DS3 System Services Volume Uncapped Bidders' Conference

11 April 2019

EIRGRID SONI

Agenda

Topic	Time	Speaker
Registration (Tea & Coffee)	09.30	
Introduction	10.00	Ian Connaughton
Procurement Process Overview	10.10	Joe Deegan
Q&A	10:30	Panel
Tender Pack and Technical Questionnaire	10.50	Joe Deegan
Q&A	11.20	Panel
Testing and Signalling Requirements	11.40	Colm MacManus
Q&A	12:00	Panel
Session Closed	12:30	Ian Connaughton

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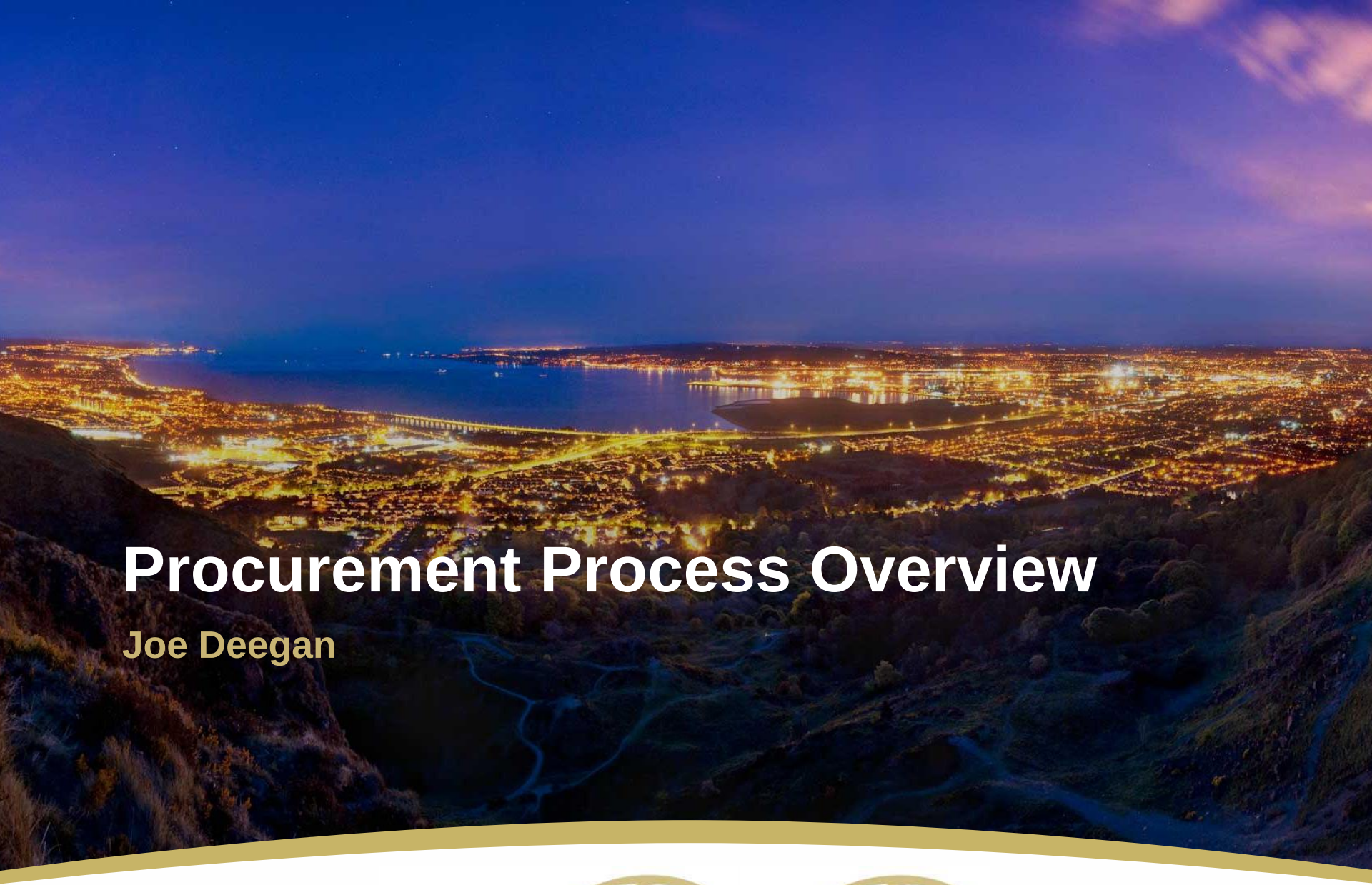

Procurement Process Overview

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Qualification System

- **Qualification System** – refers to the system that is in place to enable interested parties to submit a Response and subsequently qualify for award of Contract for provision of DS3 System Services (under Volume Uncapped Arrangements).

- Qualification System will last until April 2023, with the option to extend at the Contracting Entities' discretion and subject to Regulatory Authority approval (2 extensions, 18 months apiece).

- 14 System Services in total being procured as part of the Qualification System, over 28 lots (14 for EirGrid and 14 for SONI).

- 12 services were procured in accordance with the Phase 1 and Phase 2 in 2018.

Gate Process

- **Gate Process** – refers to the period subsequent to the initial procurement Phases 1 and 2 whereby Tenderers may apply for a place on the Qualification System at any time.

- New applicants may submit a completed Response for a place on the Qualification System at any time.

- It is intended that specific contracts will be awarded every six months – these periods are referred to as Gate Dates. EirGrid will issue periodic notices on the OJEU / EirGrid websites outlining the requirements and timeframes involved. Indicative dates are contained in the briefing document.

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DS3 System Services Agreement

- This procurement is being run by EirGrid on behalf of both EirGrid and SONI for their respective DS3 System Services Agreement.

- A separate DS3 System Services Agreement is in place for:
  - EirGrid (as contracting entity for the DS3 System Services Agreement applicable to Ireland) and
  - SONI (as contracting entity for the DS3 System Services Agreement applicable to Northern Ireland).

- Existing holders of an agreement will receive an amended Schedule 9; new parties to the Qualification System will receive an agreement dated 1st September 2019.

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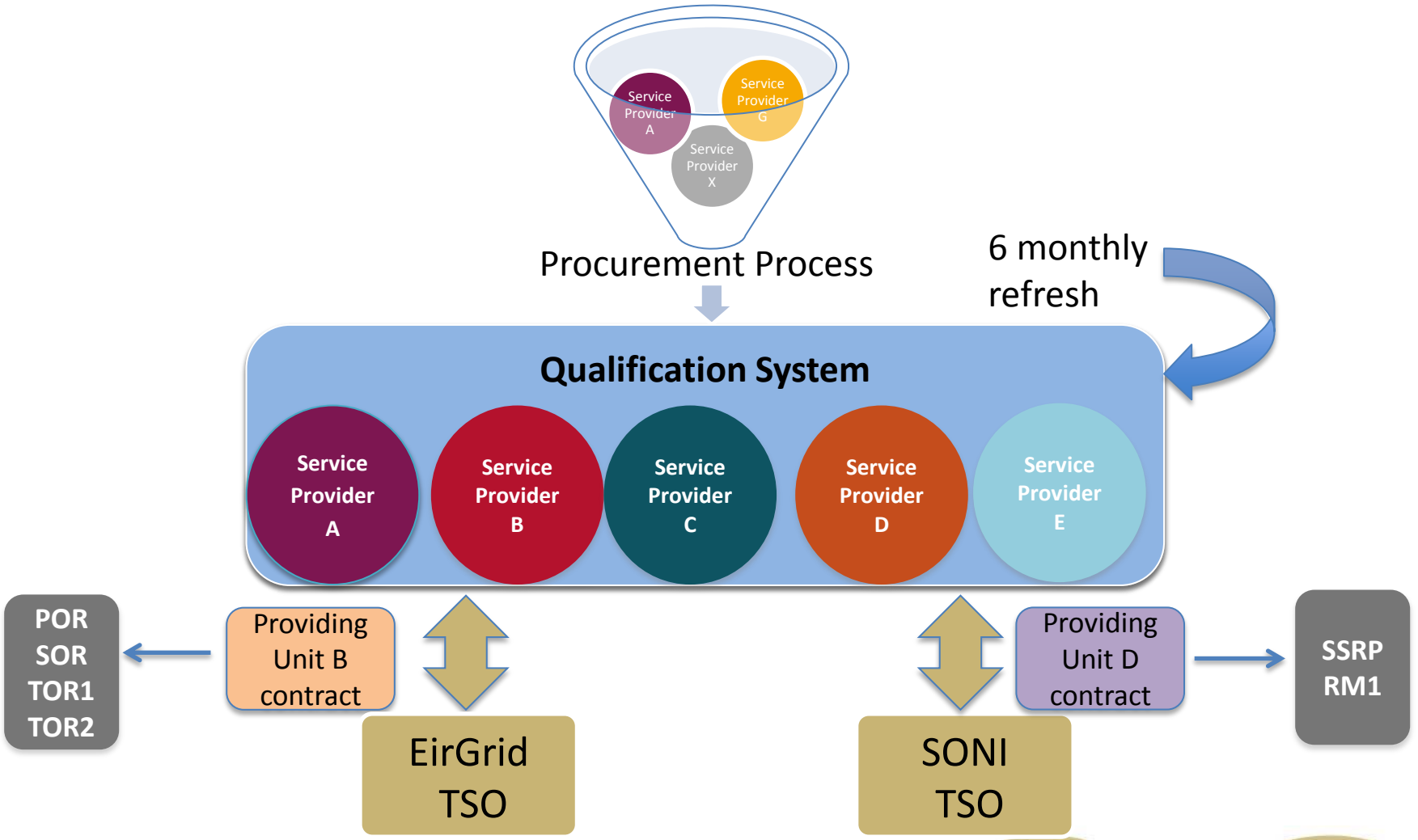
Volume Uncapped Procurement



