Customer request number	3026169 / 3034740
Customer request description	Reliability Services Aggregator System (RSAS)

Content

Note : Pages 6, 7, 8 and 87 have been intentionally removed.

3 GLOSSARY OF TERMS AND ABBREVIATIONS

3.1 Glossary of Terms

Definition	Explanation
Bid Capacity	Is the capacity in megawatt (MW) indicated by the Participant as available for Load reduction/generation during the next Day.
Bid Price	Is the price (in R/MWh) at which the Participant is willing to make energy available to ESKOM or the price (in R/MW) at which the Participant is willing to make demand available to ESKOM.
Business Day	Any day, excluding a Saturday, Sunday or official public holiday in the Republic of South Africa.
Capacity Payment	Is the payment (in R/MW/h) to the Participant by ESKOM for capacity scheduled by ESKOM for relevant Reliability Services products, for which capacity has been or can be successfully load reduced/generated on instruction from ESKOM. Such payment is made irrespective of whether or not the Participant is required to provide Load reduction or generation on instruction from ESKOM.
Certified Capacity	Is the capacity in megawatt (MW), that the Participant has proved to ESKOM on 2 (two) or more occasions that the participant can reduce/generate as per agreed specifications, and which has subsequently been accepted and certified by ESKOM.
Contract Schedule	Is a schedule provided to the Participant by ESKOM, specifying the capacity (in MW per hour) to be available for reduction or generation during each hour of the next Day.
Critical Peak Day	A specific period when the national electricity network faces severe constraints. During these hours, the demand for electricity surpasses the available supply, leading to potential challenges in maintaining stability and preventing load shedding. These critical peak days are predetermined by Eskom's System Operator, who aims to create "breathing space" in the power system by balancing supply and demand
Curtailment Day	A day on which a Participant reduces load on request by ESKOM.
Customer Base Line (CBL)	A daily profile representing the amount of electricity the Participant would have consumed in each Integration Period for Weekdays and Week-end Days.
Energy Payment	Is the payment (in R/MWh) to the Participant by ESKOM for energy consumption reduced or energy generated depended on the product contracted for during an Event.
ESKOM	Eskom Holdings SOC Limited Divisions and Subsidiaries.
Event	A request by ESKOM to provide capacity for an applicable reserve category. It can also be a request by participant to change certified capacity temporarily due to an issue that the participant is experiencing.
Integrated Period	A specific time duration during which certain activities or calculations are accumulated or considered. An integration period typically refers to a 30-minute interval during which the load (energy consumption) at a specific metering point is accumulated.
Load Reduction (LR)	It is a reduction in Participant load or consumption on instruction by ESKOM, measured in MW and/or MWh, over the Integration Period or a period as specifically instructed.
Participant	A contracted reliability services provider.

Definition	Explanation
Reliability Services	These are services contracted from Participants to enhance the reliability of the Interconnected Power System (IPS), these include Demand Response, Instantaneous Reserve, Ten-minute Reserve, Supplemental Reserve and Self-Generation
RS Installation	Any equipment installed to enable the Participant to participate in a Reliability Services Aggregator Program.
Scheduled Capacity	Is the capacity in MW that ESKOM requires the Participant to have available
Short Message Services	A text message typically sent from one mobile device to another over the cellular network or from a system to a mobile device
Week Day	All days, excluding Week-end Days
Week-end Day	Is any Saturday, Sunday or public holiday.

3.2 Abbreviations

Abbreviation	Explanation
API	Application programming interface
AS	Ancillary Services section
BESF	Battery Energy Storage Facility
CBL	Customer Base Line
CPD	Critical Peak Day
DR	Demand Response
DRD	Demand Response section
NDC	Net Declared Capacity
IDR	Instantaneous Demand Response
IR	Instantaneous Reserve
FFR	Fast Frequency Response
SDR	Supplement Demand Response
TFR	Ten-minute Fast Response
DRD	Demand Response Department
RoCoF	Rate of Change of Frequency
SO	System Operator
SR	Supplemental Reserve
SFR	Supplemental Fast Response
SMS	Short Message Services
PSRS	Power System Reliability Services
RS	Reliability Services
RSAP	Reliability Services Aggregator Programme
RSAS	Reliability Services Aggregator System
RSI	Reliability Services Installation
RSDC	Reliability Services Data Collector
AS	Ancillary Services
YTD	Year to Date

4 REASON FOR THE REQUIREMENT

The System Operator (SO) is responsible for the reliability and security of the South African national electricity grid by monitoring, controlling and operating it in a safe, economical and reliable manner. The reliability services fulfil an important role towards power system security by providing the System Operator (SO) with much needed flexibility and reliability to maintain adequate daily operating reserve margins to cater for unforeseen circumstances that could affect the stability of the supply. Factors that could affect the stability of the electricity supply include:

- System constraints caused by severe weather and/or power line issues.
- Generator malfunctions (unexpected trips – loss of multiple Generation units)

What reliability services comprises of

The key reserves needed by the System Operator are, but not limited to, Instantaneous reserves, Ten-minute reserves, Supplemental reserves, Energy imbalance reserves and Emergency demand reduction (curtailment).

Instantaneous Reserves are Participant loads contracted to respond to a fall/rise in system frequency caused by a sudden change in the balance between supply and demand. The purpose of Instantaneous Reserve is to arrest the frequency at acceptable limits following a contingency, for example a generator trip.

- Generator – Generators must respond fully to a low or high frequency event within 10 seconds and sustain the response for 10 minutes or until the frequency recovers, whichever occurs first.
- Instantaneous Demand Response (IDR) - Participant loads must respond fully within 10 seconds and must be sustained for at least 10 minutes for low frequency events.
- Fast Frequency Response (FFR) – is capacity that can be delivered within 400ms and sustained for up to 10 minutes for low and high frequency events.

Ten-minute reserve is generating capacity (synchronised or not) or demand side managed load that can respond within 10 minutes when called upon. The purpose of this reserve is to restore instantaneous reserve and regulation reserve to the required levels after an incident.

- Generator – A generator contracted to provide Ten-minute reserve must respond to a dispatch instruction/notification and fully activate the required capacity within 10 minutes of receiving the notification.
- Ten-minute Fast Response (TFR) – Participants contracted to provide TFR must respond to the dispatch instruction/notification by fully activating the required capacity (up to 100%) in 1 minute within 1 minute of acknowledging the request. The resource's response must be sustainable for at least 120 minutes or as instructed by SO.

Supplemental reserve is capacity that can be dispatched in 1 to 6 hours, and it is used to reduce the short-term risk. This reserve must be sustained for at least two hours. It is contracted to ensure an acceptable day-ahead risk.

- Generator – A generator contracted to provide supplemental reserve must respond to a dispatch instruction/notification and fully activate the required capacity within 10 minutes of receiving the notification. The resource's response must be sustainable for at least 120 minutes.
- Supplemental Demand Response (SDR) – Participant loads that can respond within a notice period of 30 – 120 minutes. This reserve remains utilised for a maximum duration

agreed with the Participant. It is contracted annually with the Participant and bid available day-ahead.

- Supplemental Fast Response (SFR) – Participants contracted to provide SFR must respond to the dispatch instruction/notification by fully activating the required capacity (up to 100%) in 1 minute within 10 minutes of acknowledging the request. The resource's response must be sustainable for at least 120 minutes or as instructed by SO.

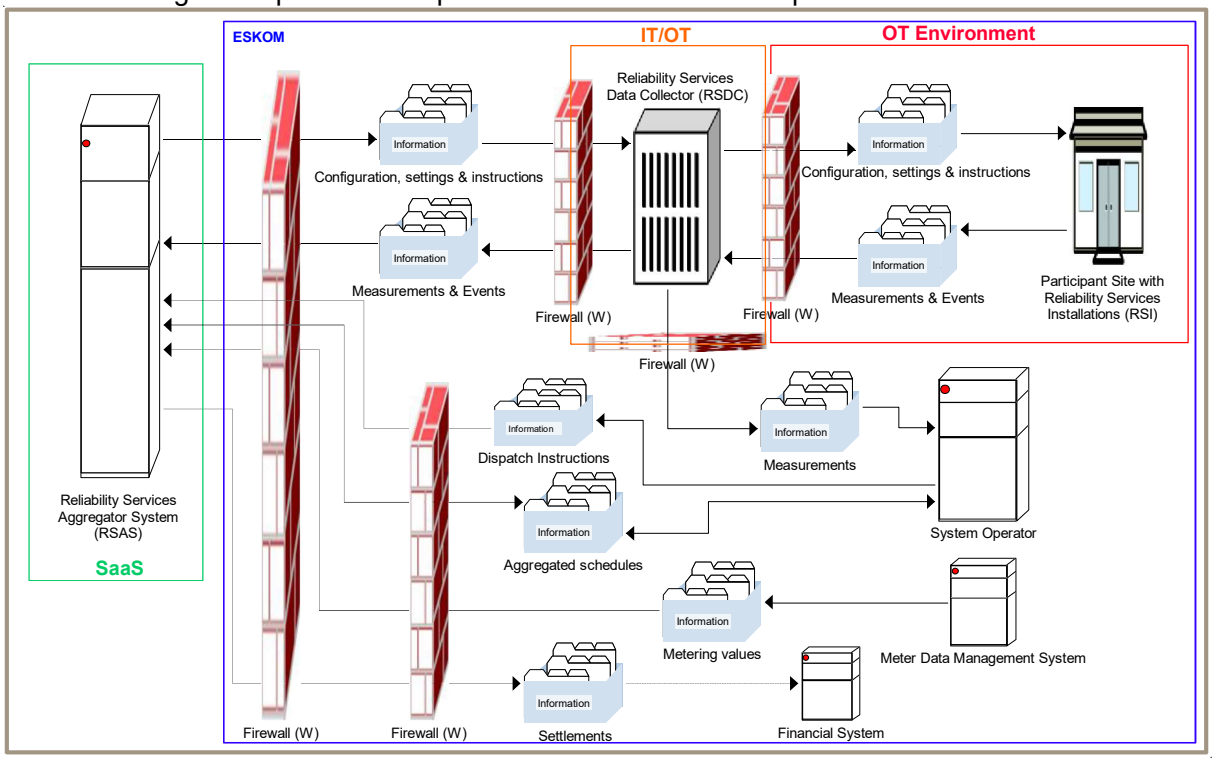
Energy imbalance reserves are participant loads that can be dispatched in advance by the System Operator (as opposed to near real time in the Reserve). The purpose of the energy reduction products is to cater for generation capacity losses in the medium to long term (a day to weeks). The dispatching can be anywhere between a day or weeks in advance, for 2 to 24 hour reductions.

Emergency load reduction (NRS 048-9 Curtailment) is when loads are dispatched in the event of the System Operator calling a system emergency. These loads are reduced on the day with a two-hour notification prior to the start of the event for the duration of the emergency.

The **Reliability Services Aggregator Programme (RSAP**) comprises broadly of:

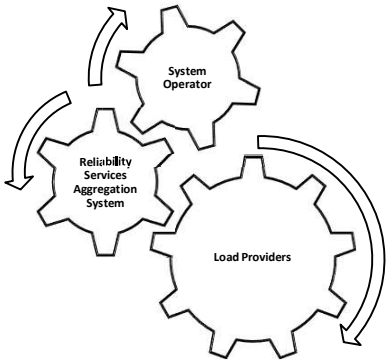
- Reliability Services Aggregator System (RSAS).
- Reliability Services Data Collector (RSDC).
- Reliability Services Installation (RSI).
- Various interfaces among the above.
- Services require for the programme.

The below diagram depicts a conceptual view of the various component within the RSAPs.



Purpose of the Reliability Services Aggregation System (RSAS)

The Reliability Services Aggregation System (RSAS) will enable the System Operator to dispatch reliability service providers and power users to increase generation or reduce demand to maintain balance between supply and demand as required by the power system.



This document addresses the requirements associated with the Reliability Services Aggregator System (RSAS).

Current Business Challenges / Issues That Need To Be Addressed.

- Changes to the NRS 048-9.
- New products developed that need to be implemented for grid stabilisation.

5 HIGH LEVEL GAPS BETWEEN THE "AS-IS" AND "TO-BE" STATE

As Is Statement	To Be Statement	Therefore, the high -level gap is:
Current system only caters for Demand Response products and would require extensive changes to cater for new products	A system that is flexible and easier configurations, with minimum customisation that can cater for various reliability services products.	A system that caters for multiple reliability services products.

