

Frequently Asked Questions

Mersey region reactive power service

25 November 2019



Contents

Frequently Asked Questions	2
General	2
Requirement	2
Technical	3
Commercial	4
Assessment	6
Testing	7
Dispatch	7
Settlement	8
Embedded providers	8
Aggregators	9

Frequently Asked Questions

General

What service are you buying specifically? (last updated: 25 Nov)

We are seeking static reactive power absorption in the Mersey region. We are tendering for a nine-year service between 1 April 2022 and 1 April 2031. Providers are expected to be available 24/7 year-round.

Who can participate in this tender? (last updated: 25 Nov)

We invite tender submissions from any provider which can meet the technical requirements for reactive power provision and are located within the highlighted region in the tender pack, connected by 1 April 2022 and available for the full nine-year period.

How do I participate in this tender? (last updated: 25 Nov)

We are running a two-stage tender process. Participants are asked to submit technical information initially within section A of the tender proforma by 5pm on 13 December 2019. NGENSO will then conduct a technical review and liaise with the DNO/TO as appropriate and share effectiveness, power factor and reinforcement information within section B by 7 February 2020. Participants will then be required to submit their commercial offer(s) within section C of the proforma by 5pm on 28 February 2020.

All submissions should be sent via email to commercial.operation@nationalgrideso.com

Am I allowed to stack additional balancing services revenues if I'm successful? (last updated: 25 Nov)

Providers can stack additional balancing services provided that it does not impact the ability for the provider to deliver the contracted reactive power services if instructed to do so.

Requirement

Is there a minimum and maximum size for the reactive power solution? (last updated: 25 Nov)

The minimum size for participating in the tender is 15MVAR. Sub-units which are part of an aggregated unit can have a minimum of size of 5MVAR.

The maximum size is limited by the voltage step change limits in the event of the credible faults or a single switching action and will depend on the voltage levels at which the provider is connected. The maximum size will broadly be in line with the following guidelines: 200MVAR at 400kV, 100MVAR at 275 kV, 60MVAR at 132kV, 30MVAR at 66kV, 15MVAR at 33kV.

The technical assessment carried out by NGENSO for transmission solutions and SPEN for distribution solutions will determine whether the proposed solutions are within the voltage step change limits.

Why do I need to be available to receive instruction on a 24/7 basis? (last updated: 25 Nov)

For a long-term commitment such as this NGENSO is requiring 24/7 availability. This acknowledges that our utilisation profile through the period will change and is reflective of the alternative solution of installing a network asset.

I'm due to connect / will be available after 1 April 2022, can I participate? (last updated: 25 Nov)

No, the requirement is from 1 April 2022. This is reflective of the need in the area and the lead times required to install the alternative network asset.

Technical

How do I know where I am connected / connecting? (last updated: 25 Nov)

You should contact the NGESO Electricity Customer Connections team to enquire about connections to the transmission network, or SP Energy Networks (SPEN) for your connection to the distribution network in the Mersey region. For distributed providers, the DNO will be able to provide an indication of your nearest Transmission connection point for referring to the diagram in the tender pack.

NGESO Electricity Customer Connections: <https://www.nationalgrideso.com/connections>

SP Energy Networks: https://www.spenergynetworks.co.uk/pages/which_type_of_connection.aspx

How do I know how effective I will be? (last updated: 25 Nov)

We are running a two-stage tender process. Once the technical submission has been reviewed NGESO will communicate unit level effectiveness information by 7 February 2020. This will allow participants to structure their commercial offer.

The effectiveness of any proposed options varies according to their points of connection. It will impact the total volume of Reactive Power procured. Options in different locations, connected at different voltage levels or of different sizes have different impacts on the transmission system voltage. NGESO will work with SPEN to calculate the effectiveness factors when all technical data is received. Please see the [effectiveness factor assessment methodology](#) for details on how effectiveness factors are calculated.

Can I provide a substitute unit if my contracted unit becomes unavailable? (last updated: 25 Nov)

Yes, however where the substitute unit is not located at the same connection point the participant will be expected to work with the relevant parties (SPEN if distribution connected and NGESO if transmission connected) to ensure that the effective MVAR at the transmission network remains at least the same. NGESO reserve the right to reject any substitution requests that adversely impact the original contracted service.