Gate 1

- OJEU Notice (2019/S 066-155841) Published on 3rd April 2019
  - ENQEIR659 – DS3 System Services - Volume Uncapped
- Two stages in this procurement process (submitted together):
  - Pre-Qualification; and
  - Tender
- Lots
  - Lots 1-12 IE
  - Lots 1-12 NI
- Documents available on eTenders www.etenders.gov.ie

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Gate 1

- Gate 1 applies to 3 scenarios:
  1) Providing Unit that is not currently contracted for the provision of any System Service and wishes to tender for one, some or all services;
  2) Providing Unit intends to amend its contracted values for a service that it currently provides;
  3) Providing Unit that is contracted for the provision of one or more services and wishes to tender for additional service(s).

- Providing Units that do not wish to amend their provision of a particular service are not required to submit a tender for the respective Lot.

Gate 1 Lot Numbers – EirGrid

Existing Services			
POR L1IE	Primary Operating Reserve	**SSRP L7IE**	Steady State Reactive Power
SOR L2IE	Secondary Operating Reserve	**SIR L8IE**	Synchronous Inertial Response
TOR1 L3IE	Tertiary 1 Operating Reserve	**RM1 L9IE**	Ramping Margin 1 Hour
TOR2 L4IE	Tertiary 2 Operating Reserve	**RM3 L10IE**	Ramping Margin 3 Hour
RRD L5IE	Replacement Reserve (De-Synchronised)	**RM8 L11IE**	Ramping Margin 8 Hour
RRS L6IE	Replacement Reserve (Synchronised)	**FFR L12IE**	Fast Frequency Response

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Gate 1 Lot Numbers – SONI

Existing Services			
POR L1NI	Primary Operating Reserve	**SSRP L7NI**	Steady State Reactive Power
SOR L2NI	Secondary Operating Reserve	**SIR L8NI**	Synchronous Inertial Response
TOR1 L3NI	Tertiary 1 Operating Reserve	**RM1 L9NI**	Ramping Margin 1 Hour
TOR2 L4NI	Tertiary 2 Operating Reserve	**RM3 L10NI**	Ramping Margin 3 Hour
RRD L5NI	Replacement Reserve (De-Synchronised)	**RM8 L11NI**	Ramping Margin 8 Hour
RRS L6NI	Replacement Reserve (Synchronised)	**FFR L12NI**	Fast Frequency Response

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Future Gate

EirGrid			
FPFAPR **L13NI**	Fast Post Fault Active Power Recovery	**DRR** **L14NI**	Dynamic Reactive Response

SONI			
FPFAPR **L13NI**	Fast Post Fault Active Power Recovery	**DRR** **L14NI**	Dynamic Reactive Response

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Providing Unit

- Tenderers must submit a separate standalone tender for each and every Providing Unit.

- Providing Unit:
  - If registered in the SEM, to the extent that is required, Providing Units should apply in accordance with how they are registered in the SEM.
  - If not registered in the SEM, the Providing Unit is the Unit or collection of Units behind a single connection point.
  - In the case of an Aggregator, the Providing Unit is the collection of sites which is controlled by the Aggregator, and the interface with the TSO shall be with the Aggregator.

- Note: A Tenderer may have more than one Providing Unit.

Tender Response

- Tenders should be split into two constituent parts (submitted at the same time):
  - A pre-qualification section; and
  - A tender section.

- Tenderers' response for each Providing Unit should consist of:
  - Part 2 of the **Qualification System Briefing Document**, including Forms 1, 2 and 3; and
  - A Completed **Technical Questionnaire** sheet for each Lot they are submitting for (must be completed in Excel).

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Tender Evaluation

- All Responses will be evaluated, on a lot by lot basis and Providing Unit by Providing Unit basis.

- As the payment rate (tariff) for each System Service will be fixed, Responses will be assessed under the award criteria based upon quality (technical compliance) only.

- Tender evaluation:
  - against the **Pass / Fail pre-qualification** minimum requirements for the lot concerned; and
  - against the **award criteria for compliance** in line **with the technical requirements** for the lot concerned.

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Qualification Criteria

Selection Criterion	Minimum Requirement	Weighting	Minimum
Exclusionary Criteria Declaration	Exclusionary Criteria Declaration must be completed satisfactorily. See Form 2 of Qualification System Briefing Document.	Pass/Fail	Pass
Financial & Economic Standing	Tenderers must complete the Self-Declaration of Financial and Economic Capacity. See Form 2 of Qualification System Briefing Document.	Pass/Fail	Pass
Health & Safety, Environment and Employment	Tenderers must demonstrate that they comply with the relevant health and safety, environmental and employment legislation. See Form 2 of Qualification System Briefing Document.	Pass/Fail	Pass

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Award Criteria

Award Criterion	Description	Weighting	Minimum
Technical Compliance	Tenderers are required to demonstrate compliance against the requirements set out in the Technical Questionnaire and Scope of Work, for each Lot they are applying for.	Pass/Fail	Pass
Legal	Acceptance of contractual conditions in accordance with Form 3. Tenderers shall complete the Contractual Acceptance Declaration as part of their tender submission. This verifies that Tenderers accept the Terms and Conditions as issued.	Pass/Fail	Pass

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Queries

- **Queries from this Bidders' Conference**
  - We will endeavour to respond to all queries today.
  - We request Candidates to formally submit queries via email.
  - Formal response will issue to all Tenderers which may supersede information provided today.

- **General Queries**
  - Submit by email.
  - In Clarification Template.
  - Not later than **12:00hrs Irish Time on Thursday 25th April 2019.**
  - Addressed to: Sinéad Connolly Email: sinead.connolly@eirgrid.com and tenders@eirgrid.com

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Submission of Tenders

- Interested Tenderers must submit a tender response **through the eTenders portal** in respect of the relevant Lot.

- Tender box close time **12 noon**, Irish Time, on **Friday 24th May 2019 – eTenders will not allow upload after this time**.

- **It is EirGrid policy to open tenders promptly on the closing date.**
- **The Tenderer is fully responsible for the timely delivery of the tender.**

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Timetable

Event	Date
Deadline for Submission of Queries	No later than 12:00 hrs (Irish Time) on **25th April 2019**
EirGrid to Respond to All Queries by	**10th May 2019**
Deadline for Submission of Tenders	No later than 12:00 hrs (Irish Time) on **24th May 2019**
Notification of Successful Tenderers	End of July 2019 (Indicative)
Standstill Period	14 days
Contract Commencement	**1st September 2019**

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Procurement Process Overview

