

Business Process

BP_SO_9.1 Demand Control Process

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1 ASSUMPTIONS

Assumptions made during the design of this process include:

- This is an all-island business process, meaning the same process will be used across both jurisdictions on the island, Ireland and Northern Ireland;
- The following business processes addresses all requirements, including roles, tools, and activities that will enable the TSO to achieve scheduling objectives;
- All required systems, including MMS are in place. They offer all required functionalities to support business needs; and
- Demand control in each jurisdiction should be instructed by the control centre in that jurisdiction, i.e. CHCC instructs all demand control activities in Northern Ireland and NCC instructs all demand control activities in Ireland.

2 PROCESS REFERENCES

2.1 RELATED RULES REFERENCES

The following table provides references to the documents that govern the design of this business process.

Document Title	Relevant Section	Description
SONI Grid Code	OC4 Demand Control	Operating Condition 4 Demand Control outlines the circumstances when the TSO may initiate demand reduction in order to maintain system security and the subsequent reconnection of that demand.
EirGrid Grid Code	OC5 Demand Control	Operating Condition 5 Demand Control outlines the circumstances when the TSO may initiate demand reduction in order to maintain system security and the subsequent reconnection of that demand.
Trading and Settlement Code	Chapter E Imbalance Price	Chapter E details the treatment of Imbalance Pricing including calculation and triggering of the Administered Scarcity Price following a demand control event.
Trading and Settlement Code	Chapter K Market Data Transactions	Chapter K details the transactions between Market Operator and System Operator.

2.2 RELATED DOCUMENTS

The following table provides a list of documents that are related to this business process.

Document Title	Relationship	Description
Trading & Settlement Code Appendix K Market Data Transactions	Output from Process	This details the data transactions required to be sent from the System Operator to the Market Operator following a demand control event.
BP_SO_9.2 Declaration of System Alerts	Related process	Declaration of System Alerts may be a pre cursor to this process. The system will be in an emergency state if demand control is manually activated. This may not be the case for automatic demand control.

System and Generator Frequency Settings	Information	This document contains the latest system (including generator, interconnector and under frequency demand) settings.
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3 PROCESS CONTEXT

3.1 BUSINESS MODEL RELATIONSHIP

The Demand Control Process sits within 'System Operations' group within the System Operator processes. Aside from scheduling and dispatch responsibilities there are several planned and unplanned activities required close to System Operations in order to manage the power system. Demand control may be triggered automatically following a significant system event or be planned by the TSO in accordance with the relevant Grid Code in order to maintain system security.

The scheduling and dispatch of demand as a market resource is considered along with the management of other dispatchable resources in separate scheduling and dispatch processes.

3.2 BACKGROUND AND SCOPE

Background

Demand control or load shedding may occur for the following reasons as per SONI and EirGrid Grid Codes.

1. Automatic Load Shedding / Low Frequency Demand Disconnection
2. Planned or Emergency Manual Disconnection
3. Customer Voltage Reduction (Northern Ireland only)
4. Mandatory Demand Curtailment (Ireland only)

I-SEM does not result in any changes to the triggers for demand control, however should such a demand control event occur due to a shortfall in capacity (and not for local voltage reasons) it will impact on the Imbalance Price and the Market Operator must be notified in real time. If demand control is required due to a shortage of capacity then the Imbalance Price is set to the Administered Scarcity Price as per the Trading and Settlement Code.

Scope

Automatic under frequency load shedding is facilitated through the Distribution System Operator following a significant event resulting in a low frequency to prevent system collapse. As this type of demand control event is automatic there is no requirement for the Transmission System Operator to carry out any process steps. The Market Management System will automatically detect a demand control under frequency result by examining the frequency nadir in real time and implementing Administered Scarcity Pricing for the relevant imbalance period.

This process covers the steps to be taken in real time should planned or emergency demand control be required. Once the requirement for demand control has been identified the Control Centre will notify the jurisdictional Distribution System Operator to implement any demand control actions. Once notified the Market Operator will ensure the Administered Scarcity Price is triggered in pricing.

4 PROCESS OBJECTIVE

The objective of this Business Process is to meet the following obligations under, namely:

- SONI Grid Code OC4 Demand Control;
- EirGrid Grid Code OC5 Demand Control;
- Trading and Settlement Code Chapter E Imbalance Price; and
- Trading and Settlement Code Appendix K Market Data Transactions.

