

Dispatch Alignment Recommendations

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Related documents

Reference 1	ON19-WS1A-P3 Flexibility Services - Dispatch and Settlement Processes
Reference 2	ON22-WS1A-P3 Initial Dispatch Process Capture Populated (15 Feb 2022)
Reference 3	ON22-WS1A-P3 Dispatch Interoperability and Settlement Key Service Parameters (31 May 2022)

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Introduction

About ENA

Energy Networks Association (ENA) represents the owners and operators of licenses for the transmission and/or distribution of energy in the UK and Ireland. Our members control and maintain the critical national infrastructure that delivers these vital services into customers' homes and businesses.

ENA's overriding goals are to promote UK and Ireland energy networks ensuring our networks are the safest, most reliable, most efficient and sustainable in the world. We influence decision-makers on issues that are important to our members. These include:

- Regulation and the wider representation in UK, Ireland and the rest of Europe
- Cost-efficient engineering services and related businesses for the benefit of members
- Safety, health and environment across the gas and electricity industries
- The development and deployment of smart technology
- Innovation strategy, reporting and collaboration in GB

As the voice of the energy networks sector, ENA acts as a strategic focus and channel of communication for the industry. We promote interests and good standing of the industry and provide a forum of discussion among company members.

About Open Networks

Britain's energy landscape is changing, and new smart technologies are changing the way we interact with the energy system. Our Open Networks programme is transforming the way our energy networks operate. New smart technologies are challenging the traditional way we generate, consume and manage electricity, and the energy networks are making sure that these changes benefit everyone.

ENA's Open Networks programme is key to enabling the delivery of Net Zero by:

- opening local flexibility markets to demand response, renewable energy and new low-carbon technology and removing barriers to participation
- providing opportunities for these flexible resources to connect to our networks faster
- opening data to allow these flexible resources to identify the best locations to invest
- delivering efficiencies between the network companies to plan and operate secure efficient networks

We're helping transition to a smart, flexible system that connects large-scale energy generation right down to the solar panels and electric vehicles installed in homes, businesses and communities right across the country. This is often referred to as the smart grid.

The Open Networks programme has brought together the nine electricity grid operators in the UK and Ireland to work together to standardise customer experiences and align processes to make connecting to the networks as easy as possible and bring record amounts of renewable distributed energy resources, like wind and solar panels, to the local electricity grid.

The pace of change Open Networks is delivering is unprecedented in the industry, and to make sure the transformation of the networks becomes a reality, we have created six workstreams under Open Networks to progress the delivery of the smart grid.

2022 Open Networks programme Workstreams

- WS1A: Flexibility Services
- WS1B: Whole Electricity System Planning and T/D Data Exchange
- WS2: Customer Information Provision and Connections
- WS3: DSO Transition
- WS4: Whole Energy Systems
- WS5: Communications and Stakeholder Engagement

Our members and associates

Membership of Energy Networks Association is open to all owners and operators of energy networks in the UK.

- ▶ Companies which operate smaller networks or are licence holders in the islands around the UK and Ireland can be associates of ENA too. This gives them access to the expertise and knowledge available through ENA.
- ▶ Companies and organisations with an interest in the UK transmission and distribution market are now able to directly benefit from the work of ENA through associate status.

ENA members



ENA associates

- [Chubu](#)
- [EEA](#)
- [Guernsey Electricity Ltd](#)
- [Heathrow Airport](#)
- [Jersey Electricity](#)
- [Manx Electricity Authority](#)
- [Network Rail](#)
- [TEPCO](#)

Executive Summary

Currently there are a range of different approaches of how dispatch is managed and communicated by different System Operators. At this stage the most significant alignment is amongst DNOs that are using the Flexible Power platform to manage dispatch; however, this alignment is the result of a common choice of platform for managing dispatch rather than as the result of a decision to align practices between DNOs.

Longer term the view of the WS1A P3 group is that System Operators will move to use APIs as their primary way of communicating dispatch requirements with Service Providers as this will allow the greatest level of automation and make it easy to operate at scale. As services become more critical to the running of distribution systems it may also be necessary to have multiple alternative methods of communicating dispatch to Service Providers as a backup option should the API platforms become unavailable for any reason. Alternative dispatch methods may also be necessary to engage with smaller providers who may not be willing or able to afford the costs of integrating with an API based platform.

