Publicly Available

NBM Service Provider - Web Services Specification Version4

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Document History

Version	Date	Comment/Changes
1.0	19/12/2024	Version 4 Web Services for ASR Reserve, Response Published on Portal.
1.1	24/02/2025	Updated the following • Section 3.8.1 - Updated Service Type field in Heartbeat NACK API as Optional; updated the sample payloads for the same change. • Section 4.1.1 - Removed references to PasswordDigest. Only the password field is supported. • Section 3.1.1 - Datetimestamp example in API structure
1.2	10/04/2025	Updated namespaces for incoming and outgoing SOAP messages Incoming availability: https://obp.neso.energy/ConsumeAvailability Outgoing availability: https://obp.neso.energy/ConsumeAvailabilityConfirmation Incoming PN: https://obp.neso.energy/ConsumePhysicalNotification Outgoing PN: https://obp.neso.energy/ConsumePhysicalNotificationConfirmation Incoming Instruction: https://obp.neso.energy/ConsumeInstructionConfirmation Outgoing Instruction: https://obp.neso.energy/ConsumeInstruction Incoming HeartBeat: https://obp.neso.energy/ConsumeHeartBeat Outgoing HeartBeat: https://obp.neso.energy/ConsumeHeartBeatNack Incoming Nomination: https://obp.neso.energy/ConsumeNominationConfirmation

		Outgoing Nomination: https://obp.neso.energy/ConsumeNomination Removed all references to MW Dispatch Aligned sample messages to latest WSDLs
1.3	10/10/2025	Content in “OBP_Web_Services_Specifications_Version4_v1.3” and “ASDP_Web_Services_Specifications_Version4_v1.3” is same. Deleted sandbox references from document history Section 3.4 - Updated WindowConfirmation as Optional Section 5.2 - Corrected the DISPATCH/CEASE Instruction Service Sync Response Pattern Sample payload Section 7 – Updated the NUI and DUI in given examples

Introduction

The OBP (Open Balancing Platform) project has an objective to replace and enhance systems across the 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 NESO is using web services to communicate with Service Providers. To achieve the communication between NESO and Service Providers, systems from both sides should accept common data interfaces. This document provides the technical specifications required to establish communication between OBP and Service Providers.

1.1 In Scope

This document describes the version 4 of web services to be implemented from both NESO (OBP) 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.

Services covered:

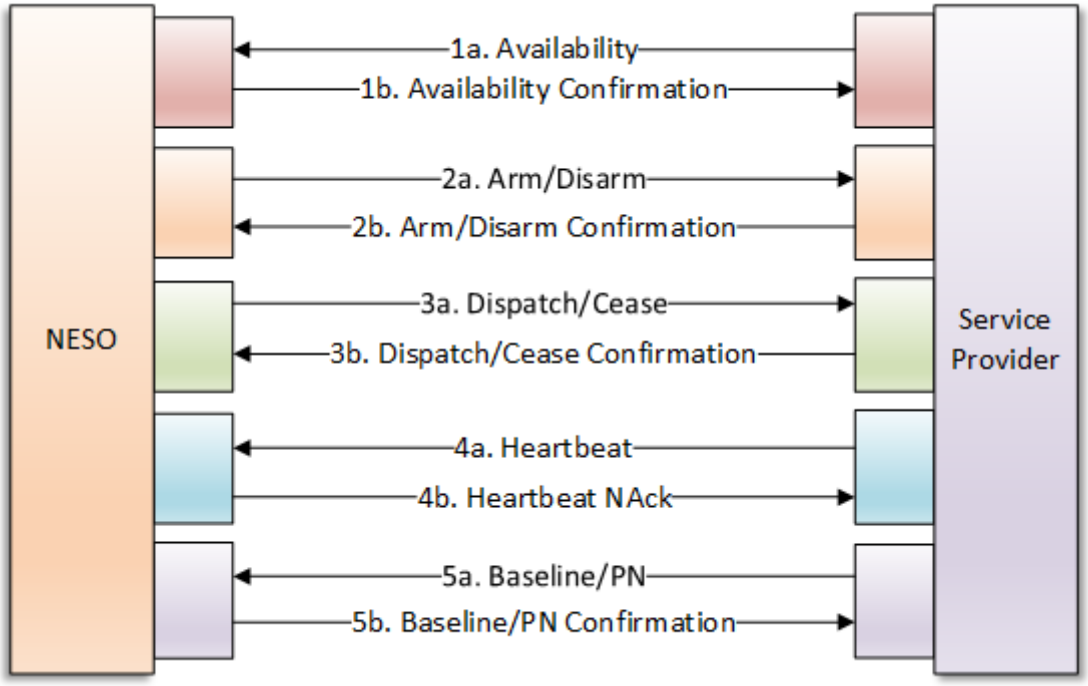
- ASR Reserve Slow
- ASR Reserve Quick
- ASR Response

Settlement metering will be via a separate channel.