Can I participate in this tender if I am a dynamic service provider? (last updated: 25 Nov)

Yes, but a dynamic provider will need to operate in constant reactive power mode.

Why is there a requirement for specific protection settings? (last updated: 25 Nov)

The reliability of a provider is a key element which NGESO needs to consider when awarding a contract for the reactive power service. By requesting that specific protection settings be met, NGESO is ensuring that providers will not be inadvertently disconnected from the network, thereby maximising their availabilities.

What protection settings do I need to have to participate in the tender? (last updated: 25 Nov)

The protection settings requirement relates to the loss of mains protection and fault ride through requirements. Solutions which implement loss of mains protections based on RoCoF (Rate of Change of Frequency) need to have a setting of 1Hz/s or above with a time delay of 500ms and those which implement loss of mains protection based on Vector Shift will either need to change or reprogram their relays to RoCoF protection with the same above settings.

With regards to the fault ride through requirements, solutions must be able to remain connected and stable for transmission system faults where the voltage at the Grid Entry Point or User System Entry point could fall to 0 pu for up to 140 ms.

Participants who are successful in the tender will need to have the right protection settings on or before the scheduled commercial operations date i.e. 1st April 2022.

Commercial

How do you calculate availability? (last updated: 25 Nov)

Providers are deemed available or unavailable on a settlement period basis. If a provider can deliver $\geq 90\%$ of their contracted reactive capability they will be deemed available for that settlement period. If a provider's operational meter reads $\geq 90\%$ of contracted volume whilst under instruction, they are deemed available.

For Force Majeure events, providers will not receive their availability fee.

For the avoidance of doubt, if a provider's ability to deliver contracted volume is limited by DNO restrictions, this is not a Force Majeure event.

Will I be paid for injection of reactive power, or absorption of reactive power without receiving an instruction from NGESO? (last updated: 25 Nov)

Providers are paid on an availability basis and so will receive the availability fee (subject to performance criteria) regardless of whether NGESO have issued an instruction to the provider. There is no utilisation fee, see utilisation price question below.

What is the utilisation price? (last updated: 25 Nov)

There is no utilisation price offered for this service type.

In addition, obligated providers of reactive power agree they will cease to be entitled to payments for the Obligatory Reactive Power Service throughout the Service Term. This applies regardless of whether a dispatch instruction has been issued.

What is the contract length? (last updated: 25 Nov)

The contract is for a nine-year period, running 1 April 2022 at 23:00 to 1 April 2031 at 07:00.

What is the payment structure within the contract? (last updated: 25 Nov)

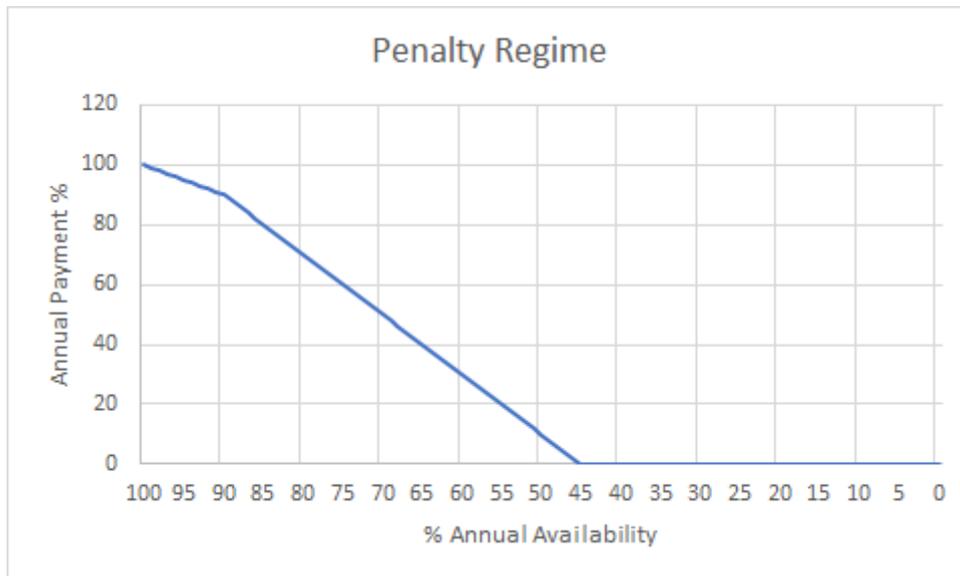
Providers are paid an availability fee (£/SP), subject to 90% of contracted reactive volume being available or delivered when under instruction. For the impacts of unavailability, see the penalties for unavailability question.

