

 Eskom National Transmission Company South Africa TM	Report	NTCSA, System Operator
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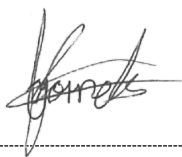
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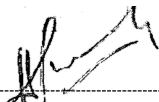
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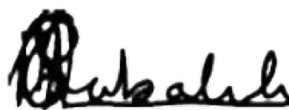
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1. Introduction

The System Operator (SO) is responsible for operating and controlling the power system in a manner that is safe, reliable and efficient. In support of this role, Integrated Power System Reliability Services (IPSRS) manages Reliability Services (RS) required by National Control through the assessment, specification, procurement and contractual management of these services. For purposes of this document, RS consists of Ancillary Services (AS) which include Demand Response (DR).

The establishment of the National Transmission Company South Africa SOC Ltd (NTCSA) and the evolution of the transmission business toward a transmission system and market operation model create an opportunity to broaden the potential provider base for RS. This includes the potential participation of a wider range of customers, generators, storage resources, distributed energy resources and market intermediaries, subject to future market arrangements, qualification requirements and system needs.

Against this background, IPSRS is undertaking a broader assessment of the future supply landscape for RS. The purpose of this Request for Information (RFI) is to obtain market information that will assist NTCSA in understanding the technical capability, commercial readiness and operational constraints of potential reliability service providers under a changing market environment.

In particular, IPSRS seeks to improve its understanding of the following:

- The level of potential AS participation across a broad range of sectors and resource types, including (but not limited to) industrial, commercial, agricultural, municipal/public, mining, data centre, generation, distributed energy resource and storage participants;
- The role of market intermediaries, such as traders and aggregators, including the services they may offer, their operating models and their limitations;
- The technical viability, operational characteristics, dispatchability, scalability and limitations of eligible technologies and resource types;
- Potential AS volumes, participation availability profiles, cost drivers and feasible commercial or pricing approaches.
- The information, data and market design details that potential participants would need in order to assess, model and consider feasible participation in RS arrangements.

The information obtained through this RFI is intended to support future thinking on RS design, procurement approaches and market participation frameworks. It is intended to improve understanding of the feasible supply landscape for RS and to inform future decision-making by NTCSA.

Participation in this RFI is voluntary and is intended for information-gathering purposes only. Submission of information does not create any right, preference or obligation in relation to any current or future procurement process, tender or market participation arrangement.

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2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this document is to invite and obtain information from potential and interested market participants regarding the future provision of Reliability Services, including Ancillary Services and by extension Demand Response, to the System Operator. The document is intended to support NTCSA in assessing the availability, technical capability, commercial readiness and operational suitability of potential service providers, technologies, resource types and market participation models. The information received will be used to inform future reliability services design, market development and procurement approaches. This document does not constitute a tender, a request for proposal, or a commitment by NTCSA to procure any service or enter into any commercial arrangement.

2.1.2 Applicability

This document shall apply to any Eskom subsidiary, South African entity or natural person considering or participating in any existing or potential AS of the SO, NTCSA.

2.1.3 Effective date

This document does not prescribe any requirements. The authorisation date shall be the effective date for the purposes of this RFI document.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] Ancillary Services Technical Requirements for 2026/27 – 2030/31, https://www.ntcsa.co.za/wp-content/uploads/2026/01/ASTR-2026_27-2030_31.pdf
- [2] Medium-Term System Adequacy Outlook 2026-2030, <https://www.ntcsa.co.za/wp-content/uploads/2025/10/Medium-Term-System-Adequacy-Outlook-2026-2030.pdf>
- [3] The South African Grid Code, System Operation Code, version 10.1, https://www.nersa.org.za/files/files/2022/02/SAGC-System-Ops-Version-10.1_January-2022.pdf
- [4] The South African Grid Code, The Information Exchange Code, version 10.0, <https://www.nersa.org.za/files/files/2021/08/SAGC-Info-Xchange-Version-10.pdf>
- [5] Grid Connection Code for Battery Energy Storage Facilities (BESF) Connected to the Electricity Transmission System (TS) Or The Distribution System (DS) In South Africa, version 5.2, https://www.nersa.org.za/files/files/2021/06/Annexure-A_-Battery-Energy-Sorage-Facility_Connection_Code.pdf

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- [6] 240-16706821, Certification and Performance Monitoring for Battery Energy Storage Facility Reserves, latest version, https://www.ntcsa.co.za/wp-content/uploads/2024/07/Battery_Energy_Storage_Facility_Certification_and_Performance_Monitoring_Standard.pdf
- [7] 559-217028319, Certification and Performance Monitoring Standard for System Restoration Services, latest version, <https://www.ntcsa.co.za/wp-content/uploads/2025/10/Certification-and-Performance-Monitoring-Standard-for-System-Restoration-Services.pdf>
- [8] 240-110150430, Certification and Performance Monitoring of Generation Reserves, latest version, <https://www.ntcsa.co.za/wp-content/uploads/2024/09/240-110150430-Certification-and-Performance-Monitoring-of-Generation-Reserves.pdf>
- [9] 240-180300098, Certification and Performance Monitoring for Generators Capable of Operating in a Synchronous Condenser Mode, latest version, <https://www.ntcsa.co.za/wp-content/uploads/2025/08/SCO-testing-performance-std.pdf>
- [10] 559-2053203657, Certification and Performance Monitoring for Generators Capable of Providing Reactive Power Support, latest version, <https://www.ntcsa.co.za/wp-content/uploads/2026/02/Certification-and-Performance-Monitoring-for-Generators-Capable-of-Providing-RP-Support-Standard-rev-1.pdf>
- [11] The South African Grid Code, the Network Code, version 10.1, https://www.nersa.org.za/files/files/2022/02/SAGC-Network-Version-10.1_January-2022.pdf
- [12] The Grid Connection Code for Renewable Power Plants (RPPS) Connected to the Electricity Transmission System (TS) Or The Distribution System (DS) In South Africa, version 3.1, <https://www.nersa.org.za/files/files/2022/01/SAGC-Requirements-for-Renewable-Power-Plants-Rev-3.1.pdf>

2.2.2 Informative

- [13] Electricity Regulation Act: Integrated Resource Plan 2025, https://www.gov.za/sites/default/files/gcis_document/202510/53596gon6767.pdf
- [14] Transmission Development Plan 2025-2034, https://www.ntcsa.co.za/wp-content/uploads/2024/11/TDP2024_Public_Forum_Presentation_30Oct2024_Final_Pack_Rev_1.pdf

2.3 Definitions

2.3.1 Abbreviations

Abbreviation	Explanation
AS	Ancillary Services
DR	Demand Response
IPSRS	Integrated Power System Reliability Services
MO	Market Operator
MW	Megawatt
NTCSA	National Transmission Company South Africa SOC Ltd
RFI	Request for Information

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Abbreviation	Explanation
RS	Reliability Services
SCADA	Supervisory Control and Data Acquisition
SO	System Operator