Q & A

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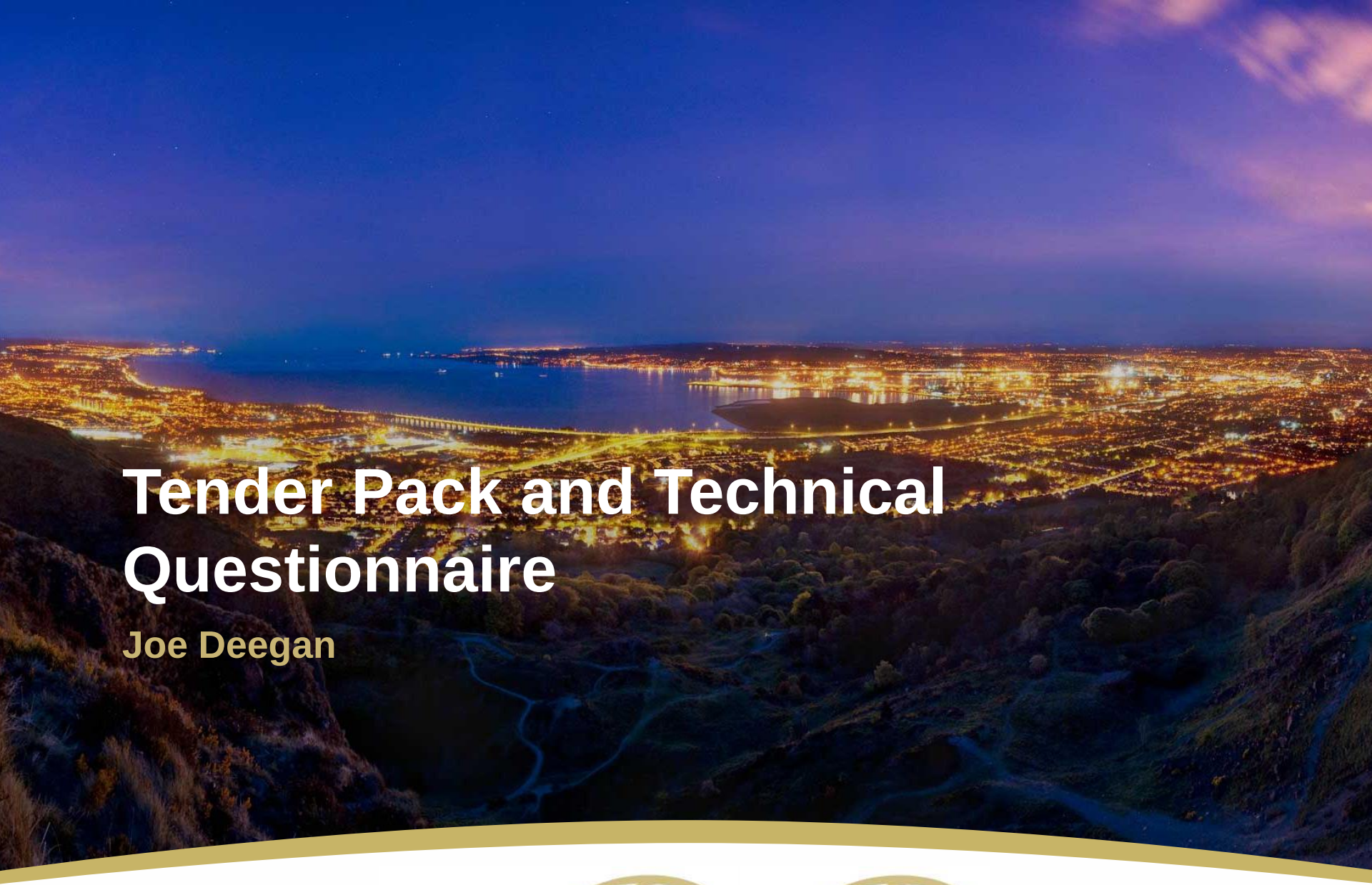

Tender Pack and Technical Questionnaire

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Amendments from Phases 1 / 2

- Agreement Date and Protocol
- Service maximum capability volumes
- Implementation of Lessons Learned
  - DSU Site Switching
  - Flexible testing process
  - Clarity on signalling requirements
  - Clarity on definitions relating to provision of FFR service

Contractual Arrangements

Scenario 1 – contract is dated 1st September 2019

DS3 System Services Contract

- Standard contractual provisions
- Term
- Schedules for 14 DS3 System Services
- Scaling Factor details
  - Product Scalars
  - Locational Scalar

Scenario 2 & 3 – amended Schedule 9

Protocol Document

- Operational Requirements
- Performance Scalar Details
- Performance Monitoring Methods and infrastructure requirements
- Temporal Scarcity Scalar values
- Governance

Protocol document effective 1st May 2019

Statement of Payments

- DS3 System Service Payment rates

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Service Maximum Capability Volumes

Briefing Document Section 1.6.6 – maximum capability volumes to apply per service.

Service	Max Volume - Normal Operation	Max Volume - Requested by TSO
FFR	**75 MW**	**100 MW**
POR	**75 MW**	**100 MW**
SOR	**75 MW**	**100 MW**
TOR1	**75 MW**	**100 MW**
TOR2	**75 MW**	**100 MW**
RRD	300 MW	N/A
RRS	300 MW	N/A
RM1	450 MW	N/A
RM3	500 MW	N/A
RM8	500 MW	N/A
SSRP	400 Mvar	N/A
SIR	120,000 MWs^2	N/A

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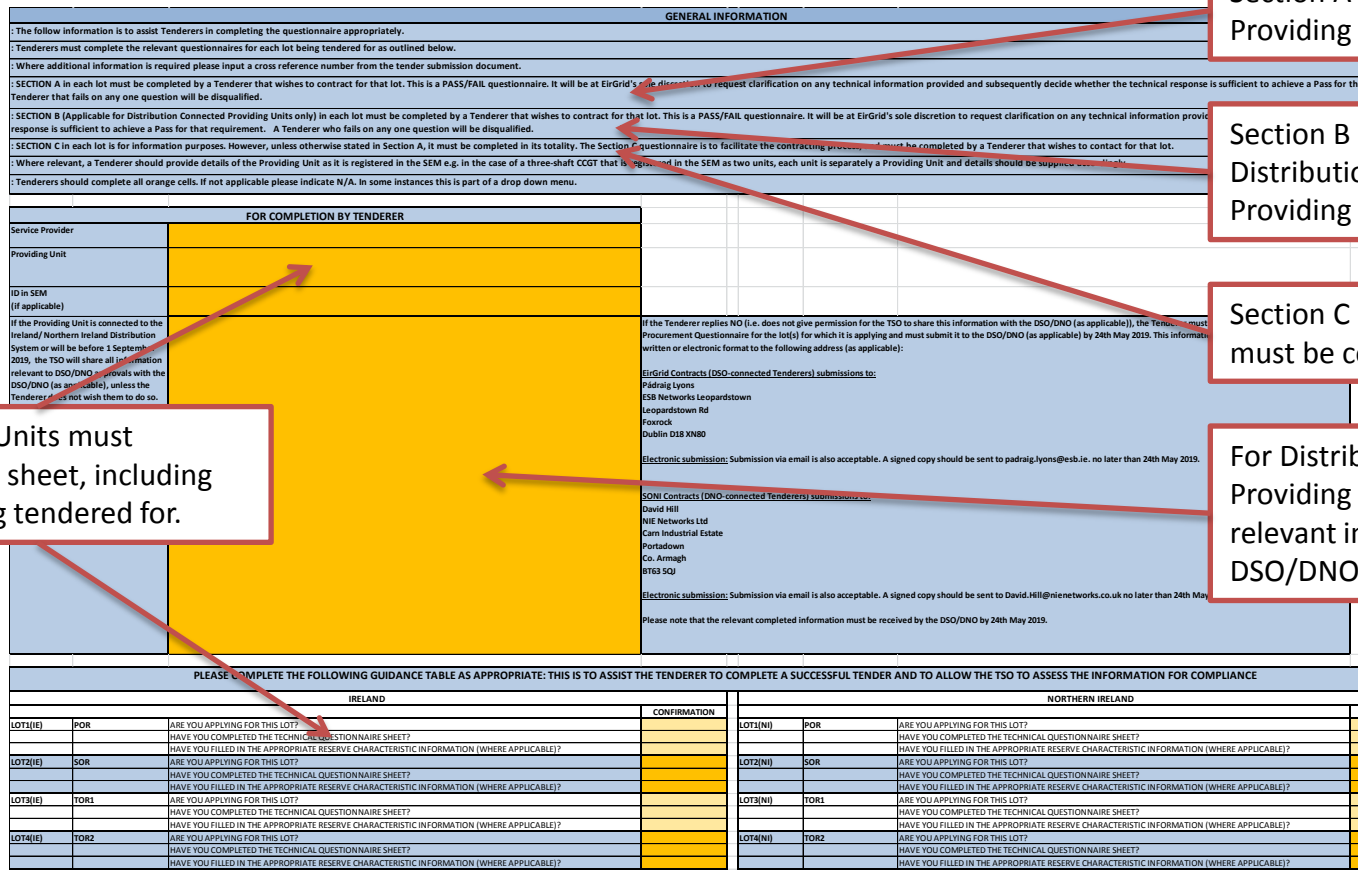
Technical Q - Guidance Sheet



