nationalgridESO

ASDP Service Provider – Web Services Specification Version 3_v2.2

Document History

Version	Date	Comment/Changes
1.0	13/01/2022	ASDP Version 3 Web Services for ASR Frequency Response (DM/DR/DC)
1.1	03/03/2022	Corrected AUI example data
2.0	11/07/2022	Update on Nomination Request & Response, Heartbeat and PN Services WindowConfirmation Tag Updated from Confirmation WindowReason Tag Updated from Reason FileConfirmation New Tag Added. The PP StartDateTime Tag is made Mandatory in Availability Confirmation Service
2.1	26/09/2022	Updated PN Confirmation SLA. Made PNDetails Tag as Optional
2.2	12/02/2024	Added sample payloads for RDP and updated description for V3 API under section 2, 3.1.1, 3.2.1, 3.7.1, 4.2, 5.1, 5.2. Integration payload updated. Added Potential Dispatch Order API (3.10), Unavailability API(3.11), RT Availability API(3.12), added corresponding payloads in sections 7.11, 7.12 and 7.13.

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1 Introduction

The PAS (Platform for Ancillary Services) project has an objective to replace and enhance systems across the ancillary service lifecycle. Starting with a flexible dispatch platform, capable of sending and receiving data, such as provider availability submissions and dispatch notifications. The platform is being rolled out to include Frequency Response, Reserve, and other ancillary services. To implement this National Grid ESO is using web services to communicate with Ancillary Service Providers. To achieve the communication between National Grid ESO and Service Providers, systems from both sides should accept common data interfaces. This document provides the technical specifications required to establish communication between ASDP (Ancillary Services Dispatch Platform) and Service Providers.

1.1 In Scope

This document describes the version 3 of web services to be implemented from both National Grid ESO (PAS) system and Service Providers' systems.

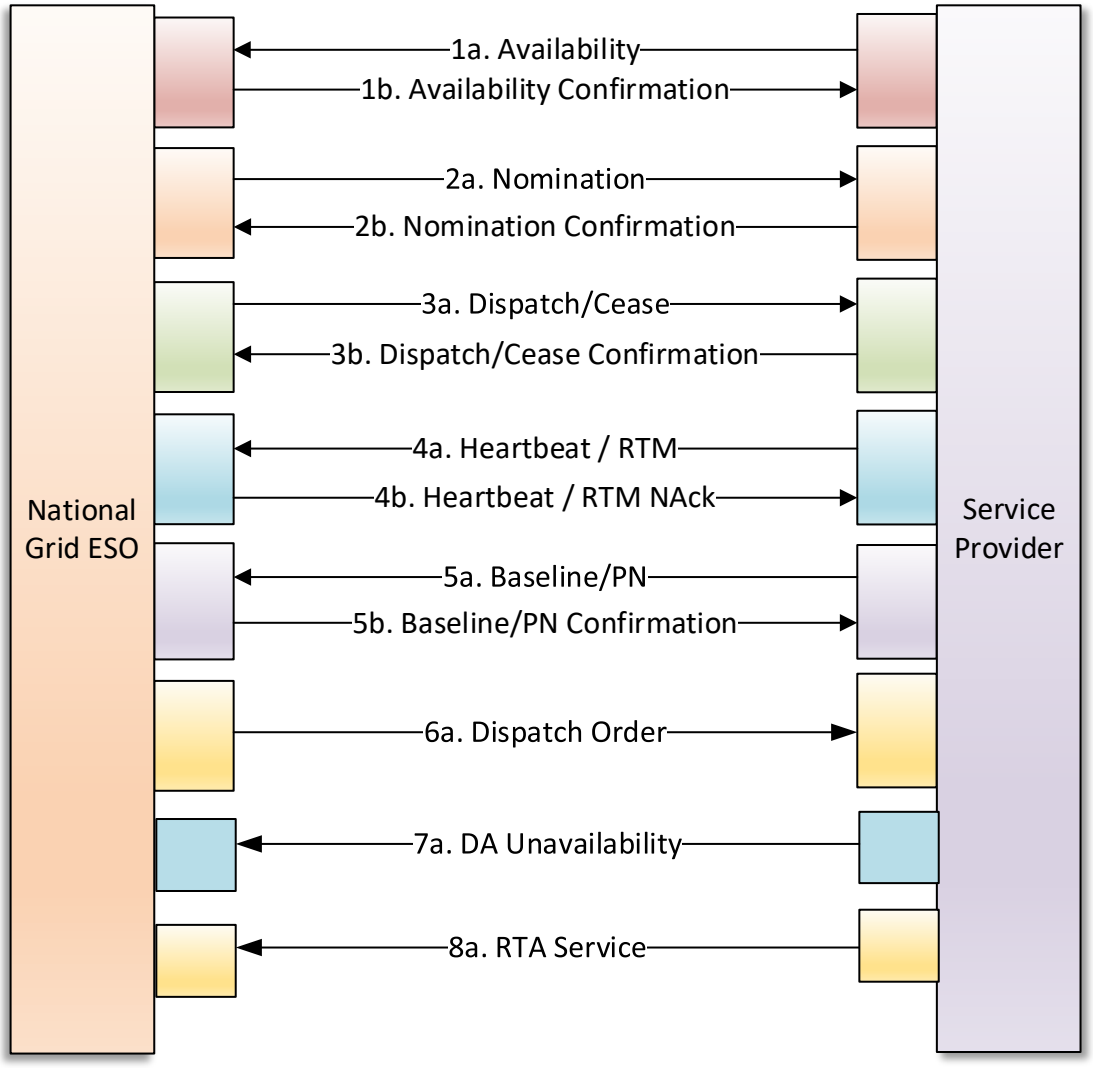
It also describes the technical specifications including WSDLs (Web Services Description Language) and XSDs (XML Schema Definition), methods and parameters to be used to invoke the WSDLs, connection patterns and protocols, security measures.

The validations and exceptions are particular to each ancillary service and hence these will be published as a separate 'Business Logic Document' for each ancillary service.

2 List of Web Services

Both National Grid ESO and Service Providers should expose the web services to each other for effective communication.

The fields mentioned in this document are categorized into mandatory and optional in each web service. The optional fields are not expected to be submitted unless required for that ancillary service which is specified in Business Logic Document. The sample payloads for the web services are mentioned in the Appendix.



The below matrix specifies which web services are required for each ancillary service.

Table 1 - Web Services by Service Type

Web Service	Dynamic Moderation (DMH/DML)	Dynamic Regulation (DRH/DRL)	Dynamic Containment (DCH/DCL)	MW Dispatch (RDP_NEGATIVE)
Availability	✓	✓	✓	
Availability Confirmation	✓	✓	✓	
Nomination (Disarm / Rearm)	✓	✓	✓	
Nomination (Disarm / Rearm) Confirmation	✓	✓	✓	
Dispatch / Cease Instruction				✓
Dispatch / Cease Confirmation				✓
Heartbeat / RTM (Real-Time Metering)	✓	✓	✓	✓
Heartbeat / Realtime Metering Negative Acknowledgement	✓	✓	✓	✓
Physical Notification	✓	✓	✓	
Physical Notification Confirmation	✓	✓	✓	
Potential Dispatch Order				✓
DA/WA Unavailability Details				✓
Real-Time Availability Status (RTA)				✓

Description of Service

Sl.No.	Service	Service Description	Sender	Receiver	Applicable Ancillary Service
1a	Availability	Web service for National Grid ESO to receive availability data from Service Providers. This would include declarations and redeclarations.	Service Provider	National Grid ESO	DMH, DML, DRH, DRL, DCH, DCL
1b	Availability Confirmation	Web service for Service Providers to receive an Availability Confirmation from National Grid ESO post data validation of availability payload.	National Grid ESO	Service Provider	DMH, DML, DRH, DRL, DCH, DCL
2a	Nomination	Web service for Service Providers to receive `the Nomination Disarm / Rearm Instruction from National Grid ESO	National Grid ESO	Service Provider	DMH, DML, DRH, DRL, DCH, DCL
2b	Nomination Confirmation	Web service for National Grid ESO to receive the Nomination Confirmation from Service Providers	Service Provider	National Grid ESO	DMH, DML, DRH, DRL, DCH, DCL

3a	Dispatch / Cease Instruction	Web service for Service Providers to receive the Dispatch or Cease Instruction from National Grid ESO	National Grid ESO	Service Provider	RDP_NEGATIVE
3b	Dispatch / Cease Confirmation	Web service for National Grid ESO to receive the Confirmation of Dispatch or Cease Instruction from Service Providers	Service Provider	National Grid ESO	RDP_NEGATIVE
4a	Heartbeat / Real-Time Metering (RTM)	Web service for National Grid ESO to receive Real-Time Metering data from Service Providers	Service Provider	National Grid ESO	DMH, DML, DRH, DRL, DCH, DCL, RDP_NEGATIVE
4b	Heartbeat / Realtime Metering Negative Acknowledgement	Web service for Service Providers to receive Non-Acknowledgement for the Realtime Metering data from National Grid ESO	National Grid ESO	Service Provider	DMH, DML, DRH, DRL, DCH, DCL, RDP_NEGATIVE
5a	Physical Notification Service	Web service for National Grid ESO to receive PN MWs for a Unit from Service Providers	Service Provider	National Grid ESO	DMH, DML, DRH, DRL, DCH, DCL
5b	Physical Notification Confirmation	Web service for Service Providers to receive the Physical Notification Confirmation from National Grid ESO	National Grid ESO	Service Provider	DMH, DML, DRH, DRL, DCH, DCL
6a	Potential Dispatch Order	This service will be implemented by Service Provider(s) to receive potential dispatch merit order day ahead data from National Grid ESO	National Grid ESO	Service Provider	RDP_Negative
7a	DA Unit Unavailability Details	This service will be implemented by National Grid ESO to receive the Init Un-availability data submissions from Service Providers.	Service Provider	National Grid ESO	RDP_Negative
8a	Real-Time Availability Status	This service will be implemented by National Grid ESO to receive the Real-time Availability data submissions from Service Providers.	Service Provider	National Grid ESO	RDP_Negative

3 Web Services Specification

This document provides details about the version 3 set of Web Services for the PAS system. Version 3 is for the new set of Frequency Response products and MW Dispatch Service introduced to the market by National Grid ESO. National Grid ESO will provide details of when Service Providers can be onboarded in the appropriate communication.

It is expected that both National Grid ESO and Service Providers develop URI client based (**? wsdl based**) **SOAP 1.1** Web Services rather than file based (.wsdl based).

Datetime fields for all web services below should be in **UTC standard** unless specified explicitly.

It is recommended that Service Providers enable logs to capture any http errors and the appropriate messages that come along with it synchronously.