The P3 group agree that the adoption of a common API for dispatching of services should be a long-term goal of dispatch interoperability, however, such an API would need to be designed in an appropriately flexible manner to provide future proofing. This is necessary to ensure that the adoption of a common standard does not inhibit future innovation and development of future flexibility products. With this in mind the P3 group are proposing that Open Networks should have a product to develop a common API as part of its 2023 work program.

Introduction

The WS1A P3 group for 2022 is tasked with looking at the standardisation of dispatch and settlement processes. This will build on the previous 2019 WS1A product 3 that reviewed dispatch and settlement activities. For dispatch the product will consider interoperability across various systems including DNOs, ESO and third-party platforms with a view to identifying an action plan to deliver interoperability across these different systems. The considerations of the product may include developing common systems, processes, standards and APIs.

This report summarises the conclusions of gap analysis on existing dispatch processes for services across DNOs and ESO and lays out the P3 group's recommendations for alignment of dispatching practices to achieve dispatch interoperability.

The Scope of Dispatch and Dispatch Interoperability

Definitions

Based on the previous work carried out in 2019, dispatch was defined as the “*process through which the DNO informs a flexibility provider of the required level of service within operational timescales*”. Building on this definition the 2022 P3 group concluded that dispatch interoperability should be defined as “*A standard set of policies and procedures to communicate and instruct a Service Provider to deliver a contracted service*”. Achieving dispatch interoperability should minimise the work required by a Service Provider who is successfully providing services to one System Operator to provide comparable services to another System Operator.

To minimise dependencies on the work of other WS1A products, and also to ensure that any proposed standardisation does not limit the development of future flexibility products, the process of dispatching services

has been decoupled from individual products as much as possible and, instead, discussions have been focused around a number of key phases of dispatch that are common across most existing products. Depending on the nature of individual products some of these phases may be completed as part of the procurement process or may be combined into another phase.

Phases of Dispatch

Declaration of availability by Service Provider

Summary

The Service Provider informs the System Operator of the relevant technical and commercial parameters of the services that they are offering to provide. Depending on how the System Operator runs their particular services some of these parameters may be specified by the System Operator as part of the procurement process, in which case the Service Provider would have confirmed their ability to meet or acceptance of these parameters as part of the procurement process.

Current Practices

There is a fair degree of variation between different System Operators. Most notably some System Operators assume that contracted Service Providers will be available unless they declare otherwise, while others require a regular declaration from Service Providers that they will be available and one System Operator currently proactively contacts Service Providers to confirm their availability. There is also variation regarding the timescales that System Operators operate services in, which can also vary between different products operated by the same System Operator.

There is significant variation between how System Operators currently receive declarations of availability from Service Providers, with dedicated electronic systems, email and phone calls being used to communicate availability. Longer term most System Operators agree that the best way to communicate this information at scale is through the use of APIs, but there is acknowledgement that this will require an overhead for Service Providers to integrate with that may put off smaller providers.

Acceptance of offered services by System Operator

Summary

The System Operator reviews the services that have been offered and decides which services to utilise. Depending on the service this may result in services being scheduled for delivery or it may secure availability of these services to operate if called on closer to real time by the System Operator.

Current Practices

Variations in acceptance practices generally seem to be the result of differences between the types of products being run by different System Operators. For example, Sustain services have acceptance as part of the contract while offers of Restore services tend to be automatically accepted by System Operators. The major difference between how System Operators process acceptance is the method of communication in use. The method of communication used by System Operators is generally the same method as is used by the Service Provider to submit their availability. As with declarations there is a general consensus that in the long term this process would be best managed at scale via APIs.

Scheduling of services to run by System Operator

Summary

Depending on the service, the System Operator may schedule the usage of services with the Service Provider in advance.

Current Practices

Most System Operators have a service that is scheduled in advance, although there is variation between System Operators as to how far in advance the schedules are decided and the products that have advance scheduling¹.

Again, currently there are differences in the method of communication used for scheduling of services, although the longer-term view is that APIs would be the best way to manage this at scale.

Instruction of services to run by System Operator

Summary

The System Operator provides a real time instruction to the service operator to start delivering a service. This instruction will normally be issued a pre-agreed ramp up time period ahead of the time the System Operator requires the service to start being delivered. For service types that are scheduled with the Service Provider in advance the System Operator may provide a dispatch instruction at the start time or may require the Service Provider to start delivering the service at the scheduled start time.

Current Practices

The method of sending dispatch instructions varies between System Operators and products offered. For products that are scheduled with a Service Provider in advance, some System Operators still provide a dispatch signal at the start of the scheduled period, while others will instead require the Service Provider to self-dispatch at the start of the scheduled time.

