System Services Test Report

Ramping Margin / Dispatch

(TOR2, RRD, RRS, RM1, RM3, RM8)

Aggregator

Unit Name

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# Document Version History

Template Version 4.0, published 21 March 2020

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Comment** | **Name** | **Company** |
| 0.1 | Insert Date | Minor version (v0.1) - First submission for review and approval | Insert Name | Unit Company Name |
| 1.0 | Insert Date | Revised to version 1.0 following approval by EirGrid, SONI. | Insert Name | Unit Company Name |

# Introduction

The Unit shall submit the latest version of this test report template as published on the EirGrid, SONI websites[[1]](#footnote-2).

The report shall be developed for technical and non-technical readers and shall follow the agreed test programme. The report is submitted to [DSU@eirgrid.com](mailto:DSU@eirgrid.com) or [generator\_testing@soni.ltd.uk](mailto:generator_testing@soni.ltd.uk) no more than 10 business days after the test date.

The purpose of the report is to present information demonstrating the unit’s ability to provide the dispatch based services listed in the corresponding test procedure. The completed report should contain analysis, tables and graphs demonstrating the unit’s compliance with the individual services.

In the simplest circumstance, the report may be compiled using data collated using previous grid code testing. In such cases the data presented should align with the units **existing approved** Technical Offer Data (TOD) for a unit[[2]](#footnote-3).

If a Unit is updating or amending its TOD values due to a change in its operating characteristics of the unit, all relevant testing shall be completed and the new TOD values validated **before** completing this report.

In the event that new IS have been tested, however services from that site only becomes available at a future date, such sites should be clearly identified and the report should be compiled to clearly identify both current product volumes and also future product volumes. This is to facilitate alignment of registration dates in the energy / capacity markets only. Both current and future TOD values relating to the registration of those sites must be included in the report.

Service providers may provide information in this report demonstrating an ability to provide greater levels of TOR2, RRD and RRS, than would otherwise be verified using the units TOD data. In such instances the aggregator will request an unscheduled dispatch test from the TSO. The TSO will subsequently issue an unscheduled dispatch to the unit within 10 business days of approving the test request. Only data gathered from this dispatch can be used for demonstrating higher volumes of TOR2, RRS or RRD than would otherwise be demonstrated by the units TOD. Note in the case of DSU the units Demand Side Unit Notice Time as defined in Grid Code must be accounted for, thus providers may be required to amend this in some instances in order to qualify for TOR2, RRS or RRD respectively.

# Abbreviations

AGU Aggregated Generating Units

DSO Distribution System Operator

DNO Distribution Network Operator

DSU Demand Side Unit

EDIL Electronic Dispatch Instruction Logger

FFR Fast Frequency Response

IS Individual Site

MEC Maximum Export Capacity

MIC Maximum Import Capacity

MPRN Metering Point Registration Number

MVAr Mega VAR

MW Mega watt

NCC, CHCC National Control Centre, Castlereagh House Control Centre

PMU Phasor Monitoring Unit

RM Ramping Margin

RRD Replacement Reserve – Desynchronised

RRS Replacement Reserve – Synchronised

TOD Technical Offer Data

TOR2 Tertiary Operating Reserve 2

TSO Transmission System Operator

# Unit Data

|  |  |
| --- | --- |
| Aggregator Type | Unit to specify DSU / AGU |
| Aggregator Name | Unit to specify |
| Aggregator Test coordinator contact name and number | Unit to specify |
| Aggregator Control Centre Location and main contact Number | Unit to specify |

# System Services

## Ramping margin services (TOR2, RRD, RRS, RM1, RM3, RM8)

The definitions referenced in this document are for indicative purposes only. In the event of inconsistency between the definitions in this document and those in the DS3 System Services Agreement, the definitions in the DS3 System Services Agreement shall prevail.

TOR2 is the additional MW output (and/or reduction in demand) provided compared to the pre-incident output (or demand) which is fully available and sustainable over the period from 5 minutes to 20 minutes following an event, or dispatch instruction.

RRS and RRD are the additional MW output (and/or reduction in demand) provided compared to the pre-incident output (or demand) which is fully available and sustainable over the period from 20 minutes to 1 hour following an event or dispatch instruction.