GENERAL INFORMATION
: The follow information is to assist Tenderers in completing the questionnaire appropriately.
: Tenderers must complete the relevant questionnaires for each lot being tendered for as outlined below.
: Where additional information is required please input a cross reference number from the tender submission document.
: SECTION A in each lot must be completed by a Tenderer that wishes to contract for that lot. This is a PASS/FAIL questionnaire. It will be at EirGrid's sole discretion to request clarification on any technical information provided and subsequently decide whether the technical response is sufficient to achieve a Pass for that requirement. A Tenderer that fails on any one question will be disqualified.
: SECTION B (Applicable for Distribution Connected Providing Units only) in each lot must be completed by a Tenderer that wishes to contract for that lot. This is a PASS/FAIL questionnaire. It will be at EirGrid's sole discretion to request clarification on any technical information provid response is sufficient to achieve a Pass for that requirement. A Tenderer who fails on any one question will be disqualified.
: SECTION C in each lot is for information purposes. However, unless otherwise stated in Section A, it must be completed in its totality. The Section C questionnaire is to facilitate the contracting proc must be completed by a Tenderer that wishes to contact for that lot.
: Where relevant, a Tenderer should provide details of the Providing Unit as it is registered in the SEM e.g. in the case of a three-shaft CCGT that is registered in the SEM as two units, each unit is separately a Providing Unit and details should be supplied
: Tenderers should complete all orange cells. If not applicable please indicate N/A. In some instances this is part of a drop down menu.

FOR COMPLETION BY TENDERER	
Service Provider	
Providing Unit	
ID in SEM (if applicable)	
If the Providing Unit is connected to the Ireland/ Northern Ireland Distribution System or will be before 1 Septemb 2019, the TSO will share all information relevant to DSO/DNO approvals with the DSO/DNO (as applicable), unless the Tenderer does not wish them to do so.	If the Tenderer replies NO (i.e. does not give permission for the TSO to share this information with the DSO/DNO (as applicable)), the Tender must Procurement Questionnaire for the lot(s) for which it is applying and must submit it to the DSO/DNO (as applicable) by 24th May 2019. This informati written or electronic format to the following address (as applicable): EirGrid Contracts (DSO-connected Tenderers) submissions to: Pádraig Lyons ESB Networks Leopardstown Leopardstown Rd Foxrock Dublin D18 XN80 Electronic submission: Submission via email is also acceptable. A signed copy should be sent to padraig.lyons@esb.ie. no later than 24th May 2019. SONI Contracts (DNO-connected Tenderers) submissions to: David Hill NIE Networks Ltd Carn Industrial Estate Portadown Co. Armagh BT63 5QJ Electronic submission: Submission via email is also acceptable. A signed copy should be sent to David.Hill@nienetworks.co.uk no later than 24th May Please note that the relevant completed information must be received by the DSO/DNO by 24th May 2019.

PLEASE COMPLETE THE FOLLOWING GUIDANCE TABLE AS APPROPRIATE: THIS IS TO ASSIST THE TENDERER TO COMPLETE A SUCCESSFUL TENDER AND TO ALLOW THE TSO TO ASSESS THE INFORMATION FOR COMPLIANCE

IRELAND			CONFIRMATION
LOT1(IE)	POR	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT2(IE)	SOR	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT3(IE)	TOR1	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT4(IE)	TOR2	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	

NORTHERN IRELAND			CONFIRMATION
LOT1(NI)	POR	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT2(NI)	SOR	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT3(NI)	TOR1	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	
LOT4(NI)	TOR2	ARE YOU APPLYING FOR THIS LOT?	
		HAVE YOU COMPLETED THE TECHNICAL QUESTIONNAIRE SHEET?	
		HAVE YOU FILLED IN THE APPROPRIATE RESERVE CHARACTERISTIC INFORMATION (WHERE APPLICABLE)?	

Section A is Pass/Fail for all Providing Units.

Section B is Pass/Fail for Distribution Connected Providing Units.

Section C is for information but must be completed as specified.

All Providing Units must complete this sheet, including the Lots being tendered for.

For Distribution Connected Providing Units, TSO will share relevant information with the DSO/DNO if tenderer permits.

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Technical Q – Reserve Characteristic

INSTRUCTIONS FOR COMPLETING THIS SHEET.

: If the Providing Unit can operate on only one fuel, please complete TABLE 1.
: If the Providing Unit can operate on two fuels, please complete TABLE 1 and TABLE 2.
: If the Providing Unit can operate on three fuels, please complete TABLE 1, TABLE 2 and TABLE 3.
: If the Providing Unit is a CCGT and can operate in Open Cycle Mode, in addition please complete TABLE 4.
: If the Providing Unit is a CCGT and can operate on two fuels in Open Cycle Mode, in addition please complete TABLE 5.
: If the Providing Unit is a WFPS and can provide FFR through emulated inertia please complete TABLE 2.

TABLE 1 - RESERVE CHARACTERISTIC PARAMETERS ON PRIMARY FUEL / FUEL 1

	DS3 System Services Reserve Characteristic parameters					
	FFR	POR	SOR	TOR1	TOR2	RR
RMX						
GMN						
R0						
R1						
R2						
DELTA1						
DELTA2						
DELTA3						
BETA						
PRIMARY FUEL / FUEL 1						

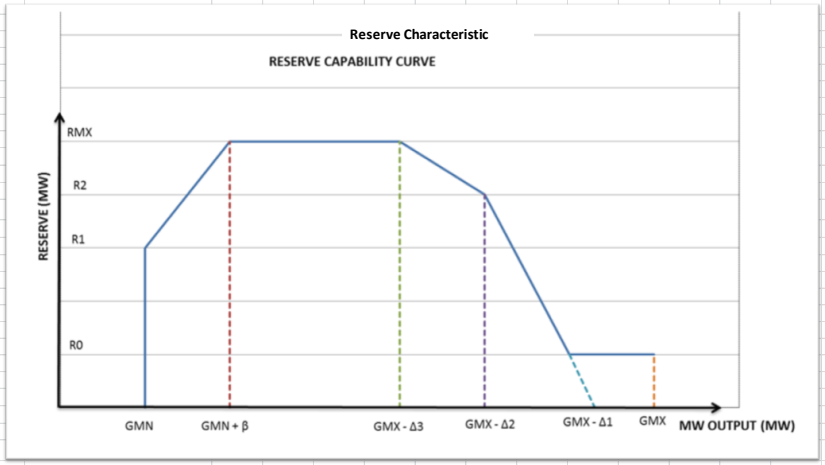
TABLE 2 - RESERVE CHARACTERISTIC PARAMETERS ON SECONDARY FUEL / FUEL 2

	DS3 System Services Reserve Characteristic parameters					
	FFR	POR	SOR	TOR1	TOR2	RR
RMX						
GMN						
R0						
R1						
R2						
DELTA1						
DELTA2						
DELTA3						
BETA						
SECONDARY FUEL / FUEL 2						

TABLE 3 - RESERVE CHARACTERISTIC PARAMETERS ON TERTIARY FUEL / FUEL 3

	DS3 System Services Reserve Characteristic parameters					
	FFR	POR	SOR	TOR1	TOR2	RR
RMX						
GMN						
R0						
R1						
R2						
DELTA1						
DELTA2						
DELTA3						
BETA						
TERTIARY FUEL / FUEL 3						

