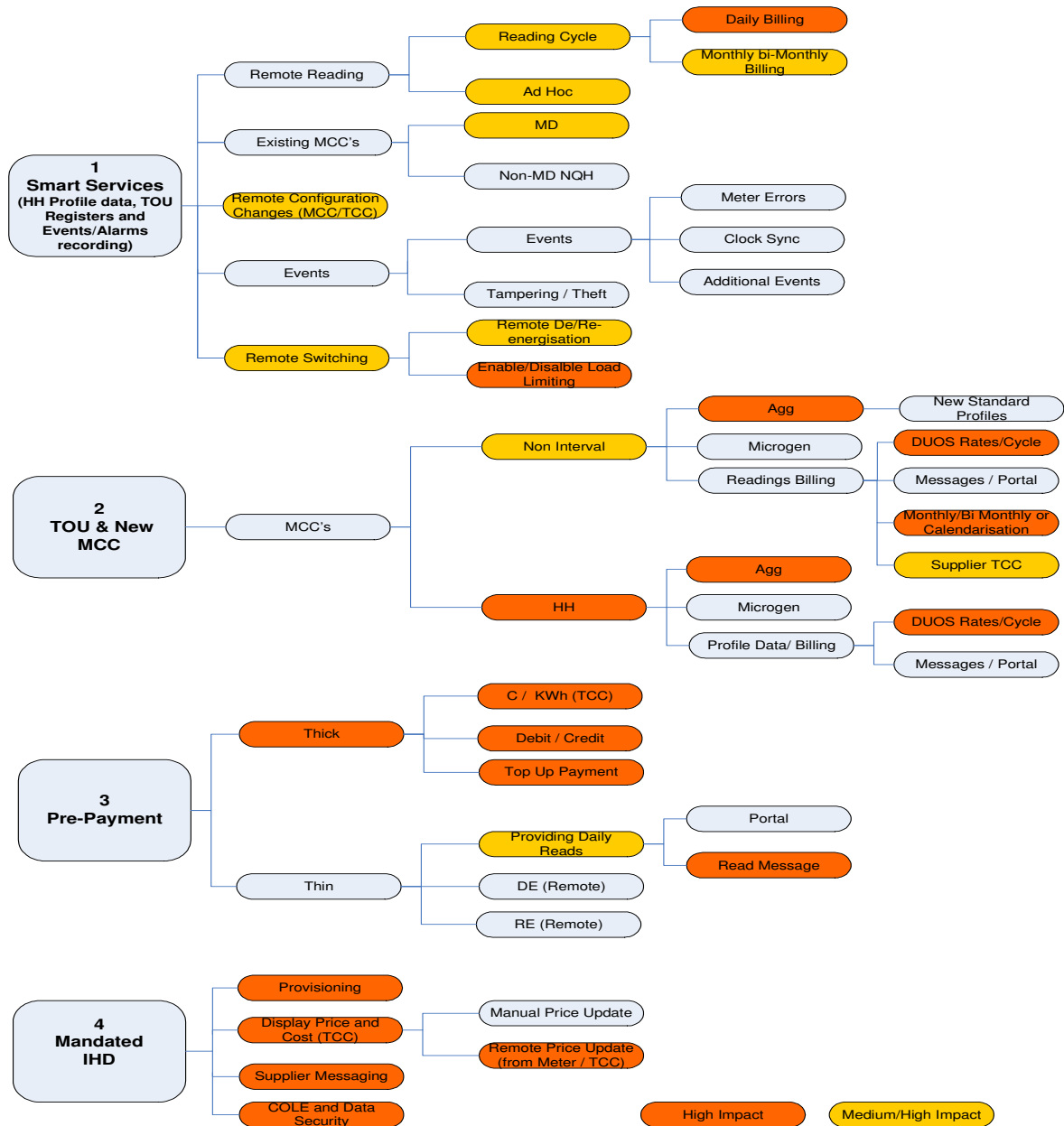
- Display consumption data
- Display cost information – the application of a supplier tariff onto the consumption data
- Display of Supplier 'Text Messages'

Depending on the final IHD solution there are two issues to be resolved:

1. Delivery of supplier specific tariff/price information to the IHD
2. Preventing a new customer accessing the previous customers data on a COLE

The impact on the central market systems is deemed medium/high depending on the solutions implemented.

The diagram below gives an overview of the functionalities and their areas of impact.



3 Detailed Impact Assessment on market processes

The table below summarises the potential changes to the current market processes. Appendix A shows each individual market process and how they may be impacted following the introduction of the smart metering related functionalities envisaged for the full roll out.