RM is defined as:

“the guaranteed margin that a unit provides to the system operator at a point in time for a specific horizon and duration”

There are horizons of one, three and eight hours with associated durations of two, five and eight hours respectively. It is important to remember that RM is defined by **both** the minimum ramp-up and the output duration. Thus the RM represents the increased MW Response output or that can be delivered by the service horizon time and sustained for the product duration window.

|  |  |  |
| --- | --- | --- |
| **RM Service** | **Ramp-up Requirement** | **Sustained Output Duration** |
| **TOR2** | 5 Mins | 15 Minutes |
| **RRS** | 20 Mins | 40 Minutes |
| **RRD** | 20 Mins | 40 Minutes |
| **RM1** | 1 Hour | 2 Hours |
| **RM3** | 3 Hour | 5 Hours |
| **RM8** | 8 Hours | 8 Hours |

## Individual site details

*Copy and paste this table depending of number of IS being tested) Complete accordingly*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Descriptor** | **Site No.1** | **Site No.2** | **Site No. 3** | **Site No. 4** |
| Individual Demand Site Name | Unit to specify | Unit to specify | Unit to specify | Unit to specify |
| MPRN | Unit to specify | Unit to specify | Unit to specify | Unit to specify |
| Bulk Supply Point or Connection Point | Unit to specify | Unit to specify | Unit to specify | Unit to specify |
| Irish Grid Co-ordinates | Eastings | Eastings | Eastings | Eastings |
| Northing | Northing | Northing | Northing |
| Site Address | Unit to specify | Unit to specify | Unit to specify | Unit to specify |
| Special Operating Limits or Network Limitations | Unit to specify | Unit to specify | Unit to specify | Unit to specify |
| MW Capacity (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Demand Reduction Capability - Avoided Consumption | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Demand Reduction Capability - On Site Generation (Continuous Parallel Mode or Shaving Mode) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Maximum Import Capacity | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Maximum Export Capacity | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| IDS Notice Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS Ramp Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS MW Response Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS Ramp Up Rate | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min |
| IDS Ramp Down Rate | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min |
| IDS Maximum Down Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| IDS Minimum Down Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| IDS Minimum Off Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| TOR2 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RRD Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RRS Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM1 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM3 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM8 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Currently aggregated or alternatively date of effectiveness | Yes or dd:mm:yy | Yes or dd:mm:yy | Yes or dd:mm:yy | Yes or dd:mm:yy |

# Analysis

## Summary of testing

Testing was completed on [DATE].

*[Insert comment on the results, highlighting any issues encountered in performing the test or in analysing the results].*

*[Insert Report summary]*

*[Include any relevant test notes here, relating to how the test was carried out or to any specific conditions encountered during the test.]*

*[If the response was provided by means of energy generation (on site generation, energy storage), provide details of the site setup, especially when site has MEC=0.]*

*[Any abnormal behaviour during the test (spikes, dips, unusual vibrations, etc.) shall be noted and documented. The reasons behind these shall be detailed along with any corrective actions taken and what its effects are on the unit and/or the result. If possible a clear graph of the issue shall also be presented.]*

## TOR2, RRS, RRD, RM1, RM3, RM8 IDS Test Loads

(Times in this table are in minutes.)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IDS No. | Pre-Event Start | Pre-Event End | Average Site Pre-Event Load | T=0 | Max Site Load T+5 to T+20 | Max Site Load T+20 to T+60 | Max Site Load T+60 to T+180 | Max Site Load T+180 to T+480 | Max Site Load T+480 to T+960 |
| 1 | hh:mm:ss | hh:mm:ss | 0.000 | hh:mm:ss | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |

(Time periods use minutes in this table: T+5= T+5 minutes.)