5.1.1 SYSTEM OPERATIONS

The following table provides a summary of the obligations of *System Operations* relating to *Demand Control*:

Team Name	Responsibility in relation to process	Timeline Associated
System Operations	Trigger demand control process and provide update to the Market Operator automatically through MMS.	This will be as required

5.1.2 ESB NETWORKS DISTRIBUTION CONTROL CENTRE (DCC) / NIE NETWORKS (DCC)

The following table provides a summary of the obligations of *ESBN DCC / NIEN DCC* relating to *Demand Control*:

Team Name	Responsibility in relation to process	Timeline Associated
ESBN DCC / NIEN DCC	Implement demand control as instructed by the TSO.	This will be as required

5.1.3 MARKET OPERATOR

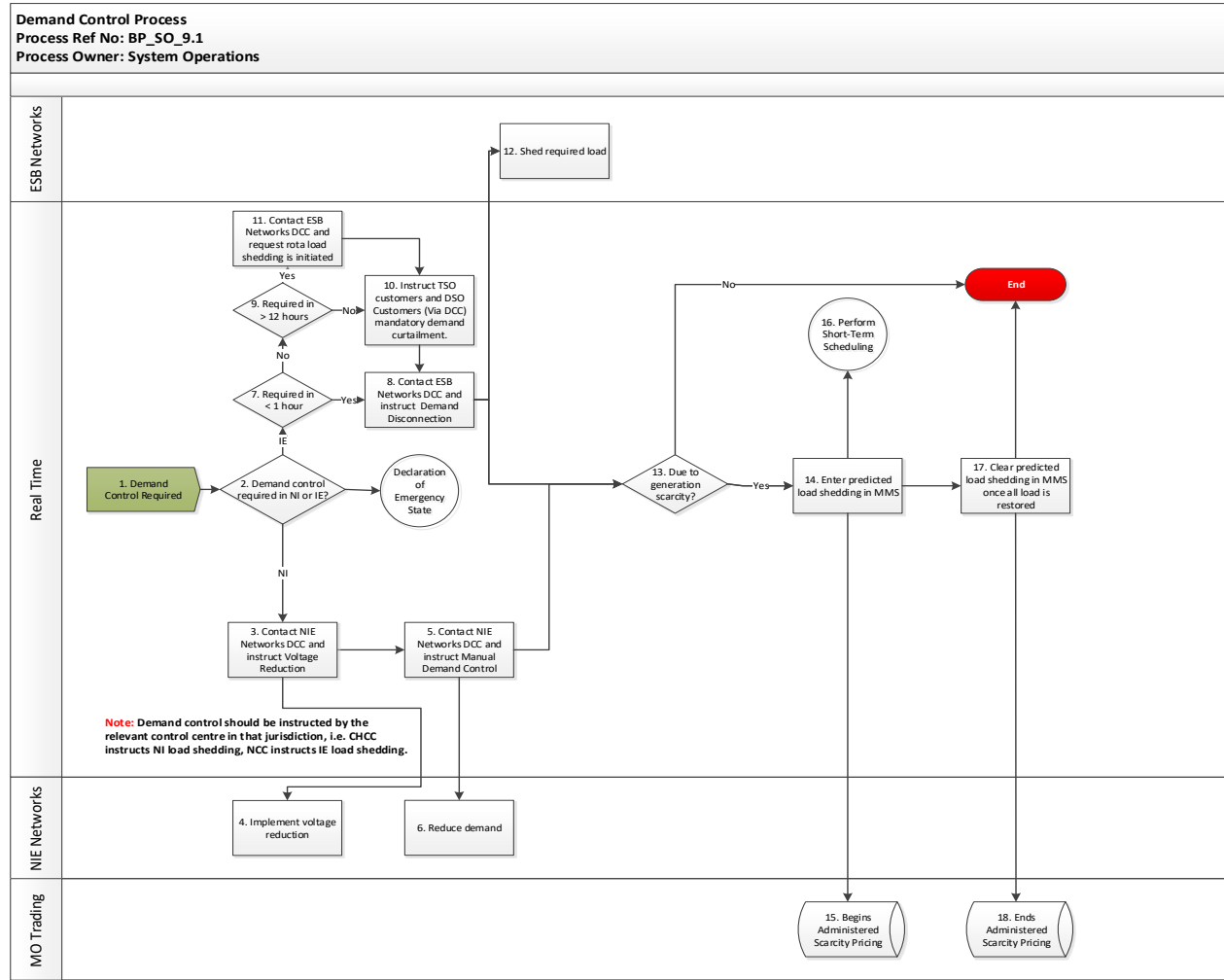
The following table provides a summary of the obligations of *Market Operator* relating to *Demand Control*:

Team Name	Responsibility in relation to process	Timeline Associated
Market Operator	Receive automatic notification of demand control from System Operator through MMS and automatically implements Administered Scarcity Pricing.	This will be as required