What are the penalties for unavailability? (last updated: 25 Nov)

Providers are required to be available year-round. An annual assessment will be conducted to calculate annual availability based on the number of settlement periods a provider was deemed available. For $\geq 90\%$ availability, providers will be paid their availability fee for the settlement periods they were available.

For availability $< 90\%$ providers will not be paid their availability fee for the periods they are not available and will be subjected to a further penalty equal to the same amount. For avoidance of doubt, penalties will only apply to the unavailability periods below 90%.

The graph below reflects the level of annual payment as a percentage of the maximum annual payment based on annual availability.



For example:

- Provider available for 94% of the year.
Availability fee paid for every settlement period provider was available.
- Provider available for 75% of the year.
Annual payment = 75% of maximum annual payment – a penalty of (90-75) % of maximum annual payment
= 60% of maximum annual payment.

What are the penalties for underperformance? (last updated: 25 Nov)

As above, however if we observe poor performance, we can request a re-proving test to determine whether the contracted volume and pro-rated availability rate should be reduced. Re-proving tests can be requested where the performance expectation of 90% is not met in more than 20% of instructed settlement periods within a calendar month.

What agreements do I need to have in place with NGESO? (last updated: 25 Nov)

Our aim is to enable more providers to deliver balancing services. For the tender process, potential providers do not need to be BM parties, signatories to the CUSC, have an MSA or a Connection Agreement. Providers will need to have a Connection Agreement for delivery of service, but not to tender. Providers may need agreements with NGET or SPEN and/or licences.

What milestones do I need to provide if I have not yet connected? (last updated: 25 Nov)

NGESO would like to ascertain that successful providers who are not yet connected to the network can demonstrate that they are on track to deliver their solution such that the reactive power service can commence on the 1 April 2022. As such we have defined an indicative set of post tender milestones which successful providers will need to have achieved by certain post tender milestone dates. Please see schedule 4 of the reactive service agreement for further details on the post tender milestones. Please also note that these will be finalised prior to contract award.

- Indicative Phase 1 Post Tender Milestones (9 months after contract award date)
 - Signed connection agreement with relevant network owner
 - Confirmation of planning permission
 - Confirmation of land purchase/ lease

- Agreed procurement, construction and installation contracts along with latest construction plan
- Indicative Phase 2 Post Tender Milestones (6 months before commercial operation date)
 - Construction is well underway and close to completion
 - All relevant consents, permits and licenses achieved

What happens if I miss a milestone? (last updated: 25 Nov)

There are consequences if a provider misses a milestone. If the Post Tender Milestones have not been satisfied and, in the Company's reasonable opinion, there is no reasonable prospect of the Provider being capable of satisfying the applicable Post Tender Milestones within two months after the applicable Post Tender Milestones Date, the Agreement may be terminated.

What happens if I take a connection offer in a different location to the one I tendered? (last updated: 25 Nov)

Participants are asked to contact NGENSO immediately upon being made aware that the tendered connection location cannot be supported. NGENSO reserve the right to terminate any agreement where the effective MVARs contracted for at the point of the transmission system are adversely impacted by a change in a successful participant's solution.

What happens if I cannot meet my contract start date? (last updated: 25 Nov)

NGESO recognises there could be unforeseen circumstances and providers may not meet the Commercial Operations Date, therefore there is a Long Stop Date of the 30 June 2022 which must be met otherwise the agreement will be terminated.

Am I able to change my tendered price if my forecast costs change? (last updated: 25 Nov)

In order to ensure a fair tender process, once prices are submitted, they cannot be changed.

Assessment

How will I be assessed? (last updated: 25 Nov)

The assessment will calculate the total cost per effective MVAR of each contract using the parameters provided and our forecast utilisation over the nine-year period to create a price stack. Contracts will then be awarded until our requirement has been fulfilled. Due to the granularity of the product this may result in some overholding.