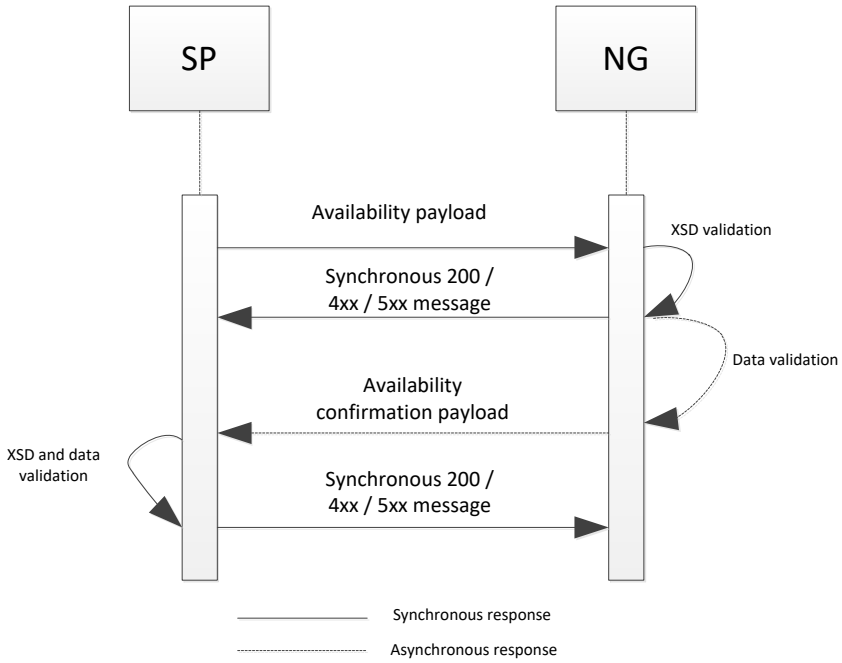
Note: The Service Providers who are already using version 1 or version 2 set of web services may need not change to version 3 for those ancillary services.

3.1 Availability Service v3

This service will be implemented by National Grid ESO to receive the availability data submissions from Service Providers. The specifications below will be followed by National Grid ESO to implement the service.

Owner: National Grid ESO
Request: Below are the service parameters, data types, size, formats, and lists.

Service Type: This is synchronous service which will send 200 ok synchronously after the data has reached the end point successfully and all XSD validations have passed. On XSD validation failures, a 4xx or 5xx error message is synchronously sent back by National Grid ESO. On any data validation failures, the error codes / messages are communicated asynchronously using Availability Confirmation web service by National Grid ESO.



3.1.1 Availability Service Inbound

The Frequency Response Ancillary Services (Dynamic Moderation (High/Low), Dynamic Containment (High/Low) and Dynamic Regulation (High/Low)) can submit the availabilities using the OfferBid array as mentioned below for a particular Availability Window, or a group of Windows as required.

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters For example: DMH/DML DCH/DCL DRH/DRL	Mandatory	Service Types from the list only should be populated in this filed
UnitID	Unit Identifier	String	20 Characters	Mandatory	As per the framework agreement
AUI	Availability Unique Identifier - ID of the message	String	20 Characters	Optional	Custom generated ID

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
AvailabilityWindow	NA	NA	NA	Mandatory	Start of AvailabilityWindow array
StartDateTime	Start date and time for Availability	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	The start time should match the contract window start time. Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for Availability	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	The end time should match the contract window end time. Time should be in UTC standard with Time Zone Designator (Z)
OfferBid	NA	NA	NA	Optional	Start of OfferBid array
OfferBid_Number	Number	Integer	1 e.g. 999 or -999	Optional	Offer Bid number
UtilisationPrice	Price in £/MWh	Numeric	5.2 e.g. 12345.12	Optional	Utilisation price
BreakPoint	MW	Numeric	5.6 e.g. 12345.123456	Optional	The MW value to be submitted
BreakPoint_Max	MW	Numeric	5.6 e.g. 12345.123456	Optional	Max MW value
AvailabilityPrice	Price in £/MWh	Numeric	5.2 e.g. 12345.12	Optional	Availability price
OfferBid	NA	NA	NA	Optional	End of OfferBid array
UtilisationPercent_Lead	Lead Utilisation Percentage	Percentage	3.2	Optional	Lead Percentage
UtilisationPercent_Lag	Lag Utilisation Percentage	Percentage	3.2	Optional	Lag Percentage
Band	NA	NA	NA	Optional	Start of Band array
BandID	Band Identifier	Integer	3	Optional	Band Number
LeadLagIndicator	To indicate if this band belongs to Lead or Lag	Enumeration	LEAD LAG	Optional	Lead or Lag
Q	MVAr	Numeric	5.6	Optional	Q value
Q_Max	MVAr	Numeric	5.6	Optional	Q Max value
AssociatedL	MVAr	Numeric	5.6	Optional	Associated Lead/Lag value
AvailabilityCost	Cost in £	Numeric	5.2 e.g. 12345.12	Optional	Availability cost
UtilisationCost	Cost in £	Numeric	5.2 e.g. 12345.12	Optional	Utilisation Cost
MaxUtilisationCost	Cost in £	Numeric	5.2 e.g. 12345.12	Optional	Maximum Utilisation cost
Band	NA	NA	NA	Optional	End of Band array
AvailabilityWindow	NA	NA	NA	Mandatory	End of AvailabilityWindow array
GateClosure	To indicate if this is pre or post gate closure submission	Enumeration	PRE POST	Optional	PRE to indicate pre gate closure submission and POST

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
					to indicate post gate closure submission
DateTimeStamp	Date and time when the web service payload was sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Service Providers should invoke the Availability webservice to submit any declarations or redeclarations for all Ancillary Services.
2. Service Providers can send availabilities for multiple windows using a single xml, multiple OfferBid arrays in a single AvailabilityWindow where applicable.
3. Service Providers would invoke the Webservice as per the WSDL url: https://test.pas.nationalgrid.com/services/V3_Sandbox_ConsumeAvailabilityService?wsdl and sample payloads in Appendix 1A.
4. National Grid ESO will Accept/Reject the availability (through Availability Confirmation web service 3.2) for a specific availability window as specified in business logic document
5. AUI should have 15-18 characters in total with the following algorithm to make it unique to 1 in million times. This field is used for traceability purposes. See example payloads in Appendix for reference.
   a. First 3 characters will have 'AUI'
   b. Next 2 characters will be random lowercase alphabets from a-z
   c. Next characters will be a random number from 1 to 9999
   d. Next 3 characters will be random uppercase alphabets between A-Z
   e. The last 6 characters will be MMHHdd (where MM is month e.g. 08; HH is hours e.g. 16; dd is date e.g. 28) So, an example AUI will be 'AUIxq34YMU081816'
6. RDP-NEGATIVE service for NGED unavailability data file to be sent to. box, file format and specification are mentioned in MW Dispatch BLD.

3.2 Availability Confirmation Service v3

This service will be implemented by Service Provider to receive the confirmation of data validation of Availability Declaration / Redeclaration against the contract data. The below specifications will be followed by Service Provider to implement the service.

Owner: Service Provider

Service Type: This is asynchronous to Availability web service and synchronous on its own i.e. Service Provider should send 200 ok synchronously after the availability confirmation data has been received and validated by Service Provider successfully. In the case of XSD or data validation failure, National Grid ESO expects Service Provider to send synchronous 4xx or 5xx error message back. The pattern diagram is represented in section 3.1.

Request: Below are the service parameters, data types, size, formats etc.
SLA: Within 5 minutes of receiving the Availability payload, National Grid ESO will send the Availability confirmation payload

3.2.1 Availability Confirmation Service Outbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes

ServiceType	Type of Service	String	25 Characters DMH/DML DCH/DCL DRH/DRL	Mandatory	Service Types from the list only should be populated in this filed
UnitID	Unit Identifier	String	20 Characters	Mandatory	
AUI	Availability Unique Identifier - ID of the Availability web service message	String	20 Characters	Optional	
AvailabilityWindow	NA	NA	NA	Optional	Start of AvailabilityWindow
StartDateTime	Start date and time for Availability	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for Availability	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
Validation	To indicate if the data submitted for this availability window is valid or invalid	Enumeration	VALID INVALID	Optional	Validation message
WindowReason	Reason for rejecting the availability data in a particular AvailabilityWIndow	String	200 Characters	Optional	Error codes are mentioned in business logic document
AvailabilityWindow	NA	NA	NA	Optional	End of AvailabilityWindow
Confirmation	Message to inform if the xml payload file is accepted	Enumeration	ACCEPTED REJECTED	Mandatory	Confirmation message
FileReason	Reason for rejecting the availability file over and above the fields within the AvailabilityWindow arrays	String	200 Characters	Optional	Error codes are mentioned in business logic document
DateTimeStamp	Date and time when the web service was sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. National Grid ESO would invoke this service to confirm the validation of the availability data received from Service Provider.
2. National Grid ESO will send a single confirmation xml even when Service Providers send multiple windows using a single Availability Service xml.
3. Validation and Confirmation is segregated in this version and relevant reasons made available at the appropriate place which are detailed in business logic document.

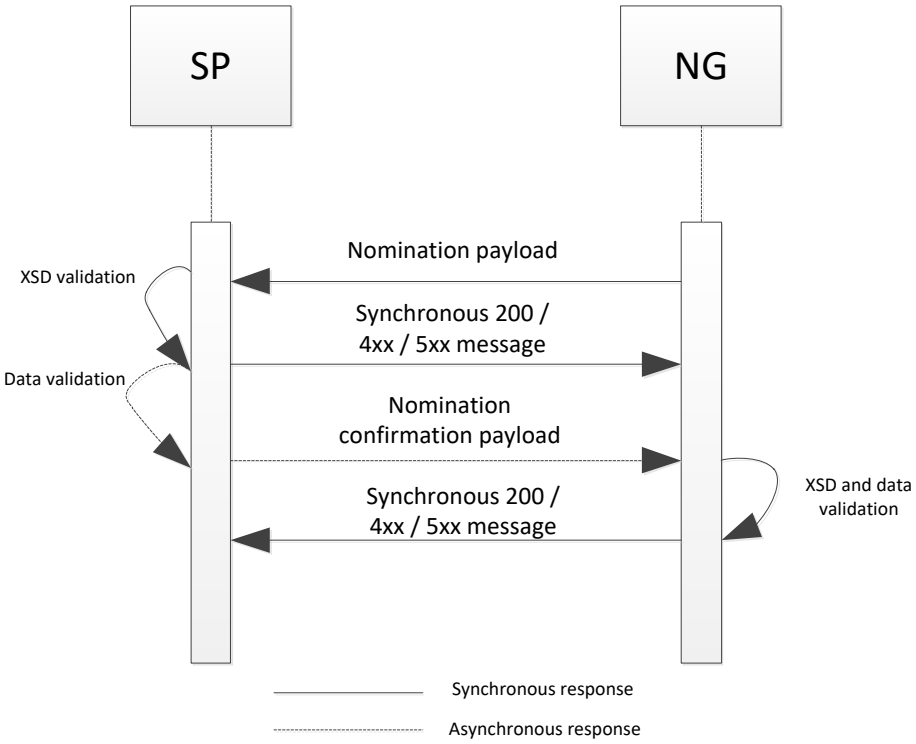
4. Service Provider would implement the Webservice as per the WSDL url: https://test.pas.nationalgrid.com/services/V3_SP_Sandbox_ConsumeAvailabilityConfPS?wsdl and the sample payloads will be sent by National Grid ESO are available in Appendix 1B.

3.3 Availability Nomination Service v3

This service will be implemented by Service Provider to receive the business acceptance/nomination of the unit to arm and disarm. The below specifications will be followed by Service Provider to implement the service.

Owner: Service Provider

Service Type: Based on different ancillary service type, this becomes asynchronous to Availability web service and synchronous on its own (e.g. DM H/L, DC H/L and DR H/L). National Grid ESO will send nominations and expect to receive synchronous 200 ok response if XSD validation has passed. On XSD validation failures, it is expected that Service Provider sends synchronous 4xx or 5xx error message to National Grid ESO. Any data validations have to be captured as error codes in the next nomination confirmation web service as per business logic document.