6 PROCESS DESCRIPTION

6.1 LEVEL 3 PROCESS

6.1.1 PROCESS MAP




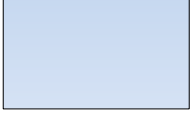
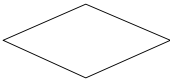




6.1.2 PROCESS STEPS

#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
1	Demand control required	The need for demand control is the trigger of this process.	SO	N/A	As required	N/A
2	Demand control required in NI or IE?	<p><i>Demand control should be implemented by the relevant control centre in that jurisdiction.</i></p> <p>Is load shedding required in Northern Ireland or Ireland?</p> <p>If Northern Ireland, go to step 3</p> <p>If Ireland, go to step 7</p> <p>This acts as a trigger for the Declaration of Emergency State process and ENTSOE Awareness System (EAS) if time permits and if practical.</p>	SO	Decision	As required	N/A
3.	Contact NIE Networks DCC and instruct voltage reduction	Contact NIE Networks DCC and instruct voltage reduction (either 3% or 6%).	SO CHCC	N/A	As required	Phone
4	Reduce Voltage.	Upon request from CHCC reduce voltage at LV.	NIE Networks	N/A	As required	N/A
5	Contact NIE Networks DCC and instruct Demand Control	Contact NIE Networks DCC and instruct manual demand control including MWs required (as per agreed process).	SO CHCC	N/A	As required	Phone

#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
6	Disconnect required load in blocks	NIE Networks shed the required load as instructed by SO CHCC.	NIE Networks	Demand reduction	As required	N/A
7	Required in < 1 hour?	If the demand disconnection in Ireland is required in less than 1 hour, then go to Step 8, else Step 9	SO NCC	Decision	As required	N/A
8	Contact ESB Networks DCC and Instruct Emergency Demand Disconnection	Contact ESB Networks DCC and notify that Emergency Demand Disconnection is required including volume and times (as per agreed process).	SO NCC	N/A	As required	Phone
9	Required in >12 hour?	If the demand disconnection in Ireland is required in less than 12 hours and greater than 1 hour, then go to Step 10, if greater than 12 hours go to Step 11.	SO NCC	Decision	As required	N/A
10	Instruct all TSO Customers (and DSO via DCC) to reduce demand	If greater than 1 hours' notice send email to all TSO customers and instruct them to mandatory curtail demand. Ask DCC to do the same to DSO customers (at 110kV or above).	SO NCC	Demand reduction	As required	Mail/SMS
11	Contact ESB Networks DCC and Instruct Rota Load Shedding	Contact ESB Networks DCC and notify that Rota Load Shedding is required including volume and times (as per agreed process).	SO NCC	N/A	As required	Phone
12	Disconnect required load	ESB Networks DCC disconnect the required load as instructed by SO NCC.	ESB Networks	Demand reduction	As required	N/A
13	Due to generation scarcity?	Was the demand control event instructed due to a generation scarcity and not a local fault or transmission reason?	SO	Decision	As required	N/A

#	Step	Step Description	Responsible Role	Outputs	Indicative Timing/ Frequency	System
		If yes, go to Step 14 If no, then no further action is required by the TSO.				
14	Enter predicted load reduction in MMS	SO control room must enter predicted load disconnected/reduced (any non-zero value will do if unknown) in the <i>Demand Control Volume</i> field on the <i>Market Applications -> RT Imbalance Pricing -> PIMB-CALCULATOR -> RTPIMB Input -> RTPIMB - Execution Control Parameters</i> screen of the MMS. This ensures that the Administered Scarcity Price is automatically triggered within the MMS.	SO	N/A	As required	MMS
15	Begins Administered Scarcity Pricing	Administered Scarcity Pricing is automatically triggered within the MMS.	System Step	N/A	As required	MMS
16	Perform Short-Term Scheduling	If time permits, short-term scheduling should be performed.	SO	N/A	As required	MMS
17	Clear predicted load shedding in MMS once all load is restored	Once all load has been restored the Real Time user must clear the predicted load shedding by setting the <i>Demand Control Volume</i> field to zero on the <i>Market Applications -> RT Imbalance Pricing -> PIMB-CALCULATOR -> RTPIMB Input -> RTPIMB - Execution Control Parameters</i> screen of the MMS. This ensures that the Administered Scarcity Price automatically ends within the MMS.	SO	N/A	As required	MMS
18	Ends Administered Scarcity Pricing	Administered Scarcity Pricing automatically ends within the MMS.	System Step	N/A	As required	MMS

7.1 PROCESS FLOWCHART KEY

FLOWCHART KEY	
 Trigger	Trigger
	Process step
	Process decision / question
	Reference to another process
	Another business process to be implemented following current step (current step is a trigger for another process)
 End	Process end
	System (automatic step)