## TOR2, RRS, RRD, RM1, RM3, RM8 IDS Test Results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **IDS No.** | **TOR2 (MW)** | **RRS (MW)** | **RRD (MW)** | **RM1 (MW)** | **RM3 (MW)** | **RM8 (MW)** |
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |

## Unit IDS specific Values

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Existing Value (MW)** | | | | | | **New Value (MW)** | | | | | |
| **IDS No.** | **TOR2** | **RRS** | **RRD** | **RM1** | **RM3** | **RM8** | **TOR2** | **RRS** | **RRD** | **RM1** | **RM3** | **RM8** |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 |  |  |  |  |  |  |  |  |  |  |  |  |
| **DSU** |  |  |  |  |  |  |  |  |  |  |  |  |

## Results Summary

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Total:**  **Services tested and available from date of System Service contract** | **Total:**  **Services tested and available including sites becoming available on date aligning with commencement of upcoming Capacity year (As per section J of I-SEM Capacity Market Code)** |
| Unit Capacity (MW) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Demand Reduction Capability - Avoided Consumption | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| Demand Reduction Capability - On Site Generation | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| IDS Notice Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS Ramp Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS MW Response Time | \_\_\_\_\_\_\_\_min | \_\_\_\_\_\_\_\_min |
| IDS Ramp Up Rate | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min |
| IDS Ramp Down Rate | \_\_\_\_\_\_MW/min | \_\_\_\_\_\_MW/min |
| IDS Maximum Down Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| IDS Minimum Down Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| IDS Minimum Off Time | \_\_\_\_\_\_\_\_hr | \_\_\_\_\_\_\_\_hr |
| TOR2 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RRD Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RRS Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM1 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM3 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |
| RM8 Capacity (MW) (achieved) | \_\_\_\_\_\_\_\_MW | \_\_\_\_\_\_\_\_MW |

## TOR2, RRD and RRS

Applications for TOR2 are based on the assessment of approved TOD and shall also include evidence of the units’ ability to provide TOR2 following the issue of an EDIL instruction. The data used for this assessment shall be agreed in advance with the TSO. For Aggregators, assessment shall be based on performance data using unscheduled dispatch instructions from NCC, CHCC.

Alternatively TOR2, RRD and RRS can be assessed using performance data using an unscheduled dispatch instruction from NCC, CHCC. The data used for this assessment shall be agreed in advance with the TSO. Sync time / Notice time will be included in this calculation as per the example graph shown below in section 6.2.2.

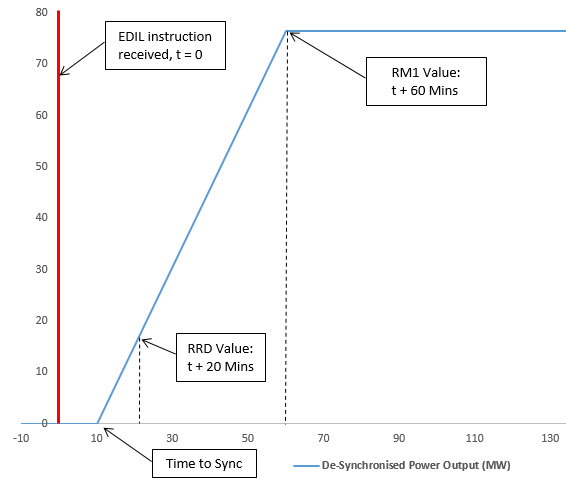
Alternatively, TOR2 can be assessed as response to a frequency event, using performance data, or test data (witnessed, as required by the TSO). The data used for this assessment shall be agreed in advance with the TSO.

### Graphed Analysis (Insert Product as applicable).

[*Insert a full graph of the units’ output over a suitable time period in response to an EDIL instruction. The graph shall be clear and shall highlight all the System Services values that the unit is contracting for. All Graphs shall be clearly labelled and easy to read. All Graphs shall have a one second resolution and shall be accompanied by verified test data unless otherwise agreed with the TSO]*

[*Include any relevant test notes here, relating to how the test was carried out or any specific conditions encountered during this test*].

### Example graphs



|  |  |
| --- | --- |
| Notice Time | \_\_ Min |
| Ramp up rate | \_\_ MW/min |
| Ramp down rate | \_\_ MW/min |
| Maximum Down Time | \_\_ min |
| Minimum Down Time | \_\_ min |
| Demand Side Unit Capacity | \_\_ MW |

# Technical Offer Data

The Unit shall include the approved Technical Offer Data[[3]](#footnote-4) used for the analysis. Multiple Technical Offer Data Sets may be used for the Analysis.