Request: Below are the service parameters, data types, size, formats etc.

3.3.1 Availability Nomination Outbound

Context: For Frequency Response services (DM H/L, DC H/L and DR H/L), to disarm a unit, National Grid ESO will send the Nomination as DISARM and to arm a unit, the instruction will have nomination as ARM.

National Grid ESO can send a single nomination request per unit.

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters DMH/DML DCH/DCL DRH/DRL	Mandatory	
UnitID	Contract Identifier	String	20 Characters	Mandatory	
AUI	Availability Unique Identifier used to refer to the appropriate Availability message	String	20 Characters	Optional	Only to be used by certain ancillary services. See

	submitted by Service Provider				example payloads in Appendix for reference
AvailabilityWindow	Array Starts	NA	NA	Mandatory	Start of AvailabilityWindow
NUI	Nomination Unique Identifier	String	20 Characters	Mandatory	
StartDateTime	Start date and time for sending Nomination	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for sending Nomination	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Optional	Time should be in UTC standard with Time Zone Designator (Z)
BandID	Band Identifier	Integer	3	Optional	
LeadLagIndicator	To indicate if this band belongs to Lead or Lag	Enumeration	LEAD LAG	Optional	
Q	MVAr	Numeric	5.6 e.g. 12345.123456	Optional	
AssociatedL	MVAr	Numeric	5.6 e.g. 12345.123456	Optional	
AvailabilityCost	£	Numeric	5.2 e.g. 12345.12	Optional	
MaxUtilisationCost	£	Numeric	5.2 e.g. 12345.12	Optional	
Nomination	Message to Arm or Disarm the unit	String	25 Characters ARM, DISARM, ACCEPTED, REJECTED	Mandatory	
WindowReason	Reason for rejecting the tender	String	200 Characters	Optional	Business Reason
AvailabilityWindow	NA	NA	NA		End of AvailabilityWindow
DateTimeStamp	Date and time when the web service was sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Nomination web services will be used differently for different service types.
2. Service Provider would implement the Webservice as per the WSDL url: https://test.pas.nationalgrid.com/services/V3_SP_Sandbox_ConsumeAvailabilityNominationPS?wsdl and the sample payloads which will be sent by National Grid ESO in Appendix 1C.
3. Service Provider is expected to Accept/Reject the nomination (through Nomination Confirmation web service 3.4) as specified in business logic document.

3.4 Nomination Confirmation Service v3

This service will be implemented by National Grid ESO to receive the availability nomination confirmation from Service Providers of their acceptance / rejection of nomination sent by National Grid ESO. The below specifications will be followed by National Grid ESO to implement the service.

Owner: National Grid ESO

Service Type: This is asynchronous service to Availability Nomination and synchronous on its own i.e. National Grid ESO will send 200 ok synchronously after the data has been received and validated successfully. In the case of XSD or data validation, National Grid ESO will send synchronous 4xx or 5xx error message back.

Request: Below are the service parameters, data types, size, formats etc.

SLA: Within 2 minutes of receiving nomination payload, Service Provider should send the availability nomination confirmation payload

3.4.1 Nomination Confirmation Inbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters DMH/DML DCH/DCL DRH/DRL	Mandatory	
UnitID	Contract Identifier	String	20 Characters	Mandatory	
AUI	Availability Unique Identifier used to refer to the appropriate Availability message submitted by Service Provider	String	20 Characters	Optional	
AvailabilityWindow	Array Starts	NA	NA	Mandatory	Start of AvailabilityWindow
NUI	Nomination Unique Identifier	String	20 Characters	Mandatory	
StartDateTime	Start date and time for DISARM / RE-ARM Instruction	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End Date time	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Optional	Time should be in UTC standard with Time Zone Designator (Z)
WindowConfirmation	To indicate if the data submitted for this availability window is ACCEPTED or REJECTED	Enumeration	ACCEPTED REJECTED	Mandatory	
WindowReason	Reason for rejecting the availability data in a particular AvailabilityWIndow	String	200 Characters	Optional	Error codes are mentioned in business logic document
AvailabilityWindow	NA	NA	NA		End of AvailabilityWindow
FileConfirmation	Message to inform if the xml payload file is accepted and File level validation pass	Enumeration	ACCEPTED REJECTED	Mandatory	
FileReason	Reason for rejecting the availability file over and above the fields within the AvailabilityWindow arrays	String	200 Characters	Optional	Error codes are mentioned in business logic document

DateTimeStamp	Date and time when the web service was sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

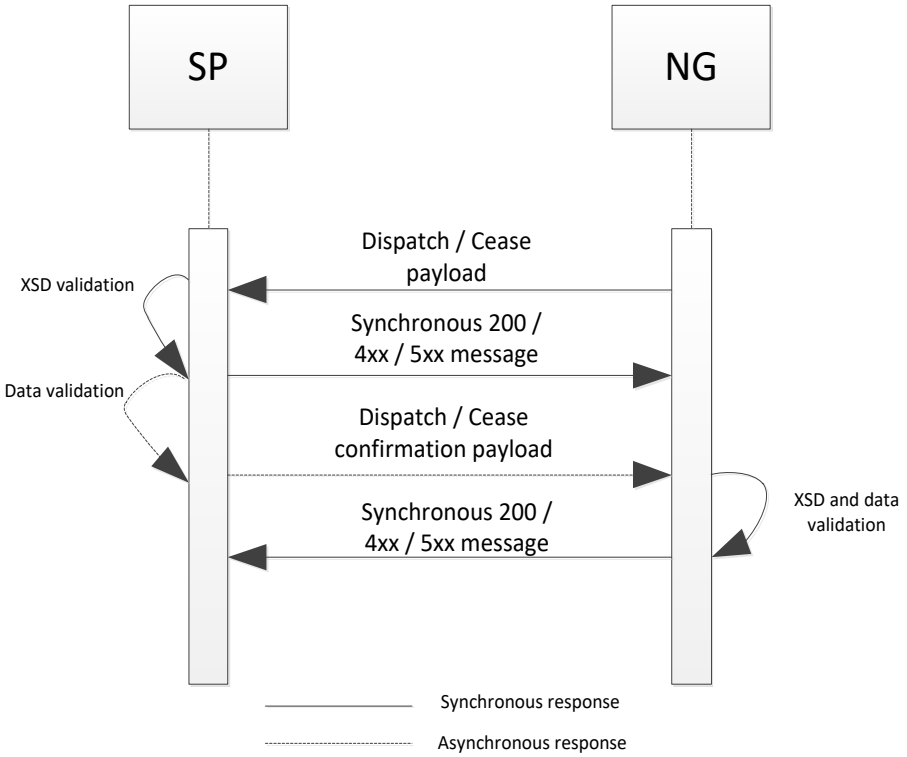
1. For DM/DR/DC, Service Provider should send the confirmation to National Grid. Confirmation for DISARM / ARM should have StartDateTime.
2. Data validation for nomination should happen at file and window level and the appropriate reason should be provided as detailed in business logic document.
3. Validation and Confirmation is segregated in this version and relevant reasons made available at the appropriate place which are detailed in Business Logic Document.
4. Service Providers would invoke the Webservice as per the wsdl url: https://test.pas.nationalgrid.com/services/V3_Sandbox_ConsumeAvailNomConfService?wsdl and sample payloads in Appendix 2D.

3.5 Dispatch/Cease Service v3

This service should be implemented by Service Providers to receive the Dispatch and Cease instructions from National Grid ESO. Below are the specifications to be followed by Service Providers to implement the service.

Owner: Service Provider

Service Type: This is synchronous service which will send 200 ok synchronously after the data has reached the end point successfully and all XSD validations have passed. On XSD validation failures, a 4xx or 5xx error message is synchronously sent back. On any data validation failures, the error codes / messages are communicated asynchronously using Dispatch / Cease Confirmation web service.



Request: Below are the service parameters, data types, size, formats, and lists.

3.5.1 Dispatch/Cease Instruction Outbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters RDP_POSITIVE	Mandatory	

			RDP_NEGATIVE		
UnitID	Unit Identifier	String	20 Characters	Mandatory	
DUI	Dispatch Unique Identifier	String	20 Characters	Mandatory	
VolumeRequested	In MW This could be positive or negative value	Numeric	5.6 e.g. 12345.123456	Optional	Non-Mandatory for cease instructions
VTarget	kV (kilo Volts)	Numeric	5.4 e.g. 12345.1234	Optional	
DroopPercentage	Droop Percentage	Percentage	3.2	Optional	
DeadBandPercentage	Dead Band Percentage which includes both up and down	Percentage	3.2	Optional	If the Deadband up is 5% and Deadband down is 5%, the value in this field should be 10% (i.e. 10 in value)
ScheduledDateTime	DateTime of scheduled Dispatch / Cease (i.e. START / STOP)	Date time	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Optional	Time should be in UTC standard with Time Zone Designator (Z)
Instruction	Dispatch (START) or Cease (STOP) instruction	Enumeration	START STOP	Mandatory	
DateTimeStamp	Date and time when the instruction is sent from National Grid ESO	Date time	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. The request having instruction as START will be a Dispatch instruction and should have value in Volume Requested tag (RDP_POSITIVE and RDP_NEGATIVE).
2. The request having instruction as STOP will be a Cease instruction.
3. National Grid ESO would call this service to send instructions (Dispatch/Cease) to Service Providers.
4. Service Providers should implement the Webservice as per the WSDL: https://test.pas.nationalgrid.com/services/V3_SP_Sandbox_ConsumeInstructionServicePS?wsdl and the sample payloads which will be sent by National Grid ESO as per Appendix 1E.
5. The VolumeRequested field is required for MW ancillary services. If it is positive then this can be considered as a dispatch notification to increase generation or reduce demand, if the number is negative this can be considered as a dispatch notification to reduce generation or increase demand.
6. Service Provider is expected to reject the dispatch / cease (through Confirmation web service 3.6) as specified in business logic document.

3.6 Dispatch/Cease Confirmation Service v3

This service should be implemented by National Grid ESO to receive the confirmation from Service Provider for Dispatch / Cease instruction. The below specifications will be followed by National Grid ESO to implement the service.

Owner: National Grid ESO

Service Type: This is asynchronous service to Dispatch / Cease and synchronous on its own i.e. National Grid ESO should send 200 ok synchronously after the data has been received and validated successfully. In the case of XSD or data validation failure, National Grid ESO will send synchronous 4xx or 5xx error message back.

Request: Below are the service parameters, data types, size, formats and lists.

SLA: This asynchronous confirmation has to be sent by Service Providers within a certain period of time after Dispatch / Cease instruction is received by Service Provider. This SLA is defined in business logic document.