Green impacts in document
Yellow impacts implied

	Impact by Area																											
	Smart Device										New MCC/TCC				Prepayment		IHD											
	Remote Readings	Meter read billing cycle - Review	Remote De-Energisation	Remote activate Load Limiting	Remote Re-Energisation	Remote de-activate Load Limiting	Remote MCC/TCC changes	Smart capable v enabled	Smart and Meter reading routes	Appointment process - Review	Record Events and Errors	Record HH and/or Non Interval TOU register data	Historical meter read data	New MCC, Registers, Segments in Message	HH MCC?	Customer awareness of new MCC	New Supplier ID MCC TCC validations	Volumes Sizing	New Standard Profiles	New DUoS Rates for new MCCs	DUoS Invoice and Supporting documents (new TOUs)	Thick c/kWh, € topup, CR/DR bal	Thin - Remote Daily Reads	Thin - Remote De-Energisation/Re-Energisation	Customer awareness CR v PPM	Default TCC for MCC	TCC for IHD of Cost info	
MPD 01 COS NQH	x				x	x								x			x					x	x	x			x	
MPD 02 COS QH																												
MPD 03 Objection and Cancellation	x		x		x		x						x				x						x					x
MPD 04 SOLR	x													x									x					x
MPD 05 New NQH Metered Connection								x	x					x		x	x									x	x	
MPD 06 New QH Metered Connection																												
MPD 07 1.1 New Dist Conn Non Participant Generator																												
MPD 07 1.2 New Dist Conn Participant Generator																												
MPD 07 1.3 Update Non Participant Generator																												
MPD 07 1.4 Non Participant Generator turns Participant																												
MPD 07 1.5 Participant Generator turns Non Participant																												
MPD 08 1.1 Change of Conn Characteristics							x	x	x					x		x	x						x				x	x
MPD 08 1.2 Replace Exp Arr with Submetering																												
MPD 09 De-Energisation	x		x	x										x									x		x			
MPD 10 Re-Energisation	x				x	x				x				x			x						x		x			x
MPD 11 Change of Meter Configuration	x						x	x		x				x			x						x		x			x
MPD 12 Meter Problems & Damage											x			x									x	x				x
MPD 14 Reading Processing Non QH	x	x								x				x									x					
MPD 15 Data Processing QH																												
MPD 16 Data Aggregation	x	x												x	x								x					
MPD 17 Adjustments to consumption	x										x			x														
MPD 18 Special Read Requests	x													x														
MPD 19 Terminate Connection																												
MPD 20 Change of SSAC and or Supplier Unit																												
MPD 21 De-Registration																												
MPD 22 Customer Data Request	x																											
MPD 23 Supplier Data Request	x																											
MPD 24 Change of Customer Details																												
MPD 25 Change of Legal Entity	x						x							x	x								x	x				x
MPD 25 Change of Legal Entity single point unmetered																												
MPD 27 New Grouped MPRN																												
MPD 28 1.1 New Unmetered Grouped Con																												
MPD 28 1.2 New Unmetered Single point Con																												
MPD 29 COS Grouped Unmetered																												
MPD 30 Change of Inventory for Tech Meter Pt																												
MPD 31 Grouped Unmetered Data Processing																												
MPD 32 CoLE Grouped Unmetered																												
MPD 33 COS Single Point Unmetered																												
MPD 34 DUoS, Transaction and PSO Payment Process	x	x	x	x	x	x	x							x								x	x		x			
MPD 35 Change of Metering NQH to QH	x													x														
MPD 36 1.1 Change of Group MPRN COS																												
MPD 36 1.2 Change of Group MPRN_no COS																												

The table below lists some new processes that may be required and their impacts.

Green impacts in document
Yellow impacts implied

	Impact by Area																										
	Smart Device								New MCC/TCC				Prepayment			IHD											
	Remote Readings	Meter read billing cycle - Review	Remote De-Energisation	Remote activate Load Limiting	Remote Re-Energisation	Remote de-activate Load Limiting	Remote MCC/TCC changes	Smart capable v enabled	Smart and Meter reading routes	Appointment process - Review	Record Events and Errors	Record HH and/or Non Interval TOU register data	Historical meter read data	New MCC, Registers, Segments in Message	HH MCC?	Customer awareness of new MCC	New Supplier ID MCC TCC validations	Volumes Sizing	New Standard Profiles	New DUoS Rates for new MCCs	DUoS Invoice and Supporting documents (new TOU's)	Thick c/kWh, € topup, CR/DR bal	Thin - Remote Daily Reads	Thin - Remote De-Energisation/Re-Energisation	Customer awareness CR v PPM	Default TCC for MCC	TCC for IHD of Cost info
Tariff Configuration Code changes	x					x							x			x	x					x					x
MicroGeneration	x					x				x			x														
COS HH													x	x								x	x				x
New HH Metered Connection													x	x								x	x				x
Data Processing HH	x										x							x				x					
Change of Metering HH to QH	x												x	x													

4 Impact Assessment on Agreed Procedures

The Agreed Procedures are not impacted by the introduction of Smart Metering as ESNB is a data provider for SEMO. However where SEMO deems that changes need to be made to take advantage of the more up to date actual data that is available then there may be an impact on Agreed Procedure 16 "Provision of Meter Data"

There is no Impact if the aggregation schedule stays the same with the introduction of Smart Metering. But there is a question for the Market Operator SEMO with the availability of more up to date consumption information from remote reading "Is the current Aggregation schedule adequate or is a new one to be implemented?"

Refer to Appendix B of this document for a full listing of agreed procedures.

5 Impact Assessment on Working Practices

Overall there is no impact on the existing working practices with the introduction of smart metering but new working practices may need to be introduced, for example, Clock Synchronisation.

Refer to Appendix C of this document for a full listing of the current working practices.