2.3.2 General

Definition	Description
AB Schedule	This is a Microsoft® Excel® document which captures the questions asked in this document (Part A) and provides an allocated space for the Service Provider to document their response (Part B).
Aggregator	An Aggregator is a legal entity or market intermediary that coordinates, combines and manages multiple individual facilities, customer loads, distributed energy resources, storage systems or generation resources so that they may collectively participate as a larger, measurable and controllable resource for the provision of Reliability Services.
Ancillary Services	As per the SAGC, these are services supplied to the NTCSA by generators, distributors, or end-use customers, necessary for the reliable and secure transport of power from generators to distributors and other customers, as defined in the System Operation Code, section 4.
Balance Responsible Party	Balance Responsible Party means a licensed or registered generator, distributor or trader that is responsible for balance responsible activities, and which is accountable through the balancing mechanism for deviations.
Co-generators	Facilities that produce electricity as part of, or in conjunction with, another industrial, commercial or thermal process, where the electrical output may be used for own consumption, exported to the grid, supplied to another party, or a combination thereof. Co-generation may include combined heat and power arrangements or process-linked generation where electricity production is influenced by the primary process requirements.
Demand-side Management	A broad set of programmes, actions, technologies or commercial arrangements intended to influence electricity consumption patterns, including energy efficiency, load shifting, peak reduction, conservation and other demand-side interventions. Demand Response is generally considered a specific form of demand-side management where demand is adjusted in response to system, market, price or dispatch signals.
Demand Response	The intentional adjustment, reduction, increase, shifting or interruption of electricity demand by an end-use customer, facility, aggregator or other demand-side resource in response to a system requirement, dispatch instruction, market signal, price signal or contractual arrangement, for the purpose of supporting power system reliability, balancing, reserve provision or system operation.
Facility	Facility means a power generation facility from which the Ancillary Services will be generated. A generation facility which converts primary energy to electrical energy which consists of one or more Power Generating Modules connected to a network at one or more Connection Points.
Market Operator	Market Operator means the person licensed to operate a trading platform for power market participants and who takes no ownership of the Energy traded, and fulfils the requirements of the Act and this Market Code.
National Transmission Company	As per the SAGC, this is the South African legal entity licensed to execute the national transmission responsibility. It consists of a System Operator and a national transmission network service provider.

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Definition	Description
Prosumer	A customer or facility that both consumes electricity and produces electricity, typically through embedded generation, storage, controllable load or other distributed energy resources. A prosumer may use generated energy for self-consumption, export surplus energy where permitted, reduce grid imports, or participate in energy, Demand Response or reliability service arrangements.
Retailer	Retailer means a Trader that supplies energy to consumers that do not meet the qualifying criteria for market participants of the Market Operator code.
Service Provider	A legal entity responding to the RFI, who can or has the potential to provide ancillary services and operates one or more units or one or more facilities that supply power or capabilities to the Transmission or Distribution System.
System Operator	A legal entity licensed to be responsible for short term reliability of the interconnected power system (IPS), which oversees controlling and operating the transmission system and dispatching generation (or balancing the supply and demand) in real time basis.
Trader	Trader means a person that holds a trading licence issued by NERSA.
Wheeling Plant	A generation facility that supplies electricity to an offtaker located at a different connection point by using the transmission and/or distribution network to transport the energy under a wheeling, use-of-system, trading or related commercial arrangement. The plant may have contractual delivery obligations that influence its available export capacity and ability to provide Reliability Services.
Zero-export	An operating arrangement where a facility with embedded generation, storage or other energy resources is configured or contractually required to prevent active power export beyond the point of connection. The facility may still reduce its own grid imports or provide demand-side flexibility, subject to metering, control, contractual and technical limitations. In some cases these type of facilities aren't even connected to the grid.

2.3.3 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Roles and Responsibilities

The Service Provider is required to respond to the Information and Pricing question recorded in this document, by completing the Microsoft® Excel® document ("SO IPSRS RFI_AB Schedules_Rev1.xlsx").

The guideline on how to complete the Excel® schedules, is included as the first tab in the Excel® AB Schedules. The numbering of the requested information shall be retained. The Service Provider shall include references to supporting document paragraphs where requested to do so, as indicated in the AB Schedule.

The Service Provider shall submit both an electronic and hard copy of the AB Schedule and additional supporting documents.

2.5 Process for Monitoring

None.

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2.6 Related/Supporting Documents

None.

3. Reliability Services

The main content of the document is centred around gaining perspective from existing and potential participants towards the objectives listed in the Introduction section. Furthermore, to inform on how NTCSA can help the industries better understand, model and cost participation as part of self-evaluation and better-informed Reliability Services consideration.

The general format of each sub-heading of section 3 is to provide context and background information to understand the intent behind the questions that follows. The questions are captured in a block to ensure segregation and labelled to indicate in which schedule the information must be captured by the Service Provider.

Note: Service Providers can choose to not answer questions by stating “Not sure” or “Prefer not to say”, it is however requested that the answers that are provided must be as accurate as possible. There is no binding commitment, especially related to the pricing feedback, however the quality of the feedback does impact the effectiveness and success of the business decisions leading to future products and procurement efforts.

3.1 Background

AS are the services required by the System Operator to maintain the secure, reliable and efficient operation of the interconnected power system, in addition to the normal supply of electrical energy. These services support real-time balancing, frequency control, voltage control, system restoration and other operational requirements necessary to ensure that electricity can be transported reliably from generators to distributors and end-use customers. DR refers to the intentional adjustment, reduction, shifting or interruption of electricity demand by customers, aggregators or other demand-side resources in response to system requirements, dispatch instructions, market signals or contractual arrangements. In the context of Reliability Services, AS provide the System Operator with flexible operational tools to manage supply-demand balance, system constraints, reserve requirements and emerging variability associated with changes in the generation mix, customer behaviour and distributed energy resources.

The System Operation Code [3] defines Ancillary Services broadly as services necessary for reliable and secure power system operation. The currently recognised categories include:

- Total reserves, including:
 - Operating reserves:
 - Instantaneous Reserve,
 - Regulating Reserve,
 - Ten-minute Reserve,
 - Supplemental Reserve, and
 - Emergency Reserve.
- Reactive power and voltage control.
- Black start capability / system restoration services.

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- Constrained generation services, where generation is required for system security or network constraint management.

DR is a form of demand-side participation in the provision of AS Operating reserves, whereby controllable demand-side resources can contribute to system reliability, balancing and reserve requirements. The currently relevant DR forms include:

- Instantaneous Demand Response (IDR) as an Instantaneous Reserve,
- Supplemental Demand Response (SDR) as a Supplemental Reserve,
- Other Aggregated demand-side resources or Interruptible loads.

In addition to or as part of the AS listed above, there are Battery Energy Storage Facility (BESF) specific AS provision, namely: (not limited to)

- Instantaneous Reserve (400 milliseconds), also referred to as Fast Frequency Response (FFR),
- Regulating Reserve,
- Ten-minute Reserve, also referred to as Ten-minute Fast Response (TFR), and
- Supplemental Reserve, also referred to as Supplemental Fast Response (SFR) as a Supplemental Reserve.

The establishment of NTCSA as an independent transmission entity, together with the development of the Market Operator function, represents a material change in the institutional and market environment within which RS are planned, procured and utilised. As the transmission system and market arrangements mature, IPSRS is required to reassess how AS should be specified, sourced, contracted and operationalised to support the SO's responsibility for maintaining power system reliability and security.

The future requirements for AS will also be influenced by expected changes in the South African power system. Planning and adequacy documents such as the Transmission Development Plan [14], Integrated Resource Plan [13], Medium-Term System Adequacy Outlook [2] and Ancillary Services Technical Requirements [1] indicate that the generation mix, demand profile and operational characteristics of the system will continue to evolve. Increased penetration of variable renewable energy, the advent of storage and distributed energy resources, changes in customer behaviour and the retirement or reduced availability of conventional plant may alter the volume, type, location and response characteristics of reliability services required by the SO.

In addition, network constraints, congestion and renewable curtailment are becoming increasingly relevant in the operation and planning of the power system. These factors can affect the shape of the demand and supply curve, the timing of system flexibility needs, and the locational value of resources capable of providing AS. Future AS arrangements therefore need to be sufficiently broad and adaptable to accommodate changing system conditions, emerging technologies, new market participants and evolving operational requirements.

This RFI is therefore intended to gather information from existing and potential service providers to assist NTCSA and SO (IPSRS department) in understanding available capabilities, participation limitations, readiness levels, commercial considerations and information requirements. The responses will support the evaluation of future RS procurement approaches and help inform the development of flexible, transparent and fit-for-purpose reliability service arrangements.