6 PRECONDITIONS

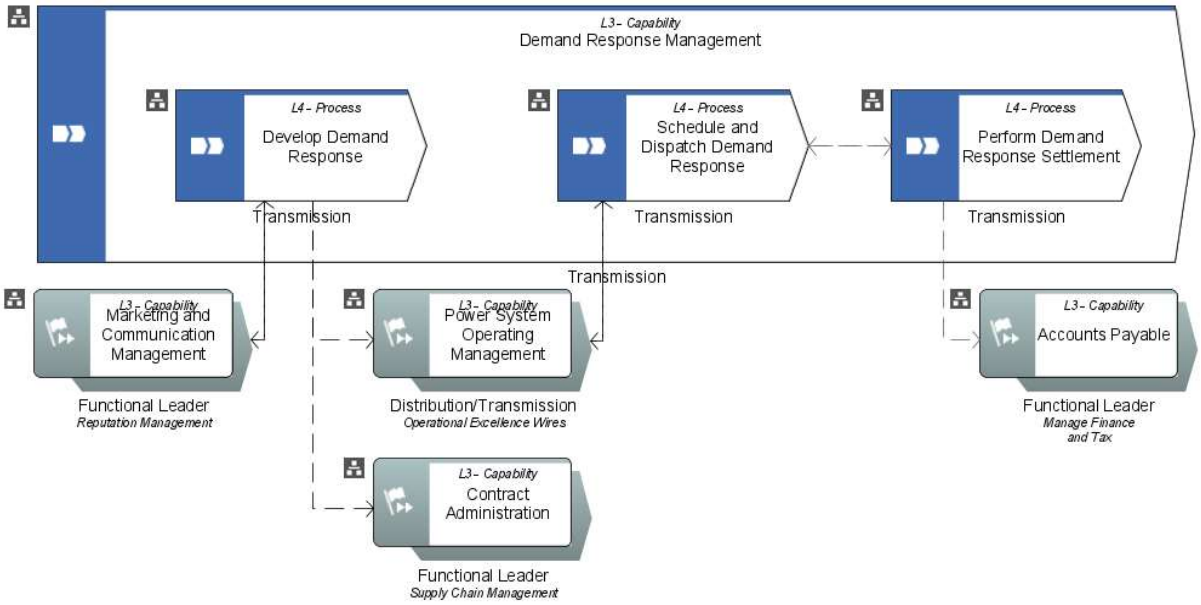
Not applicable

7 AS-IS AND TO BE BUSINESS PROCESS ACTIVITY MAPPING

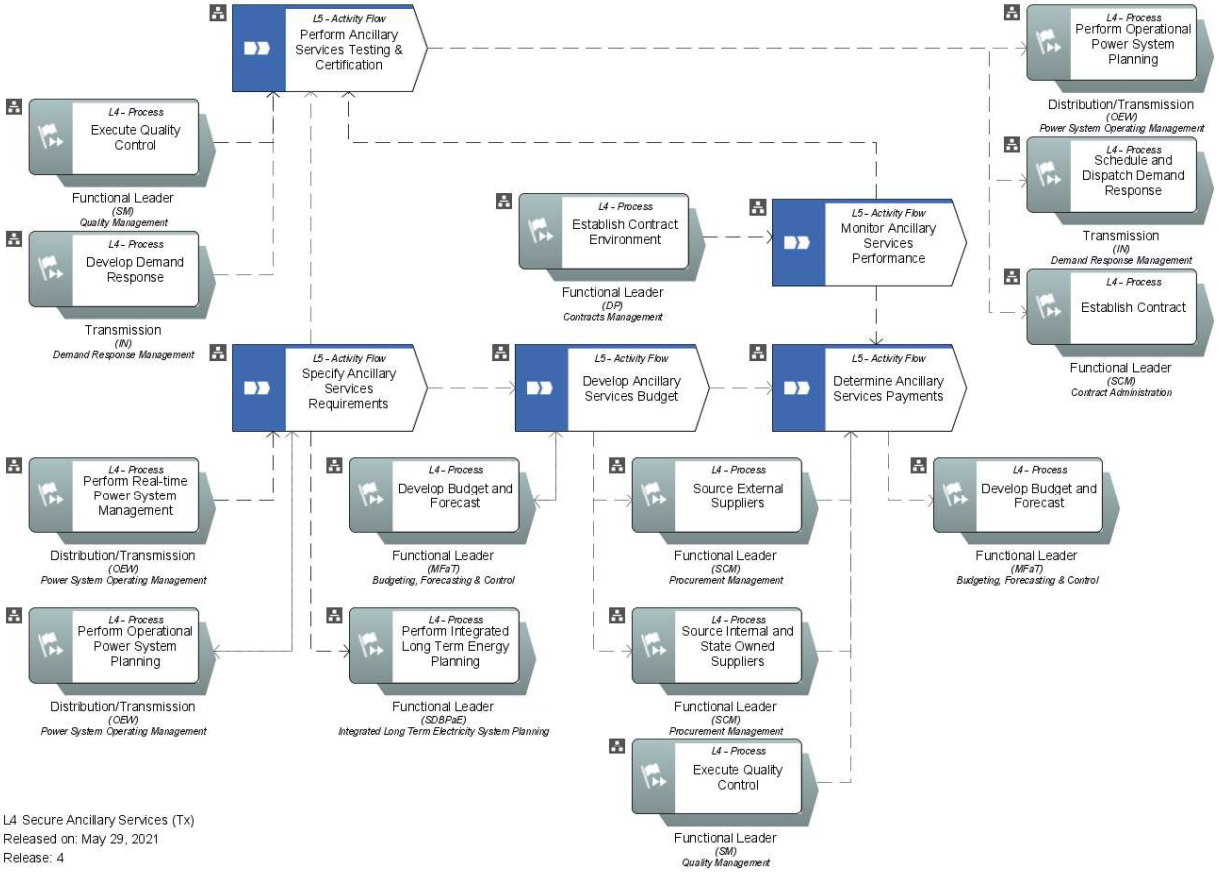
7.1 AS-IS business processes.

The requirements supported the following processes:

- Demand Response Management
- Secure Ancillary Services



L3 Demand Response Management
Released on: Mar 7, 2023
Release: 3



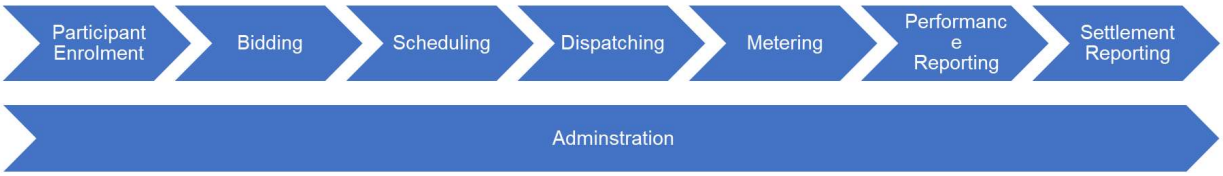
7.2 To-be business process.

Any change of Process Control Manual (PCM) will be dealt with separately from this project.

8 BUSINESS REQUIREMENTS

8.1 High level Requirements

The process involve is depicted below.



8.2 Administration

Functionality grouping	Req. Number	Functionality	Business Rule / Description
Manage Products	8.2.1	Ability to manage various products / services and associated parameters	
	8.2.1.1	Capture/edit product information	
	8.2.1.2	Indicate if product is active or not	Product to have an effective date from which it is active
Manage Company Information	8.2.2	Ability to manage information related to companies that participate in the reliability services	
	8.2.2.1	Capture/edit company information	
	8.2.2.2	Indicate if company participation is active or not	Company to have an effective date from which it is active
	8.2.2.3	Capture/edit company contact personnel information	
	8.2.2.4	Link the business roles of the contact person	A contact person must have at least 1 business role
	8.2.2.5	Link to the Eskom Custer	
Manage Agreement information	8.2.3	Ability to manage agreement / contract information with companies for reliability services	
	8.2.3.1	Capture/edit agreement information	
	8.2.3.2	Capture start and end dates associated with agreement/contract	
	8.2.3.3	Associate agreement with the product(s) as per the agreement	An agreement must have at least 1 product associated
	8.2.3.4	Associate agreement with Site(s)	
	8.2.3.5	Associate Site with RSI(s)	

Functionality grouping	Req. Number	Functionality	Business Rule / Description
	8.2.3.6	Associate product(s) with the RSI as per the agreement	A product must have at least 1 site associated.
Manage Roles	8.2.4	Ability to manage various roles associated with personnel and system users	Also refer to Section 12
	8.2.4.1	Define system roles and permissions	A role to be associated with Site(s)
	8.2.4.2	Define business roles	
Manage users	8.2.5	Ability to manage users of the system	
	8.2.5.1	(De-) Register user	
	8.2.5.2	Associate user with the company which he/she will represent	User can only be associated with 1 company
	8.2.5.3	Allocate role(s) to the user	
	8.2.5.4	Allocate site(s) to the role	Only where applicable, e.g. bidding. A participant can only access information related to his/her company.
	8.2.5.5	Allocate site to product(s)	
	8.2.5.6	User able to login and logoff	
Manage Participant Site Information	8.2.6	Ability to manage participant site information	
	8.2.6.1	Capture/edit site information & parameters	
	8.2.6.2	Associate the site with a company	
	8.2.6.3	Associate the site with an agreement	At least 1 site need to be associated with an agreement
	8.2.6.4	Associate the site with product(s)	At least 1 product need to be associated with a site
	8.2.6.5	Capture/edit Certification information	
Manage RSI related information	8.2.7	Ability to manage RSI (panel) information related for metering / measurements	
	8.2.7.1	Capture/edit RSI related information (including configuration related information)	
	8.2.7.2	Associate the RSI with product(s)	At least 1 product need to be associated with a meter
Manage meter information	8.2.9	Ability to manage meter information related for metering / measurements	
	8.2.9.1	Capture/edit meter related information	

Functionality grouping	Req. Number	Functionality	Business Rule / Description
	8.2.9.2	Associate the meter with product(s)	
Manage 'day' information	8.2.10	Ability to manage specific days	
	8.2.10.1	Capture planned and unplanned maintenance days per site(s)	When participant cannot assist for some reason and if it is not suitable as a CBL day
	8.2.10.2	Capture and edit curtailment days	When participant reduce load on Eskom's request (including NRS 048-9 curtailment)
	8.2.10.3	Capture and edit critical peak days	SO will notify Aggregator
	8.2.10.4	Capture and edit High & Low season days/months	
Manage configuration groups	8.2.11	Ability to manage the configuration groups associated for the aggregation of information	
	8.2.11.1	• Create/edit Network Grouping (for aggregation to System Operator)	Network Grouping: • Central • Western Cape • Eastern Cape • Kwa-Zulu Natal
	8.2.11.2	• Create/edit unit based on product criteria and regional area	There can be multiple units
	8.2.11.3	• Associate participant site(s) and/or RSI with unit	A site / RSI can be linked to more than one unit
	8.2.11.4	• Create/edit dispatch groups (for participant dispatching purposed)	Products can each have they own dispatch groups. Not all products are associated with dispatch groups.
	8.2.11.5	• Associated products with Load Blocks based on product criteria	Not all products are associated with load blocks
	8.2.11.6	• Associate participant site(s) and/or RSI(s) with Load blocks	This association change regularly for optimisation purposes.
	8.2.11.7	• Create/edit aggregated unit(s) (for SO bids, schedules and dispatching)	
	8.2.11.8	• Associate participant site(s) and/or RSI(s) with Aggregated Unit	
	8.2.11.9	• Create/edit Eskom Cluster Grouping	
	8.2.11.10	• Configuration groups must be associated with effective dates to allow for auditability	

8.3 Participant Enrolment

Functionality grouping	Req. Number	Functionality	Business Rule / Description
Enrol participant	8.3.1	Ability to capture information about the participant	1 day
	8.3.1.1	Manage company information	Refer to Administration section
	8.3.1.2	Manage agreement information (including Eskom billing account name and number, if applicable)	Refer to Administration section. Participant that is not directly supplied by/to Eskom will not have an Eskom billing account name and number.
	8.3.1.3	Manage company contact persons	Refer to Administration section
	8.1.3.4	Manage company site(s) information	Refer to Administration section
	8.3.1.5	Manage company site RSI(s) information (if application)	Refer to Administration section
	8.3.1.5	Manage company site meter information (if applicable)	Refer to Administration section
	8.3.1.6	Manage users, their roles and permissions	Refer to Administration section
Verify and capture metering data	8.3.2	Ability to ensure that the data is obtained from the relevant data source	10 days
	8.3.2.1	Confirm access to source(s) of metering and/or measurement, i.e. Eskom's MV90 system, 3rd party metering solutions, new metering installation or measurement panel	
	8.3.2.2	Confirm metering / measuring data in the correct format	
	8.3.2.3	Obtain data as per product criteria	
Perform Certification Test	8.3.3	Ability to certify the participant for the product(s)	10 days
	8.3.3.1	Simulate two dispatch events to calculate the potential certification of the Participant or perform test as per certification standard.	Simulation of event or performance test is dependent on the product
	8.3.3.2	Calculate the certification value based on the specific product criteria	
	8.3.3.3	Generate event performance report to determine capability from Participant.	
	8.3.3.4	Capture certification results and store certificate	

8.4 Bidding

Functionality grouping	Req Number	Functionality	Business Rule / Description / Comments
Submit bids	8.4.1	Ability of participants to provide bids for the product(s) as per agreement and product requirements	A participant can provide the information electronically (portal), email or phone call. Refer to Section 8.14
	8.4.1.1	Capture/edit bid information for at least the next 7 days per site per product.	Only the 1st day is firm/official.
	8.4.1.2	Submit bid	Bids/Offers applicable for day N must be submitted by 09h00 of day N-1. If no bid/offer submitted, then previous bid/offer submitted to be used, enabling the participant to only change/capture bids/offer when required.
Aggregate bid/offers	8.4.2	Ability to aggregate participant bids for submission to the System Operator	
	8.4.2.1	Aggregate bid per product per regional area per product	
Submit aggregated bid/offers	8.4.3	Ability to provide System Operator with an aggregated bid/offer	
	8.4.3.1	Submit aggregated bid/offer	Aggregated bids applicable for day N must be submitted by 10h00 of day N-1.
View bids	8.4.4	Ability to view participant and aggregated bid information	

8.5 Scheduling

Functionality grouping	Req Number	Functionality	Business Rule / Description / Comments
Obtain aggregated schedule	8.5.1	Ability to receive the aggregated schedule from the System Operator	
	8.5.1.1	Receive aggregated schedule	Aggregated schedule for day N to be received by 14h00 on day N-1

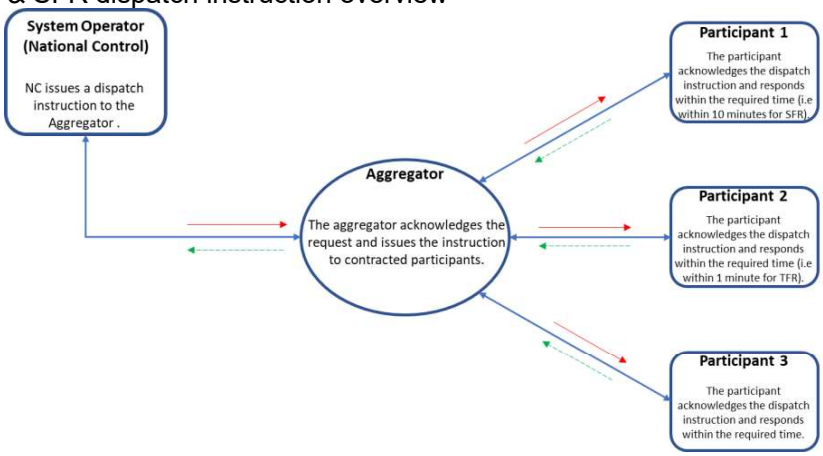
Functionality grouping	Req Number	Functionality	Business Rule / Description / Comments
De-aggregate schedule	8.5.2	Ability to de-aggregate the aggregated schedule received into individual participant schedules and relevant configuration group	
	8.5.2.1	De-aggregate schedule into participant schedules	
Provide participant schedule.	8.5.3	Ability to provide participant of their schedule	
	8.5.3.1	Inform participant that they have been scheduled or not (bid accepted/bid not needed)	Participant schedule applicable for day N must be available by 15h00 of day N-1. The information can be provided electronically via (portal) and selected communication method. For some products the relevant configuration settings is also send to the RSDC.
	8.5.3.2	Inform relevant parties of participants' schedule.	
View participant schedule	8.5.4	Ability to view the schedule of a participant	
	8.5.4.1	View participant schedule	
	8.5.4.2	Download/print participant schedule	

8.6 Dispatching

Functionality grouping	Req Number	Functionality	Business Rule / Description
Receive aggregated dispatch instruction	8.6.1	Ability to receive dispatch instruction from System Operator	
	8.6.1.1	Receive System Operator dispatch instruction	Anytime during day N as per product requirements. This only relates for non-instantaneous products
	8.6.1.2	Acknowledge System Operator dispatch instruction	
	8.6.1.3	Capture System Operator dispatch instruction	

Functionality grouping	Req Number	Functionality	Business Rule / Description
De-aggregate dispatch instruction	8.6.2	Ability to de-aggregate the System Operator into participant dispatch instructions	
	8.6.2.1	De-aggregate dispatch instruction into participant dispatch instructions based on the participant schedule and configuration groups	
Instruct participant to dispatch	8.6.3	Ability to instruct the participant and/or the associated RSI (via RSDC) to dispatch	
	8.6.3.1	Instruct participant to dispatch as per product specification	Instruction to be provided as per communication method. Direct to panel – some products Some cases both
	8.6.3.2	Acknowledge dispatch instruction as per product specification	Acknowledgement can be provided electronically (portal), phone call by SMS (e.g. SDR) Direct to panel – some products Some cases both
View dispatch instructions	8.6.4	Ability to view dispatch instructions	
	8.6.4.1	View list of dispatch instructions	
	8.6.4.2	View details of a dispatch instruction	

Example: TMR & SFR dispatch instruction overview



E.g. National Control issues a dispatch instruction to the RSAS at **9:40:00**, the RSAS acknowledges the request at **9:41:00**. The RSAS then issues an instruction to the contracted participants at **9:42:00**. If a participant acknowledges the request at **9:42:30,** then the plant shall fully respond to the **Ten-minute Fast Response (TFR)** dispatch instruction by **9:43:30** (1-minute after acknowledging the dispatch instruction).