6 Impact Assessment on Additional Documents

There will be a need to impact assess other documents

- Trading and Settlement Code
- Distribution Code of Practise
- Customer Billing Code of Practise
- Re-write of briefing documents
- ROI Market Message Guides

Appendices

7 Appendix A - Detailed Impact Assessment on Market Processes

Each section below details the high level impact of the changes needed to support smart metering on the current market process documents. Each of the MPDs are reviewed in detail.

7.1 MPD01 Change of Supplier NQH

The introduction of smart metering and the ability to obtain a remote read allows a review of the Change of Supplier read arrangement process.

7.1.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High	<ul style="list-style-type: none"> Revised COS read process and time lines – actual reads may be available, Implied re-energisation process – remote re-energisation possible MCC/TCC change process – remote changes possible
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> MCC – new registers data and additional segments in COS messages which have read information.
Prepayment	High/Low	<ul style="list-style-type: none"> Thick – High – c/kWh, € Top up, CREDIT/DEBIT balance Thin – Low - daily reads. Remote De/Re Energisation
Mandated IHD	High	<ul style="list-style-type: none"> TCC depending on IHD update of c/kWh information and prepayment solution – COS message and process impacted COS with COLE and data protection

7.1.2 Open Items

No	Description
1	Decision - COS read arrangement process – will new supplier provide COS date only and ESBN retrieve COS read.
2	Decision - Customer read process for smart metering – is it still relevant
3	Decision - Special read process for smart metering – is it still relevant.
4	Decision – Meter read cycle – Daily v Monthly and use of estimates.
5	Decision on new MCCs – number and complexity
6	Decision on need to display supplier tariffs / cost information on IHD and need for introduction of TCC to support.
7	Decision on thick or thin prepayment
8	Decision – How will customer access their data securely on IHD and COLE

7.2 MPD 02 COS QH

The plan is for delivery of smart metering to all NQH MPRNs and whether some or all sites may be measured as HH interval or non interval data is yet to be determined. If sites are to be measured as HH then the impact will need to be reviewed and a new market process introduced depending on the final agreement.

7.2.1 High Level Impact COS QH

Smart Meter Functionality	Impact	Reason
Smart Services	NA	As Is
New Time of Use Tariffs (MCC)	NA	As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.2.2 High Level Impact if COS HH

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> Part of QH process or a new HH process
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> Changes to market message to accommodate new MCC based on HH Interval. TCC will apply to the 48 applicable prices for the HH data
Prepayment	Low/High	<ul style="list-style-type: none"> Thick is High TCCs and C/kWh Thin is Low
Mandated IHD	High	<ul style="list-style-type: none"> TCC will apply to the 48 applicable prices for the HH data COS with COLE and data protection

7.2.3 Open Items

No	Description
1	Decision – Will there be a half hour (HH) MCC and the timing of its availability
2	Decision – How will customer access the data securely on IHD and COLE

7.3 MPD 03 Objection & Cancellation

The introduction of smart metering and the ability to remotely obtain actual reads, change MCC/TCC and re-energise will have an impact in the COS NQH cancellation process. When a new supplier ultimately cancels the original COS the MCC/TCC may need to be reversed and the previous suppliers MCC/TCC reinstated.

7.3.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Medium/High	<ul style="list-style-type: none"> Revised COS read process and time lines – actual read may be available Implied re-energisation process – remote re-energisation may be completed - cancellation process impacted MCC/TCC change process – remote change may be completed - cancellation process impacted On cancellation of the registration smart metering would facilitate a re-instatement of the original MCC, TCC, Meter point status setup
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> MCC – Medium - new registers data and additional segments in COS messages which have read information.
Prepayment	High	<ul style="list-style-type: none"> Thick – High – c/kWh, € Top up, Credit/Debit balance – cancellation process impacted Thin – N/A
Mandated IHD	High	<ul style="list-style-type: none"> TCC – High - depending on IHD update of c/kWh information and prepayment solution – data may be on IHD - cancellation process impacted

7.3.2 Open Items

No	Description
1	Decision – Agree cancellation process where remote re-energisation or remote MCC/TCC changes have been completed.
2	Decision – Agree cancellation process if supplier tariffs / cost information on IHD
3	Decision on thick or thin prepayment
4	Decision - Currently QH is excluded from this process, is HH data treated the same?

7.4 MPD 04 SOLR

The introduction of smart metering and the ability to remotely obtain actual reads, change MCC/TCC and reenergise will have an impact in the SOLR process

7.4.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Medium/High	<ul style="list-style-type: none"> Revised Alternative Supplier COS read process and time lines – actual read may be available where estimates are required currently and MD sites Customer reads no longer required Special reads no longer required TCC change process impacted
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> MCC – new registers data and additional segments in messages which have read information.
Prepayment	High/	<ul style="list-style-type: none"> Thick – High – c/kWh, € Top up, Credit/Debit balance Thin – N/A
Mandated IHD	High	<ul style="list-style-type: none"> TCC – High - depending on IHD update of c/kWh information and prepayment solution – data may be on IHD - SOLR process impacted

7.4.2 Open Items

No	Description
1	Decision - COS read arrangement process – will new supplier provide COS date only and ESNB retrieve COS read.
2	Decision - Customer read process for smart metering – is it still relevant
3	Decision - Special read process for smart metering – is it still relevant. (SOLR for MD's)
4	Decision – Meter read cycle – Daily v Monthly and use of estimates.
5	Decision on need to display supplier tariffs / cost information on IHD and need for introduction of TCC to support. – changing TCC on SOLR and complexity
6	Decision on thick or thin prepayment – updating Thick PPM with SOLR c/kWh, Credit/Debit balance and € top-up.