FOR INFORMATION: RESERVE FUEL GENERATION MODEL



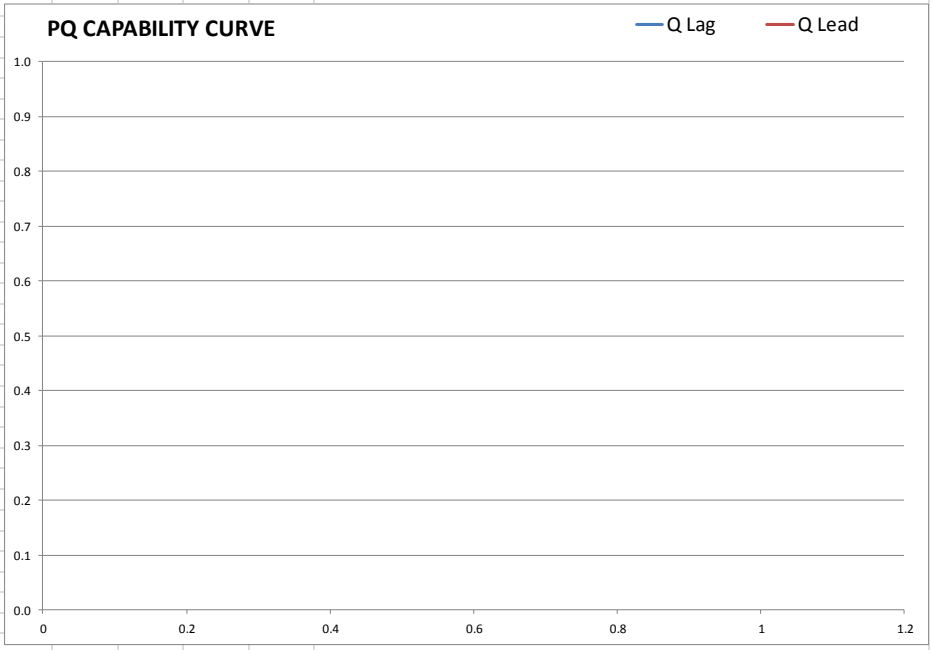
Technical Q – PQ Capability

INSTRUCTIONS FOR COMPLETING THIS SHEET.
: If the Providing Unit is a Generation Unit, but is not a dual-shaft or three-shaft which is part of a CCGT installation, please complete TABLE1
: If the Providing Unit is a dual-shaft or three-shaft which is part of a CCGT installation, please complete TABLE2, TABLE3
: If the Providing Unit is non-synchronous and has a negative Active Power range, please complete TABLE4

Generation Unit, but is not a dual-shaft or three-shaft which is part of a CCGT installation

TABLE 1 - PQ Capability

Registered Capacity			
% RCAP	P	Q Lead	Q Lag
0.00 of RCAP	0.0		
0.05 of RCAP	0.0		
0.10 of RCAP	0.0		
0.12 of RCAP	0.0		
0.15 of RCAP	0.0		
0.20 of RCAP	0.0		
0.25 of RCAP	0.0		
0.30 of RCAP	0.0		
0.35 of RCAP	0.0		
0.40 of RCAP	0.0		
0.45 of RCAP	0.0		
0.50 of RCAP	0.0		
0.55 of RCAP	0.0		
0.60 of RCAP	0.0		
0.65 of RCAP	0.0		
0.70 of RCAP	0.0		
0.75 of RCAP	0.0		
0.80 of RCAP	0.0		
0.85 of RCAP	0.0		
0.90 of RCAP	0.0		
0.95 of RCAP	0.0		
1.00 of RCAP	0.0		



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Sample Lot – Section A

	SECTION A.1 - EXISTING CONTRACTED ENTITIES ONLY				
1.1	Has the Providing Unit an existing DS3 System Services Agreement for Regulated Arrangements for FFR for a non-zero value and is applying to change the Reserve Characteristic for FFR relative to the values specified in its DS3 System Services Agreement or to change from Static to Dynamic service provision or vice versa?			**Tenderer must respond YES and must answer questions 1.2A - 1.4, Section B and all of Section C.** **If the Providing Unit is an Aggregator please provide all associated MPRN meter numbers, and Individual Demand Sites or Generator Sites details, as outlined in the Grid Codes (SONI section PC.A3.4.2 for AGU, SONI section PC.A3.4.3 for DSU, EirGrid section PC.A4.13 for AGU, EirGrid section PC.A7 for DSU) by filling out the System Services Site Info tab. Where an Individual Demand Site or Generator Site is not currently contracted with the Aggregator, the Providing Unit must provide satisfactory evidence, for example a Letter of Intent, that such contracts will be in place by 1 October 2019.**	
1.2A	Has the Providing Unit a TSO-approved System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service according to the applied for changes (i.e. changed Reserve Characteristic and/or Static/Dynamic classification)? (This question is only pass / fail in combination with 1.2B & 1.2C.) Note: Test Reports must be in the correct System Services Test Report template. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide the TSO-approved System Services Test Report demonstrating the Providing Unit's capability.** **If Tenderer responds NO, Tenderer must respond to questions 1.2B - 1.2C and provide the associated evidence.**	
1.2B	If the answer to question 1.2A above is **NO**, please confirm: Has the Providing Unit conducted testing with the TSO to demonstrate capability to provide the FFR service and has not yet had a test report approved by the TSO? OR Has the Providing Unit submitted a Testing Request to the TSO and the TSO has agreed to a date, which must not be after **21 June 2019**, for testing to take place? OR Has the Providing Unit submitted test data (witnessed as required by the TSO), or performance data, to the TSO and the TSO has agreed to evaluate the Providing Unit's capability to provide the FFR service based on the data? Note: Following testing, Tenderer must submit a completed System Services Test Report to the TSO within 10 working days of the testing date as per the Testing process. Test Reports must be in the correct System Services Test Report template. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond YES.** **Tenderer must provide written confirmation from the relevant system operator confirming that:** **Testing has taken place. Tenderer must state the test date.** **OR** **If a Testing Request has been submitted, that the TSO has agreed a date, which must not be after 21 June 2019, for testing to take place. Tenderer must state the test date.** **OR** **If test / performance data has been submitted, that the TSO has agreed to evaluate the Providing Unit's capability to provide the service based on the data.**	
1.2C	If the answer to question 1.2A above is **NO**, do you understand that a System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service must be approved by the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.3A	Does the Providing Unit comply with the signalling requirements for the provision of the FFR service, as applicable to the Providing Unit's technology? Note 1: There are specific signalling requirements for the provision of the FFR service from Interconnectors, Aggregated Generator Units, Demand Side Units, Energy Storage Providing Units (including batteries), and Wind Farms providing the service through emulated inertia. Note 2: Signals lists that specify the signalling requirements for the provision of the FFR service, applicable to the Providing Unit's technology, are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml In addtion, signalling requirements for the provision of the FFR service are set out in the DS3 System Services New Signals Requirements for the Regulated Arrangements document that is included in the tender pack (or available here: http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-New-Signals-Requirements.pdf)			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide a site-specific Wiring Certificate confirming compliance with the signalling requirements for the FFR service.** **If Tenderer responds NO, Tenderer must respond to question 1.3B.**	
1.3B	If the answer to question 1.3A above is NO, do you understand that where applicable the signalling requirements for the FFR service must be met by the Providing Unit and that a site-specific Wiring Certificate must be provided to the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.4	Have the relevant questions in Section C been answered?			**Tenderer must respond YES.**	

Section A.1 is for Candidates that are applying to amend their existing contracted service values.

DSUs take note of Q1.1 - specifically relating to individual sites that will not be contracted with the Providing Unit on September 1st 2019.

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DSU Site Switching

- A service provider managing an aggregated Demand Side Unit may submit a tender in respect of a Providing Unit comprising a list of constituent sites where for such sites there is either:
  - an active contract in place between the service provider and the demand site; or
  - a future-dated signed contract in place between the service provider and the demand site which executes no later than commencement of the 2019/20 T-1 Capacity Market (i.e.1st October 2019)
- All necessary testing as specified under the procurement rules must be completed by the deadlines specified within the procurement.
- Where a future-dated signed contract exists between the service provider and the demand site, evidence of such contract will be required at tender submission.

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System Services Site Info

	Site No.	Tenderer should align the Site no. with site numbers listed in the DSU Application form / AGU Application form / DSU Ops Cert / GASOA Schedule	1	2	3	4	5	6	7
1	Is this site providing DS3 System Services?	Yes / No	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List
2	Name of Individual Demand Site		<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
3	MPRN		<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
4	Irish Grid Co-ordinates of the Connection Point		<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
5	Maximum Export Capacity	(MW)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
6	Maximum Import Capacity	(MW)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
7	Performance Measurement Device Standards for Fast Acting Services installed in agreement with TSO.	Yes / No	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List	Please Select from Drop Down List
8	The Trigger Point that the IDS is expected to start responding at (F Trigger On).	(Hz)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
9	The frequency range over which the IDS will go from minimum to maximum declared response (F Trigger Range).	(Min Hz - Max Hz)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
10	The frequency at which the IDS will begin to cease responding at (F Trigger Off).	(Hz)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
11	Time delay to the F Trigger Off characteristic that the IDS will continue to respond for thereafter (T loiter).	(sec)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>
12	Minimum time duration following a response before the IDS will become available to respond again (T Min Interval).	(sec)	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>	<Insert Here>

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Sample Lot – Section A – Testing