2 List of Web Services

Both NESO 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	ASR Reserve Slow	ASR Reserve Quick	ASR Response
Availability	✓	✓	✓
Availability Confirmation	✓	✓	✓
Nomination (Disarm / Rearm)			✓
Nomination (Disarm / Rearm) Confirmation			✓
Dispatch / Cease Instruction	✓	✓	
Dispatch / Cease Confirmation	✓	✓	
Heartbeat	✓	✓	✓
Heartbeat Negative Acknowledgement	✓	✓	✓
Physical Notification	✓	✓	✓
Physical Notification Confirmation	✓	✓	✓

Description of Service

Sl.No.	Service	Service Description	Sender	Receiver	Applicable Ancillary Service
1a	Availability	Web service for NESO to receive availability data from Service Providers. This would include declarations and redeclarations.	Service Provider	NESO	SR, QR, Response,
1b	Availability Confirmation	Web service for Service Providers to receive an Availability Confirmation from NESO post data validation of availability payload.	NESO	Service Provider	SR, QR, Response,
2a	Nomination	Web service for Service Providers to receive `the Nomination Disarm / Rearm Instruction from NESO	NESO	Service Provider	SR, QR, Response
2b	Nomination Confirmation	Web service for NESO to receive the Nomination Confirmation from Service Providers	Service Provider	NESO	SR, QR, Response
3a	Dispatch / Cease Instruction	Web service for Service Providers to receive the Dispatch or Cease Instruction from NESO	NESO	Service Provider	SR, QR, Response
3b	Dispatch / Cease Confirmation	Web service for NESO to receive the Confirmation of Dispatch or Cease Instruction from Service Providers	Service Provider	NESO	SR, QR, Response
4a	Heartbeat	Web service for NESO to receive Real-Time unit status from Service Providers	Service Provider	NESO	SR, QR, Response
4b	Heartbeat Negative	Web service for Service Providers to receive Non-Acknowledgement for the	NESO	Service Provider	SR, QR, Response

	Acknowledgement	Realtime Metering data from NESO			
5a	Physical Notification Service	Web service for NESO to receive PN MWs for a Unit from Service Providers	Service Provider	NESO	SR, QR, Response
5b	Physical Notification Confirmation	Web service for Service Providers to receive the Physical Notification Confirmation from NESO	NESO	Service Provider	SR, QR, Response

3 Web Services Specification

This document provides details about the version 4 set of Web Services for the OBP system. Version 4 covers the new quick and slow reserve service plus the existing response service. NESO will provide details of when Service Providers can be onboarded in the appropriate communication.

Web Services will use SOAP v1.1 and v1.2.

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: Existing service providers who are implementing the STOR and Fast Reserve services will only need to move to this version when they move to Quick and Slow reserve

Greyed out fields are left in for compatibility with previous versions but are not used by the OBP system.

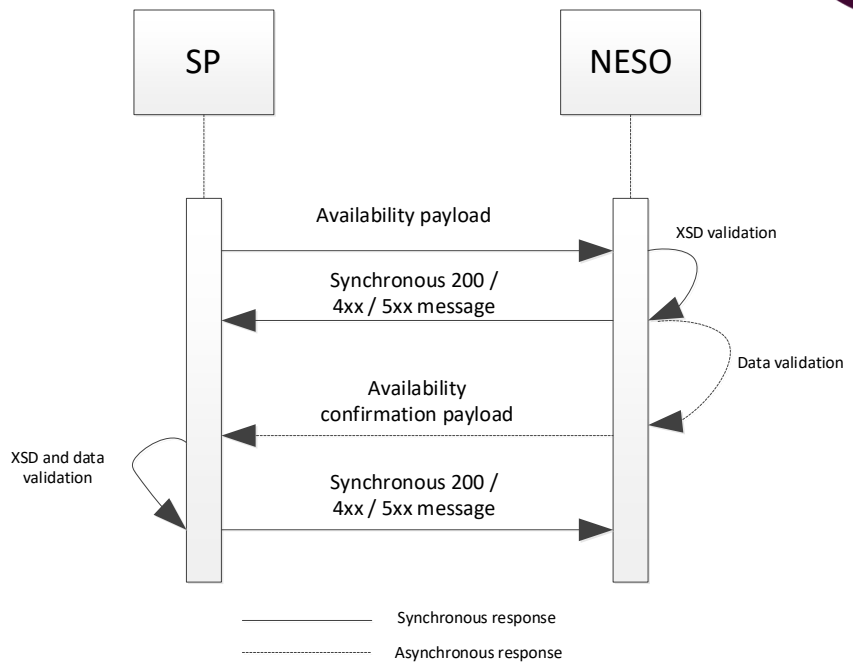
3.1 Availability Service v4

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

Owner: NESO

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 NESO. On any data validation failures, the error codes / messages are communicated asynchronously using Availability Confirmation web service by NESO.