8.7 Metering Data

Functionality grouping	Req Number	Functionality	Business Rule / Description
Obtain metering & measurement data	8.7.1	Ability to obtain metering / measurement data from various sources	Expectation is that time stamp should be at the start of the 30-minute interval period. There can be cases where data is time stamped at the end of the 30-minute interval period that need to be converted.
	8.7.1.1	Retrieve official metering data	½ hourly integrated values from MDMS From Eskom MDMS, RSDC, 3rd party
	8.7.1.2	Store metering data	
	8.7.1.3	Retrieve measurement data	From RSDC and DR Data Collector
	8.7.1.4	Store measurement data	
View metering / measurement data	8.7.1	Ability to view metering / measure data	
	8.7.1.1	View metering data in graphical and tabular format	
	8.7.1.2	View measurement data in graphical and tabular format	

8.8 Performance Reporting

Functionality grouping	Req Number	Functionality	Business Rule / Description
Event performance report	8.8.1	Ability to report on participant's performance in relational to power system events	An event can be a dispatch instruction or frequency related. Refer to Appendix C
	8.8.1.1	Calculate event performance based on specific product criteria	by Day N+3 after event on day N
	8.8.1.2	Verify event performance report	Refer to Appendix A
	8.8.1.3	Publish verified event performance report	As per communication method
	8.8.1.4	View verified event performance report	Participant access to own site(s) reports not to other participant's sites
Monthly Event Performance report	8.8.2.	Ability to provide a consolidated reports of events and participants performance for the month	Refer to Appendix C
	8.8.2.1	Calculate the median performance based on the consolidated events	

Functionality grouping	Req Number	Functionality	Business Rule / Description
	8.8.2.3	Verify consolidated performance report	Refer to Appendix A
	8.8.2.3	Distribute report via communicate method	by the 3rd business day of forthcoming month
	8.8.2.4	View monthly event performance report.	

8.9 Monthly Settlement Reporting

Functionality grouping	Req Number	Functionality	Business Rule / Description
Participant Settlements	8.9.1	Ability to determine and report of participant settlements	Refer to Appendix C
	8.9.1.1	Calculations based on the consolidate monthly events, product criteria and approved rates	by the 5th business day of forthcoming month
	8.9.1.2	Verify report (quality assurance)	Refer to appendix B
	8.9.1.3	Distribute participant settlement report to participants.	
	8.9.1.4	View settlement report	
Consolidated Settlement report	8.9.2	Ability to provide a consolidated reports of participant settlements	Refer to Appendix C
	8.9.2.1	Generate consolidated settlements into a monthly report based on criteria	by the 5th business day of forthcoming month
	8.9.2.2	Verify report (quality assurance)	Refer to appendix B
	8.9.2.3	Distribute consolidated settlement report	
	8.9.2.4	View consolidated settlement report	

8.10 Statistical Reporting

Functionality grouping	BRS Number	Functionality	Business Rule / Description
Provide statistical reporting	8.10	Ability to provide statistical reports	Refer to Appendix C
	8.10.1	Generate statistical report	
	8.10.2	Verify report (quality assurance)	
	8.10.3	Publish statistical report	
	8.10.4	View statistical report	
Provide System Operator Reports	8.10.2	Ability to provide System Operator reports	Refer to Appendix C
	8.10.2.1	Generate System Operator report	
	8.10.2.2	Verify report (quality assurance)	
	8.10.2.3	Publish System Operator report	
	8.10.2.4	View System Operator report	
Create own (user defined) reporting	8.10.3	Ability to create own reports for analysis purposes.	
	8.10.3.1	Create own reports including the use of formulas.	

8.11 Manage Issues.

The vendor to provide a help desk capability for the entire RSAP solution that will:

- Provide a single point of contact for issue resolution.
- Log issues (e.g. changes, disputes and queries).
- Route to the relevant parties to address the issues.
- Update the issues.
- Track issues.
- Close issues.
- Provide reports.

8.12 Functionality applicability per product

8.12.1 Summary

Capability	IDR	SDR	Self-generation	Curtailment	Critical Peak day	FFR	TFR	SFR
Enrol participant	Y	Y	Y	Y	Y	Y	Y	Y
Bidding	Y	Y	Y	N/A	Y	Y	Y	Y
Scheduling	Y	Y	Y	Y (Refer to Note 2)	Y	Y	Y	Y
Dispatching of participant	Auto (frequency based)	Manual interaction	Manual interaction	Manual interaction (Refer to Note 2)	Manual interaction	Auto (frequency based)	Automated (Refer to Note 3)	Manual interaction
Metering data	MDMS (for special conditions)	MDMS	MDMS	MDMS	MDMS	MDMS (for special conditions)	MDMS	MDMS
Measurements	RSDC	RSDC (where applicable)	N/A	N/A	N/A	RSDC	RSDC	RSDC
Performance Reporting	Y	Y	Y	Y	Y	Y	Y	Y
Settlements Reporting	Y	Y	Y	N/A	N/A	Y	Y	Y
Statistical Reporting	Y	Y	Y	Y	Y	Y	Y	Y

Notes:

1. If frequency based, then the Site installation (RSI) will perform the dispatching. The dispatching information is then stored in the RSDC. The RSAS then obtain the data from the RSDC.
2. System Operator will notify the Aggregator for a Curtailment event. The RSAS will notify the participant and Customer Executive.
3. After dispatch instruction received from System Operator and acknowledged, an automated signal to be send from RSAS to the RSI (via RSDC)

8.12.2 Supplemental Reserves

Activity	Supplemental Demand Response (SDR)	Supplemental Fast Response (SFR)
Participant enrolment	Certified capacity, metering information, schedule contacts, three dispatch contacts, dispatch notice period, unit, performance method, rates etc.	Certified capacity, metering information, schedule contacts, dispatch notice period, unit, performance method, rates etc.
Bidding/Offering	7 days ahead bids required each day consisting of a MW value and price per hour. Only day 1 is a firm bid. Participant's bid must be provided by 9am day ahead (N-1)	7 days ahead bids required each day consisting of a MW value and price per hour. Only day 1 is a firm bid. Participant's bid must be provided by 9am day ahead (N-1).
Scheduling	A day ahead (N-1) schedule provided by 3pm, consisting of a MW value per hour.	A day ahead (N-1) schedule provided by 3pm, consisting of a MW value per hour.
Dispatch Notification	The Participant will be given between 30 – 120 minutes notification to Dispatch by the aggregator.	The RSAS will be given between 10 minutes notification to dispatch the participant
Dispatching	Dispatched on the day (N). SO sends a dispatch instruction to the RSAS operator, who then sends the instruction to the participants. The instruction can either be electronic or via telephone.	Dispatched on the day (N) from System Operator. A signal to be send to the site RSI (via RSDC). Event is up to 2 hours.
Metering Information	Half hourly metering information gathered for each event day.	1 second data (4 second integrated data) is gathered for each event day.
Performance Reporting	Performance report generated per event and a monthly summary report. Three performance methods (depend on participant agreement) are available: • Same Day Method • CBL Dynamic Scaled Method (DR Supplemental Only) • CBL Static Scaled Method (DR Supplemental Only)	Performance report generated per event and a monthly summary report. Refer to section 23.2.
Settlements	Settlement report is generated monthly. • Capacity Payment (standby) • Energy Payment – factored by performance and product criteria	Settlement report is generated monthly. • Capacity Payment (standby) • Energy Payment – factored by performance and product criteria

8.12.3 Instantaneous Reserves

Activity	Instantaneous Demand Response (IDR)	Fast Frequency Response (FFR)
Participant Enrolment	Certified capacity, metering information, schedule contacts, Participant SCADA details, unit, performance method, rates etc.	Certified capacity, measurement information, schedule contacts, performance method, rates etc.
Bidding	7 days ahead bids required each day consisting of a MW value and price per hour. Only day N-1 is a firm bid. Bid must be provided by 9am.	7 days ahead bids required each day consisting of a MW value and price per hour. Only day N-1 is a firm bid. Bid must be provided by 9am.
Scheduling	A day ahead (N-1) schedule provided to the Participant by 3pm, consisting of a MW value per hour. Standby schedules sent to site RSI (via the RSDC)	A day ahead (N-1) schedule provided by 3pm, consisting of a MW value per hour. Standby schedules sent to site RSI (via the RSDC)
Max response time	6 seconds	400 milliseconds
Dispatching	Dispatched on the day when the network frequency drops below a certain value. Event is maximum 10 minutes. Dispatch instruction from RSI on site.	Dispatched on the day when the network frequency/RoCoF drops below the low frequency trigger point or rises above the high frequency trigger point. Dispatch instruction from RSI on site.
Metering / measurement Information	1 second metering and frequency information gathered daily	Data is stored at 20 milliseconds during an event and 1 second during normal operations. Information gathered at least daily.
Performance Reporting	Performance report generated per event and a monthly summary report. One performance method available: • Same Day Method	Performance report generated per event and a monthly summary report. Refer to section 23.2
Settlements	Settlement report is generated monthly. • Capacity (standby) Payment – factored by monthly median performance and availability of scheduled load.	Settlement report is generated monthly. • Capacity (standby) Payment – factored by monthly median performance and availability of scheduled load.

8.12.4 Ten-minute Reserve

Activity	Ten-minute Fast Response (TFR)
Participant Enrolment	Certified capacity, measurement information, schedule contacts, three dispatch contacts, dispatch notice period, unit, performance method, rates etc.
Bidding	7 days ahead bids required each day consisting of a MW value and price per hour. Only 1st day is a firm bid. Participant's bid must be provided by 9am (day N-1)
Scheduling	A day ahead (N-1) schedule provided to the Participant by 3pm, consisting of a MW value per hour.
Notification	1 to 9 minutes
Dispatching	The contracted facility will receive dispatch instructions to ramp-up/down based on the contracted MW. A signal will be sent to site to the RSI on site. The Participant will acknowledge the request
Metering Information	4 seconds measurement information gathered for each event day.
Performance Reporting	Performance report generated per event and a monthly summary report.
Settlements	Settlement report is generated monthly for ancillary services payments.

8.12.5 Self-Generation

Activity	Self-generation
Participant Enrolment	Certified capacity, metering information, schedule contacts, three dispatch contacts, dispatch notice period, unit, performance method, rates etc.
Bidding	7 day ahead bids required each day consisting of a MW value and price per hour. Only day N-1 is a firm bid. Bid must be provided by 9am.
Scheduling	A day ahead (N-1) schedule provided by 3pm, consisting of a MW value per hour.
Dispatching	Dispatched on the day via a telephone call from RSAS. Can also have a signal sent to a site RSI if installed. Event is 2 to 16 hours.
Metering Information	Half hourly metering information gathered for each event day.
Performance Reporting	Performance report generated per event and a monthly summary report. Three performance methods (depend on participant agreement) are available: • CBL Dynamic Scaled Method • Same Day Method • Static CBL Method
Settlements	Settlement report is generated monthly. • Capacity (standby) • Energy Payment – factored by performance.

8.12.6 Curtailment

Activity	Curtailment
Participant Enrolment	NRS 048-9 stage curtailment targets, metering information, three dispatch contacts, dispatch notice period, unit, performance method
Bidding	Not applicable - this product is only called upon when a national grid system emergency is declared.
Scheduling	Not applicable - this product is only called upon when a national grid system emergency is declared.
Dispatching	System Operator will notify the Aggregator for a Curtailment event. The RSAS will notify the participant and Customer Executive. Can also have a signal sent to a site RSI if installed. Event is 2 to 24 hours.
Metering Information	Half hourly metering information gathered each day.
Performance Reporting	Performance report generated per event and a monthly summary report. Two performance methods (depend on participant agreement) are available: • CBL Dynamic Scaled Method • CBL Static Scaled Method
Settlements	Not applicable

8.12.7 Critical Peak Day

Description	Critical Peak Day
Contract Information	Certified capacity, metering information, schedule contacts, three dispatch contacts, dispatch notice period, unit, performance method, rates etc.
Bidding	>7 day ahead bids required each day consisting of a MW value and price per hour. Only day 1 is a firm bid. Bid must be provided by 9am.
Scheduling	A 1 day ahead schedule provided by 3pm, consisting of a MW value per hour.
Dispatching	Dispatched on the day via a telephone call from RSAS. Event is 2 to 16 hours.
Metering Information	Half hourly metering information gathered each day.
Performance Reporting	Performance report generated per event and a monthly summary report. Three performance methods (depend on participant agreement) are available: • Same Day Method • CBL Dynamic Scaled Method • CBL Static Scaled Method
Settlements	Not applicable

8.13 System Operator Interaction

The RSAS interacts with System Operator and National Control on an aggregated unit level, 365 days of the year.

The following general rules apply for the RSAS units.

Description	Timing (where Day N = Day of Dispatch)
Aggregate Unit Information	As required
Aggregate Bidding	Day N – 1 (10am)
Aggregate Scheduling	Day N – 1 (2pm)
Aggregate Dispatching	Day N
Aggregate Performance Reporting	After Day N and Monthly
Aggregate Settlements	Monthly

Description	Notes
Aggregate Unit Information	The RSAS units will be broken up into the Central, Western Cape, Eastern Cape, Kwa-Zulu Natal regional areas for aggregation purposes. Each regional area may have one or more units linked to it depending on requirements. Each unit can have own parameters e.g. price, notification time etc.
Aggregate Bidding	7 day ahead aggregate bids required each day per unit, consisting of a MW value and price per hour. Only day N-1 is a firm bid. Bid must be provided to System Operator by 10am.
Aggregate Scheduling	A day ahead (N-1) aggregate schedule per unit, provided by 2pm, consisting of a MW value per hour per unit.
Aggregate Dispatching	Supplemental, Standby Gen and other supply side units dispatched on the day (N) from National Control to the Aggregator. Instantaneous units dispatched by network frequency and time delays. (Load Blocks)
Aggregate Performance Reporting	Performance report generated per units or load blocks and a monthly summary report per unit.
Aggregate Settlements	Aggregate settlement reports are generated monthly.

Each RSAS unit will be part of the System Operator/National Control bidding, scheduling and dispatch/merit order processes and be provided a unique supplier/unit id by the System Operator. RSAS must conform to System Operator/National Control interfacing requirements.