SECTION A.1 - EXISTING CONTRACTED ENTITIES ONLY						
1.1	Has the Providing Unit an existing DS3 System Services Agreement for Regulated Arrangements for FFR for a non-zero value and is applying to change the Reserve Characteristic for FFR relative to the values specified in its DS3 System Services Agreement or to change from Static to Dynamic service provision or vice versa?			**Tenderer must respond YES and must answer questions 1.2A - 1.4, Section B and all of Section C.** **If the Providing Unit is an Aggregator please provide all associated MPRN meter numbers, and Individual Demand Sites or Generator Sites details, as outlined in the Grid Codes (SONI section PC.A3.4.2 for AGU, SONI section PC.A3.4.3 for DSU, EirGrid section PC.A4.13 for AGU, EirGrid section PC.A7 for DSU) by filling out the System Services Site Info tab. Where an Individual Demand Site or Generator Site is not currently contracted with the Aggregator, the Providing Unit must provide satisfactory evidence, for example a Letter of Intent, that such contracts will be in place by 1 October 2019.**	
1.2A	Has the Providing Unit a TSO-approved System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service according to the applied for changes (i.e. changed Reserve Characteristic and/or Static/Dynamic classification)? (This question is only pass / fail in combination with 1.2B & 1.2C.) Note: Test Reports must be in the correct System Services Test Report template. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide the TSO-approved System Services Test Report demonstrating the Providing Unit's capability.** **If Tenderer responds NO, Tenderer must respond to questions 1.2B - 1.2C and provide the associated evidence.**	
1.2B	If the answer to question 1.2A above is **NO**, please confirm: Has the Providing Unit conducted testing with the TSO to demonstrate capability to provide the FFR service and has not yet had a test report app OR Has the Providing … not be after **21 June 2019**, for testing … OR Has the Providing … TSO and the TSO has agreed to evalua… Note: Following … 0 working days of the testing date … emplate. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond YES.** **Tenderer must provide written confirmation from the relevant system operator confirming that:** **Testing has taken place. Tenderer must state the test da…** **OR** **If a Testing Request has been submitted, that the TSO h… be after 21 June 2019, for testing to take place. Tendere…** **OR** **If test / performance data has been submitted, that the… Providing Unit's capability to provide the service based on the data.**	
1.2C	If the answer to question 1.2A above is **NO**, do you understand that a System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service must be approved by the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.3A	Does the Providing Unit comply with the signalling requirements for the provision of the FFR service, as applicable to the Providing Unit's technology? Note 1: There are specific signalling requirements for the provision of the FFR service from Interconnectors, Aggregated Generator Units, Demand Side Units, Energy Storage Providing Units (including batteries), and Wind Farms providing the service through emulated inertia. Note 2: Signals lists that specify the signalling requirements for the provision of the FFR service, applicable to the Providing Unit's technology, are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml In addtion, signalling requirements for the provision of the FFR service are set out in the DS3 System Services New Signals Requirements for the Regulated Arrangements document that is included in the tender pack (or available here: http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-New-Signals-Requirements.pdf)			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide a site… confirming compliance with the signalling requirement…** **If Tenderer responds NO, Tenderer must respond to qu…**	
1.3B	If the answer to question 1.3A above is NO, do you understand that where applicable the signalling requirements for the FFR service must be met by the Providing Unit and that a site-specific Wiring Certificate must be provided to the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.4	Have the relevant questions in Section C been answered?			**Tenderer must respond YES.**	

We encourage units to test early! There is no requirement to wait unit after tender submission (as was the case in Phases 1 and 2).

Questions relate to Testing – apply to all Providing Units and taken together are Pass / Fail

All units must have engaged with the TSO in advance of tender submission and agreed a testing plan.

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Sample Lot – Section A – Signals

	SECTION A.1 - EXISTING CONTRACTED ENTITIES ONLY				
1.1	Has the Providing Unit an existing DS3 System Services Agreement for Regulated Arrangements for FFR for a non-zero value and is applying to change the Reserve Characteristic for FFR relative to the values specified in its DS3 System Services Agreement or to change from Static to Dynamic service provision or vice versa?			**Tenderer must respond YES and must answer questions 1.2A - 1.4, Section B and all of Section C.** **If the Providing Unit is an Aggregator please provide all associated MPRN meter numbers, and Individual Demand Sites or Generator Sites details, as outlined in the Grid Codes (SONI section PC.A3.4.2 for AGU, SONI section PC.A3.4.3 for DSU, EirGrid section PC.A4.13 for AGU, EirGrid section PC.A7 for DSU) by filling out the System Services Site Info tab. Where an Individual Demand Site or Generator Site is not currently contracted with the Aggregator, the Providing Unit must provide satisfactory evidence, for example a Letter of Intent, that such contracts will be in place by 1 October 2019.**	
1.2A	Has the Providing Unit a TSO-approved System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service according to the applied for changes (i.e. changed Reserve Characteristic and/or Static/Dynamic classification)? (This question is only pass / fail in combination with 1.2B & 1.2C.) Note: Test Reports must be in the correct System Services Test Report template. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide the TSO-approved System Services Test Report demonstrating the Providing Unit's capability.** **If Tenderer responds NO, Tenderer must respond to questions 1.2B - 1.2C and provide the associated evidence.**	
1.2B	If the answer to question 1.2A above is **NO**, please confirm: Has the Providing Unit conducted testing with the TSO to demonstrate capability to provide the FFR service and has not yet had a test report app OR Has the Providin not be after **21 June 2019**, for testing OR Has the Providin TSO and the TSO has agreed to evalua Note: Following 0 working days of the testing date emplate. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond YES.** **Tenderer must provide written confirmation from the relevant system operator confirming that:** **Testing has taken place. Tenderer must state the test date.** **OR** **If a Testing Request has been submitted, that the TSO has agreed a date, which must not be after 21 June 2019, for testing to take place. Tenderer must state the test date.** **OR** **If test / performance data has been submitted, that the TSO has agreed to evaluate the Providing Unit's capability to provide the service based on the data.**	
1.2C	If the answer to question 1.2A above is **NO**, do you understand that a System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service must be approved by the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.3A	Does the Providing Unit comply with the signalling requirements for the provision of the FFR service, as applicable to the Providing Unit's technology? Note 1: There are specific signalling requirements for the provision of the FFR service from Interconnectors, Aggregated Generator Units, Demand Side Units, Energy Storage Providing Units (including batteries), and Wind Farms providing the service through emulated inertia. Note 2: Signals lists that specify the signalling requirements for the provision of the FFR service, applicable to the Providing Unit's technology, are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml In addtion, signalling requirements for the provision of the FFR service are set out in the DS3 System Services New Signals Requirements for the Regulated Arrangements document that is included in the tender pack (or available here: http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-New-Signals-Requirements.pdf)			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide a site-specific Wiring Certificate confirming compliance with the signalling requirements for the FFR service.** **If Tenderer responds NO, Tenderer must respond to questi**	
1.3B	If the answer to question 1.3A above is NO, do you understand that where applicable the signalling requirements for the FFR service must be met by the Providing Unit and that a site-specific Wiring Certificate must be provided to the TSO by **19 July 2019**?			**Tenderer must respond YES.**	
1.4	Have the relevant questions in Section C been answered?			**Tenderer must respond YES.**	

Specific Signalling requirements are noted per Lot. Please use the tender queries process if further clarity is required.

Questions relate to Signalling – apply to Providing Units depending on the technology and the service being tendered for.