All tenders are compared against the BM counterfactuals although at times there may be no alternative BM actions to take due to generator outages and unavailability. NGENSO is licensed to manage the system in an economic and efficient manner and the cost of the contracts will be compared to the historic cost of managing voltages in the Mersey region and other voltage areas. If the total costs of the contracts required to obtain 230MVARs absorption is excessively high compared to these costs, NGENSO may reject tenders with £/effective MVAR costs that show significant deviation from the average accepted tender price. Providers are expected to be price reflective in line with the market.

If the lowest cost solution is a combination of options, NGENSO will collaborate with SPEN to perform a validation. This is to validate that when all the selected options are working together to provide the reactive power services, no system limits will be exceeded inadvertently as a result. Shall the lowest cost solution prove to cause other system issues, the next-lowest cost solution will be selected instead. This validation step will be repeated until a solution is found to clear the validation process.

What is the counterfactual for the assessment? (last updated: 25 Nov)

All tenders are compared against the BM counterfactuals although at times there may be no alternative BM actions to take due to generator outages and unavailability. NGENSO is licensed to

manage the system in an economic and efficient manner and the cost of the contracts will be compared to the historic cost of managing voltages in the Mersey region and other voltage areas. If the total costs of the contracts required to obtain 230MVA_r absorption is excessively high compared to these costs, NG may reject tenders with Effective £/MVA_r costs that show significant deviation from the average accepted tender price. Providers are expected to be price reflective in line with the market.

All tenders will also be compared against solutions proposed by the TO i.e. NGET in this case.

How will tenders be compared to TO assets? (last updated: 25 Nov)

TO assets cost will include the capital cost of the asset spread over the same contract period (9 years) and will include the cost of losses during the forecast utilisation period. These will be provided by the TO as part of their submission. The principle behind this assessment is to compare TO solutions and other contracts as fairly as possible.

Capital spend will be amortised over the nine-year procurement window and operational spend will be discounted back to 2019 sterling.

How will losses be accounted for? (last updated: 25 Nov)

Losses will be borne by the contract provider and therefore be included in the cost per effective MVA_r based on forecast utilisation. Parties are encouraged to provide transparency on how they have calculated this.

Testing

Will I be subjected to an initial proving test? (last updated: 25 Nov)

Distribution connected participants will be tested and will need to prove their reactive capabilities at the point of connection. Transmission connected participants will be tested through the traditional compliance route.

What are the potential consequences from the initial proving test? (last updated: 25 Nov)

Potentially NGESO may reduce the contracted MVA_r capability and prorated availability payment rate where the service delivered at the point of connection is less than the contracted value. Where agreement can't be made on a reduced capability a further proving test may be offered. NGESO reserve the right to terminate the contract where the provider is not able to meet the contracted capability.

Dispatch

How do I declare whether I'm available or not? (last updated: 25 Nov)

Providers are required to submit planned unavailability in December for the following financial year e.g. December 2022 to cover April 2023 to March 2024.

Providers should otherwise notify NGESO of unavailability as soon as they become aware. Providers must submit a redeclaration of availability once they are available again.

Providers must reconfirm planned unavailability to NGESO by 14:00 for the subsequent day (23:00 for 24 hours).

Declaration of unavailability should be by fax/email (to be decided).

Unless notification has been received, providers will be assumed available and reactive instructions could be issued at any point.

How will I be instructed? (last updated: 25 Nov)

Instructions for reactive power absorption will be delivered via an electronic dispatch system. BM providers will be dispatched using existing EDL/EDT systems. Other providers will need to host an IEC104 server such that NGENSO can connect via a VPN.

Providers will be required to acknowledge receipt of the instruction within two (2) minutes. The instruction may be delivered up to 30 minutes in advance of reactive power delivery.

What form of instruction will I be given? (last updated: 25 Nov)

Providers will receive a binary on/off signal via the electronic systems. Providers will be expected to deliver reactive absorption until the binary signal changes.