3.1.1 Availability Service Inbound

The provider can submit the availabilities for services 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: PQR/PSR NQR/NSR 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 (Seconds should always be 00)	Datetime	YYYY-MM-DDThh:mm:ss TZD e.g. 2021-07-16T19:20:00Z	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 (Seconds should always be 00)	Datetime	YYYY-MM-DDThh:mm:ss TZD e.g. 2021-07-16T19:20:00Z	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. 1	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. 5.0	Optional	The MW value to be submitted. (Should be whole number)
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

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
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 to indicate post gate closure submission
DateTimeStamp	Date and time when the web service payload	Datetime	YYYY-MM-DDThh:mm:ss TZD	Mandatory	Time should be in UTC standard

Name	Description	Data type	Size/Format/ List	Mandatory / Optional	Constraint / Notes
	was sent to NESO		e.g. 2021-07-16T19:20:00Z		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 supplied url.
4. NESO will Accept/Reject the availability (through Availability Confirmation web service) 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'

3.2 Availability Confirmation Service v4

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, NESO 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, NESO 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 PQR/PSR NQR/NSR DMH/DML DCH/DCL DRH/DRL	Mandatory	
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 (Seconds should be in 00)	Datetime	YYYY-MM-DDThh:mm:ss TZD e.g. 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z).
EndDateTime	End date and time for Availability (Seconds should be 00)	Datetime	YYYY-MM-DDThh:mm:ss TZD e.g. 2021-07-16T19:20:00Z	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 this web service message was sent to NESO	Datetime	YYYY-MM-DDThh:mm:ss TZD e.g. 2021-07-16T19:20:0Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

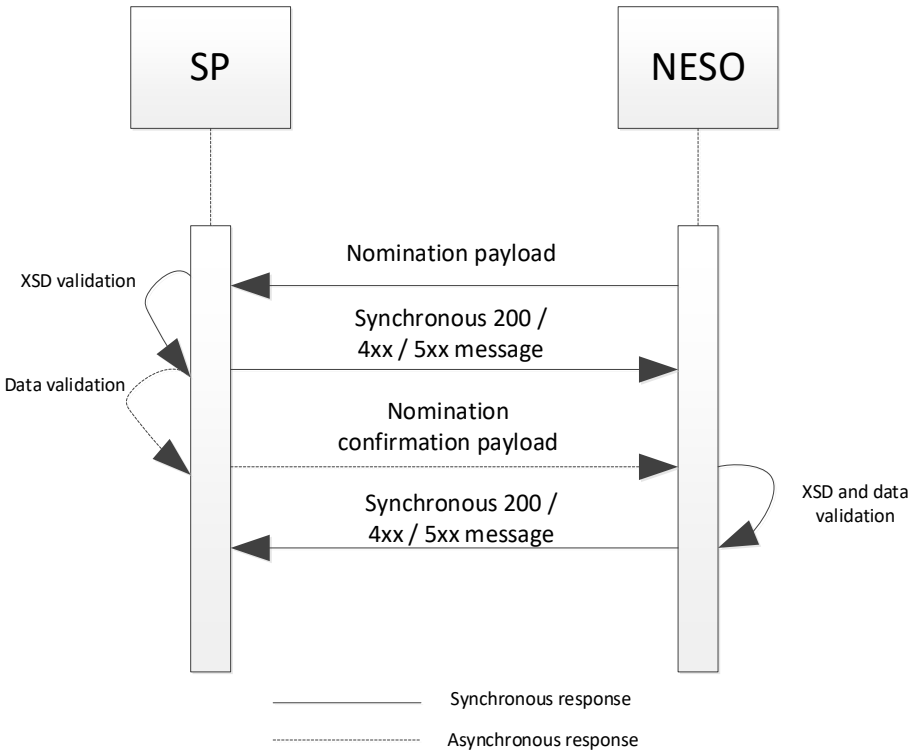
- NESO would invoke this service to confirm the validation of the availability data received from Service Provider.
- NESO will send a single confirmation xml even when Service Providers send multiple windows using a single Availability Service xml.
- Validation and Confirmation is segregated in this version and relevant reasons made available at the appropriate place which are detailed in business logic document.
- Service Provider would implement the Webservice as per the supplied url.

3.3 Arm/Disarm Service v4

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). NESO 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 NESO. 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 Arm/Disarm Service Outbound

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

NESO 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	Mandatory	

			DCH/DCL DRH/DRL		
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	Only to be used by certain ancillary services. See example payloads in Appendix for reference
Availability Window	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	Mandatory	
WindowReason	Reason for rejecting the tender	String	200 Characters	Optional	Business Reason
Availability Window	NA	NA	NA		End of AvailabilityWindow
DateTimeStamp	Date and time when this web service message was sent to the Service Provider	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 supplied url.
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 Arm/Disarm Confirmation Service v4

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

Owner: NESO

Service Type: This is asynchronous service to Availability Nomination and synchronous on its own i.e. NESO will send 200 ok synchronously after the data has been received and validated successfully. In the case of XSD or data validation, NESO 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 Arm/Disarm 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	Optional	See sample payload in Appendix section
WindowReason	Reason for rejecting the availability data in	String	200 Characters	Optional	Error codes are mentioned in business logic document

	a particular AvailabilityWIndow				
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 this web service message was sent to NESO	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 NESO. 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 supplied url.