For System Operators that have a product dispatched in real time there is generally a ramp up notice time period, which is the time period the Service Provider has from the issue of the dispatch instruction to start delivering the dispatched service in full. This time period may be fixed for the product or agreed with each Service Provider on an individual basis.

Currently System Operators send instructions by a range of communication methods including APIs, phone, email and SCADA. The general consensus is that APIs will be the longer-term method for sending instructions. Given the likely long-term importance of services it is likely that back up communication methods will be necessary for critical services, to ensure that these can be dispatched in the event of any failures in an API based system.

Cease instruction to stop operation of services

Summary

The System Operator provides a real time instruction to the Service Provider to stop delivering a running service. For service types that are scheduled with the Service Provider in advance the System Operator may provide a cease instruction or may require the Service Provider to stop delivering the service at the scheduled end time.

¹ Alignment of products that have advance scheduling is excluded from the scope of P3. This will instead be part of the considerations of P6 (Flexibility Products).

Current Practices

For services that are scheduled in advance the stop time of operation is normally sent along with the start time as part of the scheduling process. For services that are instructed in real time, the end time may be sent as part of the start instruction or may be sent separately based on current network conditions.

Generally the cease instruction will be sent by the same method as the instruction to start delivering the service.

Variation of dispatched service

Summary

The System Operator provides a real time instruction to a Service Provider to vary their delivery of a running service.

Current Practices

Use of this sort of instruction is currently very limited, with no DNO currently utilising these.

Monitoring of services

Summary

Depending on the nature of the service being delivered the System Operator may require the ability to monitor the status and delivery of services in real time.

Current Practices

Generally there is limited real time monitoring of individual services at this stage, as existing wider system monitoring processes are used to ensure the network remains within limits. For some services this means that for real time operational purposes service delivery is assumed unless the System Operator is informed otherwise. Real time monitoring of individual services is generally via SCADA, where there is SCADA already fitted at the connection point of the service. Where Service Operators submit metering data for billing in real time this can be used to monitor delivery.

Where APIs are used for dispatching, the structure of HTTP APIs means that there is an acknowledgement that dispatch messages have been received by the API server through HTTP status messages.

Longer term there is likely to be an increase in the level of real time monitoring required by System Operators, both in the form of enhanced status messages from Service Providers and real time data of the volume of service currently being delivered.

Post-action reporting

Summary

Following delivery of a service, the System Operator may carry out analysis on the delivery of the service and provide various reporting.²

Current Practices

² Detailed comparison of post-action reporting related to settlement is excluded at this stage as this will be picked up through the P3 work on settlement later in the year.

There is currently significant variation between System Operators as to the methods they use for settlement of services and the level of other post-action reporting / analysis they carry out. System Operators who utilise the Flexible Power platform to manage dispatch of services utilise the platform's performance reporting and ESO use a number of established systems, to process event data and provide settlement, depending on the type of service. Other System Operators have more manual processes to review delivery post event and provide settlement. This area is likely to have further development in future as DNOs are likely to move to more automated reporting and settlement solutions as the volume of services used within their networks increases.

Cancelation of dispatch

Summary

Stopping of planned or running services either as the result of the Service Provider no longer being able to deliver the service or because the System Operator needs to stop a planned service from running.

Current Practices

With the exception of ESO, System Operators do not have particularly established methods for cancelation of services. This may in part be due to the availability declarations and dispatch decision processes meaning that cancelation of services should be a relatively rare event, either because Service Providers would not offer availability if they knew their plant would be unavailable, or because System Operators would not schedule excessive services in advance, such that they would need to cancel services to keep their network within limits.

As the volume and criticality of services within distribution networks increases it is likely that there will be further development around the process and communication of cancelation of services.

Recommendations for alignment

Alignment of Current Processes

While there is currently significant variation in the methods of communicating dispatch requirements with Service Providers there is general alignment in terms of the phases of dispatch System Operators progress through.

As it stands, greatest alignment of dispatch is between DNOs that utilise the Flexible Power platform to manage dispatch. However, this is more the result of the choice by DNOs to utilise the same platform for dispatch rather than as the result of a decision to align practices.