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3.2 Service Provider Facility AS Participation Availability and Capability

The objective of this section is to obtain information on the reserve capacity and energy capability that existing or potential facilities may be able to provide as Ancillary Services. The information requested includes the technical, operational, technology-specific, contractual, environmental, network-related or other constraints that may affect the availability, dispatchability, response performance, sustainability and overall capability of the plant or facility to provide such services.

Note: questions are asked across all the AS. Questions not applicable to the Service Provider or not of interest to the Service Provider, shall be indicated by stating “Not Applicable” in the AB Schedule.

3.2.1 General Facility Information

This section seeks general information about the Service Provider’s facility to enable NTCSA to develop a clearer understanding of the physical, technical and grid-related characteristics of existing or planned AS resources. The information requested is intended to provide context on the type, size and location of the facility, the energy technologies currently used or planned, the nature and extent of the grid connection, and the facility’s broader operational configuration.

This information is important to help NTCSA assess the diversity, geographic spread, technology mix and potential scale of resources that may be available to participate in AS. It will also assist in identifying any locational, connection-size, technology-specific or site-related factors that may influence the facility’s ability to provide reliable, measurable and dispatchable services to the System Operator.

Information Schedule:

3.2.1.1.	Provide the name of the facility, the legal entity that owns and/or operates the facility, and the primary contact person responsible for this RFI response.
3.2.1.2.	Provide the physical location of the facility, including province, municipality, nearest town or load centre, the feeding substation name and GPS coordinates where available.
3.2.1.3.	Indicate whether the facility is existing, under construction, planned, proposed, or conceptual, and provide the expected commercial operation date or implementation timeframe where applicable.
3.2.1.4.	Describe the primary purpose and operating nature of the facility, for example generation, storage, industrial load, mining operation, commercial load, agricultural load, municipal/public infrastructure, data centre, aggregated portfolio, or hybrid facility.
3.2.1.5.	Identify the energy technology or technologies currently used or planned at the facility, including but not limited to thermal generation, renewable generation, battery energy storage, energy storage systems, pumped storage, demand-side load control, embedded generation, hybrid systems, or other relevant technologies.
3.2.1.6.	Provide the installed capacity, rated output, rated load, storage capacity, or controllable demand capability of the facility, expressed in MW and, where applicable, MWh.
3.2.1.7.	Provide the maximum import capacity and maximum export capacity of the facility at the grid connection point, including any contractual or technical limits that apply.
3.2.1.8.	Indicate the voltage level, point of connection, host network, and whether the facility is connected to the transmission system, distribution system, municipal network, private network, or behind-the-meter arrangement.

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| <p>3.2.1.9. Identify the relevant network service provider, distributor, municipality, trader, aggregator, balance responsible party, or other intermediary involved in the facility's grid connection or market participation arrangements, where applicable.</p> <p>3.2.1.10. Describe the facility's operational configuration, including whether it operates as a single facility, multiple units, multiple sites, aggregated resources, behind-the-meter resources, or a hybrid arrangement.</p> <p>3.2.1.11. Indicate the facility's prevailing operating strategy or commercial operating philosophy, for example zero-export, self-consumption/prosumer, co-generation, wheeling plant, merchant/export-oriented plant, embedded generation, behind-the-meter optimisation, aggregated portfolio, or another operating model. Where applicable, describe how this operating strategy may affect the facility's ability to import, export, self-dispatch, curtail, consume, or make capacity available for AS participation.</p> <p>3.2.1.12. Indicate whether the facility has an existing energy management system or monitoring capability that may support visibility, verification or dispatch by the System Operator. (this question is intended as a high-level question, section 3.2.2 will enquire the details and exact compatibility)</p> <p>3.2.1.13. Indicate whether the facility currently participates in any energy, reserve, demand response, curtailment, wheeling, trading, self-dispatch, embedded generation or other reliability-related arrangement. Where the arrangement is not with NTCSA, if possible, please indicate with who the arrangement\agreement is entered into.</p> <p>3.2.1.14. Indicate whether the facility's capability to provide Reliability Services is expected to change over the next five years due to expansion, refurbishment, repowering, technology changes, storage additions, process changes, grid connection changes, or other planned developments.</p> <p>3.2.1.15. Provide any additional information that the Service Provider considers relevant for NTCSA to understand the facility's suitability, scale, location, technology type, grid connection context, or potential role in future Ancillary Service arrangements.</p> |
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3.2.2 Facility AS Compatibility and Capability

This section seeks to understand the extent to which the Service Provider's facility, technology configuration, control systems, compliance status and market participation arrangements are compatible with the requirements for AS. The information requested is intended to help NTCSA assess whether the facility already complies with the applicable Grid Code requirements, whether previous or existing AS certification has been obtained, and whether future certification or compliance testing is planned. Where compliance or certification has not yet been completed, NTCSA seeks to understand the Service Provider's view on whether the facility is technically capable of meeting the applicable requirements for the specific AS categories in which it may be interested.

The section also seeks information on the technologies, metering, telemetry, control, communication and monitoring capabilities currently in place or planned, and whether these are aligned with the performance, dispatch, verification and monitoring requirements associated with AS and DR participation. This includes understanding whether the Service Provider is aware of the applicable performance monitoring, testing and certification standards, and whether any facility upgrades, process changes, control-system developments, operational changes or additional investments may be required to enable participation.

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Information Schedule:

General questions:

- 3.2.2.1. Identify the AS and/or DR categories in which the facility is interested in participating, including any specific reserve or response products such as Instantaneous Reserve, Regulating Reserve, Ten-minute Reserve, Supplemental Reserve, Emergency Reserve, Instantaneous Demand Response, Supplemental Demand Response, Fast Frequency Response, Ten-minute Fast Response, Supplemental Fast Response, System Restoration, etc.
- 3.2.2.2. For each AS (including DR) category identified, indicate whether the Service Provider believes the facility can meet the applicable technical, operational, response, sustainability, metering, visibility and performance requirements. Where the facility cannot currently meet the requirements, provide a short explanation of the limitation.
- 3.2.2.3. Indicate whether the facility has existing metering, telemetry, remote control, Supervisory Control and Data Acquisition (SCADA), communication, energy management system or monitoring capability that may support visibility, verification or dispatch by the System Operator.
- 3.2.2.4. Indicate whether the facility currently holds any active AS (including DR) certification. If yes, specify the relevant service category, capability volume, and certification date (with validity period, if applicable).
- 3.2.2.5. Indicate whether the facility plans to apply for AS (including DR) certification or recertification in the future. If yes, specify the intended service category, certified capacity goal, planned timeframe and expected preparatory requirements.
- 3.2.2.6. Describe the facility technologies, control systems, protection systems, automation systems and operating processes currently in place that may support AS participation.
- 3.2.2.7. Describe the current level of dispatchability or controllability of the facility, including whether the facility can receive and respond to dispatch instructions from National Control automatically, remotely, manually, through an intermediary, or through internal operational procedures.
- 3.2.2.8. Is the Service Provider aware for which categories of AS is an NTCSA specified and approved SCADA gateway and Telecommunication's interface to National Control required?
- 3.2.2.9. Indicate whether the facility has Global Positioning System (GPS) time synchronisation capability to timestamp data for accuracy and data integrity.
- 3.2.2.10. Excluding performance monitoring data required by IPSRS for AS, is the Service Provider aware of the SCADA data requirements prescribed for the following:
 - I. Conventional plant: the Information Exchange Code [4].
 - II. Inverter Based Resources (IBRs): the BESF Code [5] and the Renewable Power Plants (RPPS) Code [12].
- 3.2.2.11. Indicate whether the Service Provider makes use of an Energy Management System or SCADA system that can sample and control the facility/facilities at a data resolution equal or faster than 20 milliseconds.
- 3.2.2.12. Indicate if the facility's SCADA/Energy Management System can dynamically or at elapsed time intervals downgrade the stored data resolution. For example: change 20 millisecond data to 100 millisecond data after 4 months of data retention, or sample at 20 milliseconds, yet record 20 millisecond data for AS participated events and record at 100 milliseconds for the other none AS event durations.
- 3.2.2.13. Describe the facility data retention policy. How long is operational/SCADA data kept for.