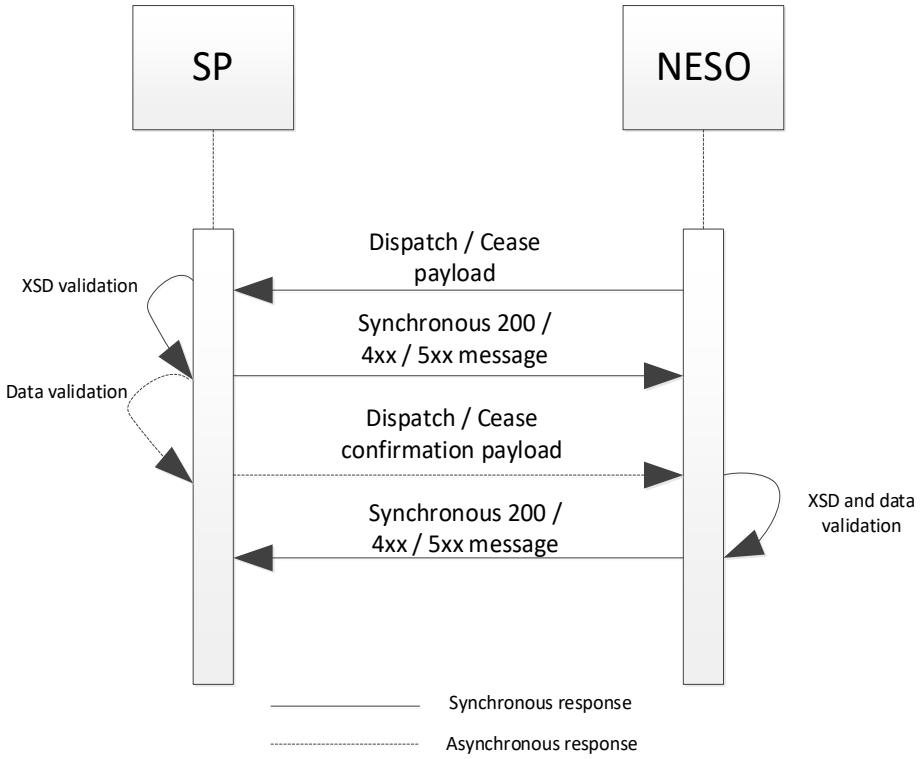
3.5 Dispatch/Cease Service v4

This service should be implemented by Service Providers to receive the Dispatch and Cease instructions from NESO. 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 e.g. PQR/PSR NQR/NSR	Mandatory	
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. 5.0	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 2021-07-16T19:20:00Z	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 NESO	Date time	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:00Z	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.
2. The request having instruction as STOP will be a Cease instruction.
3. NESO would call this service to send instructions (Dispatch/Cease) to Service Providers.
4. Service Providers should implement the Webservice as per the supplied structure.
5. The VolumeRequested field is required for MW ancillary services. If the service is positive, then this can be considered as a dispatch notification to increase generation or reduce demand, if the service 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 v4

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

Owner: NESO

Service Type: This is asynchronous service to Dispatch / Cease and synchronous on its own i.e. NESO should send 200 ok synchronously after the data has been received and validated successfully. In the case of XSD or data validation failure, NESO 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 Example PQR/PSR NQR/NSR	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	

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
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 NESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

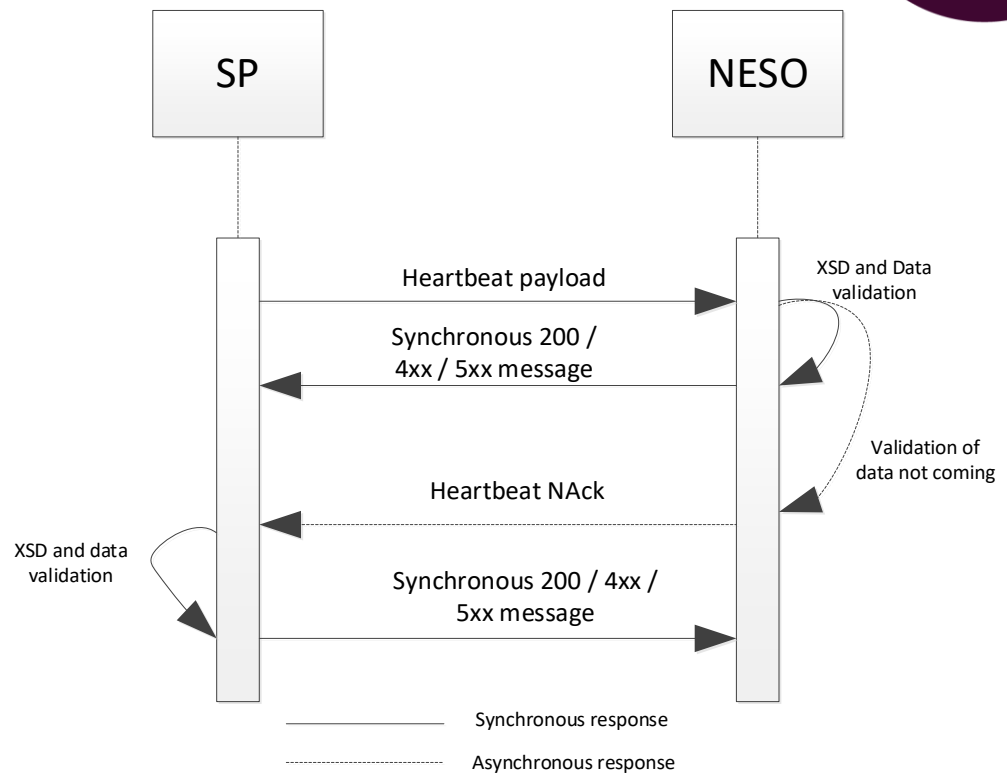
1. This service should be invoked by Service Providers for each dispatch or cease request received from NESO. If NESO does not receive a dispatch confirmation within the SLA defined in the business logic document, it will be deemed by NESO that the Service Provider is not available to dispatch.
2. Service Provider should invoke the Webservice as per supplied WSDL.