7.5 MPD 05 New NQH Metered Connection

For the new connections process the MCC and associated DUoS categories are determined at the application stage. Smart metering will bring new MCCs and an enduring solution for prepayment in ROI.

7.5.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> How the new connection fits into the roll out of smart metering infrastructure – Smart capable but no smart infrastructure in place- Smart meter in smart area - exclude new connection from Meter reading route and validations
New Time of Use Tariffs (MCC)	High	<ul style="list-style-type: none"> MCC – Customer awareness of new MCCs at application stage MCC – new registers data and additional segments in messages which have read information Central Market Systems changes – Service Orders, Service Products, Tasks, Scheduling Durations, Hand Held data capture and completion process changes New Connections Process – additional validations MCC, DUoS, Rate Categories etc
Prepayment	High/Low	<ul style="list-style-type: none"> Customer decision on CR/PPM in new connections process at application stage. Thick – High – c/kWh, € Top up, Credit/Debit balance must be provided on the New Registration market message and process
Mandated IHD	High	<ul style="list-style-type: none"> TCC – depending on IHD update of c/kWh information and prepayment solution – data may be on IHD – New Registration message and process impacted

7.5.2 Open Items

No	Description
1	Decision on new MCCs – number and complexity – Customer must select MCC in New Connections process at application stage
2	Decision on need to display supplier tariffs / cost information on IHD and need for introduction of TCC to support – TCC and related information required in New Registration process
3	Decision on thick or thin prepayment – updating thick prepayment on a New Registration with c/kWh, Credit/Debit balance and € top up.
4	Decision – Prepayment and DUoS category validation combination in the new connections process.
5	Decision on installation of smart capable meter in a non smart area during roll out phase – Meter status in central market system.
6	Decision- Is provision of an IHD mandatory for new connections?

7.6 MPD 06 New QH Metered Connection

Currently only mV, 38kV and 110kV customers are QH from connection. For LV customers a QH capable meter is installed at 50kVA and above but the MCC is set to MD in order to allow for a future change from NQH to QH when the 300,000kWh threshold is achieved. With Smart metering will a smart meter or a QH capable meter be installed? Also the plan for delivery of smart metering to all NQH MPRN's and whether some or all sites may be measured as HH Interval or Non Interval data needs to be determined. If sites are to be measured as HH then the impact will need to be reviewed.

7.6.1 High Level Impact QH

Smart Meter Functionality	Impact	Reason
Smart Services	NA	As Is
New Time of Use Tariffs (MCC)	NA	As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.6.2 High Level Impact HH

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> Extension of QH process to incorporate HH
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> Changes to market message to accommodate new MCC based on HH Interval.
Prepayment	Low/High	<ul style="list-style-type: none"> Thick is High TCCs and C/kWh impacted at the registration stage Thin is Low
Mandated IHD	High	<ul style="list-style-type: none"> TCC will apply to the 48 applicable prices for the HH data at the registration stage

7.6.3 Open Items

No	Description
1	Decision - LV MD sites \geq 50kVA at new connection – set up with smart meter or QH capable meter.
2	Decision - Will there be a HH MCC when Smart Metering is implemented.
3	Decision on installation of smart capable meter in a non smart area during roll out phase. – Device status.
4	Decision - LV MD sites \geq 50kVA at new connection – Should the 300,000kWh threshold be removed and allow to be set up as QH

7.7 MPD 07 1.1 New Distribution Connected Non-Participant Generator

(<10mW export) Currently all sites with export (other than micro generation) have QH Import and Export metering installed at new connection stage.

7.7.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	QH - As Is
New Time of Use Tariffs (MCC)	NA	QH - As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.7.2 Open Items

No	Description
1	Decision – To what extent if any will micro generation be handled by smart metering
2	Decision - Will LV export stay at QH once smart metering is introduced?

7.8 MPD 07 1.2 New Distribution Connected Participant Generator

(>= 10mW Export) Currently all sites with export (other than micro generation) have QH Import and Export metering installed at new connection stage.

7.8.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	QH - As Is
New Time of Use Tariffs (MCC)	NA	QH - As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.8.2 Open Items

No	Description
1	NA

7.9 MPD 07 1.3 Update Non-Participant Generator

(< 10mW Export) Agreeing updated export arrangements with Supplier(s)

7.9.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	As Is
New Time of Use Tariffs (MCC)	NA	As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.9.2 Open Items

No	Description
1	NA

7.10 MPD 07 1.4 Non Participant Generator turns Participant

Currently all sites with export (other than micro generation) have QH Import and export metering installed at new connection stage.

7.10.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	QH - As Is
New Time of Use Tariffs (MCC)	NA	QH - As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.10.2 Open Items

No	Description
1	NA

7.11 MPD 07 1.5 Participant Generator turns Non Participant

Currently all sites with export (other than micro generation) have QH Import and export metering installed at new connection stage.