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Sample Lot – Section A

	SECTION A.2 - ASPIRING ENTRANTS ONLY				
1.5	Is the Providing Unit's technology designated as "Proven" for the FFR service on the DS3 System Services Proven Technologies List?			**Tenderer must respond YES or NO.** **If Tenderer responds YES, Tenderer must provide information (1000 words maximum) on the Providing Unit's technology as evidence.** **If Tenderer responds NO, Tenderer must provide evidence (1000 words maximum) that the Providing Unit's technology can provide the service.**	
1.6A	Is the Providing Unit a Demand Side Unit DSU? Note: Individual Demand Sites must be part of a DSU in order to qualify to provide this service.			**Tenderer must respond YES or NO.** **If Tenderer responds YES, Tenderer must answer question** **If Tenderer responds NO, Tenderer does not need to answ** **complete remaining questions in this section.**	
1.6B	Is the Providing Unit registered in SEM or will it be registered by 1 September 2019? Note: If the Providing Unit is a Demand Side Unit, it must be registered in SEM by 1 September 2019 in order to qualify to provide this service.			**Tenderer must respond YES.**	
1.7	Can the Providing Unit provide a Dynamic Response or a Static Response? Please detail in the Parameter cell if Dynamic Response or Static Response or both. Note: The criteria defining the capability of a Providing Unit to provide either a Dynamic or Static Response for the FFR service are set out in the DS3 System Services Contracts for Regulated Arrangements Recommendations Paper (http://www.eirgridgroup.com/site-files/library/EirGrid/DS3-System-Services-Contracts-Recommendations_final.pdf).			**Tenderer must respond YES and provide parameter, eithe** **the Providing Unit.**	
1.8	Is the Reserve Trigger Capability greater than or equal to 49.3Hz?			**Tenderer must respond YES**	
1.9	Can the Providing Unit provide a minimum of 1MW of FFR?			**Tenderer must respond YES**	
1.10	Is the Providing Unit connected to the Ireland/ Northern Ireland Transmission System or Distribution System or will the Providing Unit be connected by 1 September 2019?			**Tenderer must respond YES.** **If the Providing Unit is not an Aggregator, please confirm t** **Providing Unit is an Aggregator please provide all associated MPRN meter numbers, and Individual Demand Sites or Generator Sites details, as outlined in the Grid Codes (SONI section PC.A3.4.2 for AGU, SONI section PC.A3.4.3 for DSU, EirGrid section PC.A4.13 for AGU, EirGrid section PC.A7 for DSU) by filling out the System Services Site Info tab. Where an Individual Demand Site or Generator Site is not currently contracted with the Aggregator, the Providing Unit must provide satisfactory evidence, for example a Letter of Intent, that such contracts will be in place by 1 October 20** **If not currently connected to the Power System but planni** **September 2019 please provide a detailed project progran** **similar) and proof of connection agreement or letter from** **(EirGrid, SONI, ESB Networks, NIE Networks) confirming co** **If the Providing Unit is an Aggregator please provide all as** **and Individual Demand Sites or Generator Sites details, as** **(SONI section PC.A3.4.2 for AGU, SONI section PC.A3.4.3 fo** **for AGU, EirGrid section PC.A7 for DSU) by filling out the S** **Where an Individual Demand Site or Generator Site is not** **Aggregator, the Providing Unit must provide satisfactory e** **Intent, that such contracts will be in place by 1 October 2019.**	
1.11	Can the Providing Unit provide FFR by 1 September 2019 as per the technical description in the DS3 System Services Agreement and the DS3 System Services Protocol - Regulated Arrangements?			**Tenderer must respond YES.**	
1.12A	Has the Providing Unit a TSO-approved System Services Test Report demonstrating the Providing Unit's capability to provide the FFR service according to the applied for changes (i.e. changed Reserve Characteristic and/or Static/Dynamic classification)? (This question is only pass / fail in combination with 1.12B & 1.12C.) Note: Test Reports must be in the correct System Services Test Report template. System Services Test Report templates are available here: http://www.eirgridgroup.com/customer-and-industry/general-customer-information/grid-code-compliance-test/compliance-testing/system-services-testing/index.xml			**Tenderer must respond either YES or NO.** **If Tenderer responds YES, Tenderer must provide the TSO-approved System Services Test Report demonstrating the Providing Unit's capability.** **If Tenderer responds NO, Tenderer must respond to questions 1.12B - 1.12C and provide the associated evidence.**	

Section A.2 is for Tenderers that do not currently provide the service in the Lot.

Additional Pass / Fail questions apply to aspiring entrants – including relating to the unit's connection status and capability to provide the service, among others.

Pass / Fail Questions relating to Testing and Signalling (where applicable to the technology and service) are the same as Section A.1.

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Sample Lot – Section B

Section B is for Distribution-Connected Candidates only.

PRIMARY OPERATING RESERVE (POR) SECTION B - PASS/FAIL TECHNICAL QUESTIONNAIRE FOR DISTRIBUTION CONNECTED PROVIDING UNITS ONLY					
Q No.	**Description**	**Response**		**Minimum Evidence Required to demonstrate compliance**	**Please provide document name, location and cross reference number in submission for explanation where required (e.g. pg.4 POR Testing Report)**
1.15	If the Providing Unit is connected to the Ireland/ Northern Ireland Distribution System or will be before 1 September 2019, do you understand that formal notification must be provided from the relevant DSO/DNO confirming consent for the service to be provided by **5 July 2019**?			**Tenderer must respond YES.** **Formal notification from the relevant DSO/DNO confirming appropriate operational protocols will be required by 5 July 2019.**	

Sample Lot – Section C

Section C is for information purposes but must be completed as specified.

Tenderers must specify the total contracted volume that is being applied for.

FAST FREQUENCY RESPONSE (FFR) SECTION C - TECHNICAL (FOR INFORMATION PURPOSES ONLY) QUESTIONNAIRE					
Q No.	Description	Response	Parameter (All orange fields must be completed, if not applicable please indicate N/A.	Notes	location and cross reference number in submission for explanation where required (e.g. pg.4 FFR Testing Report)
	Operating Reserve Questions Relating to FFR (DYNAMIC RESPONSE)				
2	If the Providing Unit can provide a Dynamic Response please confirm and complete questions 2.1 - 2.8.				
2.1	Is the Providing Unit automatically able to track changes in frequency dynamically and respond in a continuously controlled manner proportional to the system frequency?				
2.2A	Does the Providing Unit provide a response in discrete steps? Note: To be considered as dynamic provision of FFR, for each step as the frequency recovers the withdrawal of the provision of the service must be identical in both MW volume and response time to that provided at the corresponding Reserve Step Trigger when providing the service. Otherwise, the provision of the FFR service is deemed as Static.			**Tenderer must respond YES or NO** **If Tenderer responds YES, Tenderer must complete Questions 2.2b - 2.**	
2.2B	In how many discrete steps can the Providing Unit provide a response? Note: For dynamic capability when providing FFR, a Providing Unit must be able to respond with a minimum of 10 discrete steps.				
2.2C	What is the maximum individual discrete step size with which the Providing Unit provides an FFR response? Note: The maximum individual discrete step size cannot exceed 5 MW for a dynamic response.				
2.2D	Does the Providing Unit provide an FFR response in a monotonically increasing manner? (Definition of 'monotonically increasing manner' given below.)				
2.2E	Can the Providing Unit provide each discrete step of response within the maximum allowable tolerance? Note: All discrete steps should be of equal magnitude, but a maximum allowable tolerance of 1MW of the average step size will apply, where the average step size is the FFR available volume divided by the number of discrete steps in the response. For example, for a Providing Unit that can provide 20 MW of FFR with 10 discrete steps, the average step size will be 2 MW; therefore, the smallest discrete step that the Providing Unit may provide is 1 MW, and the largest discrete step that the unit may provide is 3 MW.				
2.3	What is FFR Response Time of the Providing Unit, measured in seconds? (Definition of FFR Response Time given below.)				
2.4	What is the Reserve Trigger Capability of the Providing Unit? (Definition of Reserve Trigger Capability given below.)				
2.5	Is the Reserve Trigger adjustable? (Definition of Reserve Trigger given below.)				
2.6	If the Reserve Trigger is adjustable what is the adjustable range? Note: The lower limit of the range cannot be lower than 49.8 Hz and the upper limit of the range cannot be above 49.985 Hz.				
2.7	What is the FFR Trajectory Capability of the Providing Unit, measured in Hz? (Definition of FFR Trajectory Capability given below). Note 1: For a Providing Unit to be eligible to be contracted as a dynamic provider of FFR, the unit must be able to operate with a minimum trajectory capability of 2 Hz in response to a Reserve Trigger. For Providing Units that provide a response in discrete steps, the unit's final discrete step must occur at or above 49.3 Hz. Note 2: For this gate, the Providing Unit's FFR Trajectory Capability is determined as part of the testing process.				
2.8	What is the adjustable range of the FFR Trajectory Capability of the Providing Unit, measured in Hz?				
2.9	Is the Providing Unit capable of operating following a frequency event without recovering its resource until the system frequency has recovered and been sustained at an acceptable level? The exact timeframes for resource recovery and acceptable level of frequency restoration shall be agreed by the TSOs. For example, a battery that wishes to re-charge following a frequency event may be instructed to wait for a period of time after the frequency has recovered above an acceptable level e.g. 49.8 Hz before re-charging. Note: This is a question to determine the capability of a Providing Unit. System and market operations may determine the timeframe for a Providing Unit to recover its resource following a frequency event.				