8.14 Communication method per product

Capability	IDR	SDR	Self-generation	Curtailment	Critical Peak day	FFR	TFR	SFR
Phone call (system generated call with info & phone selection for acknowledgement)		Dispatching	Dispatching					Dispatching
Phone call	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue
Email	Schedules Reports Issue	Schedules Reports Issues	Schedules Reports Issue	Dispatching Reports via Eskom Customer Executive. Issue	Dispatching Notification of CPD & hours Report Issue	Schedules Reports Issue	Schedules Reports Issue	Schedules Reports Issue
SMS		Dispatch	Dispatch	Dispatching via Eskom Customer Executive	Dispatch notification of CPD & hours			Dispatching
RSI	Schedules Dispatching	Schedules Dispatching If RSI, RSAS send to RSDC to RSI	N/A	N/A	N/A	Schedules Dispatching	Schedules Dispatching	Schedules Dispatching
Portal	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting	Bidding Scheduling Dispatching Reporting

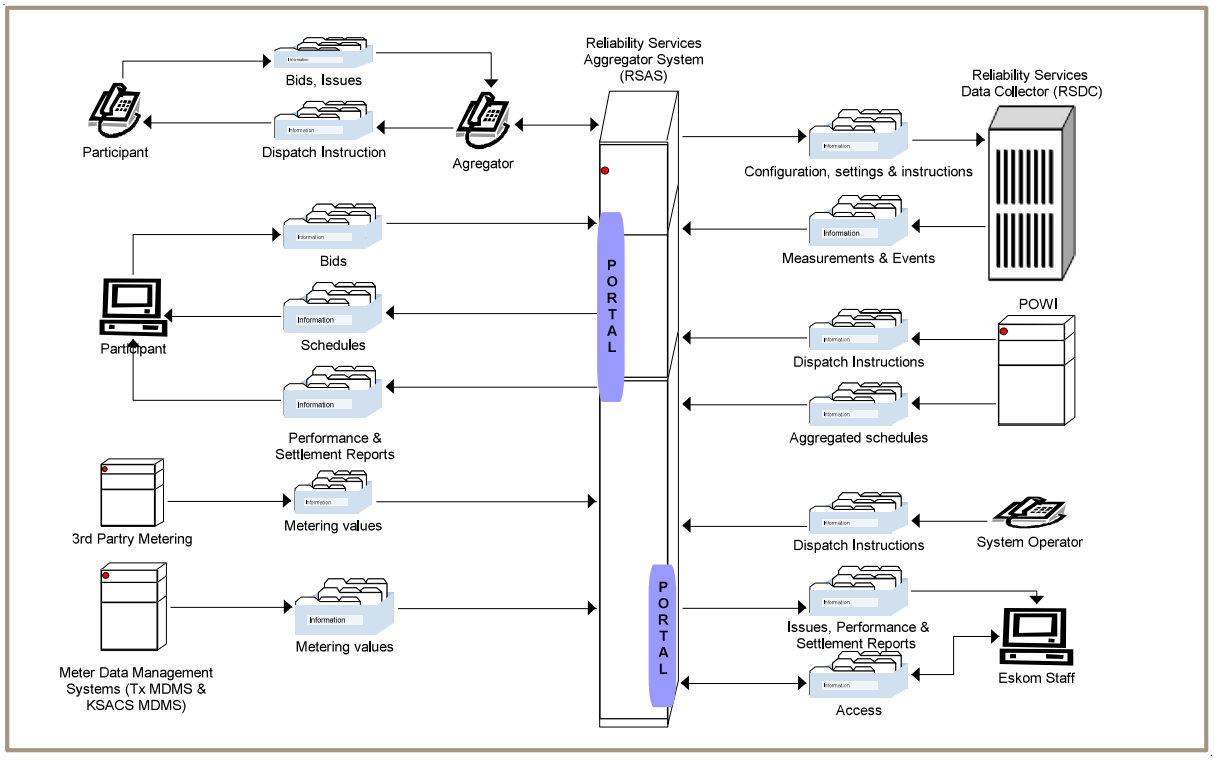
9 LIST OF REPORTS

Details of the reports are described in Appendix C.

Report/Document Description	Distribution list	Timelines	Format
Schedules reports	Participant /DRD	daily	PDF
Event performance reports	Participant /DRD/AS	within 3 business days after the event	PDF
Monthly performance reports	Participant /DRD/AS	by the 3rd business day of forthcoming month	PDF
Settlement reports	Participant /DRD	by the 5th business day of forthcoming month	PDF
Certified monthly capacity summary	DRD	by the 1st business day of forthcoming month	XLS
Monthly Statistics Report	DRD	by the 3rd business day of forthcoming month	XLS
Monthly Statistics Summary Report	DRD (Demand Response dept)	by the 5th business day of forthcoming month	XLS
Monthly Statistics Summary Report	DRD	by the 5th business day of forthcoming month	XLS
Daily Scheduled Load Report (per product).	DRD	daily by 10h00	XLS
Planned Product Dispatches	DRD/SO	daily by 15h00	XLS
Scheduled Load	DRD/SO	daily by 15h00	XLS
Unit Certification Changes	DRD/SO	within 4 business days after the request	XLS
Performance report per IDR block per event	DRD/SO	within 3 business days after the event	PDF
Performance report per SDR unit per event	DRD/SO	within 3 business days after the event	PDF
Performance report per IDR unit	DRD/SO	within 3 business days after the event	PDF
Performance report per SDR unit	DRD/SO	within 3 business days after the event	PDF
Finance total settlement report	DRD/SO	by the 5th business day of forthcoming month	XLS

Report/Document Description	Distribution list	Timelines	Format
IDR Real Time Feed Monthly Report	DRD/SO	by the 4th business day of forthcoming month	XLS
Certified and Bids values	DRD/SO	Every Monday by 15h00	XLS
Finance total settlement report - YTD summary	DRD/SO	by the 5th business day of forthcoming month	XLS
Settlement report per Participant	DRD/SO	by the 5th business day of forthcoming month	PDF
Event performance report FFR	AS/DRD/Participant	within 3 business day after the event	PDF&XLS
Monthly performance report FFR	AS/DRD/Participant	by the 3rd business day of forthcoming month	PDF
Settlement report FFR	AS/DRD/Participant	by the 5th business day of forthcoming month	PDF
Event performance report TFR	AS/DRD/Participant	within 3 business day after the event	PDF&XLS
Monthly performance report TFR	AS/DRD/Participant	by the 3rd business day of forthcoming month	PDF
Settlement report TFR	AS/DRD/Participant	by the 5th business day of forthcoming month	PDF
Event performance report SFR	AS/DRD/Participant	within 3 business days after the event	PDF&XLS
Monthly performance report SFR	AS/DRD/Participant	by the 3rd business day of forthcoming month	PDF
Settlement report SFR	AS/DRD/Participant	by the 5th business day of forthcoming month	PDF
Adhoc reports for internal and external audit purposes	DRD	As required	PDF/XLS/WORD

10 DATA FLOW DIAGRAM / CONTEXT DIAGRAM



11 INFORMATION REQUIREMENTS

Refer to appendix D

12 ACCESS REQUIREMENTS

All information should be loaded, edited and viewed via an online portal with appropriate user access (Eskom, Participants,3rd party aggregator).

The following roles are the minimum required for the participant and Eskom users.

Role	Comments
Viewer	Ability to view information and download information
Reviewer	Ability to review and approve e.g. events and reports
Bidder	Ability to capture/edit and submit bids. This can be done by the participant or by the aggregator with instruction (e.g. phone call, email) from the participant.
Eskom administration	Ability to change selected own information, e.g. Customer Executive information, participant information, product information
Participant administrator	Ability to change selected own information, e.g. contact information

13 INTEGRATION REQUIREMENTS

Publisher (from)	Subscriber (to)	Information	Comments
RSAS	POWI	Aggregated Bids	An existing API (Offer) on POWI
POWI	RSAS	Aggregated Schedules	An existing API (Schedules) on POWI
Tx MDMS (Refer to note 1)	RSAS	Metering data	
KSCACS MDMS (refer to note 2)	RSAS	Metering data	
DR Data Collector (Refer to note 3 & 6)	RSAS	Events Metering / Measurement data	Vendor API on DR Data Collector
RSAS	RSDC (Refer to note 6)	Participant's product Schedules & RSI settings Dispatch instruction	
RSAS	DR Data Collector (Refer to note 3 & 6)	Participant's product Schedules & RSI settings Dispatch instruction	Vendor API on DR Data Collector
RSDC (Refer to note 6)	RSAS	Events data Metering / measurement data	
DR Data Collector	RSAS	Events data Metering / measurement data	Vendor API on DR Data Collector
POWI	RSAS	Frequency and time data	An existing API (Frequency) on POWI

Publisher (from)	Subscriber (to)	Information	Comments
POWI	RSAS	Dispatch instructions	POWI has an API (Refer to note 5)

Note:

1. There is a project to replace the Tx MDMS system.
2. There is a project to introduce a MDMS system that could incorporate the KSACS MDMS system.
3. There is an existing data collector for the DR products.
4. OT related integration is specified in the RSDC and RSI standard.
5. An API is available but has to be tested.
6. Refer to 240-138187946 RELIABILITY SERVICES DATA COLLECTOR AND RELIABILITY SERVICES INSTALLATIONS STANDARD for more information.

14 DISASTER RECOVERY REQUIREMENTS

Disaster recovery and hot standby capability for an availability factor of RSAS to be 99.7% - 24/7/365

15 SECURITY REQUIREMENTS

Compliance with Eskom Information and Cyber security requirements.

16 DATA RETENTION REQUIREMENTS

The data needs to be kept for at least a 5-year period after the participant contract ended. All information should be available online.
The following document are applicable:

- SANS S474
- 240-56296995 Standard for records retention periods

17 ARCHIVING REQUIREMENTS

Not applicable.

18 AUDITIBILITY REQUIREMENTS

All changes to data must be auditable as to who changes what data from what to what.

Functionality grouping	Req. Number	Functionality	Business Rule / Description
Audit Trail	18.1	All changes to data must be auditable as to who changes what data from what to what	
Reporting	18.2	Able to provide reports of data changes	

19 LEGAL REQUIREMENTS

NRS 048-9
Minimum Information Security Standards, 1996 (MISS)
Protection of Personal Information Act, Act no. 2013 (POPIA)
Cybercrimes Act, Act no. 19 of 2020 (CCA)
Data and Cloud Policy 36 of 2005 (DACP)

20 INTELLECTUAL PROPERTY

All intellectual property (requirements) belongs to Eskom Transmission.

21 SERVICE REQUIREMENTS

Functionality grouping	Req Number	Functionality	Business Rule / Description
Day-to-day operations	21.1	Provide a day-to-day aggregator operations capability, including:	
	21.1.1	Managing the bidding, scheduling, dispatching, metering, and reporting process	
	21.1.2	Interfacing with participants and Eskom staff (including System Operator	
	21.1.3	Fault finding and ratification for the entire RSAP solution	
Help desk capabilities	21.2	Provide a help desk capability (refer to section 8.11) on a 24/7 basis for issue management.	
Training	21.3	Provide training and skills transfer to users	
RSAS support	21.4	Provide a maintenance, support and upgrading of the	

22 APPENDIX A: Event Preliminary Event Performance Review

This section describes the checklist to automatically generate an event review.

22.1 Supplemental Demand Response - CBL Dynamic MW & % Scaled Method, Static CBL Scaling & Same day method.

Evaluation type	Event criteria	Actions
Dispatch Call Status	Is the dispatch call status not equal to CONFIRMED? E.g. NO ANSWER, DECLINED	• If the evaluation criteria are TRUE, then no further evaluations are required. • If the evaluation criteria are FALSE, then continue to the next evaluation
Scaling Factor %	Is the scaling factor more than 120% or less than 80% (not inclusive)? NOTE: Applicable for CBL Dynamic % Scaled Method Only.	• If one or more of the evaluation criteria is TRUE, then further evaluation is done by the Demand Response Department on the RSAS system. • If all of the evaluation criteria are FALSE, then continue to the next evaluation
Actual Profile Reference Point Start	Is the variance between the actual profiles average reference point (-3, -2) relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below?	
Actual Profile Reference Point Recovery	Is the variance between the actual profiles average reference point (-4, -2) relative to the average of period after the event (+3, +5) more than 15% above?	
CBL Day Relativity %	Do the CBL day %'s differ by more than 15% relative to each other? Steps: 1) Calculate CBL day % for each of the 3 CBL days (A,B,C) used: - Calculate the average of the 5 (-6 to -2) half hour intervals prior to the event (P). - Calculate the average of the half hour intervals during the event (D) - CBL day % = (D/P)100 2) Compare the 3 CBL days % to each other: - E.g. A = 150%, B= 85%, C = 100% - Difference between A and B CBL day % = 65% - Difference between A and C CBL day % = 50% - Difference between B and C CBL day % = 15% In the above example they do differ by more than 15%.	

Evaluation type	Event criteria	Actions
Total CBL Day Reference Point Deviation/Deflection	Is the variance between the total CBL's average reference point (-3, -2), relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below.	
CBL Profile	For the CBL profile, is the variance between average MW's during event period vs the average of the 5 (-6 to -2) half hour intervals prior to the event (P) greater than zero. (Is the Average MW (D) >= MW (P))?	• If the evaluation criteria are FALSE, then further evaluation is done by the Demand Response Department on the RSAS system. • If the evaluation criteria are FALSE, then continue to the next evaluation
Second Event On Same Day	Is there a prior event for this contract on the same day?	• If the evaluation criteria are TRUE, then further evaluation is done by the Demand Response Department on the RSAS system. • If the evaluation criteria are FALSE, then continue to the next evaluation
Performance %	Is the event performance % between than 90% and 120% (inclusive) for the event calculation?	• If the evaluation criteria are TRUE, then release the report. • If the evaluation criteria are FALSE, then final evaluation is done by the Demand Response Department on the RSAS system

CBL Static scaled methodology	The CBL will consist of a pre-determined profile based on specific days/months for the High and Low season months agreed by both the Participant and Eskom. Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the Scaled CBL and summated for the duration of the Load Reduction request. Same scale method as for CBL Dynamic
Same day methodology	Use reference point (-2&-3) on the event day to calculate the load reduction. No CBL's involved.

22.2 Self-generation - CBL Dynamic MW Scaled Method & Static CBL Scaling

Evaluation	Event criteria	Actions
Dispatch Call Status	Is the dispatch call status not equal to CONFIRMED? E.g. NO ANSWER, DECLINED	• If the evaluation criteria are TRUE, then no further evaluations are required. • If the evaluation criteria are FALSE, then continue to the next evaluation
Actual Profile Reference Point Start	Is the variance between the actual profiles average reference point (-3, -2) relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below?	• If one or more of the evaluation criteria is TRUE, then further evaluation is done by the Demand Response Department on the RSAS system. • If all of the evaluation criteria are FALSE, then continue to the next evaluation
CBL Day Relativity %	Do the CBL day %'s differ by more than 15% relative to each other? Steps:	

	1) Calculate CBL day % for each of the 3 CBL days (A,B,C) used: - Calculate the average of the 5 (-6 to -2) half hour intervals prior to the event(P). - Calculate the average of the half hour intervals during the event (D) - CBL day % = (D/P)100 2) Compare the 3 CBL days % to each other: - E.g. A = 150%, B= 85%, C = 100% - Difference between A and B CBL day % = 65% - Difference between A and C CBL day % = 50% - Difference between B and C CBL day % = 15% In the above example they do differ by more than 15%.	
Second Event On Same Day	Is there a prior event for this contract on the same day?	• If the evaluation criteria are TRUE, then further evaluation is done by the Demand Response Department on the RSAS system. • If the evaluation criteria are FALSE, then continue to the next evaluation
Performance %	Is the event performance % between than 90% and 120% (inclusive) for the event calculation?	• If the evaluation criteria are TRUE, then release the report. • If the evaluation criteria are FALSE, then final evaluation is done by the Demand Response Department on the RSAS system

CBL Static scaled methodology	The CBL will consist of a pre-determined profile based on specific days/months for the High and Low season months agreed by both the Participant and Eskom. Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the Scaled CBL and summated for the duration of the Load Reduction request. Same scale method as for CBL Dynamic

22.3 Instantaneous Demand Response - Same Day Method.

Evaluation	Event criteria	Actions
Event Duration	Is the instantaneous event less than 60 seconds OR greater or equal to 600 seconds long?	• If any of the evaluation criteria are TRUE, then final evaluation is done by the Demand Response Department on the RSAS • If all of the evaluation criteria are FALSE, then release the report
Metering Gap	Has the instantaneous event had any metering gap filled, within 60 seconds before the event start time or within 60 seconds after the event end time?	
Performance %	Is the event performance % less than 80% (not inclusive) for the event calculation?	

