

Flexible Demand Operating Protocol for <Insert Customer/Site Name(s)>



DOCUMENT HISTORY

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SIGN-OFF

Name	Representing	Date
TBC	EirGrid	TBC
TBC	ESB Networks	TBC
TBC	Customer	TBC

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GLOSSARY OF TERMS

Term	Description
Demand Reduction Acknowledgement On/Off	An on/off indication from the customer to the System Operator acknowledging that demand reduction is required (based on an instruction from the System Operator).
Demand Reduction Activation/De-Activation	A signal from the System Operator to the customer instructing activation or de-activation of demand reduction.
Demand Reduction in Progress On/Off	An on/off indication issued from the customer to the System Operator indicating that demand reduction is in progress.
EirGrid	The Transmission System Operator (TSO).
ESB Networks	The Distribution System Operator (DSO).
Flexible Demand	The portion of the site demand that can be reduced on instruction as defined in the Connection Agreement.
Flexible Demand Ramp Down Rate Limit	The maximum rate (in MW / min) at which demand can be reduced.
Flexible Demand Ramp Up Rate Limit	The maximum rate (in MW / min) at which demand can be increased.
MIC	Maximum Import Capacity.
MVA	MegaVolt Amperes.
MW	MegaWatt.
MW Limit Setpoint	The maximum site import level set during activation of demand reduction.
Operation Instruction	The document agreed between EirGrid, ESB Networks and the customer that includes the arrangements for switching operations at the interface.
System Operator	The Transmission System Operator (TSO) or Distribution System Operator (DSO).
Transmission System	As defined by the EirGrid Grid Code.

1. OVERVIEW

This protocol sets out the operational arrangements in place between the System Operator and the customer for implementation of Flexible Demand Arrangement at the customer's site(s).

Flexible Demand is the portion of a customer's electrical load that can be reduced on instruction as set out in the customer's Connection Agreement.

The Flexible Demand Arrangement is invoked in situations where there is a shortage of generation capacity on the Power System or to alleviate a local Transmission System constraint. The Flexible Demand Arrangement may be activated as the last mitigation measure before entering an Alert or Emergency State. The Flexible Demand Arrangement may be deactivated once the Flexible Demand reduction is no longer required.

2. IMPLEMENTATION OF FLEXIBLE DEMAND

This section sets out the operational process for activation and deactivation of the Flexible Demand arrangements. In addition, the process followed in the event of a failure to respond to a demand reduction instruction is set out.

2.1. ACTIVATION

- 2.1.1. A **Demand Reduction Activation** instruction and a **MW Limit Setpoint** will be issued electronically from the System Operator's control centre to the customer's site(s).
- 2.1.2. The **MW Limit Setpoint** instruction will be no lower than the Firm MIC MW equivalent as set out in Appendix 2.
- 2.1.3. The customer will acknowledge the instruction by electronic means by responding with a **Demand Reduction Acknowledgement ON** indication within two (2) minutes of receipt of the instruction.
- 2.1.4. The customer will then reduce their electrical demand to achieve the **MW Limit Setpoint**, or below, within five (5) minutes of the **Demand Reduction Acknowledgement**. During demand reduction a **Demand Reduction in Progress ON** signal is sent from the customer to the System Operator's control centre.
- 2.1.5. The rate of reduction in electrical demand will be no greater than the maximum **Flexible Demand Ramp Down Rate Limit** (defined in Appendix 2).
- 2.1.6. The System Operator may reduce the **MW Limit Setpoint** in steps to manage the wider system impact of the change in electrical demand.

2.2. DEACTIVATION

- 2.2.1. A **Demand Reduction De-activation** instruction will be issued along with an increase to the **MW Limit Setpoint**. Again, this will be issued from the System Operator's control centre electronically to the customer's site(s).

- 2.2.2. The customer will acknowledge the instruction by electronic means by responding with a **Demand Reduction Acknowledgement OFF** indication within two (2) minutes of receipt of the instruction.
- 2.2.3. The customer may then restore their electrical demand up to **MW Limit Setpoint** within one (1) hour of receipt of the **Demand Reduction De-activation** signal. During demand restoration a **Demand Reduction in Progress OFF** signal is sent to the System Operator's control centre.
- 2.2.4. The rate of increase in electrical demand will be no greater than the maximum **Flexible Demand Ramp Up Rate Limit** (defined in Appendix 1).
- 2.2.5. The System Operator may raise the **MW Limit Setpoint** in steps to manage the wider system impact of the change in electrical demand.
- 2.2.6. Should the customer experience difficulty in restoring their electrical demand within one (1) hour of receipt of the **Demand Reduction De-activation** signal or anticipate experiencing difficulty they should inform the System Operator and co-ordinate the demand restoration.