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FFR Service Provision

- Technical Questionnaire for Lots 12IE and Lot1 2NI have additional explanatory notes on the provision of the FFR service
- FFR Response Time
- FFR Hysteresis Control
- Dynamic Provision of FFR by aggregate units

Tender Pack and Technical Questionnaire

Q & A

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Testing and Signalling

Colm MacManus

EIRGRID GROUP

Testing & Signalling Agenda

- Overview
- Updated Publications
- Testing Dates & Data
- Signalling Requirements
- Questions

Testing Overview

- System Services webpage
  - Signal List Templates
  - Test Procedure & Report Templates
  - Addition of Battery Templates

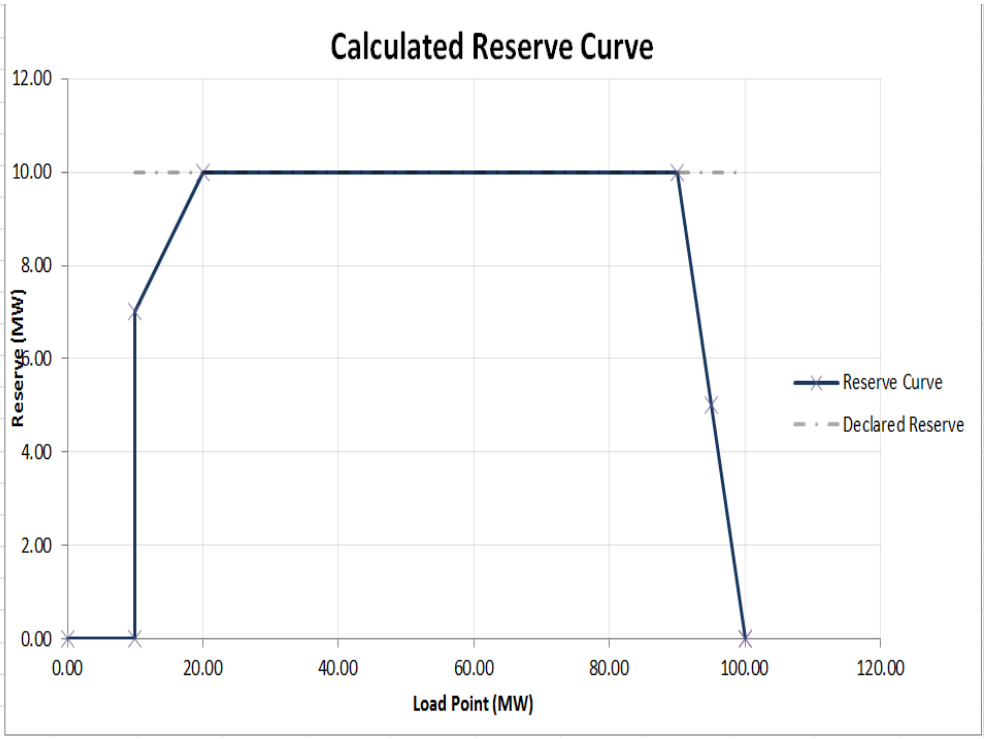
Updated Publications

- Minor changes
  - Definitions updated per clarifications in the Protocol document
  - *e.g.* layout of the Reserve Curve table
- Publication of the Reserve Curve Tool
- TOR2 assessment:
  - TOR2 may also apply from frequency trigger
  - It may be reasonable to assess a Providing Unit's capability on something other than TOD
    - Technology / Providing Unit specific - submit proposal

Reserve Curve Tool

- Visualisation

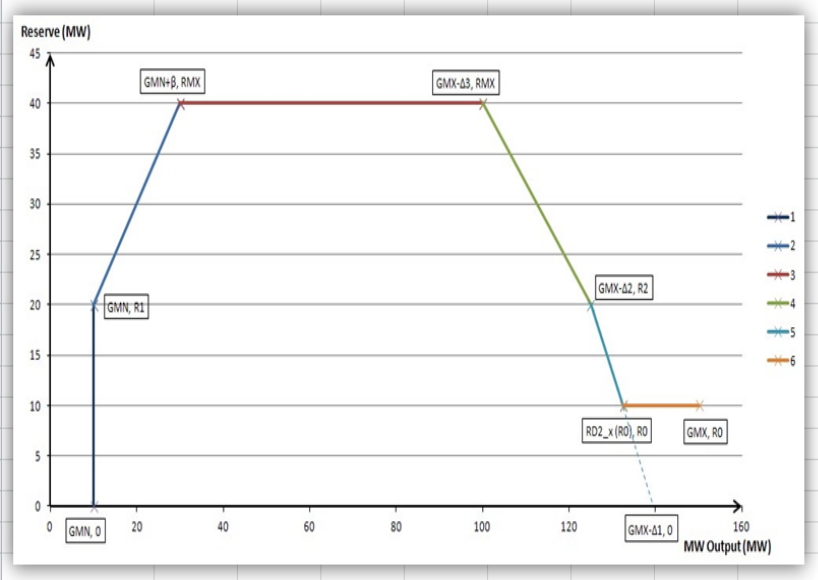
Maximum Output	
GMX	100
Reserve Curve Values	
RMX	10
GMN	10
R0	0
R1	7
R2	5
Δ1	0
Δ2	5
Δ3	10
β	10
MW Curve Points	
GMN+β	20
GMX-Δ3	90
GMX-Δ2	95
GMX-Δ1	100
Input Variables	
Declared Reserve	10
Current Output	50
Available Reserve	10.00



Reserve Curve Tool

- Ruleset & Ambient Declarations

Ruleset for Calculating the Reserve Curve



GMN	Minimum Load (IE) / Minimum Generation (NI)
GMX	Maximum Output
RMX	Maximum reserve volume (shall be provided across the full range between GMN+β to GMX-Δ3)
R0	Reserve volume provided at GMX (Normally 0 MW)
Δ1	0 if the unit will provide reserve at any load point < GMX.
R2	Reserve provided at GMX-Δ2 (R2 is normally ≤ Δ2)
R1	Reserve provided at GMN
Δ3 ≥ Δ2 > Δ1	
RMX ≥ R2 > R0	

Suggested Methodology for Units with Ambient Declarations*

1. Set GMX = maximum availability at the time of testing
2. Calculate the values for Δ1, Δ2, Δ3, R0, R2, RMX using that value for GMX
3. Set GMX = Registered Capacity / MCR

For the purpose of the contract, GMX is Registered Capacity (or MCR). For the purpose of monitoring, GMX is the declared availability.

**This may not reflect the unit's actual capability. The contracting unit shall decide whether this approach is suitable for their unit or not.*

Testing Dates / Data

- Testing Dates
  - First date: N/A
  - Last date: 21 June 2019
- Early engagement if planning not to test
  - Test report ideally approved before tender submission
    - Or have agreement that data is appropriate (via report submission)
      - *E.g.* ROCOF test data / performance data
  - If provided data is not deemed appropriate, testing will be required
    - Test date must be agreed before tender submission

Signalling Requirements

- Signalling obligations on the Providing Unit for certain services published in signal list templates
  - Information in “DS3 System Services New Signaling Requirements”
- Process to meet obligations < 19 July:
  - Providing Unit requests site-specific Signal List
    - Provides any info required for Signal List
  - TSO issues site specific signal list
    - Based on published templates & site-specific info
  - Carry out works to make the signals available to the TSO
  - Complete, sign and submit the site-specific Wiring Certificate

Wiring Certificate

Providing Unit Name	Interconnector Signal List - System Services - FFR		
	V3.0	14/03/2019	
Digital Output signals (from TSO) to Providing Unit			
Signal Description	Digital - Control	Signal in place	Functionality Confirmed
Dynamic Frequency Response Mode (Control) Disable	Control		
Common			
Dynamic Frequency Response Mode (Control) Enable	Control		
Static Frequency Response Mode (Control) Disable	Control		
Common			
Static Frequency Response Mode (Control) Enable	Control		
Reserve Response Mode 1 (Control) ON	Control		
Reserve Response Mode 2 (Control) ON	Control		
Reserve Response Mode 3 (Control) ON	Control		
Reserve Response Mode 4 (Control) ON	Control		
Reserve Response Mode 5 (Control) ON	Control		
Digital Input Signals (to TSO) from Providing Unit			
Signal Description	Digital - Feedback	Signal in place	Functionality Confirmed
Dynamic Frequency Response Mode (Feedback) Disabled	Feedback		
Common			
Dynamic Frequency Response Mode (Feedback) Enabled	Feedback		
Static Frequency Response Mode (Feedback) Disabled	Feedback		
Common			
Static Frequency Response Mode (Feedback) Enabled	Feedback		
Reserve Response Mode 1 (Feedback) OFF / ON	Feedback		
Reserve Response Mode 2 (Feedback) OFF / ON	Feedback		
Reserve Response Mode 3 (Feedback) OFF / ON	Feedback		
Reserve Response Mode 4 (Feedback) OFF / ON	Feedback		
Reserve Response Mode 5 (Feedback) OFF / ON	Feedback		
Confirmation provided by:		Date:	

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Testing and Signalling

Q & A

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