22.4 Curtailment - CBL Dynamic MW & % Scaled Method, Static CBL Scaling & Same day method.

Evaluation type	Event criteria	Actions
Dispatch Call Status	Is the dispatch call status not equal to CONFIRMED? E.g. NO ANSWER, DECLINED	• If the evaluation criteria are TRUE, then no further evaluations are required. • If the evaluation criteria are FALSE, then continue to the next evaluation
Scaling Factor %	Is the scaling factor more than 120% or less than 80% (not inclusive)? NOTE: Applicable for CBL Dynamic % Scaled Method Only.	• If one or more of the evaluation criteria is TRUE, then further evaluation is done by the Demand Response Department on the RSAS • If all of the evaluation criteria are FALSE, then continue to the next evaluation
Actual Profile Reference Point Start	Is the variance between the actual profiles average reference point (-3, -2) relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below?	
Actual Profile Reference Point Recovery	Is the variance between the actual profiles average reference point (-4, -2) relative to the average of period after the event (+3, +5) more than 15% above?	
CBL Day Relativity %	Do the CBL day %'s differ by more than 15% relative to each other? Steps: 1) Calculate CBL day % for each of the 3 CBL days (A,B,C) used: - Calculate the average of the 5 (-6 to -2) half hour intervals prior to the event (P). - Calculate the average of the half hour intervals during the event (D) - CBL day % = (D/P)100 2) Compare the 3 CBL days % to each other: - E.g. A = 150%, B= 85%, C = 100%	

	- Difference between A and B CBL day % = 65% - Difference between A and C CBL day % = 50% - Difference between B and C CBL day % = 15% In the above example they do differ by more than 15%.	

Evaluation type	Demand Response Event criteria	Actions
Total CBL Day Reference Point Deviation/Deflection	Is the variance between the total CBL's average reference point (-3, -2), relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below.	
CBL Profile	For the **CBL profile,** is the variance between average MW's during event period vs the average of the 5 (-6 to -2) half hour intervals prior to the event (P) greater than zero. (Is the Average MW (D) >= MW (P))?	• If the evaluation criteria are TRUE, then further evaluation is done by the Demand Response Department on the RSAS • If the evaluation criteria are FALSE, then continue to the next evaluation
Second Event On Same Day	Is there a prior event for this contract on the same day?	• If the evaluation criteria are TRUE, then further evaluation is done by the Demand Response Department on the RSAS • If the evaluation criteria are FALSE, then continue to the next evaluation
Performance %	Is the event performance % between than 90% and 120% (inclusive) for the event calculation?	• If the evaluation criteria are TRUE, then release the report. • If the evaluation criteria are FALSE, then final evaluation is done by the Demand Response Department on the RSAS

CBL Static scaled methodology	The CBL will consist of a pre-determined profile based on specific days/months for the High and Low season months agreed by both the Participant and Eskom. Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the Scaled CBL and summated for the duration of the Load Reduction request. Same scale method as for CBL Dynamic
Same day methodology	Use reference point (-2,-3, -4 & -5) on the event day to calculated the load reduction. No CBL's involved.

22.5 Critical Peak Day - CBL Dynamic MW & % Scaled Method, Static CBL Scaling & Same day method.

Evaluation type	Event criteria	Actions
Dispatch Call Status	Is the dispatch call status not equal to CONFIRMED? E.g. NO ANSWER, DECLINED	• If the evaluation criteria are TRUE, then no further evaluations are required. • If f the evaluation criteria are FALSE, then continue to the next evaluation
Scaling Factor %	Is the scaling factor more than 120% or less than 80% (not inclusive)? NOTE: Applicable for CBL Dynamic % Scaled Method Only.	• If one or more of the evaluation criteria is TRUE, then further evaluation is done by the Demand Response Department on the system. • If all of the evaluation criteria are FALSE, then continue to the next evaluation
Actual Profile Reference Point Start	Is the variance between the actual profiles average reference point (-3, -2) relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below?	
Actual Profile Reference Point Recovery	Is the variance between the actual profiles average reference point (-4, -2) relative to the average of period after the event (+3, +5) more than 15% above?	
CBL Day Relativity %	Do the CBL day %'s differ by more than 15% relative to each other? Steps: 1) Calculate CBL day % for each of the 3 CBL days (A,B,C) used: - Calculate the average of the 5 (-6 to -2) half hour intervals prior to the event (P). - Calculate the average of the half hour intervals during the event (D) - CBL day % = (D/P)100 2) Compare the 3 CBL days % to each other: - E.g. A = 150%, B= 85%, C = 100% - Difference between A and B CBL day % = 65% - Difference between A and C CBL day % = 50% - Difference between B and C CBL day % = 15% In the above example they do differ by more than 15%.	

Evaluation type	Event criteria	Actions
Total CBL Day Ref Point Deviation/Deflection	Is the variance between the total CBL's average reference point (-3, -2), relative to the average of period prior to the event (-6, -2) more than 5% above or more than 5% below.	

Evaluation type	Event criteria	Actions
CBL Profile	For the CBL profile, is the variance between average MW's during event period vs the average of the 5 (-6 to -2) half hour intervals prior to the event (P) greater than zero. (Is the Average MW (D) >= MW (P))?	• If the evaluation criteria are TRUE, then further evaluation is done by the Demand Response Department on the RSAS • If the evaluation criteria are FALSE, then continue to the next evaluation
Second Event On Same Day	Is there a prior event for this contract on the same day?	• If the evaluation criteria is true, then further evaluation is done by the Demand Response Department on the RSAS • If the evaluation criteria is false then continue to the next evaluation
Performance %	Is the event performance % between than 90% and 120% (inclusive) for the event calculation?	• If the evaluation criteria are TRUE, then release the report. • If the evaluation criteria are FALSE, then final evaluation is done by the Demand Response Department on the RSAS

CBL Static scaled methodology	The CBL will consist of a pre-determined profile based on specific days/months for the High and Low season months agreed by both the Participant and Eskom. Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the Scaled CBL and summated for the duration of the Load Reduction request. Same scale method as for CBL Dynamic
Same day methodology	Use reference point (-2&-3) on the event day to calculate the load reduction. No CBL's involved

22.6 Fast Frequency Response (FFR) - Same Day Method.

Evaluation	Event criteria	Actions
Event Duration	Is the frequency event longer than 10 minutes?	• If any of the evaluation criteria are TRUE, then final evaluation is done by the Demand Response Department on the RSAS • If all of the evaluation criteria are FALSE, then release the report
Metering Gap	Has the event had any measurement gap filled, within 60 seconds before the event start time or within 60 seconds after the event end time?	
Performance %	Is the event performance % less than 90% (not inclusive) for the event calculation?	

22.7 Supplemental Fast Response (SFR)

Evaluation type	Event criteria	Actions
1. Availability	Is the Participant's contracted load/generation available? TRUE: available FALSE: Not available	• If TRUE, proceed to evaluation 2.
2. Dispatch Instruction Status	Is the dispatch Instruction acknowledged? E.g. TRUE: Confirmed False: Not acknowledged	• If TRUE, proceed to evaluation 3. then no further evaluations are required • If FALSE, then no further evaluations are required
3. Response time	Was the response time within 10 minutes? TRUE: Compliant FALSE: Non complaint	• Proceed to evaluation 4
4. Performance %	Is the event performance % equal or greater than 90% (≥ 90%) for the event calculation?	• If evaluation 3 is TRUE, then release the report. • If evaluation 3 is FALSE, then final evaluation is done by the Demand Response Department on the RSAS.

22.8 Ten- Minute Fast response (TFR)

Evaluation type	Event criteria	Actions
1. Availability	Is the Participant's contracted load/generation available? TRUE: available FALSE: Not available	• If TRUE, proceed to evaluation 2.
2. Dispatch Instruction Status	Is the dispatch Instruction acknowledged? E.g. TRUE: Confirmed FALSE: Not acknowledged	• If TRUE, proceed to evaluation 3. then no further evaluations are required • If FALSE, then no further evaluations are required
3. Response time	Was the response time within the specification? 10 minutes TRUE: Compliant FALSE: Non complaint	• Proceed to evaluation 4
4. Performance %	Is the event performance % equal or greater than 90% (≥ 90%) for the event calculation?	• If evaluation 3 is TRUE, then release the report. • If evaluation 3 is FALSE, then final evaluation is done by the Demand Response Department on the RSAS.

23 APPENDIX B: Performance and Settlement Calculations

23.1 Supplemental Demand Response (SDR) Loads

Capacity Payment:

a. The Participant will receive full Capacity Payment if the median performance for all Load Reductions during a particular Month is above 90 % (ninety percent)
b. The Participant will receive a prorate portion of the Capacity Payment if the median performance during a particular Month is equal to or below 90% (ninety percent)
c. Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the scaled CBL and summated for the duration of the Load Reduction request, as instructed by ESKOM.

Formula for Load Reduction:

Load Reduction (LR) = sum [(Scaled CBL (n) – Actual Load (n))……(Scaled CBL (m) – Actual Load (m))]

Where:
n = first Integration Period of the Load Reduction request
m = last Integration Period of the Load Reduction request

If the Actual Load exceeds the scaled CBL, the said difference shall be a negative variance and if the Actual Load is less than the scaled CBL, the said difference shall be a positive variance.

For each load reduction event, the positive variances and the negative variances shall be summated and should the resultant Load Reduction amount be negative, it shall be deemed to be zero.

Customer Base Load (CBL):

The CBL shall consist of average half-hourly Week Day and Week-end Day profiles.

- These profiles shall exclude Curtailment Days.
- A planned and unplanned maintenance Day may be excluded and replaced by ESKOM with a subsequent Day for the purpose of CBL calculations.
- Should the Participant not query such replacement within 3 Business Days after the receipt of the event performance report, it shall be deemed to be an acceptance thereof.

Week Day profile:

- Select 3 (three) Week Days prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days

Week-end Day profile

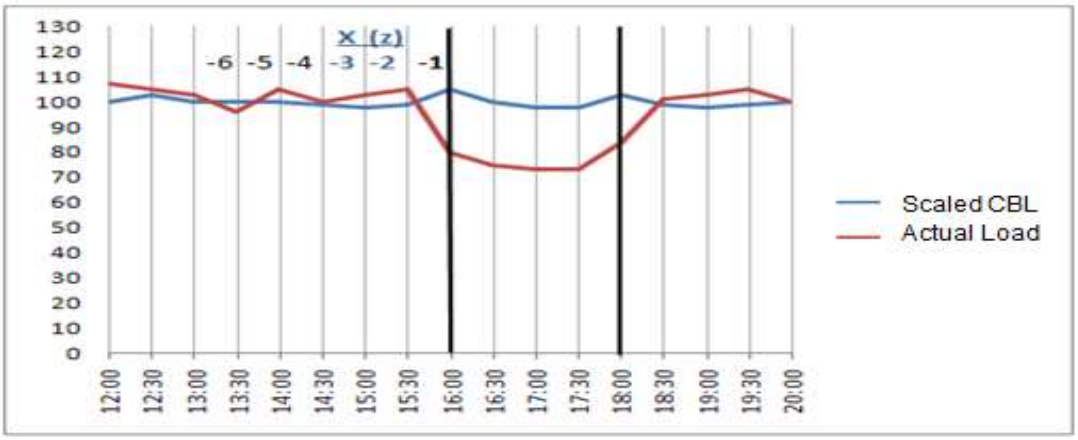
- Select 3 (three) non-public holiday Saturdays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days

- Select 3 (three) Sundays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days
- For a "public holiday" Day, refer to the ESKOM Megaflex public holiday definition table for the Day classification as per ESKOM's tariff book which can be found at www.eskom.co.za for the current year, and then select the three day profiles as bullet 1 or 2 above.

Scales CBL:

For each Load Reduction event, the CBL shall be scaled up or down to match the Actual Load in proportion to the MW difference between the Actual Load and the CBL during the first 2 Integration Periods X(z) of a moving 3 completed Integration Periods immediately prior to the Load Reduction event. To scale, add the calculated MW difference to the CBL.

Illustration



It is further agreed that, should the Participant receive a request from the Aggregator to reduce the Scheduled Capacity and such reduction follows a period of abnormal consumption (either scheduled or unscheduled and agreed to by the Parties not to be representative of the consumption under normal conditions) the reference point X(z) may be moved by ESKOM to a mutually agreed period of normal consumption up to point -6, as indicated in the illustration.

The options allowed for such a movement shall be limited to points (-1 & -2), (-3 &-4), (-4 &-5) or (-5 &-6). It shall be deemed to be an acceptance of the reference point should the PARTICIPANT not query the reference point movement within 3 Business Days after the receipt of the event performance report.

Energy payment:

ESKOM shall pay the PARTICIPANT for all Load Reduction requests, for energy reduced, as follows:

a) An Energy Payment for the actual Load Reduction for Events where the performance is greater than 30% (thirty percent) and capped at 120%, metered in MWh as described in (c)
b) Payment shall be made at a price equal to the lesser of the Participant's Bid Price, or the capped R/MWh price.
c) Formula: Price[n] = Min (Bid[n], capped R/MWh)
   Where: n = applicable incident that corresponds with "n" in (c)
d) If the Participant accepts ESKOM's request to reduce load on a day not scheduled to be on standby, ESKOM shall pay the Participant a capacity payment and an energy payment at contracted rates.

23.2 Self-Generation (SG) Demand Response Loads

Capacity payment:

a) The Participant will receive full Capacity Payment if the median performance for all Self Generation events during a particular Month is above 90 % (ninety percent)
b) The Participant will receive a prorate portion of the Capacity Payment if the median performance during a particular Month is equal to or below 90% (ninety percent)
c) Self-Generation shall be calculated per Integration Period, subtracting the actual generation output from the CBL and summated for the duration of the generation request, as instructed by ESKOM.

Formula:

Self Generation (SG) = sum [(Actual Generation (n) - CBL (n))……(Actual Generation (m) - CBL (m))]

Where:
n = first Integration Period of the Self Generation request
m = last Integration Period of the Self Generation request

If the Actual Generation exceeds the CBL, the said difference shall be a positive variance and if the Actual Generation is less than the CBL, the said difference shall be a negative variance.

For each load reduction event, the positive variances and the negative variances shall be summated and should the resultant Self Generation amount be negative, it shall be deemed to be zero.

Customer Base Load (CBL):

The CBL shall consist of average half-hourly Week Day and Week-end Day profiles.

- These profiles shall exclude Curtailment Days.
- A planned and unplanned maintenance Day may be excluded and replaced by ESKOM with a subsequent Day for the purpose of CBL calculations.
- Should the Participant not query such replacement within 3 Business Days after the receipt of the event performance report, it shall be deemed to be an acceptance thereof.

Week Day Profile:

- Select 3 (three) Week Days prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days

Week-end Day Profile:

- Select 3 (three) Sundays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days
- For a “public holiday” Day, refer to the ESKOM Megaflex public holiday definition table for the Day classification as per ESKOM’s tariff book which can be found at

www.eskom.co.za as per current year and then select the three day profiles as bullet 1 or 2 above.

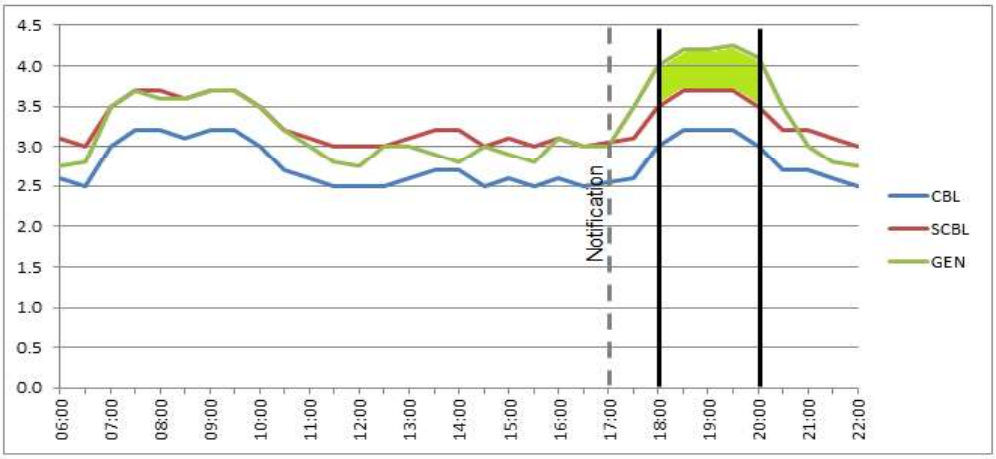
Scales CBL:

For each Self-Generation event, the CBL shall be scaled up or down to match the actual generator output in proportion to the difference between the average of the CBL and the average actual generation output. This will be relative to the average generator output over the two completed Integration Periods immediately prior to the Notification Time for Self-Generation.