3.7 Heartbeat v4

This service will be implemented by NESO to receive the real time unit status from Service Providers. The below specifications will be followed by NESO to implement the service.

Owner: NESO

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, NESO will send Heartbeat 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 Service Inbound

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

			e.g. 12345.123456		
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	
QState		Enumeration	ON OFF	Optional	
DateTimeStamp	Date and time when this web service message was sent to NESO	Date Time	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. Service Provider would invoke this Webservice as per the API structure.
2. As the heartbeat is used by NESO to gauge the status 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 service provider to send the Unit Availability Flag

3.8 Heartbeat Negative Acknowledgement Service v4

This service will be implemented by Service Providers to receive Negative Acknowledgement for the heartbeat from NESO. The below specifications will be followed by Service Providers to implement the service.

Owner: Service Provider

Service Type: This is asynchronous to heartbeat 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, NESO expects Service Provider to send synchronous 4xx or 5xx error message back. The pattern diagram is represented in section 3.7.

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 NAck Service Outbound

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
ServiceType	Type of Service	String	25 Characters	Optional	
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:ss TZD eg 2021-07-16T19:20:00Z	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:ss TZD eg 2021-07-16T19:20:00Z	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 this web service message was	Datetime	YYYY-MM-DDThh:mm:ss TZD	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

	sent from NESO		eg 2021-07-16T19:20:00Z		

Guidelines:

1. Service Provider should implement this Webservice as per the API structure.
2. NESO will populate appropriate error codes in the ErrorCode tag as per business logic document.

3.9 Physical Notification Service v4

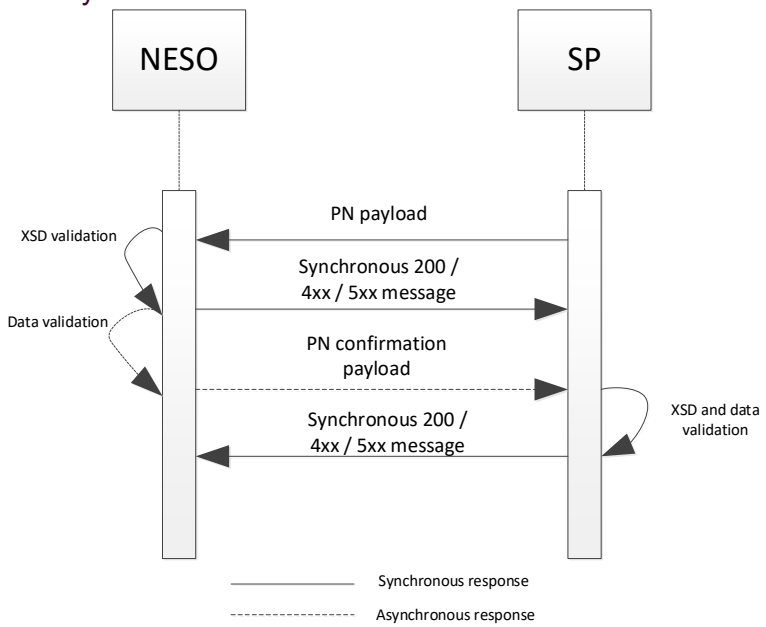
This service will be implemented by NESO to receive the Physical Notification Service - MW submissions from Service Providers. The specifications below will be followed by NESO to implement the service.

Owner: NESO

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 NESO. On any data validation failures, the error codes / messages are communicated asynchronously using Physical Notification Service Confirmation web service by NESO.

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 2021-07-16T19:20:00Z	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 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Name	Description	Data type	Size/Format/List	Mandatory / Optional	Constraint / Notes
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 this web service message was sent to NESO	Datetime	YYYY-MM-DDThh:mm:ss TZD eg 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with 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 API structure.
4. NESO 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 NESO web service.

3.10 Physical Notification Confirmation Service v4

This service will be implemented by Service Providers to receive Confirmation for the Physical Notification from NESO. 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, NESO 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, NESO 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 Identifier - ID of the message	String	20 Characters	Mandatory	
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 2021-07-16T19:20:00Z	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 2021-07-16T19:20:00Z	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 and time when this web service message was sent by NESO	Datetime	YYYY-MM-DDThh:mm:ssTZD eg 2021-07-16T19:20:00Z	Mandatory	Time should be in UTC standard with Time Zone Designator (Z)

Guidelines:

1. NESO would invoke this service to confirm the validation of the Physical Notification data received from Service Provider.
2. NESO 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 API structure.