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- 3.2.2.14. Indicate if the facility's SCADA/Energy Management System can switch between solicited and unsolicited data depending on the operational state or participation status of the facility.

Ancillary Services:

- 3.2.2.15. Does the Service Provider know how to formally request AS certification, and which communication channel/contact person is applicable?
- 3.2.2.16. Does the Service Provider know how to formally request NC access for their SCADA gateway for the necessary AS provision, and which communication channel/contact person is applicable?
- 3.2.2.17. Indicate if the Service Provider knows of the Certification and Performance Monitoring Standard for System Restoration Services [7] document and the purpose thereof.
- 3.2.2.18. Indicate if the Service Provider knows of the Certification and Performance Monitoring of Generation Reserves [8] document and the purpose thereof.
- 3.2.2.19. Indicate if the Service Provider knows of the Certification and Performance Monitoring for Generators Capable of Operating in a Synchronous Condenser Mode [9] document and the purpose thereof.
- 3.2.2.20. Indicate if the Service Provider knows of the Certification and Performance Monitoring for Generators Capable of Providing Reactive Power Support [10] document and the purpose thereof.
- 3.2.2.21. Identify any gaps between the facility's current capability and the expected AS performance, certification, metering, telemetry, communication, response or monitoring requirements.
- 3.2.2.22. Describe any upgrades, developments, investments, process changes, control-system modifications, metering changes, communication improvements or operational changes that may be required for the facility to comply with the AS requirements in which it is interested.
- 3.2.2.23. Provide an indicative timeframe for the facility to become compliant or participation-ready for each AS category of interest, including any dependencies.

Demand Response:

- 3.2.2.24. Does the Service Provider know how to formally engage or request DR participation, and which communication channel/contact person is applicable?
- 3.2.2.25. Indicate whether the Service Provider knows of the DR products in which they can enquire to participate in.
- 3.2.2.26. Describe how the facility can operationally, consistently (or whether cool down periods apply) and on demand reduce the contracted load with a high success rate.
- 3.2.2.27. Indicate whether the Service Provider can participate in a DR initiative to consume a contracted load capacity when dispatched. (for non-BESF facilities)
- 3.2.2.28. Describe what operational limitations or considerations will be applicable if the facility needs to consume an agreed amount of load. (for non-BESF facilities)

Battery Energy Storage Facilities:

- 3.2.2.29. Indicate if the Service Provider knows of the Certification and Performance Monitoring for Battery Energy Storage Facility Reserves [6] document and the purpose thereof.
- 3.2.2.30. Does the BESF Service Provider know how to formally request AS certification, and which communication channel/contact person is applicable?
- 3.2.2.31. Does the BESF Service Provider know how to formally request NC access for their SCADA gateway for the necessary AS provision, and which communication channel/contact person is applicable?

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- 3.2.2.32. What is the real-life cost delta (as a percentage) between Grid Forming (GFM) versus Grid Following (GFL) inverter systems for a BESF?
- 3.2.2.33. Indicate whether the Service Provider only installs GFM inverters, GFL inverters, or decides on a case-by-case bases.
- 3.2.2.34. Identify any gaps between the facility's current capability and the expected BESF AS performance, certification, metering, telemetry, communication, response or monitoring requirements.
- 3.2.2.35. Describe any upgrades, developments, investments, process changes, control-system modifications, metering changes, communication improvements or operational changes that may be required for the facility to comply with the BESF AS requirements in which it is interested.
- 3.2.2.36. Provide an indicative timeframe for the facility to become compliant or participation-ready for each BESF AS category of interest, including any dependencies.
- Future trends and possible future AS and DR products:
- 3.2.2.37. Currently the fastest frequency triggered AS is within 1 second, however faster response times are being considered such as a response time of <400 milliseconds. With the advancements of IBRs, even faster RS can be considered to help arrest power system contingencies in an increasingly volatile energy mix. If a frequency triggered AS with a <100 millisecond response time condition is brought to fruition, what is the Service Provider's readiness to be able to provide this BESF provision?
- 3.2.2.38. Are there insights or indications of cost difference (as a percentage) between GFM versus GFL inverter systems for a none – BESF, such as Photovoltaic (PV), wind, heat Energy Storage Systems (ESS), etc?

In the evolving electricity market environment, the role of market intermediaries may become increasingly relevant to the practical participation of facilities in AS and DR. A Trader is generally understood as a licensed entity that may buy, sell or facilitate electricity transactions and may act as a market-facing party on behalf of customers, generators or other participants. A Retailer may supply electricity to customers that do not directly participate in the market or do not meet the criteria to participate directly through the Market Operator framework. An Aggregator may combine multiple smaller facilities, loads, distributed energy resources, storage systems or customer sites into a larger portfolio that can be offered as a single controllable or dispatchable resource. Through such aggregation, facilities that may individually be too small, operationally complex or commercially constrained to participate directly may be able to contribute to AS through a coordinated portfolio arrangement.

For AS and DR participation, Traders, Retailers and Aggregators may therefore play different roles in contracting, customer coordination, portfolio management, scheduling, dispatch communication, settlement, data management, metering coordination and performance reporting. However, the involvement of such intermediaries does not remove the need for the underlying facility to be technically capable, controllable, measurable and compliant with the applicable requirements. NTCSA therefore seeks to understand whether the Service Provider currently has, or intends to establish, arrangements with a Trader, Retailer, Aggregator or similar intermediary, and whether the Service Provider understands the respective roles and responsibilities that may apply between the facility owner or operator, the intermediary and NTCSA or the System Operator.

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This section further seeks to understand whether the Service Provider is aware of the potential obligations that may remain with the facility itself, including technical compliance, Grid Code conformance, certification, controllability, metering accuracy, telemetry availability, performance delivery, response verification and communication during dispatch or monitoring events. Responses to this section will assist NTCSA in assessing participation readiness, compatibility risks, intermediary dependency, development requirements and the practical pathway for different facility types and participation models to qualify for future Reliability Services arrangements.

Information Schedule:

General Service Provider facility compatibility:

- 3.2.2.39. Identify any physical, technical, regulatory, contractual, environmental, operational or network-related constraints that may limit the facility's ability to participate in AS.
- 3.2.2.40. Indicate which Grid Code, connection code, licence, operating agreement or other regulatory requirements currently apply to the facility, including the applicable connection code for the technology type and connection arrangement.
- 3.2.2.41. Where Grid Code compliance has not yet been confirmed, indicate the status of the compliance process, expected completion timeframe, key outstanding requirements and any known barriers to compliance.
- 3.2.2.42. Indicate whether the facility currently participates, or intends to participate, through a Trader, Retailer, Aggregator, Balance Responsible Party or other intermediary. If yes, identify the type of intermediary and describe the nature of the current or intended relationship.
- 3.2.2.43. Where an intermediary is involved or planned, describe which responsibilities are expected to sit with the facility owner or operator and which responsibilities are expected to sit with the Trader, Retailer, Aggregator or other intermediary.
- 3.2.2.44. Indicate whether the facility would prefer to participate directly with NTCSA/System Operator, through a Trader, through a Retailer, through an Aggregator, or through another participation model. Provide the reason for the preferred participation model.
- 3.2.2.45. Indicate whether the facility has any existing contractual, licensing, operating, customer, supply, wheeling, trading, aggregation or energy management arrangements that may affect its ability to provide AS.
- 3.2.2.46. Provide any additional information that the Service Provider considers relevant for NTCSA to understand the facility's compatibility, readiness, compliance pathway, certification status, intermediary arrangements or practical ability to participate in future AS (including DR) arrangements.