Longer Term Developments

Longer term the consensus of the P3 group is that the communication of dispatch requirements is best handled at scale via APIs as this will enable the use of automated systems to process dispatch requirements. It is recognised that this approach will require an overhead for Service Providers to integrate with APIs and that this could be off putting for smaller providers. In addition, as the use of services becomes more critical it is likely to be necessary to provide backup methods for dispatching services to ensure services can be dispatched in the event of a failure of systems associated with an API. As a result of these it may be that System Operators still maintain other methods of dispatching alongside APIs.

As the consensus of the P3 group is that APIs will be used to manage dispatch in the long term, the group explored the idea of achieving dispatch interoperability through the use of a common API across all System Operators represented on the group. Given the rapid pace of development of flexibility services it will be essential to ensure that a common API has suitable flexibility such that it allows further innovation and

development of new products. A poorly designed API that only addresses the current needs of flexibility services may bring some short term alignment, but runs a significant risk of becoming quickly outdated and ultimately hindering the future development of flexibility markets.

With this in mind, the P3 group explored three existing dispatch API standards: Universal Smart Energy Framework (USEF), OpenADR 2.0 and IEEE 2030.5. Each of these standards have their own advantages and disadvantages, given that technical specifications are excluded from the scope of this year's product 3 it was concluded that it would not be appropriate to make a recommendation to adopt an existing standard nor a recommendation to design a bespoke new standard at this stage. Instead, the P3 group has focused on creating a first pass of a high-level specification and are recommending that if it is possible to meet the requirements contained within this specification with the use of an existing API standard that this is preferable to the development of a new standard. This first pass at a high-level specification is included as an appendix to this report and will likely require further refinement if it moves into development.

Based on the above considerations the P3 group are recommending that a common dispatch API should be developed that can be adopted by all System Operators. If possible this should align with an existing dispatch industry standard, provided that this approach will meet the requirements of the UK System Operators. The design and development of this common API should be led by a Software Developer familiar with API design, with representatives of the System Operators providing a high-level functional specification and oversight to ensure that the developed API will address the System needs. *This work should also account for existing APIs in use within the industry and the costs and security implications to the industry of changes from existing arrangements.* With this in mind the P3 group is making the recommendation that next year's Open Networks work plan should include a product to develop this API with suitable Software Developer resource contracted in to take the lead on the technical design of the API.

A common API for use by System Operators may also be of interest to third party markets and dispatch platforms. On the whole, wider adoption of a common API for dispatching flexibility services is likely to be of benefit as it could enable dispatch interoperability between System Operators and third-party markets. Consideration should therefore be given as to if and how third-party markets and dispatch platform operators should be able to input into the design and development of a common API.

A further important consideration will be the ongoing management of a common API. As has been previously noted, flexibility services are developing rapidly and it is likely that future developments will result in a need for additions or changes to the API. These should be minimised through good design of the initial API, but there will still be a need for changes to be made. The governance and management of the API and future changes will need to be considered and provisions put in place for this as part of the initial design.

Adoption of a Common API

Once a common API has been developed it would then need to be implemented within System Operators dispatch platforms and then adopted by Service Providers. Depending on the complexity of the developed API and the availability of developer resource, these could have significant lead times to implement. In some respects this may actually be more complex to implement for System Operators that already have an API in operation due to the added complexities of migrating to a new API and the need to provide an appropriate migration period, where both APIs would need to be in operation, for Service Providers to move to the new API. As part of the 2022 Open Networks consultation the P3 group is seeking input from Service Providers as to what they consider a reasonable timeframe for them to migrate to a new API would be, which will help shape decisions by System Operators as to how long they run any existing APIs in parallel with a new common API.

Given that at this stage there is only a high-level functional specification of a common API, it is too early in the development process to provide any meaningful estimations as to how long the development and adoption of a

common API could take. At this stage we would suggest that development of the API is likely to be a medium-term development with implementation of the API as a long-term development.

Glossary

Service Provider: A party that provides a commercial service to a System Operator to assist with the management of an electrical system. Typically this would be by varying their delivery or consumption of power through the dispatch or constraint of generation or demand.

System Operator: A party that is responsible for the management of the power flows within an electrical system.

Dispatch: The process through which the DNO informs a flexibility provider of the required level of service within operational timescales

Dispatch Interoperability: A standard set of policies and procedures to communicate and instruct a Service Provider to deliver a contracted service.

API: Application Programming Interface. A standard way of communication between computer systems utilising predefined messages.

Appendices

[WS1A P3 Initial Dispatch Process Capture Populated.xlsx](#)

[Key Service Parameters.xlsx](#)

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