3.6.1 Dispatch/Cease Instruction Confirmation Inbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters E.g. RDP_POSITIVE, RDP_NEGATIVE	Optional	
UnitID	Unit Identifier	String	20 Characters	Mandatory	
DUI	Dispatch Unique Identifier	String	20 Characters	Mandatory	
QDelta	MVAr	Numeric	5.6	Optional	QDelta will always be what has been dispatched
QDeltaCost	£	Numeric	5.2	Optional	
Instruction	Dispatch (START) or Cease (STOP) instruction	Enumeration	START STOP	Mandatory	
ResponseCode	Code to confirm if Accepted or Reject or Error	Enumeration	ACCEPTED REJECTED ERROR	Mandatory	
ErrorCode	Code to inform the error	String	200 Characters	Mandatory when Response Code is equal to ERROR	Error codes are mentioned in business logic document
DateTimeStamp	Date and time when the instruction is sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

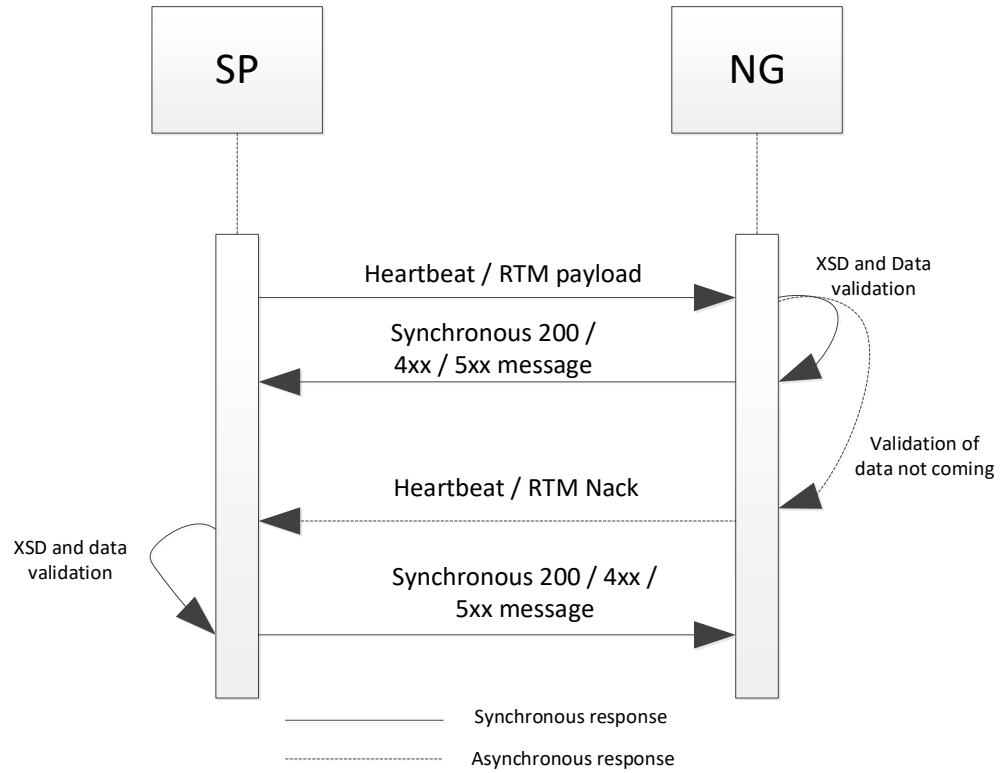
1. This service should be invoked by Service Providers for each dispatch or cease request received from National Grid ESO. If National Grid ESO does not receive a dispatch confirmation within the SLA defined in the business logic document, it will be deemed by National Grid ESO that the Service Provider is not available to dispatch.
2. Service Provider should invoke the Webservice as per the WSDL: https://test.pas.nationalgrid.com/services/V3_Sandbox_ConsumeInstructionConfService?wsdl and sample payloads as per Appendix 1F.

3.7 Heartbeat / Realtime Metering Service v3

This service will be implemented by National Grid ESO to receive the Realtime Metering data from Service Providers. The below specifications will be followed by National Grid ESO to implement the service.

Owner: National Grid ESO

Service Type: This is synchronous service which will send 200 ok synchronously after the data has reached the end point successfully and all XSD validations have passed. On XSD or data validation failures, a 4xx or 5xx error message is synchronously sent back. Only in the case where no data is received and on certain data validation failures, NG will send RTM Negative Acknowledgement (NAck) asynchronously to SP.



Request: Below are the service parameters, data types, size, formats and lists.

SLA: The SLA for each ancillary service is different which will be specified appropriately in the respective BLD of the service. Further for a heartbeat signal, all the optional fields can be left blank.

3.7.1 Heartbeat / RTM Service Inbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters RDP_NEGATIVE, DCH, DCL, DMH, DML, DRH, DRL	Mandatory	Service type of Contracted Unit
UnitID	Unit Identifier	String	20 Characters	Mandatory	Unit ID
DateTimeOfMeterReading	Datetime of the meter reading	DateTime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Optional	Time should be in UTC standard with Time Zone Designator (Z)
MeterReading	In MW the active power of the contract	Numeric	10.4	Optional	
PowerAvailable	MW (only applicable to Wind / Solar generators)	Numeric	10.4	Optional	
AbsoluteMeterReading	Actual meter reading aggregated at a contract level without any calculations in between	Numeric	10.4	Optional	

AvailableHeadroom	Also known as Dummy Meter	Numeric	10.4	Optional	
AvailableFootroom		Numeric	10.4	Optional	
StateOfCharge	Active Power MW Number	Percentage	3.2	Optional	*Note: Only applicable for EFR Service*
Frequency	Frequency of system	Numeric	2.4	Optional	*Note: Only applicable for EFR Service*
LeadLagIndicator	To indicate if this band belongs to Lead or Lag	Enumeration	LEAD LAG	Optional	
QCurrent	MVAr (includes ride through and it is only delta and not absolute value)	Numeric	5.6 e.g. 12345.123456	Optional	
QMaxCurrent	MVAr (Max value of MVAr for the GSP)	Numeric	5.6 e.g. 12345.123456	Optional	
QCurrentRideThrough	MVAr (Only Ride Through value)	Numeric	5.6 e.g. 12345.123456	Optional	
QUtilisationCost	£	Numeric	5.2 e.g. 12345.12	Optional	
Pup	?	Numeric	5.6 e.g. 12345.123456	Optional	
PDown	?	Numeric	5.6 e.g. 12345.123456	Optional	
PCurrent	?	Numeric	5.6 e.g. 12345.123456	Optional	
PDelta	?	Numeric	5.6 e.g. 12345.123456	Optional	
Voltage	kV (absolute Value)	Numeric	5.4 e.g. 12345.1234	Optional	
PState		Enumeration	ON OFF	Optional	Note: *To be used for RDP to send the Unit Availability Flag*
QState		Enumeration	ON OFF	Optional	
DateTimeStamp	Date and time when the web service was sent to National Grid ESO	Date Time	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Service Provider would invoke this Webservice as per the WSDL: https://test.pas.nationalgrid.com/services/V3_Sandbox_Consume_RTMService?wsdl and sample payloads in Appendix 1G.
2. As RTM is used by National Grid ESO to gauge the heartbeat of Service Provider's comms, we would consider the contract to be unavailable to dispatch as per business logic document.
3. PState is to be used by the RDP service to send the Unit Availability Flag

3.8 Heartbeat / RTM Negative Acknowledgement Service v3

This service will be implemented by Service Providers to receive Negative Acknowledgement for the Realtime Metering data from National Grid ESO. The below specifications will be followed by Service Providers to implement the service.

Owner: Service Provider

Service Type: This is asynchronous to RTM web service and synchronous on its own i.e. Service Provider should send 200 ok synchronously after the NAck is received and validated by Service Provider successfully. In the case of XSD or data validation failure, National Grid ESO expects Service Provider to send synchronous 4xx or 5xx error message back. The pattern diagram is represented in section 3.9.

Request: Below are the service parameters, data types, size, formats and lists.

SLA: SLA is defined separately for different ancillary services which is specified in business logic document.

3.8.1 Heartbeat / RTM NAck Service Outbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters	Mandatory	
UnitID	Contract Identifier	String	20 Characters	Mandatory	
StartDateTime	Start date time meter reading not received (Last date time of meter read)	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End time meter reading not received / UTC Now time when sending request	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
ErrorCode	Code to inform the error	String	200 Characters	Optional	Error codes are mentioned in business logic document
DateTimeStamp	Date and time when the web service was sent from National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Service Provider should implement this Webservice as per the WSDL: https://test.pas.nationalgrid.com/services/V3_SP_Sandbox_ConsumeRTMNegativeAckPS?wsdl and payload as in Appendix 1H.
2. National Grid ESO will populate appropriate error codes in the ErrorCode tag as per business logic document.

3.9 Physical Notification Service v3

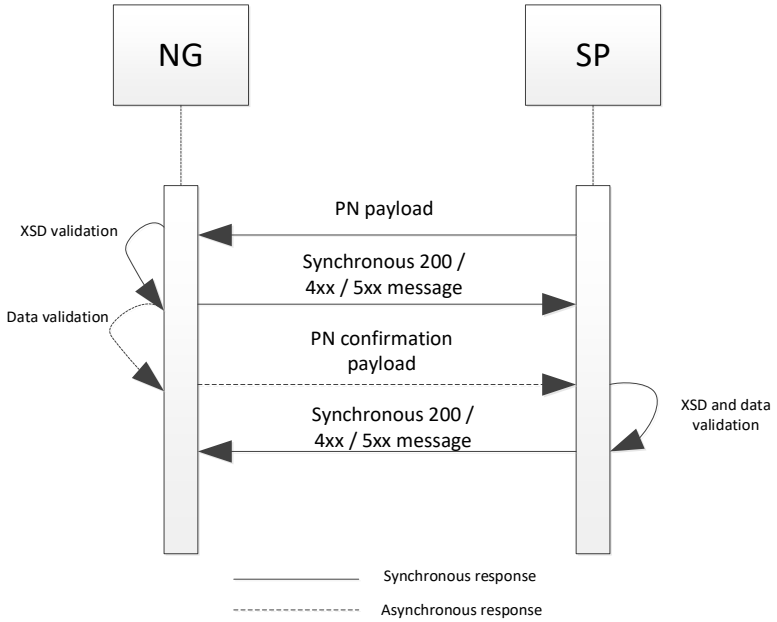
This service will be implemented by National Grid ESO to receive the Physical Notification Service - MW submissions from Service Providers. The specifications below will be followed by National Grid ESO to implement the service.

Owner: National Grid ESO

Service Type: This is synchronous service which will send 200 ok synchronously after the data has reached the end point successfully and all XSD validations have passed. On XSD validation failures, a 4xx or 5xx error message is synchronously sent back by National Grid ESO. On any data validation failures, the error codes / messages are communicated asynchronously using Physical Notification Service Confirmation web service by National Grid ESO.

Context: Non- Balancing Services can submit the Physical Notification values **for each unit** as mentioned below. The Physical Notification value is set at a global level for each Unit. This can be submitted for an active pre-qualified unit even without having a valid contract.