3.2.3 Facility AS Participation Availability

This section seeks to understand the practical factors that may influence the Service Provider's ability to make its facility available for AS participation. While section 3.2.2 focuses on compatibility, compliance and technical capability, this section focuses on the conditions under which that capability may realistically be available to the System Operator. The information requested is intended to help NTCSA understand how operational priorities, production requirements, customer obligations, technology limitations, maintenance requirements, resource availability, energy market exposure and internal commercial optimisation may affect the facility's willingness and ability to offer AS (including DR) capacity.

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Facility availability may vary depending on time of day, season, production cycle, planned or unplanned outages, peak and off-peak operating conditions, network constraints, state of charge limits, fuel or process availability, customer demand, environmental constraints, contractual obligations and other site-specific factors. In some cases, a facility or part of a facility may be dedicated to AS participation; in other cases, the same capability may first be used to optimise the facility's own energy costs, manage peak demand, support production processes, maintain resilience, or participate in other commercial arrangements. NTCSA therefore seeks to understand the extent to which the nominated capability is firm, conditional, variable, interruptible, opportunistic, or dependent on other operational and commercial drivers.

This section also seeks to determine whether the Service Provider understands the role of bidding, scheduling, availability declarations and dispatch processes in AS participation. These processes are important because they inform how capacity is offered, when it is considered available, how it may be scheduled by the System Operator, and how performance obligations may apply once a facility has committed to provide a service. The Service Provider's understanding of these processes, and any limitations in their ability to forecast, declare, schedule or maintain availability, will assist NTCSA in assessing the practical participation readiness of different facilities and business models.

Responses to this section will help NTCSA assess the likely firmness, predictability, duration, repeatability and reliability of available AS capacity. The information will also support NTCSA in identifying whether future Reliability Services arrangements should accommodate different availability profiles, such as continuously available capability, time-bound capability, seasonal capability, peak-period capability, emergency-only capability, aggregated capability, or capability that is subject to operational or commercial optimisation by the Service Provider.

Information Schedule:

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| 3.2.3.1. | Indicate the AS and/or DR categories for which the facility expects to have capacity available, and provide an indicative available MW and, where applicable, MWh for each category. |
| 3.2.3.2. | Indicate whether the stated AS capability is continuously available, time-bound, seasonal, peak-period specific, off-peak specific, emergency-only, opportunistic, or dependent on operational conditions. |
| 3.2.3.3. | Describe the normal operating profile of the facility, including typical weekday, weekend, peak-period, off-peak and seasonal operating patterns that may influence availability for AS participation. |
| 3.2.3.4. | Identify the key operational constraints that may limit the facility's ability to be available for AS, including production requirements, customer obligations, process limitations, maintenance windows, staffing constraints, safety requirements, environmental constraints, start-up or shutdown limitations, and minimum operating levels. |
| 3.2.3.5. | Indicate whether the facility's AS and/or DR capability is dedicated primarily to Reliability Services, or whether it is first used to optimise the facility's own energy costs, peak demand charges, self-supply, resilience, arbitrage, wheeling, trading or other commercial arrangements. |
| 3.2.3.6. | Where the same facility capability may be used for both internal optimisation and AS participation, describe how the Service Provider would determine priority between facility optimisation and AS availability. |

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- 3.2.3.7. Indicate whether the facility can make firm availability commitments for AS participation, or whether availability would be conditional, variable, interruptible or subject to real-time confirmation.
- 3.2.3.8. Describe the minimum and maximum duration for which the facility can sustain the nominated AS response, including any recovery or cool-down period required before the facility can respond again.
- 3.2.3.9. Indicate whether the facility's availability is affected by load profile, production cycle, state of charge, fuel availability, water availability, resource availability, weather conditions, network conditions, customer demand or other external dependencies.
- 3.2.3.10. Indicate whether the facility can forecast its AS availability in advance and, if so, the forecast horizon that is realistically achievable, for example intraday, day-ahead, week-ahead, month-ahead or season-ahead.
- 3.2.3.11. Based on experience, describe the processes, systems or operating procedures used to determine, approve and declare the facility's available AS capacity.
- 3.2.3.12. Indicate whether the Service Provider understands the expected role of availability declarations, schedules, nominations, bids or offers in AS participation.
- 3.2.3.13. Indicate whether the Service Provider has existing capability, systems or processes to submit bids, offers, schedules, availability declarations or nominations electronically.
- 3.2.3.14. Indicate whether the Service Provider understands how bidding and scheduling may be affected when the Market Operator function becomes applicable, including the need to submit market-aligned schedules, bids or offers within prescribed gate-closure timelines.
- 3.2.3.15. Indicate whether the Service Provider expects to participate directly in future bidding and scheduling processes, or through a Trader, Retailer, Aggregator, Balance Responsible Party or other intermediary.
- 3.2.3.16. Where an intermediary is expected to support bidding or scheduling, describe which party would be responsible for availability forecasting, bid submission, schedule submission, dispatch communication, performance tracking and settlement-related data.
- 3.2.3.17. Indicate whether the facility can update its availability after initial submission and describe the circumstances under which availability may change after a nomination, bid, offer or schedule has been submitted.
- 3.2.3.18. Describe any risks that may prevent the facility from honouring a committed AS availability declaration after it has been accepted or scheduled.
- 3.2.3.19. Indicate whether the facility can respond to dispatch instructions during all nominated availability periods, including weekends, public holidays, night-time periods, peak periods and emergency conditions.
- 3.2.3.20. Indicate whether the facility has any restrictions on the number of AS dispatches it can provide per day, week, month or season.
- 3.2.3.21. Describe how planned maintenance, forced outages, production changes or operational disruptions would be communicated to NTCSA, the System Operator, Market Operator or relevant intermediary.

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- 3.2.3.22. Indicate whether the facility can reserve a portion of its capacity specifically for AS participation, and whether this capacity can be ring-fenced from other operational or commercial use.
- 3.2.3.23. Where the facility is part of an aggregated portfolio, describe how portfolio availability would be determined, maintained and substituted if one or more underlying facilities become unavailable.
- 3.2.3.24. Identify any contractual, supply, customer, market, wheeling, trading, aggregation or energy management arrangements that may restrict the facility's ability to declare or maintain AS availability.
- 3.2.3.25. Indicate whether the Service Provider requires any information from NTCSA, the System Operator or the Market Operator to better forecast, value or determine when to make AS capacity available.
- 3.2.3.26. Describe what changes, improvements, information, systems, commercial arrangements or market rules would improve the facility's ability to make reliable AS capacity available.
- 3.2.3.27. For those who prefer a longer duration agreement, indicate how influential an increased duration agreement can be on the availability of the Service Provider. If possible, elaborate why a longer term enables the improved availability and is there a point of diminishing returns.
- 3.2.3.28. Indicate whether offering a variant of the same AS to allow a Service Provider to respond if they can (the Service Provider is afforded discretion to choose to respond within the same response time requirements) at the time they are required to respond, without penalty if they don't, but at a reduced remuneration price are preferred by the Service Provider. The flexibility might align to the Service Provider's operational environment and either increase participation probability and/or allow a Service provider to participate where they otherwise would not have been able to. Note: this question is highly exploratory and is not, nor is planned standard practice for the time being.
- 3.2.3.29. Provide any additional information that the Service Provider considers relevant for NTCSA to understand the expected firmness, predictability, repeatability, scheduling readiness and practical availability of the facility for future AS participation.

3.3 Facility AS Awareness, Modelling and Costing

3.3.1 AS Awareness and Modelling

Modelling Reliability Services is an important part of a Service Provider's internal assessment of whether, how, and to what extent a facility can participate in AS. Before committing capacity, energy, response capability or operational availability, a Service Provider may need to model the expected frequency of AS events, the likely duration of dispatches, the impact on production or customer operations, the utilisation of spare capacity, the state of charge or energy limitations of storage resources, and the operational trade-offs between Reliability Services participation and other commercial or facility optimisation priorities. Modelling also supports an informed view of the potential costs, risks, opportunity costs, revenues and investment requirements associated with participation.