## Approved TOD

Table below provided for example and applies to DSU only. For AGU please insert relevant equivalent table, a template for which can be taken from the Synchronous Units Ramping Margin Test Report template.

|  |  |
| --- | --- |
| **Set Number** | **Set Description** |
| **Set 1** |  |
| **Set 2** |  |
| **Set 3** |  |
| **Set 4** |  |
| **Set 5** |  |
| **Set 6** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Down Time Details** | | | | | | |
| **Item** | **Set 1 (Default)** | **Set 2** | **Set 3** | **Set 4** | **Set 5** | **Set 6** |
| **Minimum Down Time Details** |  |  |  |  |  |  |
| **Maximum Down Time Details** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Maximum Ramp Rates** | | | | | | |
| **Item** | **Set 1 (Default)** | **Set 2** | **Set 3** | **Set 4** | **Set 5** | **Set 6** |
| **Ramp Rate Details - Up** |  |  |  |  |  |  |
| **Ramp Rate Details - Down** |  |  |  |  |  |  |

## Proposed future TOD based on approved Future Operating Characteristics[[4]](#footnote-5)

Table below provided for example and applies to DSU only. For AGU please insert relevant equivalent table, a template for which can be taken from the Synchronous Units Ramping Margin Test Report template.

|  |  |
| --- | --- |
| **Set Number** | **Set Description** |
| **Set 1** |  |
| **Set 2** |  |
| **Set 3** |  |
| **Set 4** |  |
| **Set 5** |  |
| **Set 6** |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Down Time Details** | | | | | | |
| **Item** | **Set 1 (Default)** | **Set 2** | **Set 3** | **Set 4** | **Set 5** | **Set 6** |
| **Minimum Down Time Details** |  |  |  |  |  |  |
| **Maximum Down Time Details** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Maximum Ramp Rates** | | | | | | |
| **Item** | **Set 1 (Default)** | **Set 2** | **Set 3** | **Set 4** | **Set 5** | **Set 6** |
| **Ramp Rate Details - Up** |  |  |  |  |  |  |
| **Ramp Rate Details - Down** |  |  |  |  |  |  |

## Operating Characteristics

Applicable to DSU only

### Operating Characteristics of unit as per unit’s Operational Certificate

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DSU** | **Demand Side Unit Capacity** | **Demand Reduction Capability** | | **DSU Notice Time** | **DSU MW Response Time** | **Ramp Up Rate** | **Ramp Down Rate** | **Min Down Time** | **Max Down Time** |
| **Avoided Consumption** | **On Site Generation** |
| (Name) | (MW) | (MW) | (MW) | (Mins) | (Mins) | (MW/min) | (MW/min) | (Mins) | (Mins) |

### Future Operating Characteristics of unit, as noted on the unit’s Operational Certificate[[5]](#footnote-6)

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **DSU** | **Demand Side Unit Capacity** | **Demand Reduction Capability** | | **DSU Notice Time** | **DSU MW Response Time** | **Ramp Up Rate** | **Ramp Down Rate** | **Min Down Time** | **Max Down Time** |
| **Avoided Consumption** | **On Site Generation** |
| (Name) | (MW) | (MW) | (MW) | (Mins) | (Mins) | (MW/min) | (MW/min) | (Mins) | (Mins) |

1. <http://www.eirgridgroup.com/> or <http://www.soni.ltd.uk/> [↑](#footnote-ref-2)
2. **TOR2, RRD and RRS applications shall provide results for review based on unscheduled NCC or CHCC EDIL Dispatch Instructions.** [↑](#footnote-ref-3)
3. Information on Validation Technical Offer Data requirements in 3.42A - 3.42O (T&SC) and Appendix I - Offer Data. [↑](#footnote-ref-4)
4. Applicable to units who have tested sites which are due to become available on the date aligning with commencement of upcoming Capacity year (As per section J of I-SEM Capacity Market Code) only. In such cases please also fill out current TOD in section 6.3 [↑](#footnote-ref-5)
5. Applicable to units who have tested sites which are due to become available on the date aligning with commencement of upcoming Capacity year (As per section J of I-SEM Capacity Market Code) only. In such cases please also fill out current Operating Characteristics in section 6.5.1 [↑](#footnote-ref-6)