Request: Below are the service parameters, data types, size, formats, and lists



3.9.1 Physical Notification Service Inbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
UnitID	Unit Identifier	String	20 Characters	Mandatory	
PUI	Physical Notification Service Unique Identifier - ID of the message	String	20 Characters	Mandatory	
PNDetails	NA	NA	NA	Mandatory	Start of PN Details array
StartDateTime	Start date and time for PN	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for PN	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
PN_Start_MW	Expected Start of Physical Notification MW	Decimal	e.g. 1234.5678	Mandatory	
PN_End_MW	Expected End of Physical Notification MW	Decimal (10,4)	e.g 1234.5678	Mandatory	
PNDetails	NA	NA	NA	Mandatory	End of PN Details array
DateTimeStamp	Date and time when the web service was	Datetime	YYYY-MM-DDThh:mm:ssTZD	Mandatory	Time should be in UTC standard with

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
	sent to National Grid ESO		eg 2021-07-16T19:20:30Z		Time Zone Designator (Z)

Guidelines:

1. Service Providers should invoke the Physical Notification webservice to submit the Physical Notification values for the Non- Balancing Services.
2. Service Providers can send Physical Notification values with start time and end time. The duration up to which the PN can be sent for each unit using a single xml (where applicable), will be unique for different services and will be mentioned in the BLD.
3. Service Providers would invoke the Webservice as per the WSDL url: https://test.pas.nationalgrid.com/services/V3_Sandbox_ConsumePhysicalNotificationService?wsdl and sample payloads in Appendix 1K.
4. National Grid ESO will Accept/Reject the Physical Notifications (through Physical Notification Services Confirmation web service 3.10) for a specific Unit as specified in the business logic document.
5. Physical Notification Service Unique Identifier should have 20 characters in total with the following algorithm to make it unique to 1 in million times. This field is applicable only to particular ancillary services. See example payloads in Appendices for reference.
    a. First 3 characters will have letters 'PUI'
    b. Next 2 characters will be random lowercase alphabets from a-z
    c. Next characters will be a random number from 0001 to 9999
    d. Next 3 characters will be random uppercase alphabets between A-Z
    e. The last 6 characters will be MMDDHHmm (where MM is month e.g. 08; DD is date eg. 18, HH is hours e.g. 16; mm is minute e.g. 25)
    So, an example BUI will be 'PUIxq0034YMU08181625
6. DateTimeStamp – refers here datetime stamp in UTC when request payload for sending PN data is sent to NG ESO web service.

3.10 Physical Notification Confirmation Service v3

This service will be implemented by Service Providers to receive Confirmation for the Physical Notification from National Grid ESO. The below specifications will be followed by Service Providers to implement the service.

Owner: Service Provider

Service Type: This is **asynchronous** to Physical Notification web service and synchronous on its own i.e. Service Provider should send 200 ok after the confirmation data has been received and validated by Service Provider successfully. In the case of XSD or data validation failure, National Grid ESO expects Service Provider to send synchronous 4xx or 5xx error message back.

Request: Below are the service parameters, data types, size, formats and lists.

SLA: Within 5 minutes of receiving the Physical Notification Service Payload from the Service Provider, National Grid ESO will send the Physical Notification Service confirmation payload back

3.10.1 Physical Notification Confirmation Service Outbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
UnitID	Unit Identifier	String	20 Characters	Mandatory	
PUI	Physical Notification Service Unique	String	20 Characters	Mandatory	

	Identifier - ID of the message				
PNDetails	NA	NA	NA	Optional	Start of PN Details array
StartDateTime	Start date and time for Physical Notification	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for Physical Notification	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
PNValidation	To indicate if the data submitted for this Unit is valid or invalid	Enumeration	VALID INVALID	Optional	
PNReason	Reason for rejecting the Physical Notification data in a particular Unit	String	200 Characters	Optional	Error codes are mentioned in business logic document
PNDetails	NA	NA	NA		End of PN Details array
Confirmation	Message to inform if the xml payload file is accepted	Enumeration	ACCEPTED REJECTED	Mandatory	
FileReason	Reason for rejecting the Physical Notification file over and above the fields within the Unit arrays	String	200 Characters	Optional	Error codes are mentioned in business logic document
DateTimeStamp	Date time when confirmation was sent from NG ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

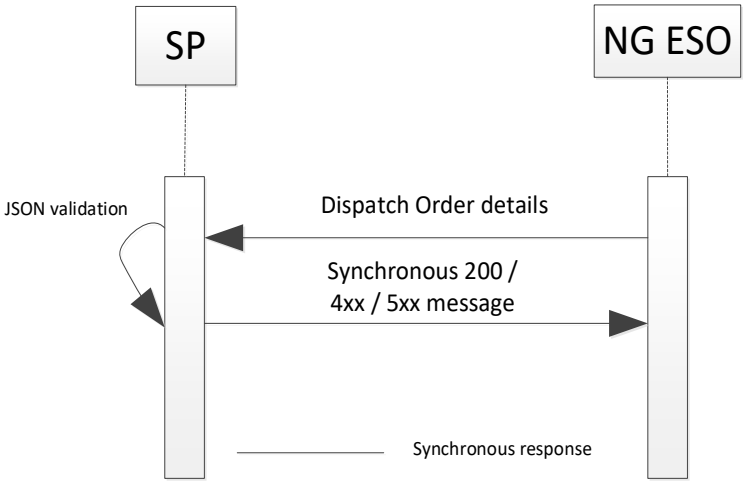
1. National Grid ESO would invoke this service to confirm the validation of the Physical Notification data received from Service Provider.
2. National Grid ESO will send a single confirmation xml for each of the Physical Notification request made via the Physical Notification service for a unit.
3. Validation and Confirmation is segregated in this version and relevant reasons made available at the appropriate place which are detailed in business logic document.
4. Service Provider would implement the Webservice as per the WSDL url: https://test.pas.nationalgrid.com/services/V3_SP_Sandbox_ConsumePhysicalNotificationConfPS?wsdl and the sample payloads will be sent by National Grid ESO are available in Appendix 1L.

3.11 Potential Dispatch Merit Order API

This REST service will be implemented by Service Provider(s) to receive day-ahead potential dispatch merit order data from National Grid ESO. The below specifications will be followed by Service Provider(s) to implement the service. Potential dispatch merit order data would be sent by Post method and Service Provider should send synchronous 200 Ok after the data has been received and validated by Service Provider successfully (as mentioned in BLD). In the case of JSON validation failure, National Grid ESO expects Service Provider to send synchronous 4xx or 5xx error message back.

Request: Below are the service parameters, data types, size, formats, and lists.

Owner: Service Provider



Below is the response structure:

Data Tag Name	Description	Data Type	M/O	Example
InterfaceName	API Interface name	String (20)	O	Interface value should be UKPN-DISP-ORDER
MeritOrderDetails	Start of Array		M	Either with data or Empty
GSPName	Name of the GSP	String	O	BOLN_1 Its optional in case of blank response
ESOMWD_DERID	NGESO assigned Unit ID of the DER	String	O	UKPN-145 Its optional in case of blank response
PricedOrderDispatch	Cheapest DER on the top of the list to the Costliest at the bottom of the list.	Number	O	e.g 1/2/3… etc Its optional in case of blank response
MaxRegisteredCapacity	Registered Capacity	Decimal	O	5.75 Its optional in case of blank response
MeritOrderDetails	End of Array			
DateTimeStamp	Date and time when the response is sent (in UTC)	DateTime (YYYY-MM-DDTHH:mm:SS)	M	2023-02-19T18:11:00Z

Guidelines:

1. Service Provider should expose the REST API with above specification and provide endpoint URL for the Dispatch order API.
2. National Grid ESO would call this API service to send Potential Dispatch Merit order details to Service Provider.
3. DateTimeStamp – refers here datetime stamp in UTC when payload for sending Dispatch Order data is sent to service provider UKPN.

Security consideration:

- Transport Layer security using https/SSL/TLS.
- The data exchange between UKPN and MuleSoft will be secured using OAuth authentication.
- To generate access token value, service consumer (ESO) need to request service provider for token generation url, client_id, client_secret, scope and grant_type.
- MuleSoft API need to generate access token using above details, same access token will be passed to access API exposed by Service provider (UKPN).
- IP Whitelisting is required to enable communication between Service Provider and NG ESO.

3.12 DA/WA Unavailability Details

MW Dispatch Services DNO- NGED submits the WA Unavailability in a File-based approach to NGESO Middleware. box.

MW Dispatch Services DNO- UKPN submits the DA Unavailability using day ahead unavailability service API.

This service will be implemented by National Grid ESO to receive the Units Un-availability data submissions from Service Providers. The specifications below will be followed by National Grid ESO to implement the service.

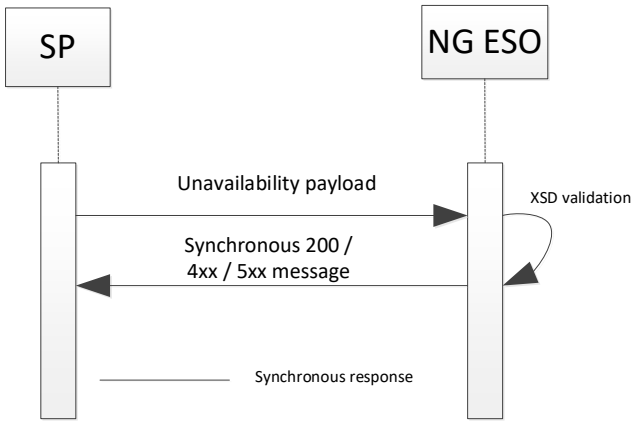
This REST service is used for declaration of unavailability window time for DER unit. Service Providers are expected to send unavailability request JSON for a unit (operational day 05:00 – 05:00 local time)

Consumer- Service Provider

Owner: National Grid ESO

Request: Below are the service parameters, data types, size, formats, and lists.

Service Type: This is synchronous service which will send 200 ok synchronously after the data has reached to the end point successfully and all JSON validations have passed (refer business logic document). On JSON validation failures, a 4xx or 5xx error message is synchronously sent back by National Grid ESO.



Unavailability Request payload schema:

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
Interface	Interface name	Enum		Mandatory	"**UNAVAIL-DATA**" for ASDP "**NAPUnavail3WA**" for NAP WA "**NAPUnavailDA**" for NAP DA
ServiceType	Type of Service	Enum	25 Characters	Mandatory	"RDP_NEGATIVE"
UnAvailabilityDetails	Array of unavailable units			Mandatory	
UnitID	Unit ID Identifier	String	20 Characters	Mandatory	As per the framework agreement
UnAvailabilityWindow	Array of unavailable windows			Mandatory	Start of the array
StartDateTime	Start date and time for unavailability window	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2023-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
EndDateTime	End date and time for unavailability window	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2023-07-16T19:22:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)
Unavail_Reason		Number	e.g: 0, 1,2	Optional	
Unavail_Cause		string	e.g A, F, O	Optional	
UnAvailabilityWindow	End of Array				
UnAvailabilityDetails	End of Array				
DateTimeStamp	Date and time when the web service payload was sent to National Grid ESO	Datetime	YYYY-MM-DDThh:mm:ssTZD e.g. 2021-07-16T19:20:30Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Service Providers should invoke the Availability REST API to submit any day ahead unavailability windows for the units.
2. If any of the mandatory field from the payload is missing or null or empty, then whole request payload would be rejected.
3. Service Providers can send unavailability for multiple windows within single operational day using a single payload.
4. Service Providers would invoke the REST service as per the sandbox URL and sample payload given in Appendix 1N.
5. National Grid ESO will Accept/Reject the unavailability as specified in Business Logic Document (BLD).

Security consideration:

To Access this API, please refer security details section 4.2.

3.13 RT Availability API

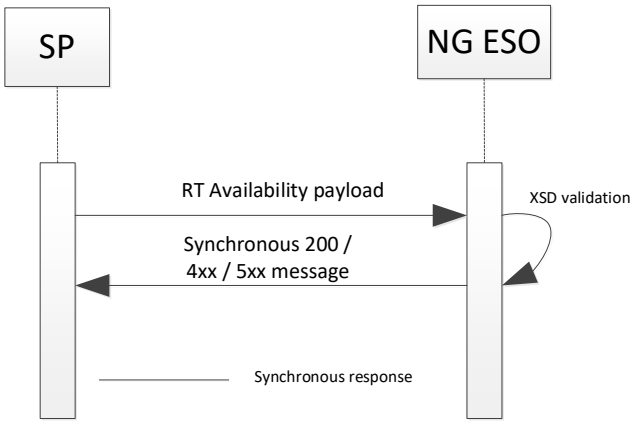
This service will be implemented by National Grid ESO to receive the Real-time Availability data submissions from Service Providers.