2.3. FAILURE TO RESPOND

- 2.3.1. Failure of the customer to respond to an instruction to reduce their electrical demand will result in disconnection of the customer from the Transmission/Distribution System by the System Operator without further notice.
- 2.3.2. Reconnection of the customer site(s) will be facilitated once the Flexible Demand reduction is no longer required and in line with the Operation Instruction (switching arrangements) for the connection interface.
- 2.3.3. The System Operator will contact the customer and inform them that the load may now be restored at the agreed rate when the customer is ready to do so.
- 2.3.4. The System Operator will restore supply to the disconnected customer's site(s) in line with the Operation Instruction for the connection interface.

- 2.3.5. The customer must provide the System Operator with a written explanation of the reason for failing to comply with the instructed demand reduction, and steps taken to avoid reoccurrence, within 24 hours of the original instruction.

3. TESTING

The customer will facilitate at least one annual test of these arrangements if deemed necessary by the System Operator. This will include a requirement for the customer to demonstrate their capability to reduce demand in the required timeframe.

The System Operator may require additional tests should the required performance not be achieved.

APPENDIX 1 FLEXIBLE DEMAND DETAILS

(sample data for illustration)

Contract / Calculated Data

Site	Contract Data			Calculated Data		
	MIC (MVA)	Firm (MVA)	Flexible Demand (MVA)	Power Factor	MIC (MW Equivalent)	Firm (MW Equivalent)
A	100	60	40	0.95	95	57
B	40	20	20	0.98	39	20
C	50	0	50	1.0	50	0

Description of Flexible Demand Reduction Process Including Ramp Rate Limits

Site	Flexible Demand (MVA)	Flexible Demand Ramp Down Rate Limit* (MW / min)	Description of Implementation
A	40	10	Demand will be reduced in blocks of 5 MW every 30 seconds.
B	20	10	Demand will be reduced in blocks of 10 MW every 1 minute.
C	50	10	Demand will be reduced in blocks of 5 MW every 30 seconds.

*The rate of reduction should be no greater than.

Description of Flexible Demand Restoration Process Including Ramp Rate Limits

Site	Flexible Demand (MVA)	Flexible Demand Ramp Up Rate Limit* (MW / min)	Description of Implementation
A	40	10	Demand will be increased in blocks of 2 MW every 5 minutes
B	20	10	Demand will be increased in blocks of 5 MW every 5 minutes
C	50	10	Demand will be increased in blocks of 5 MW every 5 minutes

*The rate of increase should be no greater than.

APPENDIX 2 GENERIC SIGNALS LIST

The customer should refer to their site-specific signal list.

System Operator Flexible Demand Signal List

Digital Output Signals (from System Operator)

Double Command Outputs (Remote Control)

Name	Status	Type	Duration
Demand Reduction	Activated	Pulse	0.5 second
Demand Reduction	De-activated	Pulse	0.5 second

Strobe Enable Pulse*

Analogue Digital Output Demand Reduction Setpoint Enable	Pulse	0.5 second
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Digital Input Signals (to System Operator)

Double Point Status Indications (P.I.)

Name	Status
Demand Reduction Acknowledgement	ON
Demand Reduction Acknowledgement	OFF
Demand Reduction in Progress	ON
Demand Reduction in Progress	OFF

Analogue Output Signals (from System Operator)

Analogue Output Signals from System Operator to Customer

Name	mA range	Analogue Range	Unit
MW Limit Setpoint	4 – 20	0 – YYY**	MW

Analogue Input Signals (to System Operator)

Analogue Input Signals from Customer to System Operator

Name	mA range	Analogue Range	Unit
MW Limit Setpoint (Feedback)	0 – 10	0 – YYY**	MW

* Logic configuration in System Operator side Remote Terminal Unit (RTU).

** Site-specific Total Demand (i.e. Firm + Flexible) in MVA converted to MW using agreed power factor.

APPENDIX 2 CONTACT DETAILS

To be completed.

EIRGRID CONTACT DETAILS

National Control Centre Primary (24/7): TBD

National Control Centre Secondary (24/7): TBD

ESB NETWORKS CONTACT DETAILS

National Distribution Control Centre Primary (24/7): TBD

National Distribution Control Centre Secondary (24/7): TBD

CUSTOMER CONTACT DETAILS

Customer Contact Site A Primary (24/7): TBD

Customer Contact Site A Secondary (24/7): TBD

Customer Contact Site B Primary (24/7): TBD

Customer Contact Site B Secondary (24/7): TBD

Customer Contact Site C Primary (24/7): TBD

Customer Contact Site C Secondary (24/7): TBD

APPENDIX 3 SINGLE LINE DIAGRAM

See Operation Instruction for the connection interface.