7.11.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	QH - As Is
New Time of Use Tariffs (MCC)	NA	QH - As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.11.2 Open Items

No	Description
1	NA

7.12 MPD 08 1.1 Change to Connection Characteristics

Increased / Decreased connections – MIC, MEC, DUoS changes.

7.12.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> How the new connection fits into the roll out of smart metering infrastructure – Smart capable but no smart infrastructure in place Smart meter in smart area - exclude new connection from meter reading route and validations
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> MCC – Customer awareness of new MCCs at application stage MCC – new registers data and additional segments in messages which have read information Central market systems changes – Service Orders, Service Products, Tasks, Scheduling Durations, Hand Held data capture and completion process changes New Connections Process – additional validations MCC, DUoS, Rate Categories etc
Prepayment	Low	<ul style="list-style-type: none"> Default TCC for MCC in increased/decreased connection process where customer choosing Prepayment

Mandated IHD	High	<ul style="list-style-type: none"> TCC – depending on IHD update of c/kWh information and prepayment solution – data may be on IHD, Agreed default TCCs to be applied in increased/decreased connection process and include in outgoing market messages.
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7.12.2 Open Items

No	Description
1	Decision on new MCCs – number and complexity – Customer must select MCC in increased/decrease Connections process at application stage
2	Decision on need to display supplier tariffs / cost information on IHD and need for introduction of TCC to support. – Agreement on default TCC and related information required in increased/decreased connection process and include in outgoing market messages.
3	Decision on thick or thin prepayment – updating thick prepayment with default c/kWh.
4	Decision – Prepayment and DUoS category validations combinations in the increase/decrease process.
5	Decision on installation of smart capable meter in a non smart area during roll out phase. – Meter status in central market systems
6	Default TCC for MCC in increased/decreased connection process where customer choosing prepayment

7.13 MPD 08 1.2 Replace Export Arrangements with Sub metering

7.13.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	QH - As Is
New Time of Use Tariffs (MCC)	NA	QH - As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.13.2 Open Items

No	Description
1	NA

7.14 MPD 09 De-Energisation

The smart metering infrastructure will allow remote de-energisation of the meter. There may also be an option to introduce load limiting on the meter if required.

7.14.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Medium	<ul style="list-style-type: none"> New reason codes to differentiate between remote and actual site visit de-energisation. New reason codes for Load Limiting if it's introduced
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> Messages will have to take account of the new MCCs
Prepayment	Low	<ul style="list-style-type: none"> Remote De-energisation
Mandated IHD	NA	NA

7.14.2 Open Items

No	Description
1	Decision- Is Load Limiting to be introduced?
2	Decision- Updating the Code of Practise to take account of remote de-energisation?

7.15 MPD 10 Re-Energisation

The smart metering infrastructure will allow remote re-energisation of the meter. There may also an option to introduce load limiting on the meter if required.

7.15.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Medium	<ul style="list-style-type: none"> New reason codes to differentiate between remote and actual site visit re-energisation. New reason codes for Load Limiting if it's introduced Appointment may not be required
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> Messages will have to take account of the new MCCs
Prepayment	Low	<ul style="list-style-type: none"> Remote Re-energisation
Mandated IHD	Medium	<ul style="list-style-type: none"> TCC – depending on IHD update of c/kWh information and prepayment solution – data may be on IHD COS with COLE and data protection

7.15.2 Open Items

No	Description
1	Decision- Is Load Limiting to be introduced?
2	Decision- Updating the Code of Practise to take account of remote de-energisation?
3	Decision- How is customer Informed once remote re-energisation is complete
4	Decision- How will customer access their data securely on IHD and COLE

7.16 MPD 11 Change to Meter Configuration

Following the introduction of smart metering and the possibility of remote meter configuration code changes, the appointment process can be reviewed. Also decisions on how the customer is to be informed of completion of the changes.

7.16.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High	<ul style="list-style-type: none"> Removal of need for site visits and appointments for remote MCC changes Remote capture of opening/closing read on MCC change New Work Type codes
New Time of Use Tariffs (MCC)	High	<ul style="list-style-type: none"> MCC – new MCCs (including micro generation) on associated market messages New register data and additional segments in messages which have read information New Validations (Supplier ID, MCC TCC combinations etc.)
Prepayment	High	<ul style="list-style-type: none"> Thick – High – new messages for update of c/kWh, € Top-Up, Credit/Debit balance, mass updates of rates Thin – Low – remote switching to/prepayment mode
Mandated IHD	High	<ul style="list-style-type: none"> TCC – depending on IHD update with c/kWh information and prepayment solution

7.16.2 Open Items

No	Description
1	Decision - New MCCs – number and complexity?
2	Decision - Thick or think prepayment?
3	Decision - Need to display supplier tariffs / cost information on IHD and need for introduction of TCC to support?
4	Decision - Mass MCC migration?
5	Decision - Whether TCC change is tied to MCC market message or a new message is created?
6	Decision – How is Customer informed of MCC change?

7.17 MPD 12 Meter Problems & Damage

Following the introduction of Smart Metering and the possibility of recording events and errors at the meter a new source of collecting meter problem and damage information can be incorporated into the existing process.