Real-Time Availability of the registered DER-Units for the MW Dispatch service will be shared by the Service Provider to ASDP. Service Providers will share the Real-time Availability status on change of state.
Request schema structure:

Name	Description	Data type	M/ O	Constraint / Notes
ServiceType	Type of Service	ENUM	M	"RDP_NEGATIVE"
UnitID	Unit ID Identifier	String (20)	M	As per the framework agreement
RTAStatus	Real-Time Availability of DER based on the flag received from SP (ON/OFF)	Enum ON/OFF	M	ON- indicating Available OFF- Indicating Unavailable
DateTimeStamp	DateTimeStamp in UTC which is received in payload from SP.	Date/time	M	

Security consideration:

To Access this API, please refer security detail section 4.2.



4 Security of messages

National Grid ESO will secure its webservices as mentioned below and would expect SPs to do the same.

1. Transport Layer security using https / SSL / TLS
2. Authenticate the message through username tokens (username and password)
3. Whitelist IP address – NG to whitelist SP IP address(es) and SP can also whitelist NG IP addresses (as per the IP addresses provided in *Section* ***Error! Reference source not found.*** below)

National Grid ESO would introduce Digital Certificates and Signatures (through binary tokens) at a later point in time. The specification will be updated with the appropriate timelines until which the above security pattern would need to be followed.

4.1 Authentication using username and passwords (SOAP Webservices)

This section details how to use the UsernameToken with the WSS: SOAP Message Security specification [WSS]. More specifically, it describes how a web service consumer can supply a UsernameToken as a means of identifying the requestor by "username", and using a password (or shared secret, or password equivalent) to authenticate that identity to the web service producer.

The <wsse:UsernameToken> element is introduced in the WSS: SOAP Message Security documents as a way of providing a username.

Within <wsse:UsernameToken> element, a <wsse:Password> element may be specified. Passwords of type PasswordText and PasswordDigest are not limited to actual passwords, although this is a common case. Any password equivalent such as a derived password can be used.

Passwords of type PasswordDigest are defined as being the Base64 [XML-Schema] encoded, of the UTF8 encoded password (or equivalent). However, unless this digested password is sent on a secured channel or the token is encrypted, the digest offers no real additional security over use of wsse:PasswordText.

When a UsernameToken is referenced using <wsse:SecurityTokenReference> the ValueType attribute is not required. If specified, the value of UsernameToken MUST be specified.

A Service Provider can have multiple contracts across multiple ancillary services; however, the assumption is that there will be a single set of web services exposed to National Grid ESO and hence National Grid ESO would expect to have a single web services password per Service Provider. The same will be the situation for the web services exposed by National Grid ESO.

The usernames and passwords should be changed every 6 months to avoid any security breach. Once every 6 months, National Grid ESO will share the passwords to the appropriate Service Provider IT personnel securely and expect Service Providers to do the same.

4.1.1 Sample request Header with username token

```
<soapenv:Header>
    <soapenv:Header xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
    <wsse:UsernameToken wsu:Id="UsernameToken-4D71FDCDB47BAB441716848439573201">
      <wsse:Username>DemoTestUser</wsse:Username>
      <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      <wsu:Created>2023-05-23T12:12:37.308Z</wsu:Created>
    </wsse:UsernameToken>
  </wsse:Security>
</soapenv:Header>
```

In order to enable testing of this service username & password required, please contact National Grid ESO.

4.1.2 User credentials for Sandbox environment web services

User credentials for the sandbox environments could be requested from National Grid ESO by sending an email to: box.support.pas@nationalgrid.com

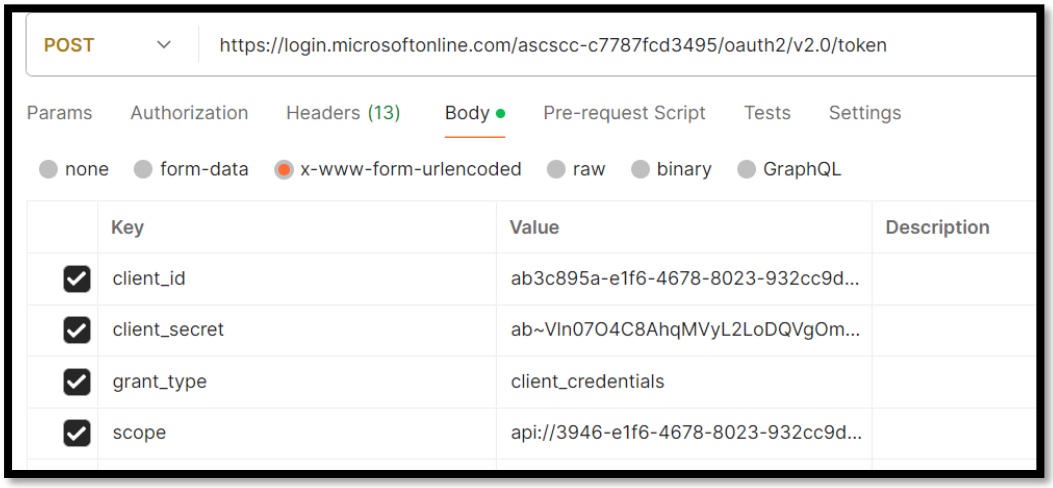
4.2 Authentication for REST Webservices (OAuth 2.0)

This section describes how to use the OAuth 2.0 for the Rest API authentication. Specifically, it describes how a service consumer can supply access token to authenticate that identity to the web service producer (NG ESO).
OAuth 2.0 (Open Authorization) is an open standard protocol that allows secure authorization between Service consumer and NG ESO application. This enables client to access resources on behalf of the resource owner.

To invoke an exposed REST APIs using OAuth 2.0, service providers need to follow below steps:

GET the Token:

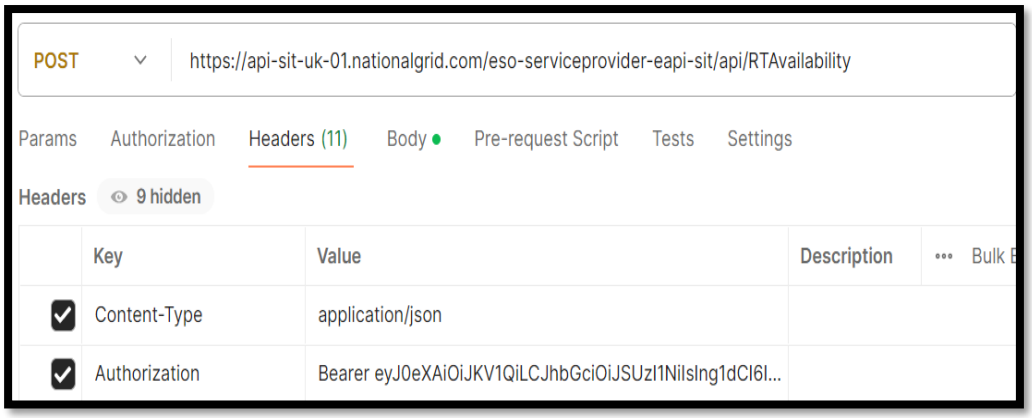
1. Service providers need to request ESO for Token generation url, client_id, client_secret, scope and grant_type value will be always 'client_credentials'.
2. Above details need to pass as part of body as shown below.



3. Service Consumer need to hit the token url with valid credentials to get the access_token as response. Refer below sample response.

4. Access the API: With the obtained access token, service consumer can make requests to the API. As part request header caller need to send access token the below format.

   Authorization: **Bearer** <<Access Token Value>>
   Example: Authorization: Bearer ntgiwreee3LRm6frS4FwZvB3lFwbT



5. Access tokens have an expiration time: 3599 secs. After the token expires, user will not be able to access the API until obtain the new access token.

4.2.1 Sample Curl command for token generation

curl --location --request GET 'https://login.microsoftonline.com/f98a6a53-25f3-4212-901c-c7787fcd3495/oauth2/v2.0/token' \
--header 'Content-Type: application/x-www-form-urlencoded' \
--header 'Cookie: fpc=AmVGXpxPQwVKqPe_5Fd8mK-aNpBLAQAAAIZFp9wOAAAA2vIxOgEAAAD0RqfcDgAAAA; stsservicecookie=estsfd; x-ms-gateway-slice=estsfd; fpc=AmVGXpxPQwVKqPe_5Fd8mK_1s-keAQAAAACDqNwOAAAA; x-ms-gateway-slice=estsfd' \
--data-urlencode 'client_id=40fcf9d7-68668686-757575-35481' \
--data-urlencode 'client_secret=gEa8Q~hhhttestote-Y~QxtLeYzDaccm3' \
--data-urlencode 'grant_type=client_credentials' \
--data-urlencode 'scope=api://40fcf9d7-7896-4988-46010384934/.default'

4.2.2 Credential details for REST APIs

User credentials for the sandbox environments could be requested from National Grid ESO by sending an email to: **box.support.pas@nationalgrid.com**

5 Response Pattern for web services

When an xml is sent to the end point, it is expected to send synchronous response back. National Grid ESO is following in-line wsdl response and requests Service Providers to follow the same. This pattern is embedded in the wsdls and explained below.

5.1 Success synchronous response

When the party is expected to send synchronous successful response, along with 200 http status code, the following is expected in xml format. The below is only a sample representation.
Based on Service Types Success Synchronous response patterns are given below:

Availability Confirmation Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header/>
  <soapenv:Body>
    <ns1:Availability_ConfirmationResponse
xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Availability_Confirmation">
      <ns1:ServiceType>DMH</ns1:ServiceType>
      <ns1:UnitID>SITASR1</ns1:UnitID>
      <ns1:Response>SUCCESS</ns1:Response>
```

```
    </ns1:Availability_ConfirmationResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

DISARM/RE-ARM Nomination Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header/>
  <soapenv:Body>
    <ns1:Avail_Nom_ConfirmationResponse
xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Avail_Nom_Confirmation">
      <ns1:ServiceType>DMH</ns1:ServiceType>
      <ns1:UnitID>SITASR9</ns1:UnitID>
      <ns1:Response>SUCCESS</ns1:Response>
      <ns1:Details>Response Details</ns1:Details>
    </ns1:Avail_Nom_ConfirmationResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

DISPATCH/CEASE Instruction Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
<ns1:Send_Instruction_Response xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Send_Instruction">
         <ns1:ServiceType>RDP_NEGATIVE</ns1:ServiceType>
         <ns1:UnitID>RDPFOK016</ns1:UnitID>
         <ns1:Response>SUCCESS</ns1:Response>
      </ns1:Send_Instruction_Response>
   </soapenv:Body>
</soapenv:Envelope>
```

RTM/HEARTBEAT NAck Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header/>
  <soapenv:Body>
    <ns1:RealtimeMetering_NACKResponse xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/RTMNegativeACK">
      <ns1:ServiceType>DRL</ns1:ServiceType>
      <ns1:UnitID>SITASR18</ns1:UnitID>
      <ns1:Response>SUCCESS</ns1:Response>
    </ns1:RealtimeMetering_NACKResponse>
  </soapenv:Body>
</soapenv:Envelope>
```