If the Event is from 18h00-20h00 and the Notification Time is:

14h15; then X(z) will be from 13h00 to 14h00.
14h35; then X(z) will be from 13h30 to 14h30.
14h55; then X(z) will be from 13h30 to 14h30.
17h10; then X(z) will be from 16h00 to 17h00.

Illustration



It is further agreed that, should the Participant receive a request from the CDS to generate the Scheduled Capacity and the period immediately prior to the Notification Time is abnormal (either scheduled or unscheduled and agreed to by the Parties not to be representative of the generation under normal conditions) then the reference point X(z) may be moved by ESKOM to a mutually agreed period of normal generation.

It shall be deemed to be an acceptance of the reference point should the PARTICIPANT not query the reference point movement within 3 Business Days after the receipt of the event performance report.

Energy Payment:

ESKOM shall pay the PARTICIPANT for all Self Generation requests, for energy reduced, as follows:

- An Energy Payment for the actual Self Generation, metered in MWh as described above

- Payment shall be made at a price equal to the lesser of the Participant's Bid Price, or the capped R/MWh price.
- Formula: Price[n] = Min (Bid[n], capped R/MWh)
  Where: n = applicable incident that corresponds with "n"
- If the Participant accepts ESKOM's request to generate on a day not scheduled to be on standby, ESKOM shall pay the Participant a capacity payment and an energy payment at contracted rates.

23.3 Instantaneous Demand Response (IDR) Loads

Capacity payment:

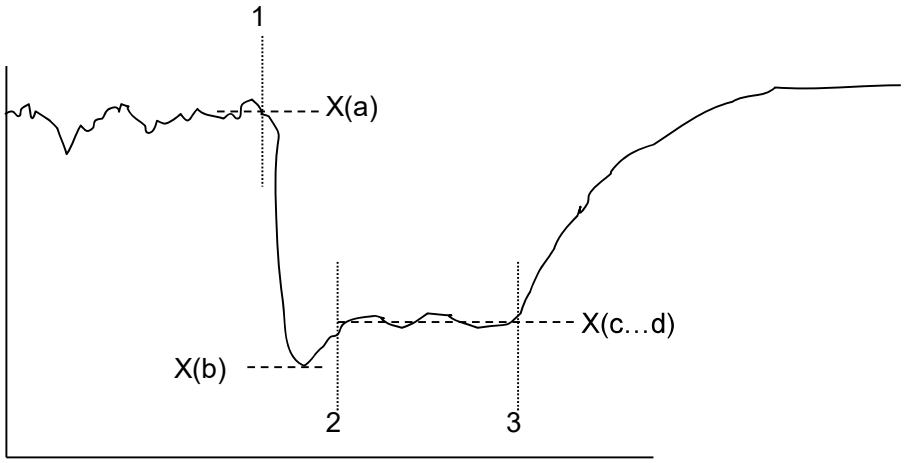
a) No Capacity Payments will be made to the Participant during the hours not scheduled by ESKOM to be available for Load Reduction
b) The hourly Capacity payment will be based on the available MW value if the plant's load is lower than the scheduled capacity during a scheduled hour or the scheduled MW value if the plant is running above the scheduled MW capacity value
c) The Participant will receive full Capacity Payment if the median performance for all Load Reductions during a particular Month is above 90 % (ninety percent
d) The Participant will receive a prorate portion of the Capacity Payment if the median performance during a particular Month is equal to or below 90% (ninety percent)

Load Reduction:

Load Reduction shall be calculated as the average of the Participant's biggest Load Reduction (measured in four-second intervals during the first 12 (twelve) seconds from instruction) relative to the position prior to the instruction (second completed four-second interval) and the average Load Reduction after 12 (twelve) seconds until a Load Reduction restore signal is send by the DR Installation or 10 (ten) minutes after the incident, whichever comes first.

Formula:
Actual Load Reduction (n) = Avg [reduction initial (n), reduction sustained (n)]
where:
n = applicable incident;
reduction initial (n) = [X(a) - X(b)] ;
reduction sustained (n) = [X(a) - Avg (X(c…d))]
X = actual metered four-second integrated Demand
a - the second completed four-second integration period prior to the instructed time of Load Reduction, indicated as time "1" in the illustration;
b - completed four-second integration period falling within the first twelve seconds from the time of instruction (period between "1" and "2") which corresponds with the lowest Demand registered during this period, and
c…d - all completed four-second integration periods falling within the period starting twelve seconds after the time of instruction ("2") and end at the time of restoration or 10 minutes after the incident ("3")

Illustration:



23.4 Curtailment

Load Reduction:

Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the scaled CBL and summated for the duration of the Load Reduction request, as instructed by ESKOM.

Formula:

Load reduction (LR) = sum [(Scaled CBL (n) – Actual Load (n))……(Scaled CBL (m) – Actual Load (m))]

Where:

n = first Integration Period of the Load Reduction request

m = last Integration Period of the Load Reduction request

If the Actual Load exceeds the scaled CBL, the said difference shall be a negative variance and if the Actual Load is less than the scaled CBL, the said difference shall be a positive variance. For each load reduction event, the positive variances and the negative variances shall be summated and should the resultant Load Reduction amount be negative, it shall be deemed to be zero.

Customer Base Load (CBL):

The CBL shall consist of average half-hourly Week Day and Week-end Day profiles.

- These profiles shall exclude Curtailment Days.
- A planned and unplanned maintenance Day may be excluded and replaced by ESKOM with a subsequent Day for the purpose of CBL calculations.
- Should the Participant not query such replacement within 3 Business Days after the receipt of the event performance report, it shall be deemed to be an acceptance thereof.

Week day Profile:

Select 3 (three) Week Days prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days

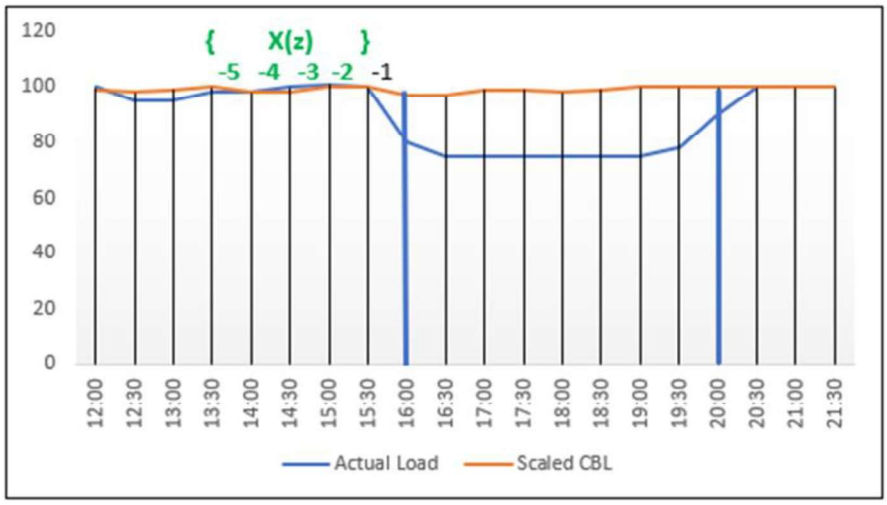
Week-end Day profile:

- Select 3 (three) non-public holiday Saturdays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days)
- Select 3 (three) Sundays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days as per (d)
- For a “public holiday” Day, refer to the ESKOM Megaflex public holiday definition table for the Day classification as per ESKOM’s tariff book which can be found at www.eskom.co.za as per current year , and then select the three day profiles as per (a) or (b)

Scales CBL:

- For each Load Reduction event, the CBL shall be scaled up or down to match the Actual Load in proportion to the MW difference between the Actual Load and the CBL during the first 4 Integration Periods X(z) of a moving 5 completed Integration Periods immediately prior to the Load Reduction event.

  Illustration



- To scale, add the calculated MW difference to the CBL

23.5 Critical Peak Day

Load Reduction:

Load Reduction shall be calculated per Integration Period, subtracting the Actual Load from the scaled CBL and summated for the duration of the Load Reduction request, as instructed by ESKOM.

Formula:

LR = sum [(Scaled CBL (n) – Actual Load (n))……(Scaled CBL (m) – Actual Load (m))]

Where:
n = first Integration Period of the Load Reduction request
m = last Integration Period of the Load Reduction request

If the Actual Load exceeds the scaled CBL, the said difference shall be a negative variance and if the Actual Load is less than the scaled CBL, the said difference shall be a positive variance.
For each load reduction event, the positive variances and the negative variances shall be summated and should the resultant Load Reduction amount be negative, it shall be deemed to be zero.

Customer Base Load (CBL):

The CBL shall consist of average half-hourly Week Day and Week-end Day profiles.

- These profiles shall exclude Curtailment Days.
- A planned and unplanned maintenance Day may be excluded and replaced by ESKOM with a subsequent Day for the purpose of CBL calculations.
- Should the Participant not query such replacement within 3 Business Days after the receipt of the event performance report, it shall be deemed to be an acceptance thereof.

Week Day Profile:

For a Week Day profile, select 3 (three) Week Days prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days)

Week-end Day

- Select 3 (three) non-public holiday Saturdays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days
- Select 3 (three) Sundays prior to the Curtailment Day to calculate the half-hour MW averages over a 24-hour period, excluding Curtailment Days, planned and unplanned maintenance Days
- For a “public holiday” Day, refer to the ESKOM Megaflex public holiday definition table for the Day classification as per ESKOM’s tariff book which can be found at www.eskom.co.za as per current year , and then select the three day profiles as per bullet 1 or 2 above

Load Reduction Event:

For each Load Reduction event, the CBL shall be scaled up or down to match the Actual Load in proportion to the MW difference between the Actual Load and the CBL during the first 4 Integration Periods X(z) of a moving 5 completed Integration Periods immediately prior to the Load Reduction event. To scale, add the calculated MW difference to the CBL.

23.6 Ten-minute Fast Response (TFR)

23.6.1 Ramping performance

The performance is calculated as follows:

Hourly ramping performance

Percentage of Ramping Performance in each hour.

$(RP_{h}) = \frac{(RPU_{h} + RPD_{h})}{2}$

Where;

RPU_h (Percentage of Ramping up Performance in each hour) = minimum ($\frac{\sum_{i=1}^{nu} RPU_i}{n}$, PL), if $\sum_{i=1}^{h} DPU_i > 0$

RPU_i (Percentage of Ramping up Performance in a one-minute interval) = $\frac{APO_i - APO_{i-1}}{DPU_i}$ x100%

RPU_h = 1, if $\sum_{i=1}^{h} DPU_i = 0$

PL = Over Performance Limit of 110%

APO_i = Average Actual Power Output in MW in a one-minute interval

APO_{i-1} = Average Actual Power Output in MW in a previous one-minute interval

DPU_i = Dispatch up instruction in MW within each hour

RPD_h (Percentage of Ramping down Performance in each hour) = minimum ($\frac{\sum_{i=1}^{nd} RPD_i}{n}$, PL), if $\sum_{i=1}^{h} DPD_i > 0$

RPD_i (Percentage of Ramping down Performance in a one-minute interval) = $\frac{APO_i - APO_{i-1}}{DPD_i}$ x100%

RPD_h = 1, if $\sum_{i=1}^{h} DPD_i = 0$

DPD_i = Dispatch down instruction in MW within each hour

23.6.2 Overall Ramping performance

Overall Ramping Performance over the billing period is calculated as

$$RP = \sum_{h=1}^{H} \frac{RP_h}{H}$$

Where:

h = hour in which facility is contracted and dispatched for Ten-minute Reserve

H = Total hours contracted for ten-minute reserve in billing period

23.6.3 Control Error Performance (CEP)

23.6.3.1 Hourly Control Error Performance

Hourly control error performance,

$$CEPh = \frac{abs\,(APO_h - SP_h)}{abs(SP_h)}$$

Where;

$$APO_h = \sum_{i=1}^{900} \frac{APO_i}{900} \text{ , } SP_h = \sum_{i=1}^{900} \frac{SP_i}{900}$$

Where:

APO_h = Average Actual Power Output (in MW) in each hour

APO_i = Actual Power Output (in MW) in time step cycle i

SP_i = Contracted Setpoint Power (in MW), based on issued manual instructions by National Control to change the facility's output in time step cycle i

i = 1 time step cyle of 4 seconds duration within each hour (h)

SP_h = Average Contracted Setpoint Power in each hour.

23.6.3.2 Overall Control Error Performance

$$CEP = (1 - \frac{RH}{H}) \times 100\%$$

Where:

CEP = Control Error Performance in billing period

RH = Number of hours where CEP_h is greater than 1%

H = Total hours contracted for ten-minute reserve in billing period

If the contracted facility is not dispatched for Ten-minute reserve in a month, its performance will be deemed to have achieved acceptable performance.

Ten-minute reserve performance of contracted facilities shall be determined as follows for both **charging** and **discharging** modes:

(Ten-minute reserve performance over billing period) = (50%xRP) + (50%xCEP)

The facility shall be considered to have performed successfully if the ten-minute reserve performance is greater or equal to 90% as per applicable SO performance monitoring standard.

23.6.4 Capacity Payment

a) The Participant shall receive full Capacity Payment if the performance during a particular Month is 90% (ninety percent) or more
b) The Participant shall receive a prorate portion of the Capacity Payment if the performance during a particular Month is below 90% (ninety percent)

23.7 Supplemental Fast Response (SFR)

Performance calculation:

Performance of contracted facilities shall be determined as follows for both charging and discharging modes:

$$SFR_m = \sum_{h=1}^{H} \frac{SFR_h}{H}$$

$$SFR_h = \frac{APO_h}{SP_h}$$

Where:

SFR_m = Supplemental Reserve performance over a month

SFR_h = Supplemental Reserve performance over an hour

APO_h = Average Actual Power Output (based on four second data) over an hour

SP_h = Average Contracted Setpoint Power, based on issued manual instructions by National Control to change the facility's output during the hour

h = hour in which facility is contracted and dispatched for Supplemental Reserve

H = Total hours contracted for Supplemental reserve in a month

In the event that the contracted facility is not dispatched for Supplemental Reserve in a month, its performance will be deemed to have achieved acceptable performance.