7.17.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Medium	<ul style="list-style-type: none"> Ability of meter to record events and errors and pass back to the central market system will improve the identification of events and speed of reaction to the events New observation codes to communicate new events to Suppliers may be required.
New Time of Use Tariffs (MCC)	Low	<ul style="list-style-type: none"> New register data and additional segments in messages which have read information
Prepayment	Low	<ul style="list-style-type: none"> Thick – Credit/Debit balance on meter Thin – Daily reads to support Supplier Credit/Debit balance calculations
Mandated IHD	Medium	<ul style="list-style-type: none"> IHD Problem & Damage process

7.17.2 Open Items

No	Description
1	Decision – Possible new observation codes to inform Suppliers of new events at meter
2	Decision – What events will require investigation?

7.18 MPD 14 Readings Processing Non QH

Following the introduction of smart metering and the possibility of remote reading the percentage of actual reads achieved will be impacted.

Planned estimates in the annual meter reading cycle will be removed.

Also the percentage long term no access sites should also be impacted.

7.18.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High/Very High	<ul style="list-style-type: none"> Remote meter reading improves the availability of actual reads thus reducing the percentage of estimates used Remote meter reading allows a review of the meter reading billing cycle from Bi-Monthly to Monthly/Daily/Calendarisation? The smart meter can record HH data and TOU register data. Remote meter reading allows a review of processes where the supplier or the customer currently need to provide a read (COS, Customer Read, COLE, Special Read)
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> New register data and additional segments in messages which have read information
Prepayment	High/Low	<ul style="list-style-type: none"> Thick – Low meter calculates CREDIT/DEBIT balance. Thin – High – Daily reads required to support supplier calculation of CREDIT/DEBIT balances
Mandated IHD	NA	NA

7.18.2 Open Items

No	Description
1	Decision – Will HH and/or TOU data be used?
2	Decision – Meter reading billing cycle – Bi-Monthly, Monthly, Daily, Calendarisation
3	Decision - Thick or thin prepayment?
4	Decision - COS, Customer read, Special Read, COLE process - will supplier provide date only and ESNB retrieve read to support process.
5	Decision – Is readings billing cycle still linked to DUoS billing cycle?

7.19 MPD 15 Data Processing QH

The plan is to deliver smart metering to all NQH MPRNs.

However if sites are to be measured as HH then the impact will need to be reviewed and a new Market Process introduced depending on the final agreement.

7.19.1 High Level Impact QH

Smart Meter Functionality	Impact	Reason
Smart Services	NA	As Is
New Time of Use Tariffs (MCC)	NA	As Is
Prepayment	NA	NA
Mandated IHD	NA	NA

7.19.2 High Level Impact if HH

Smart Meter Functionality	Impact	Reason
Smart Services	High/Medium	<ul style="list-style-type: none"> Changes to existing market messages or a new market message to accommodate the sending of the HH Interval data. HH data may be provided via a portal to suppliers
New Time of Use Tariffs (MCC)	Low	<ul style="list-style-type: none"> New MCC for HH data sites.
Prepayment	Low/High	<ul style="list-style-type: none"> Thick is High TCCs and C/kWh Thin is Low
Mandated IHD	High	<ul style="list-style-type: none"> TCC will apply to the 48 applicable prices for the HH data

7.19.3 Open Items

No	Description
1	Decision – Will HH data be used?
2	Decision - Will there be a HH MCC when smart metering is implemented.
3	Decision – Will there be a new market process
4	Decision – Will the HH data be used in the same way as the QH data for the DUoS billing cycle?

7.20 MPD 16 2.1 Data Aggregation

The aggregation process could use either the HH profile data or the TOU registers for market settlement of smart metered sites

7.20.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High	<ul style="list-style-type: none"> Meter has the capability of collecting actual HH profile data and/or TOU registers
New Time of Use Tariffs (MCC)	Medium/High	<ul style="list-style-type: none"> HH Data Aggregation, systems requires upgrades to accommodate volumes (2.3m*48 reads daily) and sizing (2.3m*48 reads daily for 13 months), possible change to 591/595 Messages. New process to send HH data to TSO if required. NHH data aggregation requires changes to the master data for the new MCC (New Values), Meter Category (New Values), Register Type (New Values), Time of Use (New Values). New standard profiles are also required
Prepayment	NA	<ul style="list-style-type: none"> No Impact on the aggregation process
Mandated IHD	NA	<ul style="list-style-type: none"> No impact on the IHD

7.20.2 Open Items

No	Description
1	Decision - HH data or NHH data?
2	Decision - Aggregated HH data is it part of 591/595 message or new message?
3	Decision – Are standard profiles for New NHH TOU’s available or can the profiles be built up from CBT data?
4	Decision – Is the current aggregation schedule adequate or is a new one to be implemented?
5	Decision – Is there a TSO requirement for the HH data?
6	Decision – Is there a change to the NQH/QH settlement differential allocation?

7.21 MPD 17 Adjustments to Consumption

Smart metering will provide more historical data to allow any adjustments that are needed or may provide the adjustment estimate details.