PN Confirmation Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header/>
  <soapenv:Body>
    <ns1:PhysicalNotification_Conf_Response
xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/PhysicalNotificationConf">
      <ns1:PUI>12345678901234567890</ns1:PUI>
      <ns1:UnitID>SITASR1</ns1:UnitID>
      <ns1:Response>SUCCESS</ns1:Response>
    </ns1:PhysicalNotification_Conf_Response>
  </soapenv:Body>
</soapenv:Envelope>
```

ServiceType tag in the above xml will have the ServiceType sent by the party in the payload.

UnitID tag in the xml will have the UnitID sent by the party in the payload.

Response tag in the xml will have SUCCESS.

5.2 Failure synchronous response

When the party is supposed to send synchronous failure response, along with non-200 http status code, the following is expected in xml format. The below is only a sample representation.
Based on Service Types Failure Synchronous response patterns are given below.

Availability Confirmation Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body xmlns:ins="http://www.nationalgrid.com/pas/cdsa/Instruction ">
    <ns1:Response xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Instruction">
      <ns1:ServiceType>DCH|RDP_NEGATIVE</ns1:ServiceType>
      <ns1:UnitID>UNIT001</ns1:UnitID>
      <ns1:Response>FAILURE</ns1:Response>
      <ns1:Details> </ns1:Details>
    </ns1:Response>
  </env:Body>
</soapenv:Envelope>
```

DISARM/RE-ARM Nomination Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body>
   <ns1:Avail_Nom_ConfirmationResponse
xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Avail_Nom_Confirmation">
      <ns1:ServiceType>DMH</ns1:ServiceType>
      <ns1:UnitID>SITASR9</ns1:UnitID>
      <ns1:Response>FAILURE</ns1:Response>
      <ns1:Details>No Service Provider is available for this Unit ID.</ns1:Details>
</ns1:Avail_Nom_ConfirmationResponse>
  </env:Body>
</soapenv:Envelope>
```

DISPATCH/CEASE Instruction Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body xmlns:ins="http://www.nationalgrid.com/pas/cdsa/Instruction ">
<ns1:Send_Instruction_Response xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/Instruction ">
      <ns1:ServiceType>RDP_NEGATIVE</ns1:ServiceType>
      <ns1:UnitID>RDPFOK016</ns1:UnitID>
      <ns1:Response>FAILURE</ns1:Response>
      <ns1:Details>error details </ns1:Details>
    </ns1:Send_Instruction_Response>
  </env:Body>
</soapenv:Envelope>
```

RTM/HEARTBEAT NAck Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Header xmlns:ins="http://www.nationalgrid.com/pas/cdsa/RTMNegativeACK "/>
  <env:Body xmlns:ins="http://www.nationalgrid.com/pas/cdsa/RTMNegativeACK ">
    <ns1:RealtimeMetering_NACKResponse xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/RTMNegativeACK">
      <ns1:ServiceType>DRL</ns1:ServiceType>
      <ns1:UnitID>SITASR18</ns1:UnitID>
```

```
        <ns1:Response>FAILURE</ns1:Response>
        <ns1:Details>error details</ns1:Details>
      </ns1:RealtimeMetering_NACKResponse>
  </env:Body>
</soapenv:Envelope>
```

PN Confirmation Service Sync Response Pattern Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body xmlns:ins="http://www.nationalgrid.com/pas/cdsa/PhysicalNotificationConf ">
    <ns1:PhysicalNotification_Conf_Response
xmlns:ns1="http://www.nationalgrid.com/pas/cdsa/PhysicalNotificationConf">
      <ns1:PUI>12345678901234567890</ns1:PUI>
      <ns1:UnitID>SITASR1</ns1:UnitID>
      <ns1:Response>FAILURE</ns1:Response>
      <ns1:Details>Error Details</ns1:Details>
    </ns1:PhysicalNotification_Conf_Response>
  </env:Body>
</soapenv:Envelope>
```

ServiceType tag in the above xml will have the **ServiceType** sent by the party in the payload.

UnitID tag in the xml will have the **UnitID** sent by the party in the payload.

Response tag in the xml will have **FAILURE.**

Details tag will have the appropriate error message on why the service has failed.

6 National Grid ESO Public Facing IP

Service Providers are requested to whitelist the below IP addresses from National Grid ESO in case they don't want other traffic to come through. These IP addresses are the same for test and production traffic.

62.190.154.115
62.190.148.115
65.209.62.115
65.196.116.115

7 Appendix: About the XSD and WSDLs

National Grid ESO requests all the Service Providers to implement their relevant web service (Availability Confirmation) with the same service name, port type, binding operation names and namespaces. The services should be exposed as https but using http bindings. In order to facilitate quick development for Service Provider, National Grid ESO has mocked Service Provider web services which are available in the relevant sections of this document.

Sample payloads for v3 Web Services:

7.1 Appendix 1A: Availability Service Inbound

ASR Payload for Unavailability:

```
<soapenv:Envelope xmlns:ava="http://www.nationalgrid.com/pas/cdsa/Availability"
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header>
```

```
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken- KK41A651D47C8E5D2316400959478894">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <ava:AvailabilityDetails>
      <ava:ServiceType>DCH</ava:ServiceType> <<Comment: Service type can be DCH, DCL, DMH, DML, DRH, DRL>>
      <ava:UnitID>UNIT0001</ava:UnitID>
        <ava:AUI>AUIXQ34YMU081816</ava:AUI> <<Comment: Unique ID>>
      <ava:AvailabilityWindow>
        <ava:StartDateTime>2022-10-01T03:00:00Z</ava:StartDateTime> <<Comment: UTC Format>>
        <ava:EndDateTime>2022-10-01T03:30:00Z</ava:EndDateTime> <<Comment: UTC Format>>
        <ava:OfferBid>
          <ava:OfferBid_Number>1</ava:OfferBid_Number>
          <ava:BreakPoint>30</ava:BreakPoint>
        </ava:OfferBid>
      </ava:AvailabilityWindow>
      <ava:DateTimeStamp>2021-10-01T01:00:00Z</ava:DateTimeStamp>
    </ava:AvailabilityDetails>
  </soapenv:Body>
</soapenv:Envelope>
```

RDP MW Dispatch Payload for Unavailability:

```
<soapenv:Envelope xmlns:ava="http://www.nationalgrid.com/pas/cdsa/Availability" xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-CC41A651D47C8E5D2316400957078552">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <ava:AvailabilityDetails>
      <ava:ServiceType>RDP_NEGATIVE</ava:ServiceType> <<Comment: Service type-RDP_NEGATIVE>>
      <ava:UnitID>UNIT0001</ava:UnitID>
        <!--Optional:-->
        <ava:AUI>AUIXQ34YMU081816</ava:AUI> <<Comment: Unique ID>>
      <ava:AvailabilityWindow>
        <ava:StartDateTime>2023-05-02T14:00:00Z</ava:StartDateTime> <<Comment: UTC Format>>
        <ava:EndDateTime>2023-05-02T16:30:00Z</ava:EndDateTime> <<Comment: UTC Format>>
      </ava:AvailabilityWindow>
```

```
        <ava:DateTimeStamp>2023-05-01T08:32:10Z</ava:DateTimeStamp>
      </ava:AvailabilityDetails>
   </soapenv:Body>
</soapenv:Envelope>
```

7.2 Appendix 1B: Availability Confirmation Service Outbound

For ASR Response and RDP Service:

```
<soapenv:Envelope xmlns:ava="http://www.nationalgrid.com/pas/cdsa/AvailabilityConfirmation"
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header>
      <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
         <wsse:UsernameToken wsu:Id="UsernameToken-CC41A651D47C8E5D2316400964670337">
            <wsse:Username>Demouser</wsse:Username>
            <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">Xxxxxxx</wsse:Password>
         </wsse:UsernameToken>
      </wsse:Security>
   </soapenv:Header>
   <soapenv:Body>
      <ava:Availability_Conf_Message>
         <ava:ServiceType>DCH|RDP_NEGATIVE</ava:ServiceType> <<Comment: service type shall be populated
corresponding to service provider  >>
         <ava:UnitID>UNIT0001</ava:UnitID>
         <!--Optional:-->
         <ava:AUI>AUIXQ34YMU081816</ava:AUI>
         <ava:AvailabilityWindow>
            <ava:StartDateTime>2023-05-02T14:00:00Z</ava:StartDateTime>
            <ava:EndDateTime>2023-05-02T16:30:00Z</ava:EndDateTime>
            <ava:Validation>VALID</ava:Validation>
         </ava:AvailabilityWindow>
         <ava:Confirmation>ACCEPTED</ava:Confirmation>
         <ava:DateTimeStamp>2023-05-01T08:32:28Z</ava:DateTimeStamp>
      </ava:Availability_Conf_Message>
   </soapenv:Body>
</soapenv:Envelope>
```

7.3 Appendix 1C: Nomination Service Outbound

For ASR Response DIS-ARM/RE-ARM Nomination Service:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ava="http://www.nationalgrid.com/pas/cdsa/Availability_Nomination">
   <soapenv:Header>
      <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
         <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
            <wsse:Username>Demouser</wsse:Username>
            <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">xxxxxx</wsse:Password>
         </wsse:UsernameToken>
      </wsse:Security>
   </soapenv:Header>
   <soapenv:Body>
<ns2:Availability_Nomination_Message xmlns:ns2="http://www.nationalgrid.com/pas/cdsa/Nomination">
   <ns2:ServiceType>DMH</ns2:ServiceType>
   <ns2:UnitID>SITASR15</ns2:UnitID>
   <ns2:AvailabilityWindow>
      <ns2:NUI>NUI9696969</ns2:NUI>
```

```
    <ns2:StartDateTime>2008-09-29T02:49:45Z</ns2:StartDateTime>
    <ns2:EndDateTime>2014-09-19T00:18:33Z</ns2:EndDateTime>
    <ns2:Nomination>DISARM</ns2:Nomination>
  </ns2:AvailabilityWindow>
  <ns2:DateTimeStamp>2008-11-15T16:52:58Z</ns2:DateTimeStamp>
</ns2:Availability_Nomination_Message>
  </soapenv:Body>
</soapenv:Envelope>
```

7.4 Appendix 1D: ASR Response ARM/DISARM Confirmation Service Inbound

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ava="http://www.nationalgrid.com/pas/cdsa/Avail_Nom_Confirmation">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <ava:Avail_Nom_ConfirmationRequest>
      <ava:Avail_Nom_ConfirmationDetails>
        <ava:ServiceType>DCH</ava:ServiceType>
        <ava:UnitID>UNIT0001</ava:UnitID>
        <!--1 or more repetitions:-->
        <ava:AvailabilityWindow>
          <ava:NUI>NUI111028dzf5271LV</ava:NUI>
          <ava:StartDateTime>2022-09-29T14:54:45Z</ava:StartDateTime>
          <!--Optional:-->
          <ava:EndDateTime></ava:EndDateTime>
          <ava:WindowConfirmation>ACCEPTED</ava:WindowConfirmation>
          <!--Optional:-->
          <ava:WindowReason>Reason</ava:WindowReason>
        </ava:AvailabilityWindow>
        <ava:FileConfirmation>ACCEPTED</ava:FileConfirmation>
        <!--Optional:-->
        <ava:FileReason>Reason</ava:FileReason>
        <ava:DateTimeStamp>2022-09-29T14:52:58Z </ava:DateTimeStamp>
      </ava:Avail_Nom_ConfirmationDetails>
    </ava:Avail_Nom_ConfirmationRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

7.5 Appendix 1E: Dispatch/Cease Service Outbound

FOR RDP-MW DISPATCH:

```
<soapenv:Envelope xmlns:ins="http://www.nationalgrid.com/pas/cdsa/Instruction"
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B328FE039B473E38A15882451474871”>
        <wsse:Username>Demouser</wsse:Username>
```

```
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">xxxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <ins:InstructionMessage>
      <ins:ServiceType>RDP_NEGATIVE</ins:ServiceType>
      <ins:UnitID>UNIT0001</ins:UnitID>
      <ins:DUI>DUIjkghdf87620</ins:DUI>
      <ins:VolumeRequested>0</ins:VolumeRequested> <<Comment: instruction to curtail mw to 0>>
      <ins:Instruction>START|STOP</ins:Instruction> <<Comment: START for Curtailment and STOP for CEASE>>
      <ins:DateTimeStamp>2023-05-24T18:44:14Z</ins:DateTimeStamp>
    </ins:InstructionMessage>
  </soapenv:Body>
</soapenv:Envelope>
```

7.6 Appendix 1F: Dispatch/Cease Confirmation Inbound

FOR RDP MW DISPATCH:

```
<soapenv:Envelope xmlns:dis="http://www.nationalgrid.com/pas/cdsa/DispatchConfirmation"
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-CC41A651D47C8E5D2316400958326673">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <dis:Dispatch_ConfirmationRequest>
      <dis:DispatchConfirmationDetails>
        <dis:ServiceType>RDP_NEGATIVE</dis:ServiceType>
        <dis:UnitID>UNIT0001</dis:UnitID>
        <dis:DUI>DUIjkghdf87620</dis:DUI>
         <dis:Instruction>START|STOP</dis:Instruction> <<Comment: START for Curtailment and STOP for
CEASE>>
        <dis:ResponseCode>ACCEPTED</dis:ResponseCode>
        <dis:DateTimeStamp>2023-05-24T18:44:24Z</dis:DateTimeStamp>
      </dis:DispatchConfirmationDetails>
    </dis:Dispatch_ConfirmationRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

7.7 Appendix 1G: Heartbeat / Real-Time Metering Service Inbound

For ASR Response Services:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:con="http://www.nationalgrid.com/pas/cdsa/ConsumeRTM">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">Xxxxxxx</wsse:Password>
```

```
        </wsse:UsernameToken>
      </wsse:Security>
    </soapenv:Header>
    <soapenv:Body>
      <con:ConsumeRealTimeRequest>
        <con:ConsumeRealtimeDetails>
          <con:ServiceType>DCH</con:ServiceType>
          <con:UnitID>UNIT0001</con:UnitID>
          <con:DateTimeStamp>2022-05-29T14:30:48Z</con:DateTimeStamp>
        </con:ConsumeRealtimeDetails>
      </con:ConsumeRealTimeRequest>
    </soapenv:Body>
</soapenv:Envelope>
```

For RDP MW DISPATCH Service:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:con="http://www.nationalgrid.com/pas/cdsa/ConsumeRTM">
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-
wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-
utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <con:ConsumeRealTimeRequest>
      <con:ConsumeRealtimeDetails>
        <con:ServiceType>RDP_NEGATIVE</con:ServiceType>
        <con:UnitID>UNIT0001</con:UnitID>
        <con:DateTimeOfMeterReading>2023-05-29T14:30:10Z</con:DateTimeOfMeterReading>
        <con:MeterReading>2.3224</con:MeterReading>
        <!--Optional:-->
        <con:PState>ON</con:PState>
        <con:DateTimeStamp>2023-05-29T14:30:45Z</con:DateTimeStamp>
      </con:ConsumeRealtimeDetails>
    </con:ConsumeRealTimeRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

7.8 Appendix 1H: Heartbeat / Real-Time Metering Negative Ack Service Outbound

For ASR Response Service:

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv=http://schemas.xmlsoap.org/soap/envelope/
xmlns:rtm=http://www.nationalgrid.com/pas/cdsa/RTMNegativeACK>
  <soapenv:Header>
    <wsse:Security xmlns:wsse=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd
xmlns:wsu=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd
soapenv:mustUnderstand="1">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-
1.0#PasswordText>xxxxxx</wsse:Password>
      </wsse:UsernameToken>
```

```
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <rtm:RTM_Negative_Ack_Message>
      <rtm:ServiceType>DCH|DCL|DRH|DRL|DMH|DML</rtm:ServiceType>
      <rtm:UnitID>UNIT0001</rtm:UnitID>   <<Comment: name of unit id >>
      <rtm:StartDateTime>2023-05-28T14:30:00Z</rtm:StartDateTime>
      <rtm:EndDateTime>2023-05-28T14:32:00Z</rtm:EndDateTime>
      <!--Optional:-->
      <rtm:ErrorCode>RTM_Error1</rtm:ErrorCode>
      <rtm:DateTimeStamp>2023-05-20T14:32:11Z</rtm:DateTimeStamp>
    </rtm:RTM_Negative_Ack_Message>
  </soapenv:Body>
</soapenv:Envelope>
```

RTM NACK Sample for RDP MW DISPATCH Service:

```
<soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd" xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd">
      <wsse:UsernameToken wsu:Id="UsernameToken-3B128FE039B473E38A15882451474871">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
    <rtm:RTM_Negative_Ack_Message>
      <rtm:ServiceType>RDP_NEGATIVE</rtm:ServiceType>
      <rtm:UnitID>UNIT0001</rtm:UnitID>
      <rtm:StartDateTime>2023-05-28T14:30:00Z</rtm:StartDateTime>
      <rtm:EndDateTime>2023-05-28T14:32:00Z</rtm:EndDateTime>
      <!--Optional:-->
      <rtm:ErrorCode>RTM_Error1</rtm:ErrorCode>
      <rtm:DateTimeStamp>2023-05-20T14:32:11Z</rtm:DateTimeStamp>
    </rtm:RTM_Negative_Ack_Message>
  </soapenv:Body>
</soapenv:Envelope>
```

7.9 Appendix 1K: Physical Notification Service Inbound

```
<soapenv:Envelope xmlns:soapenv=http://schemas.xmlsoap.org/soap/envelope/ xmlns:phy=http://www.nationalgrid.com/pas/cdsa/PhysicalNotification>
  <soapenv:Header>
    <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd xmlns:wsu=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd>
      <wsse:UsernameToken wsu:Id="UsernameToken-CC41A651D47C8E5D2316400959478894">
        <wsse:Username>Demouser</wsse:Username>
        <wsse:Password Type= "http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
    </wsse:Security>
  </soapenv:Header>
  <soapenv:Body>
<phy:PhysicalNotificationDetails>
      <phy:UnitID>UNIT001</phy:UnitID>
      <phy:PUI>PUIxq0034YMU08181625</phy:PUI>
      <!--1 or more repetitions:-->
```

```
        <phy:PNDetails>
          <phy:StartDateTime>2022-10-29T02:00:00Z</phy:StartDateTime>
          <phy:EndDateTime>2022-10-29T02:30:00Z</phy:EndDateTime>
          <phy:PN_Start_MW>12</phy:PN_Start_MW>
          <phy:PN_End_MW>20</phy:PN_End_MW>
        </phy:PNDetails>
        <phy:DateTimeStamp>2022-10-28T10:02:30Z</phy:DateTimeStamp>
      </phy:PhysicalNotificationDetails>
   </soapenv:Body>
</soapenv:Envelope>
```

7.10 Appendix 1L: Physical Notification Confirmation Service Outbound

```
<soapenv:Envelope xmlns:phy=http://www.nationalgrid.com/pas/cdsa/PhysicalNotificationConf xmlns:soapenv=http://schemas.xmlsoap.org/soap/envelope/>
<soapenv:Header>
   <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-secext-1.0.xsd xmlns:wsu=http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssecurity-utility-1.0.xsd>
      <wsse:UsernameToken wsu:Id="UsernameToken-CC41A651D47C8E5D23164009675666310">
         <wsse:Username>Demouser</wsse:Username>
         <wsse:Password Type="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">xxxxxx</wsse:Password>
      </wsse:UsernameToken>
   </wsse:Security>
</soapenv:Header>
<soapenv:Body>
   <phy:PhysicalNotification_Conf_Message>
      <phy:UnitID>UNIT001</phy:UnitID>
      <phy:PUI> PUIxq0034YMU08181625</phy:PUI>
      <!--1 or more repetitions:-->
      <phy:PNDetails>
         <phy:StartDateTime>2022-10-29T02:00:00Z </phy:StartDateTime>
         <phy:EndDateTime>2022-10-29T02:30:00Z </phy:EndDateTime>
         <!--Optional:-->
         <phy:PNValidation>VALID</phy:PNValidation>
         <!--Optional:-->
         <phy:PNReason>string</phy:PNReason>
      </phy:PNDetails>
      <phy:Confirmation>ACCEPTED</phy:Confirmation>
      <!--Optional:-->
      <phy:FileReason>string</phy:FileReason>
      <phy:DateTimeStamp>2022-10-28T10:02:35Z</phy:DateTimeStamp>
   </phy:PhysicalNotification_Conf_Message>
</soapenv:Body>
</soapenv:Envelope>
```

7.11 Appendix 1M: Potential Dispatch Merit Order Payload

Payload having some data:

```
{
   "InterfaceName": "UKPN-DISP-ORDER",
   "MeritOrderDetails": [
      {
         "GSPName": "BOLN_1",
         "ESOMWD_DERID": "UKPN-145",
         "PricedOrderDispatch": 1,
         "MaxRegisteredCapacity": 5.75
      },
```

```
      {
        "GSPName": "RICH_1",
        "ESOMWD_DERID": "UKPN-670",
        "PricedOrderDispatch": 2,
        "MaxRegisteredCapacity": 15.50
      }
   ],
   "DateTimeStamp": "2023-09-13T12:10: 54Z"
}
```


When blank response:


```
{
   "InterfaceName": "UKPN-DISP-ORDER",
   "MeritOrderDetails": [],
   "DateTimeStamp": "2023-09-13T12:10: 20Z"
}
```


7.12 Appendix 1N: DA Unavailability Payload-UKPN


```
{
      "Interface": "UNAVAIL-DATA",
      "ServiceType": "RDP_NEGATIVE",
      "UnAvailabilityDetails": [
         {
            "UnitID": "UKPN-324",
            "UnAvailabilityWindow": [
               {
                  "StartDateTime": "2022-05-02T05:00:00Z",
                  "EndDateTime": "2022-05-02T08:00:00Z",
                  "Unavail_Reason": 1,
                  "Unavail_Cause": "A"
               },
               {
                  "StartDateTime": "2022-05-02T10:00:00Z",
                  "EndDateTime": "2022-05-02T12:00:00Z",
                  "Unavail_Reason": 2,
                  "Unavail_Cause": "F"
               }
            ]
         },
         {
            "UnitID": "UKPN-325",
            "UnAvailabilityWindow": [
               {
                  "StartDateTime": "2022-05-02T05:00:00Z",
                  "EndDateTime": "2022-05-02T08:00:00Z",
                  "Unavail_Reason": 1,
                  "Unavail_Cause": "A"
               }
            ]
         }
      ],
      "DateTimeStamp": "2022-05-01T14:00:00Z"
}
```


7.13 Appendix 1O: RT Availability API Payload-UKPN


```
     {
       "ServiceType": "RDP_NEGATIVE",
       "UnitID": "202",
```

```
  "RTAStatus": "ON/OFF",
  "DateTimeStamp": "2023-05-23T12:12:37.308Z"
}
```


End of Document