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This section seeks to understand the extent to which Service Providers currently have access to the data, tools, assumptions and methodologies required to model prospective AS participation. This includes whether the Service Provider is aware of, or has used, the NTCSA Data Portal and other publicly available information sources to assess system conditions, historical demand trends, reserve needs, dispatch patterns, energy availability, pricing assumptions or potential participation scenarios. It also seeks to determine whether Service Providers have developed internal models, algorithms, simulation tools, optimisation methods or decision-support processes to estimate the technical and commercial impact of providing Reliability Services.

NTCSA recognises that effective modelling may be particularly important for facilities with limited spare capacity, variable operating profiles, energy storage limitations, process constraints, load flexibility, aggregation portfolios or competing commercial priorities. The quality and availability of input data can directly affect a Service Provider's confidence in assessing feasibility, sizing participation offers, forecasting availability, estimating response frequency, evaluating degradation or recovery impacts, and developing a business case for AS participation.

Through this section, NTCSA therefore seeks feedback on what additional data, transparency, guidance, historical information, forecasting information, event statistics, reserve requirement information, modelling assumptions or standardised methodologies would assist potential Service Providers to better evaluate participation. Responses will help NTCSA understand how the System Operator can make modelling easier, more practical and more reliable for potential participants, and may inform future information-sharing, documentation, portal enhancements, market readiness support and stakeholder engagement initiatives.

Information Schedule:

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| <p>3.3.1.1. Indicate whether the Service Provider is familiar with the Ancillary Services Technical Requirements [1] document, which provides an outlook of the power system AS needs for the coming years. If yes, what aspects of the ASTR [1] inform or influence modelling and feasibility efforts?</p> <p>3.3.1.2. Indicate whether the Service Provider is familiar with the Medium-Term System Adequacy Outlook [2] document and whether any insights into AS/DR are brought into the modelling and feasibility efforts.</p> <p>3.3.1.3. Indicate whether the Service Provider currently models the potential technical and commercial impact of participating in AS and/or DR.</p> <p>3.3.1.4. If modelling is performed, describe the modelling approach used, for example spreadsheet analysis, simulation tools, optimisation algorithms, digital twins, energy management system analytics, production planning tools, financial models, or other decision-support methods.</p> <p>3.3.1.5. Indicate which AS and/or DR categories the Service Provider has modelled or intends to model, including any assumptions used for response time, duration, availability, recovery period, event frequency, utilisation and performance requirements.</p> <p>3.3.1.6. Describe the key inputs used in the Service Provider's AS and/or DR modelling, including facility load profile, spare capacity, energy storage capacity, state of charge, production constraints, weather dependence, network constraints, tariff exposure, opportunity cost, degradation cost, capital cost recovery, dispatch probability and expected remuneration.</p> <p>3.3.1.7. Indicate whether the Service Provider models the expected frequency, timing and duration of AS and/or DR dispatch events, and describe what historical data or assumptions are used for this purpose.</p> |
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- 3.3.1.8. Indicate whether the Service Provider models the impact of AS and/or DR participation on facility operations, including production output, process stability, customer obligations, maintenance cycles, energy cost optimisation, resilience requirements and operational risk.
- 3.3.1.9. For facilities with energy storage, indicate whether the Service Provider models state of charge management, energy throughput, charging strategy, degradation impact, reserve sustainability, cycling limits and recovery requirements.
- 3.3.1.10. For demand-side facilities, indicate whether the Service Provider models load reduction capability, load shifting capability, rebound effects, recovery periods, process interruptions, customer impacts and the ability to repeat DR events.
- 3.3.1.11. For aggregated portfolios, indicate whether the Aggregator or Service Provider models portfolio diversity, resource substitution, individual facility availability, aggregate response reliability, underperformance risk and portfolio-level dispatch capability.
- 3.3.1.12. Indicate whether the Service Provider is aware of the NTCSA Data Portal and whether it has used the portal for modelling, feasibility assessment, system trend analysis, reserve opportunity assessment or commercial evaluation.
- 3.3.1.13. If the NTCSA Data Portal has been used, describe which data sets were most useful and how they supported the Service Provider's AS and/or DR modelling.
- 3.3.1.14. If the NTCSA Data Portal has not been used, indicate why not, for example lack of awareness, access limitations, insufficient data granularity, unclear data definitions, lack of relevance, difficulty interpreting the data, or other barriers.
- 3.3.1.15. Identify any data currently available from NTCSA, the System Operator or public sources that the Service Provider considers useful for modelling AS and/or DR participation
- 3.3.1.16. Identify any additional data that would improve the Service Provider's ability to model AS or DR participation, such as dispatch frequency, event duration, reserve requirements, system demand, system frequency events, curtailment data, congestion indicators, pricing information, availability requirements or technology-specific performance assumptions.
- 3.3.1.17. Indicate the preferred level of data granularity required for useful modelling, for example real-time, sub-hourly, hourly, daily, weekly, monthly or seasonal data.
- 3.3.1.18. Indicate whether forecast information, such as expected reserve requirements, system flexibility needs, anticipated dispatch frequency or seasonal demand outlooks, would assist the Service Provider in evaluating AS or DR participation.
- 3.3.1.19. Describe any uncertainty, information gap or modelling limitation that currently prevents the Service Provider from confidently assessing AS or DR participation.
- 3.3.1.20. Indicate whether the Service Provider has internal algorithms, automated decision tools or optimisation methods that determine when capacity should be offered for AS or DR versus used for internal energy cost optimisation or other commercial purposes.
- 3.3.1.21. Where internal optimisation is performed, describe how the model balances AS or DR participation against other uses of the facility capability, including energy arbitrage, peak demand management, wheeling, trading, self-supply, production support, resilience or customer supply obligations.

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- 3.3.1.22. Indicate whether the Service Provider's modelling considers the cost of compliance, certification, metering, telemetry, communication, control system upgrades, operational readiness and ongoing performance monitoring.
- 3.3.1.23. Indicate whether the Service Provider's modelling considers the financial impact of non-performance, under-delivery, failed dispatch response, reduced availability or penalties where such arrangements may apply.
- 3.3.1.24. Describe what information NTCSA could provide to make AS or DR modelling easier, more transparent and more reliable for prospective Service Providers.
- 3.3.1.25. Indicate whether standardised modelling assumptions, templates, worked examples, guidance documents or indicative case studies from NTCSA would assist the Service Provider in evaluating participation.
- 3.3.1.26. Identify any concerns the Service Provider may have regarding the use of published data for modelling, including confidentiality, commercial sensitivity, interpretation risk, data quality, data completeness or market behaviour implications.
- 3.3.1.27. Indicate whether the Service Provider would be willing to share, at a high level, the modelling assumptions or methodology used to assess AS or DR participation, without disclosing commercially sensitive information.
- 3.3.1.28. Provide any additional information that the Service Provider considers relevant for NTCSA to understand how potential participants model AS or DR participation and what NTCSA could do to improve modelling confidence, transparency and participation readiness.

3.3.2 Facility AS Costing and Remuneration Insight

This section seeks to obtain indicative cost and pricing information from Service Providers to help NTCSA understand the potential cost of providing the different categories of Reliability Services, including AS and DR. The information requested is intended to provide insight into the indicative cost per MW, and where applicable per MWh, associated with making a facility available, maintaining the required capability, responding to dispatch instructions, sustaining the response, recovering after an event, and meeting the relevant performance, monitoring and compliance requirements. The intention is not to obtain binding commercial offers or create expectations from the Service Providers, but rather to develop a better understanding of the practical cost drivers and pricing considerations that may influence future Reliability Services design and procurement approaches.