4 Security of Messages

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

1. Transport Layer security using https / SSL / TLS
2. Whitelist IP address – NESO to whitelist SP IP address(es) and SP can also whitelist NESO IP addresses (as per the IP addresses provided)

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 are supported only. Passwords of type PasswordDigest are not supported.

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 NESO and hence NESO would expect to have a single web services password per Service Provider. The same will be the situation for the web services exposed by NESO.

The usernames and passwords should be changed every 6 months to avoid any security breach. Once every 6 months, NESO 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 NESO.

5 Response Pattern for web services

When an xml is sent to the end point, it is expected to send synchronous response back. NESO 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 Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
      <obp:Availability_Conf_Response
           xmlns:obp="https://obp.neso.energy/ConsumeAvailabilityConfirma
     tion">
         <obp:ServiceType>DMH</obp:ServiceType>
         <obp:UnitID>SITASR1</obp:UnitID>
         <obp:Response>SUCCESS</obp:Response>
      </obp:Availability_Conf_Response>
   </soapenv:Body>
</soapenv:Envelope>
```

DISARM/RE-ARM Nomination Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
      <obp:Avail_Nom_ConfirmationResponse xmlns:obp="
https://obp.neso.energy/ConsumeNominationConfirmation">
         <obp:ServiceType>DMH</obp:ServiceType>
         <obp:UnitID>SITASR9</obp:UnitID>
         <obp:Response>SUCCESS</obp:Response>
         <obp:Details>Response Details</obp:Details>
      </obp:Avail_Nom_ConfirmationResponse>
   </soapenv:Body>
</soapenv:Envelope>
```

DISPATCH/CEASE Instruction Service Sync Response Sample:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope
/">
   <soapenv:Header/>
```

```
   <soapenv:Body>
      <obp:InstructionResponse
xmlns:obp="https://obp.neso.energy/ConsumeInstruction" >
         <obp:ServiceType>PQR</obp:ServiceType>
         <obp:UnitID>RDBFOK016</obp:UnitID>
         <obp:Response>SUCCESS</obp:Response>
      </obp:InstructionResponse>
   </soapenv:Body>
</soapenv:Envelope>
```

Heartbeat NAck Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
      <obp:RTM_Negative_Ack_Response
xmlns:obp="https://obp.neso.energy/ConsumeHeartBeatNack">
         <obp:ServiceType>DRL</obp:ServiceType>
         <obp:UnitID>SITASR18</obp:UnitID>
         <obp:Response>SUCCESS</obp:Response>
      </obp: RTM_Negative_Ack_Response >
   </soapenv:Body>
</soapenv:Envelope>
```

PN Confirmation Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
      <obp:PhysicalNotification_Conf_Response
xmlns:obp="https://obp.neso.energy/ConsumePhysicalNotificationConfirmatio
n">
         <obp:PUI>12345678901234567890</obp:PUI>
         <obp:UnitID>SITASR1</obp:UnitID>
         <obp:Response>SUCCESS</obp:Response>
      </obp: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 Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Body>
      <obp: Availability_Conf_Response
xmlns:obp="https://obp.neso.energy/ConsumeAvailabilityConfirmation">
         <obp:ServiceType>DCH</obp:ServiceType>
         <obp:UnitID>UNIT001</obp:UnitID>
         <obp:Response>FAILURE</obp:Response>
         <obp:Details>Error details</obp:Details>
      </obp: Availability_Conf_Response>
   </soapenv:Body>
</soapenv:Envelope>
```

DISARM/RE-ARM Nomination Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Body>
      <obp:Avail_Nom_ConfirmationResponse
xmlns:obp="https://obp.neso.energy/ConsumeNomination">
         <obp:ServiceType>DMH</obp:ServiceType>
         <obp:UnitID>UNIT001</obp:UnitID>
         <obp:Response>FAILURE</obp:Response>
         <obp:Details>No Service Provider is available for this Unit
ID.</obp:Details>
      </obp:Avail_Nom_ConfirmationResponse>
   </soapenv:Body>
</soapenv:Envelope>
```

DISPATCH/CEASE Instruction Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/”>
   <soapenv:Body xmlns:obp="https://api.neso.energy/obp">
      <obp:InstructionResponse
xmlns:obp="https://obp.neso.energy/ConsumeInstruction">
         <obp:ServiceType>PQR</obp:ServiceType>
         <obp:UnitID>UNIT001</obp:UnitID>
         <obp:Response>FAILURE</obp:Response>
         <obp:Details>error Details</obp:Details>
      </obp:InstructionResponse>
```

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

Heartbeat NAck Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
   <soapenv:Header/>
   <soapenv:Body>
      <obp: RTM_Negative_Ack_Response
xmlns:obp="https://obp.neso.energy/ConsumeHeartBeatNack">
         <obp:ServiceType>DRL</obp:ServiceType>
         <obp:UnitID>SITASR18</obp:UnitID>
         <obp:Response>FAILURE</obp:Response>
         <obp:Details>Error Details</obp:Details>
      </obp: RTM_Negative_Ack_Response>
   </soapenv:Body>
</soapenv:Envelope>
```

PN Confirmation Service Sync Response Sample:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" >
   <soapenv:Body>
      <obp:PhysicalNotification_Conf_Response
xmlns:obp="https://obp.neso.energy/ConsumePhysicalNotificationConfirmatio
n">
         <obp:PUI>12345678901234567890</obp:PUI>
         <obp:UnitID>SITASR1</obp:UnitID>
         <obp:Response>FAILURE</obp:Response>
         <obp:Details>Error Details</obp:Details>
      </obp: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 **FAILURE.**

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

6 NESO Public Facing IP

Service Providers may need to whitelist the NESO source IP addresses. These IP addresses will be made available as part of the registration process.