7.21.1 High Level Impact QH

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> The smart meter will provide real time information where meter faults occur Historical data may facilitate more accurate estimates
New Time of Use Tariffs (MCC)	NA	As Is
Prepayment	NA	NA
Mandated IHD	High	<ul style="list-style-type: none"> Accuracy of historical data

7.21.2 Open Items

No	Description
1	NA

7.22 MPD 18 Special Read Request

Smart metering will provide access to more frequent actual reads so that the need for special reads will lessen.

The portal will provide access to additional readings data outside of the market systems.

7.22.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> Special read request will be read remotely where the smart metering infrastructure is in place
New Time of Use Tariffs (MCC)	Low	<ul style="list-style-type: none"> New register data and additional segments in messages which have read information
Prepayment	NA	NA
Mandated IHD	NA	NA

7.22.2 Open Items

No	Description
1	NA

7.23 MPD 19 Terminate Connection

The existing Terminate Connection process is not affected by the introduction of smart metering.

7.23.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	NA
New Time of Use Tariffs (MCC)	NA	NA
Prepayment	NA	NA
Mandated IHD	NA	NA

7.23.2 Open Items

No	Description
1	NA

7.24 MPD 20 Change of SSAC and or Supplier Unit

The existing SSAC and Supplier Unit change process is not impacted by the introduction of smart metering.

7.24.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	NA
New Time of Use Tariffs (MCC)	NA	NA
Prepayment	NA	NA
Mandated IHD	NA	NA

7.24.2 Open Items

No	Description
1	NA

7.25 MPD 21 De-Registration

The existing De-Registration process is not impacted by the introduction of smart metering.

7.25.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	NA
New Time of Use Tariffs (MCC)	NA	NA
Prepayment	NA	NA
Mandated IHD	NA	NA

7.25.2 Open Items

No	Description
1	NA

7.26 MPD 22 Customer Data Request

Smart metering will have more consumption data available for the customer which may have an impact on the number of requests for access to the data.

7.26.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> More data is available for the customer
New Time of Use Tariffs (MCC)	NA	NA
Prepayment	NA	NA
Mandated IHD	NA	NA

7.26.2 Open Items

No	Description
1	Decision – Is the data to be provided by a Supplier or an ESB Networks customer portal
2	Decision – Will the customer be allowed access the Data directly (Supplier agnostic request)?

7.27 MPD 23 Supplier Data Request

Smart metering will have more consumption data available for the supplier.

7.27.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> More data is available for the supplier
New Time of Use Tariffs (MCC)	NA	NA
Prepayment	NA	NA
Mandated IHD	NA	NA

7.27.2 Open Items

No	Description
1	Decision – Is the data to be provided to a supplier via a portal?

7.28 MPD 24 Change of Customer Details

The Change of Customer Details process allows the supplier to propose a change of usage type from commercial to domestic and visa versa. If cost information needs to be displayed on an IHD or if the thick prepayment option is implemented then, when proposing a Change of Usage the supplier will need to also indicate what new tariff applies.

7.28.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	NA	NA
New Time of Use Tariffs (MCC)	Low	<ul style="list-style-type: none"> Default TCC will have to be set up for DSO initiated changes and displayed in messages
Prepayment	Low	<ul style="list-style-type: none"> Thick - TCC will have to be included in the Incoming 013 market message
Mandated IHD	Medium	<ul style="list-style-type: none"> TCC - depending on IHD update with c/kWh information and prepayment solution decisions the TCC may be included in the 013 and 114 market messages

7.28.2 Open Items

No	Description
1	Decision – Will the meter have to maintain and display the rates for the IHD and thick prepayment?
2	Decision – With remote reading is there any way to see change of usage type (domestic to commercial) or is it covered with the mandatory site visit?

7.29 MPD 25 Change of Legal Entity

The introduction of smart metering will allow the potential to have COLE date based and the smart metering infrastructure will provide the actual reads.

7.29.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High	<ul style="list-style-type: none"> • May be new read arrangement process based on date of COLE • The COLE process will use less estimates • Does COLE trigger an implied de-activation of Load Limiting (assuming activated for debt)
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> • Messages segments need to be changed for read information and TCC added • A COLE will initiate a process to delete the Historical data on the IHD
Prepayment	Medium	<ul style="list-style-type: none"> • Thick -The TCC plus change reads is included in the 116 MM (so supplier can work out remaining credit)
Mandated IHD	High	<ul style="list-style-type: none"> • Data protection and access of new occupant to previous customer's data.

7.29.2 Open Items

No	Description
1	Decision - COLE read arrangement process – will supplier provide COLE date only and ESNB retrieve COLE read.
2	Decision - Customer read process for Smart metering – is it still relevant?
3	Decision on need to display supplier Tariffs / cost information on IHD and need for introduction of TCC to support.
4	Decision on thick or thin prepayment
5	Data protection issues and access of new occupant to previous customer's data.

7.30 MPD 34 DUoS, Transaction & PSO Payment Process

The introduction of smart metering may change the DUoS process if the meter read billing cycle is changed. Will the DUoS still be linked to the meter read billing cycle?