The cost of providing RS may differ materially between service categories, technologies and facility types. Factors such as response speed, response duration, firmness of availability, energy limitation, opportunity cost, production impact, state of charge management, degradation, fuel cost, start-up cost, staffing requirements, metering and telemetry costs, communication infrastructure, certification costs, compliance upgrades, maintenance impacts, intermediary fees and the risk of non-performance may all influence the price at which a Service Provider can reasonably participate. NTCSA therefore seeks to understand which cost elements are most material for different AS and DR categories, and how these costs vary across technologies such as generation, storage, demand-side facilities, aggregated portfolios and hybrid resources.

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This section also seeks the Service Provider's perspective on the relative value of different Reliability Services. Certain services may be perceived as higher value because they require faster response, greater certainty, longer sustainability, continuous availability, more stringent performance monitoring, higher technical readiness or greater operational disruption. Other services may be easier to provide where the facility has spare capacity, flexible load, existing control systems or low opportunity cost. NTCSA is therefore interested in understanding which AS categories Service Providers believe should attract higher or lower remuneration, and the reasons for those views.

In addition, this section seeks to understand which remuneration models may best stimulate broader and more reliable participation. This may include capacity payments, utilisation payments, availability payments, energy payments, performance-based payments, premium payments for faster or firmer response, long-term contracting, guaranteed minimum revenue, indexed pricing, pay-as-bid arrangements, standard tariffs, competitive procurement or hybrid models. The section also seeks views on the role of contractual guarantees, minimum volumes, minimum revenue certainty and contract duration. While such mechanisms may improve investor confidence and support participation by facilities requiring capital investment or dedicated capacity, they may also influence competition by favouring participants that require fewer guarantees or already have existing compatible capability. Responses will assist NTCSA in understanding how different commercial arrangements may affect participation, cost competitiveness, fairness, investment certainty and the practical development of future AS and DR markets.

The information obtained through this section will support NTCSA in assessing the indicative economics of Reliability Services participation, the potential affordability of different service categories, the relationship between technical requirements and pricing, and the commercial design features that may be required to encourage reliable, competitive and sustainable participation from a broader range of Service Providers.

It is worth noting that quality of feedback is critical. Overinflating, misconstruing, unreasonable values will not translate to falsely inflated pricing. It will only attempt to delay and reduce effectiveness of processes to acquire RS. Where accuracy or unknowns impact the quality of the feedback, rather indicate "Not sure" or "Prefer not to say". Your honesty and integrity are appreciated in this.

Note: it goes without saying that the content of the Service Provider's feedback shall remain sensitive/personal, with only the conclusions and recommendations of the entire RFI being used for business consumption.

Pricing Schedule:

3.3.2.1.	Indicate the AS and/or DR categories for which the Service Provider is able or interested to provide indicative pricing information.
3.3.2.2.	For each AS and/or DR category identified, provide an indicative price range that the Service Provider would expect to require, expressed as Rand per MW (R/MW), Rand per megawatt-hour (R/MWh), Rand per megawatt per hour (R/MW/h), Rand per event(R/event), Rand per month (R/month), or another pricing basis considered appropriate.
3.3.2.3.	Indicate whether the indicative pricing provided is based on existing capability, capability that requires minor upgrades, or capability that would require material investment before participation is possible.
3.3.2.4.	Identify the main cost components that influence the Service Provider's price for each AS and/or DR category, including but not limited to availability cost, opportunity cost, energy cost, production impact, start-up cost, fuel cost, battery degradation, cycling cost, recovery cost, staffing cost, maintenance impact, compliance cost, certification

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- cost, metering cost, telemetry cost, communication infrastructure cost, control-system cost, intermediary fees, capital cost recovery and non-performance risk.
- 3.3.2.5. Indicate which AS/DR categories the Service Provider expects should attract higher remuneration compared with other categories, and explain the reason for this view.
- 3.3.2.6. Indicate which AS/DR categories the Service Provider expects could be provided at lower remuneration compared with other categories, and explain the reason for this view.
- 3.3.2.7. Rank the AS and/or DR categories of interest from highest expected remuneration requirement to lowest expected remuneration requirement, based on the Service Provider's facility characteristics and perceived cost drivers.
- 3.3.2.8. Indicate whether faster response services, such as Instantaneous Reserve, Fast Frequency Response or future ultra-fast frequency response products, should attract a premium compared with slower response services. Provide the reasons for the Service Provider's view. Keeping in mind the total energy volume difference.
- 3.3.2.9. Indicate whether longer-duration or higher-sustainability services should attract higher remuneration than shorter-duration RS's, and explain the cost drivers that support this view.
- 3.3.2.10. Indicate whether firmer availability commitments should attract higher remuneration than flexible or discretionary participation arrangements, and explain how firmness affects the Service Provider's participation cost.
- 3.3.2.11. Indicate whether the Service Provider would support a standard and premium service option for the same AS or DR category, where the premium option has stricter availability, performance or response obligations and attracts higher remuneration.
- 3.3.2.12. If a standard and premium option is supported, describe what technical, operational, availability, performance or contractual features should distinguish the standard option from the premium option.
- 3.3.2.13. Indicate whether the Service Provider would support a lower-priced flexible participation option where the facility may respond when available, without penalty for non-response, provided the response time and performance requirements are met if the facility elects to respond.
- 3.3.2.14. If such a flexible option is supported, indicate the approximate discount or pricing reduction that the Service Provider would expect compared with a firm contracted service.
- 3.3.2.15. Indicate whether a separate capacity or availability payment would increase the probability of the Service Provider participating in AS or DR. Where possible, quantify the increased probability.
- 3.3.2.16. If a capacity or availability payment is introduced, indicate whether the Service Provider would accept a lower event, activation, incident or utilisation price in exchange for the certainty of an availability or capacity payment.
- 3.3.2.17. Describe the preferred balance between capacity-based remuneration and event-based remuneration for the Service Provider's facility, including whether the preference differs by AS or DR category.
- 3.3.2.18. Indicate whether the Service Provider would prefer remuneration based on availability, activation, energy delivered or reduced, performance success, duration sustained, avoided system risk, or a combination of these mechanisms. Please elaborate and support your answer. If a combination is preferred, indicate which ones and how the Service Provider weighs the individual components in the combination as part of the support reasoning.

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- 3.3.2.19. Indicate whether a minimum revenue guarantee, minimum contracted volume, minimum number of events, or minimum contract duration would materially improve the Service Provider's willingness to participate.
- 3.3.2.20. Describe how contractual guarantees, such as minimum revenue certainty or long-term contracting, would influence the Service Provider's investment decision, pricing, and participation probability.
- 3.3.2.21. Indicate whether the Service Provider considers that contractual guarantees may create competitive advantages for facilities that require fewer guarantees or already have existing compatible capability. Provide the Service Provider's view on how this should be considered in future procurement design.
- 3.3.2.22. Indicate the minimum contract duration that would be required to justify any facility upgrades, certification costs, metering costs, telemetry costs, communication infrastructure, control-system changes, or other investments required for AS or DR participation.
- 3.3.2.23. Provide the estimated once-off cost, if known, for the facility to become compliant or participation-ready for each AS or DR category of interest.
- 3.3.2.24. Provide the estimated recurring annual cost, if known, associated with maintaining compliance, certification, telemetry, metering, communications, testing, staffing, administration and performance monitoring for each AS or DR category of interest.
- 3.3.2.25. Indicate whether Grid Code compliance, AS/DR certification, performance monitoring standards, telemetry requirements or SCADA requirements materially affect the Service Provider's pricing or willingness to participate.
- 3.3.2.26. Indicate whether the Service Provider would price separately for compliance readiness, availability, activation, sustained response, recovery, and performance monitoring, or whether a bundled price would be preferred.
- 3.3.2.27. For demand-side facilities, indicate the indicative price that would be required to reduce load when dispatched for each DR category of interest.
- 3.3.2.28. For demand-side facilities, indicate whether the cost to reduce load differs materially between peak, standard and off-peak periods, and explain the reason for the difference.
- 3.3.2.29. For demand-side facilities, indicate whether the cost to reduce load differs depending on event duration, number of events per day, number of events per season, notice period or recovery period.
- 3.3.2.30. For non-BESF facilities, indicate whether the Service Provider would be able and willing to consume additional load when dispatched, and provide an indicative price or pricing basis for such a service.
- 3.3.2.31. If the facility can consume load when dispatched, describe the factors that would influence the price, including production value, process flexibility, storage capacity, energy price exposure, operating limits, environmental constraints, process recovery and opportunity cost.
- 3.3.2.32. For BESF facilities, indicate the main pricing drivers for reserve participation, including state of charge management, cycling, degradation, round-trip efficiency, charging strategy, energy replacement cost, inverter capability, grid-forming capability and reserve sustainability requirements.
- 3.3.2.33. For generation facilities, indicate the main pricing drivers for reserve participation, including fuel cost, start-up cost, minimum stable generation, part-load operation, heat-rate impact, maintenance impact, emissions constraints, opportunity cost and dispatch uncertainty.
- 3.3.2.34. For aggregated portfolios, indicate how aggregation costs, portfolio coordination, customer acquisition, customer retention, metering, baseline development, verification, substitution risk and underperformance risk influence the overall price.