What level of utilisation can I expect? (last updated: 25 Nov)

We want to provide a level of certainty for potential utilisation across the service period so that participants can account for losses appropriately. We have therefore created a maximum number of settlement periods of utilisation per annum of 11,000. Whilst we require 24/7 availability we have calculated this figure using all overnight periods, weekend days, allowance for six weeks of network outages, plus 10% for additional cover. We would expect the level of utilisation to increase over the nine-year period, however the 11,000 settlement periods per annum will remain constant. The level of utilisation per provider will vary depending on the exact requirement e.g. if one provider can meet the requirement of 150MVar, we wouldn't utilise all contracted parties.

Settlement

How will my performance be monitored? (last updated: 25 Nov)

Participants will be expected to provide operational and settlement level metering.

How will I be paid, and how often? (last updated: 25 Nov)

Payment terms are specified in the contract; however, you will be paid through the normal monthly settlement process and paid a month in arrears. For example, for service delivery in April 2022, you will be paid in May 2022 and so forth. Any reconciliation resulting from the annual availability assessment will be done at the end of the financial year.

Embedded providers

I'm connected below 33kV, can I participate? (last updated: 25 Nov)

Providers connected below 33kV cannot participate in this tender. One of the minimum criteria for providers to participate in the tender is be connected at 33kV or above. Previous analysis we have carried out suggests that the majority of connections below 33kV will have limited effectiveness at transmission level.

My current connection agreement with the DNO only allows me to operate between 0.95 lead and unity power factor. Can I still participate? (last updated: 25 Nov)

Yes, all providers who can meet the minimum technical requirement will be able to participate in the tender even if there are existing limitations in their connection agreement. Providers who win a contract for operating at a power factor outside their current connection agreement will need to submit a modification notice to the DNO soon after the contract award to change their connection agreement. The DNO will then process the modification notice and approve as appropriate following their standard process. Please note that the associated modification application process may have associated fees.

What happens if my capability is restricted by the DNO during the contract (last updated: 25 Nov)

This would not be classified as a Force Majeure event, and if the capability is reduced to below 90% of the contracted absorption capacity the provider would be deemed unavailable and receive no payment. This period of restriction will also be included in the annual availability assessment for calculating any penalties necessary. Depending on the length of restriction, NGESO may consider termination rights; however, it is expected that we would be discussing this with the provider and trying to agree a way forward.

Are there any distribution network restrictions providers should be aware of? (last updated: 25 Nov)

An impact assessment will be carried out to ensure the distribution network remains compliant. For example, restrictions could apply due to excessive active and reactive power flows or voltage control limitations. As part of the tender process, providers are requested to submit their reactive absorption capabilities at different power factors and SPEN will determine the most optimum power factor of operation for each provider. Reinforcements may be suggested where possible to enable operation at different power factors and it will be up to the provider to decide whether or not to agree to the reinforcements.

Do I need to notify the DNO i.e. SPEN I want to tender / have tendered in? (last updated: 25 Nov)

No. There is no formal requirement to do this as NGESO will inform SPEN of all potential providers once the tender closes. However, for embedded participants yet to connect to SPEN's network we would suggest that they engage early with SPEN to determine if there are any restrictions that would impact their participation.

Will I need to notify the DNO i.e. SPEN if I am instructed? (last updated: 25 Nov)

No, providers will not have to notify SPEN of any instructions. If required, NGESO will provide visibility of the instructions to SPEN.

What is power factor mode? (last updated: 25 Nov)

It is a mode of operation whereby an equipment will adjust its reactive power output such that there is always a constant ratio between its reactive power output and its active power output. If a device is set to operate in Power Factor Control mode at a power factor of 0.95, the ratio of reactive power to active power will be approximately 1:3.

Aggregators

Can aggregators participate? (last updated: 25 Nov)

Yes, aggregators are able to participate. A tendered / contracted unit can be made up of multiple sub-units where each is at least 5MVA in size. Technical information for each sub-unit is required at the point of tender to facilitate DNO level effectiveness and impact assessments. If an aggregator is expecting to offer assets connected to the transmission network, please contact us.

As an aggregator, can I substitute my sub-units? (last updated: 25 Nov)

Sub-units can be reallocated across aggregated units but the total effective MVA of the aggregated unit must remain at least the same after reallocation. Sub-unit size must remain the same as tendered when being reallocated. New sub-units can be allocated to an aggregated site where the aggregator has worked with SPEN to determine the unit level effectiveness and impact to the DNO network. If an aggregator is expecting to offer assets connected to the transmission network, please contact us.