Capacity payment

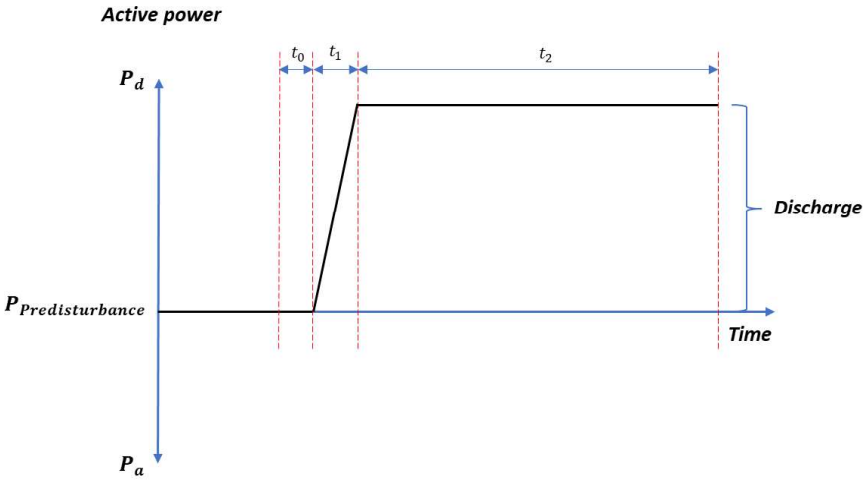
a) The Participant shall receive full Capacity Payment if the performance during a particular Month is 90% (ninety percent) or more
b) The Participant shall receive a prorate portion of the Capacity Payment if the performance during a particular Month is below 90% (ninety percent)

23.8 Fast Frequency Response (FFR)

Performance calculation:

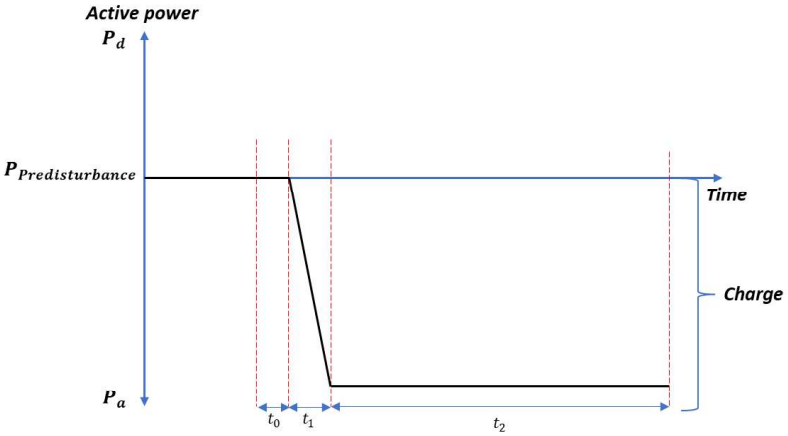
Performance of contracted facilities shall be determined as follows for both charging and discharging modes:

When the trigger conditions are met (frequency threshold/RoCoF), FFR must be fully activated within t_1(400ms) or as required by SO and sustained for the earlier of time taken to recover frequency within dead-band or for t_2 (10 minutes). The response time (400ms) should be configurable to cater for activation time settings in future.



Low frequency event (Participant response)

If the BESF has fully discharged or if it is operating close to maximum P_d such that it does not have capacity to deliver during a low frequency event, it shall not reduce output or change mode to charging while the system requires a positive response.



High frequency event (Participant response)

If the BESF is fully charged or if it is operating close to maximum $\mathbf{P_a}$ such that it does not have capacity to absorb during a high frequency event, it shall not change modes to discharging while the system requires absorption from the BESF.

$\boldsymbol{P_{Predisturbance}}$ is the average active power during 3 cycles before the start of the incident.

Maximum response is the maximum active power delivered ($\boldsymbol{P_d}$) or active power absorbed ($\boldsymbol{P_a}$) over $\mathbf{t_1}$ after the start of the incident minus $\boldsymbol{P_{Predisturbance}}$.

$$\text{Maximum } \boldsymbol{P_d} = \boldsymbol{P_d} - \boldsymbol{P_{Predisturbance}}$$
$$\text{Maximum } P_a = P_a - P_{Predisturbance}$$

The Sustained response is the average response of the period starting after $\mathbf{t_1}$ and ending at $\mathbf{t_2}$ after the start of the incident, or when the frequency recovers within the frequency dead-band, whichever occurs first.

The **Average of maximum and sustained** (AMS) is calculated using equations below:

Discharging: $\mathbf{AMS\ Response} = \mathbf{0.5} \times (\mathbf{Maximum}\ \boldsymbol{P_d} + \mathbf{Sustained\ Response})$

And

Charging: $\mathbf{AMS\ Response} = \mathbf{0.5} \times (\mathbf{Maximum}\ \boldsymbol{P_a} + \mathbf{Sustained\ Response})$

The average of all percentage AMS for both low and high frequency events over the month is the percentage performance of the facility for the month. The facility shall be considered to have performed successfully if the instantaneous reserve performance is greater or equal to 90%.

Capacity payment

a) The Participant shall receive full Capacity Payment if the performance during a particular Month is 90% (ninety percent) or more
b) The Participant shall receive a prorate portion of the Capacity Payment if the performance during a particular Month is below 90% (ninety percent)

23.9 Penalties

Penalties shall be determined for monthly performance and also for decertification.

23.9.1 Performance-based penalties

(i) Determine reserves performance per category

PP_{FFR}	*Instantaneous Reserve Percentage Performance over the Billing Period*
PP_{TFR}	*Ten minute Reserve Percentage Performance over the Billing Period*
PP_{SFR}	*Supplemental Reserve Percentage Performance over the Billing Period*

(ii) Determine penalty factors based on average performance

Reserve Performance	Penalty Factor		
(PP_{FFR} / PP_{TFR} / PP_{SFR})	PF_{FFR}	PF_{TFR}	PF_{SFR}
< 50.00%	1	1	1
50.00% and above but less than 90.00%	90%-$PPir$	90%-$PPtmr$	90%-$PPsr$
90.00% and above	0	0	0

(iii) Total Reserve Penalty (RP)

$$RP = \sum_{h=1}^{H}(CC_h * CR) * RPF$$

$$RPF = PF_{FFR} * \sum_{h=1}^{H}\frac{IRCh}{CCh} + PF_{TFR} * \sum_{h=1}^{H}\frac{TMRCh}{CCh} + PF_{SFR} * \sum_{h=1}^{H}\frac{SRCh}{CCh}$$

Where:

PF_{FFR}	*Instantaneous Reserve Penalty Factor over the Billing Period*
PF_{TFR}	*Ten minute Reserve Penalty Factor over the Billing Period*
PF_{SFR}	*Supplemental Reserve Penalty Factor over the Billing Period*
$IRCh$	*Hourly Contracted Instantaneous Reserve MW Capacity over the Billing Period*
$TMRCh$	*Hourly Contracted Ten minute Reserve MW Capacity over the Billing Period*
$SRCh$	*Hourly Contracted Supplemental Reserve MW Capacity over the Billing Period*
RPF	*Average Reserve Penalty Factor over the Billing Period*
CR	*Capacity rate in R/MW/hour*
CC_h	*Hourly Contracted MW Capacity over the Billing Period*

23.9.2 Decertification-based penalties

In the event that a participant is decertified for any reserve category, a monthly penalty shall be calculated as follows:

Total Reserve Penalty (RP)

$$RP = \sum_{h=1}^{H}(CC_h * CR) * RPF * Pesc$$

$$RPF = PF_{FFR} * \sum_{h=1}^{H} \frac{IRCh}{CCh} + PF_{TFR} * \sum_{h=1}^{H} \frac{TMRCh}{CCh} + PF_{SFR} * \sum_{h=1}^{H} \frac{SRCh}{CCh}$$

If facility is not decertified, $Pesc = 1$
Else, $Pesc = 1.0175^{m}$

P_{esc}	=	Penalty escalation factor based on number of months that facility is decertified
m	=	number of months that facility has been decertified after the first month

24 APPENDIX C: Reporting Requirements

25 Reporting Requirements

Event performances reports, monthly performance reports and settlement reports need to be available to Participants.

25.1 Schedules

25.1.1 Demand Response Schedule report

- Participant's name
- product name
- Date the schedule is sent
- Participant's scheduler's name
- Schedule table that includes columns with:
    - The Scheduled date
    - 24 hours of the day starting at 00:00
    - Scheduled MWs with reference to each hour of the day
        - The hour stamp indicates the beginning of the hour
- Graph
    - Scheduled Load Graph
        - 60 minute intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00
            - Consist of the scheduled MW value during the scheduled time period
            -
            - Indicate the notification period on the graph
            - Highlight the event period (Start to end)
- Notes:
    - The hour value in the time column represents the beginning of the hour
    - The customer is only on standby during the schedule hours with a MW value greater than zero
    - Contact details for the RSAS
    - Contact details for Demand Response representatives

25.2 Event performance reports

25.2.1 Event performance report - SDR/Self-generation/Curtailment/

- Participant name
- Product name
- Event date
- Notification time for the event
- Start and end time of the event
- Total Event duration
- MW Load scheduled for reduction

- MW Load scheduled for generation
- Contracted MW
- State of Charge (for *Battery Energy Storage Facilities only)*
- Product performance margin
- performance calculation methodology
- Total energy reduced in MWh
- Total energy generated in MWh
- Total Load reduced in MW
- Total generated in MW
- Event performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Indication whether the dispatch request was:
    - Accepted/Acknowledged
    - Declined/Not acknowledged
    - Call not answered
- Graphs
    - Load Reduction/Self -generation Event graph
        - 30-minute intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00
            - Consist of the Consumption/Generation profile on the day and the scaled CBL
            - Indicate the notification period on the graph
            - Highlight the event period (Start to end)
    - CBL table and graph
        - The table must include:
            - The selected 3 CBL days' dates
            - 30 minute interval MW values for each of the 3 CBL days
            - 30 minute interval calculated average MW values for the 3 CBL days which equals the CBL
        - Populate the above values on a 30 minute interval graph with time on the X-axis and MW on the Y-axis
            - Highlight the event period (Start to end)

- Load Reduction/Self-generation calculation table; (30 minute intervals)
    - Date and time (01/01/2018 00:00 format)
    - Calculated CBL MW values
    - The CBL and Actual MW load values for the default reference period (-2&-3)
        - The default reference period may be changed by DR department to (-1&-2) or (-3&-4) or (-4&-5) or (-5&-6)
    - The calculated scaling factor in MW
    - The calculated scaled CBL
    - The Actual Load on the day in MW
    - The energy not consumed in MWh (*SDR only*)
    - Additional energy generated in MWh (*Self-generation only*)
    - The load reduced in MW (*SDR only*)
    - The increase in MW output (*Self-generation only*)
    - The System Peak or Off-Peak period.

25.2.2 Event performance report – FFR

FFR shall be delivered within a maximum time of 400 milliseconds or as required by SO. The 400 milliseconds response time should be configurable, to cater for time delay settings change in future.

- Participant name
- Event date
- Start and end time of the event.
- Total Event duration
- MW scheduled to be Generation/Reduction
- Performance margin
- Performance calculation methodology
- Pre-disturbance – MW during the first 3 cycles before the dispatch signal.
- (a) Maximum capacity absorbed/delivered in MW in the first 400 milliseconds (or as required by SO) of the event directly after the dispatch signal
- (b) Sustained capacity in MW for the remainder of the event
- Average of Maximum and Sustained (AMS)
- Performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Graphs (FFR)
    - Generation/Reduction Event graph
        - 20 milliseconds intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00/user defined.
        - Consist of the Consumption/Generation profile on the day
        - Indicate the activation time on the graph.
        - Highlight the event period (Start to end minute intervals with time on the X-axis and MW on the Y-axis

- Generation/Reduction table: (20 milliseconds intervals)
    - Date and time (01/01/2018 00:00:00.000 format)
    - The Actual capacity on the day in MW
    - The frequency
    - The pre-disturbance level in MW
    - The maximum generation/reduction in MW during the first 400 milliseconds.
    - The sustained response in MW during the remainder of the event (until frequency recovers within the dead-band or for 10 minutes, whichever occurs first).

25.2.3 Event performance report - TFR

- Participant name
- Product name
- Event date
- Notification time for the event

- Start and end time of the event.
- Total Event duration
- MW scheduled for reduction (charge)
- MW scheduled for generation (discharge)
- Contracted MW
- State of Charge (for *Battery Energy Storage Facilities only)*
- Product performance margin
- performance calculation methodology
- Total capacity reduced in MW
- Total capacity generated in MW
- Event performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Indication whether the dispatch request was:
    - Accepted/Acknowledged
    - Declined/Not acknowledged
    - Call not answered
- Graphs (TFR)
    - Generation/Reduction Event graph
        - 4 second intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00/user defined.
        - Consist of the Consumption/Generation profile on the day
        - Indicate the notification period on the graph
        - Highlight the event period (Start to end minute intervals with time on the X-axis and MW on the Y-axis

- Generation/Reduction table: (4 second intervals)
    - Date and time (01/01/2018 00:00:00 format)
    - The Actual capacity on the day in MW
    - The contracted level in MW
    - The maximum generation/reduction in MW during the first 1 minute.

The sustained response in MW during the remainder of the event (up to 2 hours)

25.2.4 Event performance report - SFR

- Participant name
- Product name
- Event date
- Notification time for the event
- Start and end time of the event
- Total Event duration
- MW scheduled for reduction (charge)
- MW scheduled for generation (discharge)
- Contracted MW
- State of Charge (for *Battery Energy Storage Facilities only)*

- Product performance margin
- performance calculation methodology
- Total capacity reduced in MW
- Total capacity generated in MW
- Event performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Indication whether the dispatch request was:
    - Accepted/Acknowledged
    - Declined/Not acknowledged
    - Call not answered
- Graphs (SFR)
    - Generation/Reduction Event graph
        - 4 second intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00/user defined.
        - Consist of the Consumption/Generation profile on the day
        - Indicate the notification period on the graph
        - Highlight the event period (Start to end minute intervals with time on the X-axis and MW on the Y-axis

- Generation/Reduction table: (4 second intervals)
    - Date and time (01/01/2018 00:00:00 format)
    - The actual capacity before the event in MW
    - The contracted capacity in MW
    - The maximum generation/reduction in MW during the first 10 minutes.
    - The sustained response in MW during the remainder of the event (up to 2 hours).

25.2.5 Event performance report IDR

- Participant name
- DR product name
- Event date
- Start and end time of the event
- Total Event duration
- MW Load scheduled for reduction
- DR product performance margin
- DR performance calculation methodology
- Reference load – MW load during the first completed four-second integration period prior to the trip signal
- (a) Maximum load in MW reduced in the first 12 seconds of the event directly after the trip signal
- (b) Average load in MW for the remainder of the event
- Total load reduction in MW (The average of (a) and (b)
- Performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)

- On target (> then performance margin)

- Graph
  - Load Reduction Event graph
    - 4 second intervals with time on the X-axis, MW on the primary Y-axis and frequency in Hz on the secondary Y-axis
    - The consumption profile must be from 30 minutes before, to 40 minutes after the trip signal was sent
      - Consist of the Consumption profile on the day and
      - Calculated system frequency in Hz
      - Highlight the event period (Start to end)
- Load Reduction calculation table: (4 second intervals)
  - Date and time (01/01/2018 00:00:00 format)
  - The Actual Load on the day in MW
  - The frequency
  - The reference load in MW
  - The load reduced in MW during the first 12 seconds.
  - The load reduced in MW during the remainder of the event.