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- 3.3.2.35. Indicate whether participation through a Trader, Retailer, Aggregator or other intermediary would increase, decrease or have no material impact on the Service Provider's pricing. Explain the reason for the response.
- 3.3.2.36. Indicate whether the Service Provider would prefer pay-as-bid pricing, administratively determined standard tariffs, competitive auction pricing, bilateral negotiated pricing, regulated pricing, or a hybrid pricing model.
- 3.3.2.37. Indicate whether technology-specific pricing would be preferred, or whether the Service Provider supports technology-neutral pricing based on service performance and delivered capability.
- 3.3.2.38. Indicate whether locational pricing or network-constrained area premiums would influence participation, particularly where AS or DR could assist with congestion, curtailment, local reliability, voltage support or network constraint management.
- 3.3.2.39. Indicate whether indexation to inflation, energy prices, fuel prices, exchange rates, battery replacement costs, labour costs or other cost drivers would be required for longer-term participation.
- 3.3.2.40. Indicate whether penalties for non-performance, failed dispatch response, reduced availability, under-delivery or withdrawal of committed capacity would materially affect the Service Provider's pricing.
- 3.3.2.41. Describe what level of non-performance risk the Service Provider would be willing to accept under different remuneration models.
- 3.3.2.42. Indicate whether a performance bonus or premium for accurate response, faster-than-required response, high availability, high reliability or repeated successful dispatch would improve participation.
- 3.3.2.43. Indicate what market information, pricing transparency, historical activation data, reserve requirement data, dispatch frequency data or forecast information would assist the Service Provider in developing a more accurate price.
- 3.3.2.44. Indicate whether standard pricing templates, example commercial models, indicative revenue calculators, worked examples or NTCSA-issued costing guidance would assist the Service Provider in costing AS or DR participation. Keeping in mind these will most likely be technology agnostic and absent from facility operational consideration.
- 3.3.2.45. Describe any commercial, regulatory, financing, taxation, accounting, insurance, settlement or contractual factors that could materially affect the Service Provider's participation cost or required remuneration.
- 3.3.2.46. Indicate whether the Service Provider would be willing to provide additional cost breakdown information under appropriate confidentiality arrangements, should NTCSA require more detailed industry cost insight in future.
- 3.3.2.47. With the context of the price insights enquired in this document, how much of the costing details are known or standard practice at facilities of this scale.
- 3.3.2.48. Indicate if the Service Provider uses or know of energy modelling and/or costing services offered in the industry by consultants. If these type of services have been used before, elaborate how affordable and effective are those services to gain perspective and insight for AS and DR consideration.
- 3.3.2.49. Provide any additional information that the Service Provider considers relevant for NTCSA to understand the economics, pricing expectations, cost drivers, remuneration preferences, commercial risks or investment requirements associated with future AS or DR participation.

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3.4 IPSRS Documentation and Further Information Sharing

The objective of this section is to gather information from the Service Provider on what additional information can be justified and should be considered to be made available (publicly) by IPSRS to further assist or spread awareness to improve the effectiveness of AS and DR procurement efforts and/or participation performance.

Note: there is no commitment from IPSRS to adopt and implement the suggestions. Each suggestion will be evaluated on its own merit and if deemed appropriate, recommended to the appropriate forum/department for further consideration.

The first part focuses on documentation. What documents should be added to the existing suit of AS and DR documents available in the public domain. The suggestions can be aspects of participation that are confusing, lack definition, or are generally required by external party processes in their efforts to consider, evaluate, or optimise their interests in AS and/or DR.

Information Schedule:

- | | |
|--------|---|
| 3.4.1. | Suggested additional documentation which the Service Provider recommends for NTCSA's consideration. Please elaborate on the objective of the suggestion and provide justification to support the reasonable request. |
| 3.4.2. | Suggested additional information sharing which the Service Provider recommends for NTCSA's consideration, generalised to all AS and DR. Please elaborate on the objective of the suggestion and provide justification to support the reasonable request. |
| 3.4.3. | Suggested additional information sharing specific to an AS category, which the Service Provider recommends for NTCSA's consideration. Please indicate the applicable AS category, elaborate on the objective of the suggestion and provide justification to support the reasonable request. |
| 3.4.4. | Suggested additional information sharing specific to an DR category, which the Service Provider recommends for NTCSA's consideration. Please indicate the applicable DR category, elaborate on the objective of the suggestion and provide justification to support the reasonable request. |

IPSRS is contemplating increasing public engagements, either dedicated or at conference type engagements. The increased AS and DR procurement efforts, the changes in power system flexibility and volatility from changes in the planned changes of the energy mix, promoting fair competition for AS and DR provision, etc. are some of the drivers for increasing public AS and DR engagements. The questions to follow focus on this intent.

Information Schedule:

- | | |
|--------|---|
| 3.4.5. | How strongly does the Service Provider support increasing AS engagements? Where 1 = don't care and 5 = very strong. |
| 3.4.6. | For dedicated AS public engagements, what topics for discussion are encouraged by the Service Provider? Please add a short motivation for the recommendation. If there are some topics which the Service Provider deems more important, please label so or list in order of priority. |
| 3.4.7. | For AS industry engagements (AS organised or otherwise), what routine frequency or occurrence regularity would the Service Provider prefer/suggest? |
| 3.4.8. | For conference type AS engagements, which annual conferences should ideally include IPSRS representation for information sharing or bi-directional feedback? Please add a short motivation for the recommendation. If there are some conferences that are more |

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applicable which the Service Provider deems more important, please label so or list in order of priority.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
F Becker	Chief Advisor – Demand Response
H Umley	Chief Advisor – Demand Response
I Tshwagong	Chief Engineer – Ancillary Services
K Greyvenstein	Senior Engineer – Ancillary Services
L Naidoo	Middle Manager – Stability Services
N Chavalala	Chief Engineer – Ancillary Services
N Zungu	Engineer – Ancillary Services
R Pandaram	Senior Manager Integrated Power System Reliability Services
S Govender	Middle Manager – Ancillary Services Market Support Services
S Malakapatlo	Senior Engineer – Ancillary Services
S Tshabalala	Middle Manager – Technical Support Services
T Pillay	Senior Engineer – Ancillary Services
V Smith	Chief Engineer – Ancillary Services
Z Mbungela	Engineer – Ancillary Services

5. Revisions

Date	Rev.	Compiler	Remarks
Aug 2026	1	TC Visser	First version. Questions aimed across all AS categories, together with some conceptual questions towards future considerations.

6. Development Team

The following people were involved in the development of this document:

- TC Visser

7. Acknowledgements

- Lyle Naidoo

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