.

7 Appendix: About the XSD and WSDLs

NESO 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, NESO has mocked Service Provider web services which are available in the relevant sections of this document.

Sample payloads for v4 Web Services:

7.1 Appendix 1A: Availability Service Inbound

ASR Payload for Availability:

```
<soapenv:Envelope xmlns:obp="https://obp.neso.energy/ConsumeAvailability"
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>
      <obp:AvailabilityDetails>
         <obp:ServiceType>DCH</obp:ServiceType> <<Comment: Service type
can be PQR, NQR, DCH, DCL, DMH, DML, DRH, DRL>>
         <obp:UnitID>UNIT0001</obp:UnitID>
         <obp:AUI>AUIXQ34YMU081816</obp:AUI> <<Comment: Unique ID>>
         <obp:AvailabilityWindow>
            <obp:StartDateTime>2022-10-02T03:00:00Z</obp:StartDateTime>
            <obp:EndDateTime>2022-10-02T03:30:00Z</obp:EndDateTime>
            <obp:OfferBid>
               <obp:OfferBid_Number>1</obp:OfferBid_Number>
               <obp:BreakPoint>30</obp:BreakPoint>
            </obp:OfferBid>
         </obp:AvailabilityWindow>
         <obp:DateTimeStamp>2022-10-01T01:00:00Z</obp:DateTimeStamp>
      </obp:AvailabilityDetails>
   </soapenv:Body>
</soapenv:Envelope>
```

7.2 Appendix 1B: Availability Confirmation Service Outbound

For ASR Response:

```
<soapenv:Envelope
xmlns:obp="https://obp.neso.energy/ConsumeAvailabilityConfirmation"
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>
      <obp:Availability_Conf_Message>
         <obp:ServiceType>DCH</obp:ServiceType>
         <obp:UnitID>UNIT0001</obp:UnitID>
         <!--Optional:-->
         <obp:AUI>AUIXQ34YMU081816</obp:AUI>
         <obp:AvailabilityWindow>
            <obp:StartDateTime>2023-05-02T14:00:00Z</obp:StartDateTime>
            <obp:EndDateTime>2023-05-02T16:30:00Z</obp:EndDateTime>
            <obp:Validation>VALID</obp:Validation>
         </obp:AvailabilityWindow>
         <obp:Confirmation>ACCEPTED</obp:Confirmation>
         <obp:DateTimeStamp>2023-05-01T08:32:28Z</obp:DateTimeStamp>
      </obp:Availability_Conf_Message>
   </soapenv:Body>
</soapenv:Envelope>
```

7.3 Appendix 1C: ASR Response ARM/DISARM Service Outbound

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

```
<soapenv:Envelope
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-
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>
      <obp:Availability_Nomination_Message
xmlns:obp="https://obp.neso.energy/ConsumeNomination">
         <obp:ServiceType>DMH</obp:ServiceType>
         <obp:UnitID>SITASR15</obp:UnitID>
         <obp:AvailabilityWindow>
            <obp:NUI>1909696969</obp:NUI>
            <obp:StartDateTime>2008-09-29T02:49:45Z</obp:StartDateTime>
            <obp:Nomination>DISARM</obp:Nomination>
         </obp:AvailabilityWindow>
         <obp:DateTimeStamp>2008-11-15T16:52:58Z</obp:DateTimeStamp>
      </obp: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:obp="https://obp.neso.energy/ConsumeNominationConfirmation">
   <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>
      <obp:Avail_Nom_ConfirmationRequest>
         <obp:Avail_Nom_ConfirmationDetails>
            <obp:ServiceType>DCH</obp:ServiceType>
            <obp:UnitID>UNIT0001</obp:UnitID>
```

```
            <!--1 or more repetitions:-->
            <obp:AvailabilityWindow>
               <obp:NUI>1096537223</obp:NUI>
               <obp:StartDateTime>2022-09-9T14:54:45Z</obp:StartDateTime>
            </obp:AvailabilityWindow>
            <obp:FileConfirmation>ACCEPTED</obp:FileConfirmation>
            <!--Optional:-->
            <obp:FileReason>Reason</obp:FileReason>
            <obp:DateTimeStamp>2022-09-29T14:52:58Z</obp:DateTimeStamp>
         </obp:Avail_Nom_ConfirmationDetails>
      </obp:Avail_Nom_ConfirmationRequest>
   </soapenv:Body>
</soapenv:Envelope>
```