25.3 Monthly performance reports

25.3.1 Monthly performance report – FFR

- Participant's name
- Product name
- Report start and end date
  - Event table:
    - Event date
    - Start and end time of the event
    - Event duration
    - Scheduled capacity
    - Performance margin
    - The reference load in MW
    - The maximum generation/reduced in MW during the first 400 milliseconds
    - The sustained response in MW during the remainder of the event
    - Average of Maximum and Sustained (AMS)
    - System Peak or Off-Peak period
    - Performance percentage
    - Performance rating
  - Average performance of all the events

25.3.2 Monthly performance report – TFR

- Participant's name
- Product name
- Report start and end date
  - Event table:
    - Event date
    - Notification time
    - Start and end time of the event

        - Event duration
        - Schedule MW
        - Contracted MW
        - Performance margin
        - Total generation/reduced in MW
        - Total load increase in MW
        - System Peak or Off-Peak period
        - Performance percentage
        - Performance rating
    - Total event hours for the month
    - Average performance of all the events

25.3.3 Monthly performance report – SFR

- Participant's name
- Product name
- Report start and end date
    - Event table:
        - Event date
        - Notification time
        - Start and end time of the event
        - Event duration
        - Scheduled MW
        - Contracted MW
        - Performance margin
        - Total reduced in MW
        - Total generation in MW
        - System Peak or Off-Peak period
        - Performance percentage
        - Performance rating
    - Total event hours for the month
    - Average performance of all the events

25.3.4 Monthly performance report- SDR/Self-generation/Curtailment

- Participant's name
- Product name
- Report start and end date
    - Event table:
        - Event date
        - Notification time
        - Start and end time of the event
        - Event duration
        - Scheduled load
        - Contracted MW
        - Performance margin
        - Total energy not consumed in MWh (*SDR*)
        - Total energy generated in MWh (*Self-generation only*)
        - Total load reduced in MW (*SDR*)
        - Total load increase in MW (*Self-generation*)

        - System Peak or Off-Peak period
        - Performance percentage
        - Performance rating
    - Total event hours for the month
    - Total MWh not consumed (*SDR only*)
    - Total MWh generated (*Self-generation only*)
    - Median performance of all the events

25.3.5 Monthly performance report - IDR

- Participant's name
- Product name
- Report start and end date
    - Event table:
        - Event date
        - Start and end time of the event
        - Event duration
        - Scheduled load
        - Performance margin
        - The reference load in MW
        - The maximum load reduced in MW during the first 12 seconds
        - The load reduced in MW during the remainder of the event
        - Total Load reduction
        - System Peak or Off-Peak period
        - Performance percentage
        - Performance rating
    - Median performance of all the events

25.4 Settlement reports

25.4.1 Settlement report - SDR/Self-generation/SFR/TFR

- Participant's name
- Product name
- Report start and end date
    - Event table:
        - Event date
        - Start and end time of the event
        - Event duration
        - Scheduled load
        - Indication whether the dispatch instruction request was:
            - Accepted/acknowledged.
            - Declined
            - Call not answered
        - Total energy not consumed in MWh (*SDR only*)
        - Total energy generated in MWh (*Self-generation ,SFR&TFR*)
        - Total load reduced in MW (*SDR ,BESF SFR&TFR*)
        - Total generation increase in MW (*Self-generation,SFR&TFR*)
        - Performance percentage

- Performance rating
- Energy rate payable
- Energy payment
- Capacity payment
  - System Peak and Off-Peak rates
  - Total MWs scheduled during System Peak and Off-Peak periods
  - Total capacity payment based on monthly median performance percentage
- Total Energy and Capacity payment
- Statistical information
  - Number of weekdays, Saturday days, Sundays and Public Holidays scheduled
  - Number of weekdays, Saturday days, Sundays and Public Holidays dispatched
  - Dispatch ratio

- Monthly Schedule summary table
  - Date
  - Weekday
  - Total MW scheduled during System Peak for the day
  - Total MW scheduled during System Off-Peak for the day
  - Total MW scheduled for the day
  - Total MW scheduled during System Peak for the month
  - Total MW scheduled during System Off- Peak for the month
  - Total MW scheduled for the month

25.4.2 Settlement report - IDR

- Participant's name
- DR product name
- Report start and end date
  - Event table:
    - Event date
    - Start and end time of the event
    - Event duration
    - Scheduled load
    - Total load reduced in
    - Performance percentage
    - Performance rating
    - Capacity payment
      - Rate
      - Total MW scheduled for the month
      - Total capacity payment based on monthly median performance percentage
        - If no Event has occurred during a scheduled Month, the median performance percentage of a previous Month with Events shall be used to calculate the Capacity Payment
    - Statistical information
      - Total number of event day
      - Total number of events

- Monthly Schedule summary table
  - Date
  - Weekday
  - Total MW scheduled per day
  - Total MW available for the same day

- Monthly available load summary table
  - Date
  - Weekday
    - Hours of the day
    - MW load available per hour
      - The Available load **is equal to** Scheduled load if the Current load is >90% of the Scheduled load
      - If the Current load is <=90% of the Scheduled load, then the Available load **is equal to** the Current load
  - Indicate the hour and/or the event that is excluded from the settlement performance calculations with different colours
  - Indicate with a different colour the hour when an event took place.

25.5 Statistical Reports

25.5.1 Daily Scheduled Load Report (per DR product)

- Name of Participant
- Certified capacity of Participant (MW)
- Scheduled load for each half hour over 24 hour period (MW)

25.5.2 Monthly Statistics Summary Report (SDR/ Curtailment)

- Maximum Certified Capacity (MW)
- Average load dispatched by National Control (MW)
- Average load provided(MW)
- Average monthly performance (%)
- Energy provided(MWh)
- Number of days scheduled by SO
- Number of days dispatched by SO
- Hours dispatched by SO
- Number of dispatches by SO
- Number of unscheduled dispatches by SO

25.5.3 Monthly Statistics Summary Report (IDR report 1)

- Maximum Certified Capacity(MW)
- Average dispatched(MW)
- Average provided(MW)
- Average monthly performance (%)
- Number of days dispatched

- Number of events
- Average event duration (mm:ss)

25.5.4 Monthly Statistics Report (IDR Report 2)

- Event Date
- Event Start Time
- Event End Time
- Total Load Reduction(MW) in lieu of event

25.6 System Operator Reports

25.6.1 SDR/SFR/TFR Planned Dispatches

- Graph
  - Maximum Reduction/Generation vs. time of day
- Table
  - Time in 1 minute intervals (rows)
  - Participant name (columns)
  - Total National Control Dispatch (sum of units)

25.6.2 Performance report per IDR unit per event

- Block/Unit name
- DR product name
- Event date
- Start and end time of the event
- Total Event duration
- System TOU classification
- MW Load scheduled for reduction
- MW Load dispatched for reduction
- DR product performance margin
- Total load reduction (MW)
- Performance percentage
- Performance rating with reference to the performance margin
  - Below target (<= then performance margin)
  - On target (> then performance margin)
- Graph
  - Performance graph
    - 2 minute intervals with time on the X-axis, MW on the primary Y-axis and frequency in Hz on the secondary Y-axis
    - The graph must span from 30 minutes before, to 40 minutes after the trip signal was sent
      - Consist of the load profile for the entire period
      - System frequency in Hz
      - System frequency in Hz (highlighted during the event)

25.6.3 Performance report per SDR unit per event

- Unit name
- DR product name
- Event date
- Notification time for the event
- Start and end time of the event
- Total Event duration
- MW Load scheduled for reduction
- DR product performance margin
- Total energy reduced in MWh
- Total Load reduced in MW
- Event performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Graphs
    - Load Reduction Event graph
        - 30 minute intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00
            - Consist of the actual load on the day
            - Indicate the notification period on the graph
            - Highlight the event period (Start to end)

25.6.4 Performance report per SFR and TFR facility per event

- Participant name
- Product name
- Event date
- Notification time for the event
- Start and end time of the event
- Total Event duration
- Contracted MW (Reduction/Generation)
- Performance margin
- Total energy generated/reduced in MWh
- Total MW generated/reduced
- Event performance percentage
- Performance rating with reference to the performance margin
    - Below target (<= then performance margin)
    - On target (> then performance margin)
- Graphs
    - Generation/Reduction Event graph
        - 1 minute intervals with time on the X-axis and MW on the Y-axis
        - The profile must be from 00:00 to 00:00/user defined
            - Consist of the actual MW on the day
            - Indicate the notification period on the graph
            - Highlight the event period (Start to end)

25.6.5 Performance report per IDR unit

- Unit name
- DR product name
- Report start and end date
    - Event table:
        - Event date
        - Start and end time of the event
        - Event duration
        - System Peak or Off-Peak period
        - Scheduled load (MW)
        - Dispatched load (MW)
        - Performance margin
        - Total Load reduction (MW)
        - Performance percentage
        - Performance rating
    - Median performance of all the events

25.6.6 Performance report per SDR unit

- Unit name
- DR product name
- Report start and end date
    - Event table:
        - Event date
        - Notification time
        - Start and end time of the event
        - Event duration
        - Scheduled load
        - Performance margin
        - Total energy curtailed (MWh)
        - Total load reduced (MW)
        - Performance percentage
        - Performance rating
    - Median performance of all the events

25.6.7 Finance total settlement report

- Report start and end date
- Table (broken down by product)
    - Unit name
    - Customer name
    - Energy curtailed (MWh) [SDR customers]
    - Payment based on DR capacity (Rands)
    - Payment based on energy curtailed (Rands)
    - Manual correction (Rands) [if required]
    - Calculated adjustment (Rands) [if required]
    - Total (sum of capacity and energy payments and adjustments/corrections)

25.6.8 IDR Real Time Feed Monthly Report

This is a spreadsheet containing the median time (in seconds) for a particular month that the 4 different signals (dispatch, restore, available, unavailable) are received via GSM and also sent to the System Operator. There is a corresponding sheet in the same document showing the list of all events for that month that were used to calculate the median time values.

25.6.9 Participant and Unit Certification Log

This is a document that contains certification information for all participant, split by product type. This is to be issued every time there is a change that affects the overall certified value of any DR product.

It contains the following:

- Region name
- Unit ID
- Unit description
- Certified Capacity (Unit + Customer)
- Contract Name
- Capacity Rate
- Energy Rate

25.6.10 Finance total settlement report - YTD summary

- Report start and end month
    - Table (reported per product type)
        - Unit name
        - Total (sum of capacity and energy payments and adjustments/corrections)

- Report per month
    - Table (broken down by product)
        - Unit name
        - Event count (to show number of events per month)
        - Assistance required (MW) – average MW reduction per month
        - Performance [%] – average percentage performance for all events
        - Energy (MWh)
        - Energy Payment (Rands)
        - Capacity payment (Rands)
        - Adjustments (Rands)
        - Total (sum of capacity and energy payments and adjustments/corrections)

25.6.11 Certified and Bids Value

This is a document containing the bid values per Participant per day. It contains the following information:

- Region name
- Unit ID
- Unit description
- Unit certified capacity
- Participant name
- Participant certified capacity
- Weekend and weekday maximum bids
- Hours available

Aggregated total for each product

26 APPENDIX D: Information requirements

Below a list of minimum high-level information requirements.

information	Information details	Comments
Product	• Name • Description • Net Declared Capacity (NDC) • Certified capacity • Notification period • Response time • Performance Percentage Margin • Meter data source • Metering intervals • Performance calculation methodology with MW as reference: • Performance percentage margin: • Notification period • Dispatch response time from receiving dispatch signal: () • Events • Number of events per 12 months period: • Number of events per day • Number of events per week • Minimum duration of event • Maximum duration of event • Minimum duration between events	Products: • Instantaneous Demand Response • Supplemental Demand Response • Self-generation • Curtailment • Critical Peak Day • Fast Frequency response • Ten-Minute Fast Response • Supplemental Fast Response *Other products could become available*. Meter Source: • 3rd party • RSI panel • Billing metering data Metering Intervals: • milliseconds, • seconds • minutes Performance calculation methodology with ME as reference: • dynamic CBL scaling • static CBL scaling • same day performance • etc. Notification period: • 10 minutes intervals up to 120 minutes) Dispatch response time from receiving dispatch signal: • milliseconds, • seconds, • minutes)
Company	• Company Name • Eskom Cluster Name • Network Grouping	

information	Information details	Comments
Agreement / contract	• Contract ID • Contract Type • Contract Type Category • Classification • Account name (opt) • Account number (opt) • Agreement start date • Agreement end date • Agreement version (effective date) = Participation start date • Eskom Region • Product(s) • Product rates (Rands) • Contract Owner Name • Contract Owner Telephone Number • Contract Owner Cell Phone Number • Contract Owner E-Mail Address • (Key) Customer Executive Name • (Key) Customer Executive E-Mail Address • (Key) Customer Executive Landline Number • (Key) Customer Executive Cell Number • Eskom Billing Account Number/s • Eskom Billing Account Names/s • Physical Contract Status • Notes	Eskom pays all participants. Participant payment: • Credit direct participant electricity account • EFT for participant not directly supplied by Eskom
Participant Parameters	• Average Maximum Demand • Certified Capacity • Net Declared Capacity (NDC): (Product specific)	
Participant Schedule Parameters	• Schedule Sending Preference • Contract Schedule Contact Name • Contract Schedule Contact Telephone Number • Contract Schedule Contact Cell Phone Number • Contract Schedule Contact E-Mail Address	
Participant Availability	• Maximum Unavailable Hours per Contract	

information	Information details	Comments
Participant Event Parameters	• Minimum Hours per Current Financial Year • Maximum Hours per Current Financial Year • Maximum Hours per Quarter • Maximum Hours per Month • Maximum Hours per Week • Maximum Events Per Day • Minimum Event Duration • Maximum Event Duration • Minimum Time Between Events	
Participant Dispatch Parameters	• Minimum Notification Time • Contract Dispatch Contact Name - Primary • Contract Dispatch Contact Cell Number - Primary • Contract Dispatch Contact Alternate Telephone Number - Primary • Contract Dispatch Contact E-Mail Address - Primary • Contract Dispatch Contact Name - Secondary • Contract Dispatch Contact Cell Number - Secondary • Contract Dispatch Contact E-Mail Address - Secondary • Contract Dispatch Contact Name - Backup • Contract Dispatch Contact Cell Number - Backup • Contract Dispatch Contact E-Mail Address – Backup	
Performance Parameters	• Performance Calculation Method • Performance Margin	
Site	• Name • Net declared Capacity (NDC) • Energy Resource Type • Electricity Supply Authority (e.g. Munic) • Transmission substation name • Distribution substation name • Feeder name • Supply Voltage • Average MW demand • Eskom Region • Configuration grouping(s)	

information	Information details	Comments
Energy resource type	• Name • Description	Energy resource type: e.g. • PV • CSP • Storage • Hydro • Hybrid • Storage • Wind
Device	• Device ID • Meter Data Source • Metering Intervals	
Person	• Name • Email • Cell • Landline • Business Role	• A person can have more than one business role
Business Role	• Name • Description	Type of business roles: • Customer executive • Schedule receiver • Dispatcher Primary • Dispatch Secondary • Dispatch Backup • Contract owner
Bid/Offer	• Date • Time (hour) • Site • Product • MW • Price	Payment shall be made at a price equal to the lesser of the participant's Bid Price, or the maximum capped price.
Schedule	• Date • Time • Site/Aggregated unit/Network grouping • MW	
Performance calculation method	• Name • Description	• CBL Scaling • Static CBL scaling • Same day performance
Network Grouping	• Grouping Name	Grouping name: • Central • Western Cape • Eastern Cape • Kwa-Zulu Natal

27 REFERENCES

240-51274900	Process Control Manual (PCM) for Demand Response Management
240-41707533	Process Control Manual (PCM) for Secure Ancillary Services
240-56296995	Standard for records retention periods
32-85	Information Security Policy
NRS 048-9	ELECTRICITY SUPPLY — QUALITY OF SUPPLY PART 9: CODE OF PRACTICE –LOAD REDUCTION PRACTICES, SYSTEM RESTORATION PRACTICES AND CRITICAL LOAD AND ESSENTIAL LOAD REQUIREMENTS UNDER POWER SYSTEM EMERGENCIES
240-138187946	RELIABILITY SERVICES DATA COLLECTOR AND RELIABILITY SERVICES INSTALLATIONS STANDARD