7.30.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	High	<ul style="list-style-type: none"> Remote meter reading allows a review of the meter reading billing cycle from Bi-Monthly to Monthly/Daily/Calendarisation, will the DUoS billing cycle follow the meter read cycle as is or change? The smart meter can record HH data and TOU register data and either can be used.
New Time of Use Tariffs (MCC)	High	<ul style="list-style-type: none"> For the New TOU MCC new DUoS Rates will have to be implemented For the New HH MCC new DUoS Rates will have to be implemented DUoS invoice and supporting documents to include new registers
Prepayment	Low	<ul style="list-style-type: none"> Thin - If daily reads are sent through the current Market Systems then the impact on DUoS billing will need to be reviewed
Mandated IHD	NA	NA

7.30.2 Open Items

No	Description
1	Decision – Will HH and/or TOU data be used?
2	Decision – Meter reading billing cycle – Bi-Monthly, Monthly, Daily, Calendarisation
3	Decision - Thick or thin prepayment?
4	Decision – Is DUoS billing cycle still linked to meter read billing cycle?
5	Decision – Is the DUoS invoicing cycle to remain the same?

7.31 MPD 35 Change of Metering NQH to QH

Following the introduction of smart metering and the possibility of remote meter configuration code changes, do the existing rules which trigger a change from NQH to QH still apply?

7.31.1 High Level Impact

Smart Meter Functionality	Impact	Reason
Smart Services	Low	<ul style="list-style-type: none"> Remote capture of closing read on change if HH data
New Time of Use Tariffs (MCC)	Medium	<ul style="list-style-type: none"> New register data and additional segments in messages which have read information
Prepayment	NA	NA
Mandated IHD	NA	NA

7.31.2 Open Items

No	Description
1	Decision – Is HH data adequate for these sites
2	Decision- Is the 300,000kWH limit still applicable
3	Decision – Are all MD sites to be changed to QH

7.32 Unmetered MPDs

The introduction of Smart Metering will have no impact on the following unmetered processes.

- MPD 27 New Grouped MPRN v10.0
- MPD 28 1.1 New Unmetered Group Connection v10.0
- MPD 28 1.2 New Unmetered Single Point Connection v10.0
- MPD 29 CoS Grouped Unmetered v10.0
- MPD 30 Change in Inventory for Tech Meter Point v10.0
- MPD 31 Group Unmetered Data Processing v10.0
- MPD 32 CoLE Grouped Unmetered v10.0
- MPD 33 CoS Single Point Unmetered v10.0
- MPD 36 1.1 Change of Group MPRN_CoS v10.0
- MPD 36 1.2 Change of Group MPRN_no CoS v10.0

8 Appendix B – Agreed Procedures

Agreed Procedure	Impact
AP01 - Agreed Procedure 1 "Participant and Unit Registration and Deregistration"	None
AP02 - Agreed Procedure 2 "Interconnector User Capacity Right Calculation and Dispatch Notification"	None
AP03 - Agreed Procedure 3 "Communication Channel Qualification"	None
AP04 - Agreed Procedure 4 "Data Transaction Submission and Validation"	None
AP05 - Agreed Procedure 5 "Data Storage and IT Security"	None
AP06 - Agreed Procedure 6 "Data Publication"	None
AP07 - Agreed Procedure 7 "Emergency Communications"	None
AP09 - Agreed Procedure 9 "Credit Risk Management"	None
AP10 - Agreed Procedure 10 "Settlement Reallocation"	None
AP11 - Agreed Procedure 11 "Market System Operation, Testing, Upgrading and Support"	None
AP12 - Agreed Procedure 12 "Modifications Committee Operation"	None
AP13 - Agreed Procedure 13 "Query Generation"	None
AP14 - Agreed Procedure 14 "Disputes"	None
AP15 - Agreed Procedure 15 "Invoicing"	None
AP16 - Agreed Procedure 16 "Provision of Meter Data"	TBC
AP17 - Agreed Procedure 17 "Banking and Participant Payments"	None

9 Appendix C –Working Practices

Working Practice	Impact
Working Practice 0001 - Requesting a Resend of Market Messages	None
Working Practice 0002 - Requesting Registration of De-energised Sites	None
Working Practice 0003 - Controlling the number of 114 messages received in relation to a 013 Request	None
Working Practice 0004 - Terminate Connection- Request for a 021 message to be sent requesting de-registration	None
Working Practice 0005 - EUF detail at Register Level	None
Working Practice 0006 - Option to change CoS read arrangement where no reading becomes available or can be estimated under the agreed rules	None
Working Practice 0007 - Controls for TSO TuoS system for Initial Data Aggregation	None
Working Practice 0008 - Customer Request for Estimation for NIL Consumption	None
Working Practice 0009 - Suppliers to Confirm the name of the Connection agreement holder with MRSO	None
Working Practice 0011 - Re-Aggregation Messages Via CD	None
Working Practice 0012 - To nominate / denominate a Supplier as a recipient of Participant Generator messages	None
Working Practice 0014 - Distribution Connected Non Participant Generator Export Arrangements Working Practice	None
Working Practice 0015 - New Participant Registration	None
Working Practice 0016 - Document the procedure to be used for like-for-like replacement of a QH meter	None
Working Practice 0018 - Document the procedure to be used where a customer has a ESNB Landis & Gyr Budget Controller (Token Meter) installed	None
Working Practice 0019 - Keypad Meters	None
Working Practice 0020 - Debt Flagging	None
Working Practice 0021 - Crossed Metering Cases	None
New Working Practice - Clock Synchronisation	New