7.5 Appendix 1E: Dispatch/Cease Service Outbound

```
<soapenv:Envelope xmlns:obp="https://obp.neso.energy/ConsumeInstruction"
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>
      <obp:InstructionMessage>
         <obp:ServiceType>PQR</obp:ServiceType>
         <obp:UnitID>UNIT0001</obp:UnitID>
         <obp:DUI>198765423</obp:DUI>
         <obp:VolumeRequested>10</obp:VolumeRequested>
         <obp:ScheduledDateTime>2023-05-
24T18:46:00Z</obp:ScheduledDateTime>
         <obp:Instruction>START</obp:Instruction>
         <obp:DateTimeStamp>2023-05-24T18:44:00Z</obp:DateTimeStamp>
      </obp:InstructionMessage>
   </soapenv:Body>
</soapenv:Envelope>
```

7.6 Appendix 1F: Dispatch/Cease Confirmation Inbound

```
<soapenv:Envelope
xmlns:obp="https://obp.neso.energy/ConsumeInstructionConfirmation"
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>
      <obp:Dispatch_ConfirmationRequest>
         <obp:DispatchConfirmationDetails>
            <obp:ServiceType>PQR</obp:ServiceType>
            <obp:UnitID>UNIT0001</obp:UnitID>
            <obp:DUI>198765423</obp:DUI>
            <obp:Instruction>START</obp:Instruction>
            <obp:ResponseCode>ACCEPTED</obp:ResponseCode>
            <obp:DateTimeStamp>2023-05-24T18:44:24Z</obp:DateTimeStamp>
         </obp:DispatchConfirmationDetails>
      </obp:Dispatch_ConfirmationRequest>
   </soapenv:Body>
</soapenv:Envelope>
```

7.7 Appendix 1G: Heartbeat Service Inbound

For ASR Response Services:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:obp="https://obp.neso.energy/ConsumeHeartBeat">
   <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>
      <obp:ConsumeRealTimeRequest>
         <obp:ConsumeRealtimeDetails>
            <obp:UnitID>UNIT0001</obp:UnitID>
            <obp:DateTimeStamp>2022-05-29T14:30:48Z</obp:DateTimeStamp>
         </obp:ConsumeRealtimeDetails>
      </obp:ConsumeRealTimeRequest>
   </soapenv:Body>
</soapenv:Envelope>
```

7.8 Appendix 1H: Heartbeat Negative Ack Service Outbound

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv=http://schemas.xmlsoap.org/soap/envelope/
xmlns:obp="https://obp.neso.energy/ConsumeHeartBeatNack">
   <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>
      <obp:RTM_Negative_Ack_Message>
         <obp:UnitID>UNIT0001</obp:UnitID>
         <obp:StartDateTime>2023-05-28T14:30:00Z</obp:StartDateTime>
         <obp:EndDateTime>2023-05-28T14:40:00Z</obp:EndDateTime>
         <!--Optional:-->
         <obp:ErrorCode>RTM_Error1</obp:ErrorCode>
         <obp:DateTimeStamp>2023-05-20T14:40:00Z</obp:DateTimeStamp>
      </obp: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:obp="https://obp.neso.energy/ConsumePhysicalNotification">
   <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>
      <obp:PhysicalNotificationDetails>
         <obp:UnitID>UNIT001</obp:UnitID>
         <obp:PUI>PUIxq0034YMU08181625</obp:PUI>
         <!--1 or more repetitions:-->
         <obp:PNDetails>
            <obp:StartDateTime>2022-10-29T02:00:00Z</obp:StartDateTime>
            <obp:EndDateTime>2022-10-29T02:30:00Z</obp:EndDateTime>
            <obp:PN_Start_MW>12</obp:PN_Start_MW>
            <obp:PN_End_MW>20</obp:PN_End_MW>
         </obp:PNDetails>
         <obp:DateTimeStamp>2022-10-28T10:02:30Z</obp:DateTimeStamp>
      </obp:PhysicalNotificationDetails>
   </soapenv:Body>
</soapenv:Envelope>
```

7.10 Appendix 1L: Physical Notification Confirmation Service Outbound

```
<soapenv:Envelope xmlns:obp="https://obp.neso.energy/ConsumePhysicalNotif
icationConfirmation" xmlns:soapenv="http://schemas.xmlsoap.org/soap/envel
ope/">
   <soapenv:Header>
      <wsse:Security soapenv:mustUnderstand="1" xmlns:wsse="http://docs.o
asis-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>
      <obp:PhysicalNotification_Conf_Message>
         <obp:UnitID>UNIT001</obp:UnitID>
         <obp:PUI>PUIxq0034YMU08181625</obp:PUI>
         <!--1 or more repetitions:-->
         <obp:PNDetails>
            <obp:StartDateTime>2022-10-29T02:00:00Z </obp:StartDateTime>
            <obp:EndDateTime>2022-10-29T02:30:00Z </obp:EndDateTime>
            <!--Optional:-->
            <obp:PNValidation>VALID</obp:PNValidation>
            <!--Optional:-->
            <obp:PNReason>string</obp:PNReason>
         </obp:PNDetails>
         <obp:Confirmation>ACCEPTED</obp:Confirmation>
         <!--Optional:-->
         <obp:FileReason>string</obp:FileReason>
         <obp:DateTimeStamp>2022-10-28T10:02:35Z</obp:DateTimeStamp>
      </obp:PhysicalNotification_Conf_Message>
   </soapenv:Body>
</soapenv:Envelope>
```