National Grid Statement of Common Ground

Thurrock Flexible Generation Plant

Application document number A8.12

APFP Regulations reference 5(2)(q)

nationalgrid

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26th July 2019

Re: Thurrock Power Limited

Dear Andrew,

Further to recent discussions I attach an addendum to the Statement of Common Ground for Thurrock Power, the detail of this is set out below.

Thurrock Power is a 750MW project comprising a 600MW high-efficiency gas reciprocating engine plant & 150MW battery storage targeting a 2023/4 connection date to the National Grid Electricity Transmission system. The project will support both renewable generation currently on the system and further deployment of renewables in the future providing backup to the intermittency of wind and solar. Alongside emerging battery storage, demand side response, interconnectors, pumped hydro and other technologies, all other things being equal it will help reduce the cost of operating the system and lower emissions, as National Grid System Operator manages this imbalance of supply and demand. National Grid Electricity Transmission (NGET) supports measures to assist the UK in its transition to a low-carbon economy in this way and always looks to economically and efficiently connect customers' assets to the GB transmission network.

The energy system is undergoing a rapid transition to accommodate significant volumes of renewable generation, particularly off-shore wind. The wind resource, on-shore or off-shore is typically found far from the large centres of demand often at the end of radial transmission links. Increased connection of generation at the current extremities of the network may accelerate as traditional forms of generation coal and gas located more centrally close down. NGET recognises that the intermittent nature of renewable generation places additional requirements on the network, increased reliability on highly flexible forms of generation and careful management and design of the network as a whole. Thurrock Power is an example of a flexible generation asset being developed to meet this requirement.

Whilst the transmission network is highly resilient and able to transmit large volumes of energy from North to South, there are advantages in siting projects providing security of supply and flexibility as close to centres of demand as possible. Doing so reduces electrical losses which occur over long distances and reduces exposure to any constraints or problems on the transmission network which might occur. Thurrock Power's proximity to London is beneficial, situated [20] miles East of London. Generation at this location will reduce losses and investment costs because it re-uses the 275kV substation which NGET would otherwise have closed and provides valuable security of supply to the country and London, in the critical pathway to lowering carbon emissions.

Kindest Regards

[redacted]

Mark Beasley
Sector Head: Onshore & Storage
National Grid Electricity Transmission

Thurrock Power Limited

The Thurrock Power Order (DCO)

Land to the north of Tilbury substation, Walton Common, Thurrock, RM18 8UL

Applicant's Statement of Common Ground with National Grid Electricity Transmission Plc

The Planning Act 2008

Applicant: Thurrock Power Limited

Date: October 2018

CONTENTS

1 Introduction

Overview

1.1 This Statement of Common Ground has been prepared by Statera Energy Limited on behalf of Thurrock Power Limited. It forms part of the documentation submitted in support of the examination of the application for the Development Consent Order (DCO), that will be submitted to the Secretary of State for Business, Energy and Industrial Strategy, under section 37 of 'The Planning Act 2008'.

1.2 Thurrock Power Limited is seeking development consent for the construction, operation and maintenance of a new Gas Fired Electricity Generating Station and Battery Storage Facility with a combined output capacity of 750 MW including electrical and water connections, a new gas supply pipeline and other associated works on land to the north of existing Tilbury substation, Thurrock.

1.3 The purpose of this Statement of Common Ground is to set out the level of agreement that has been reached between Thurrock Power and both National Grid Electricity Transmission (NGET) Plc and National Grid Gas Plc (NGG) in respect of the following matters:

Grid Connection;

Justification;

Gas connection; and

Land matters and relationship with assets owned by NGET and NGG;

1.4 Section 2 sets out the areas of agreement in relation to the above matters.

The Site

1.5 The Proposed Development Site is located on common land and farmland directly north of the existing Tilbury substation, approximately 900m to the south east of Tilbury, 1.2km south of West Tilbury, 2.2 km west of East Tilbury and 2.3 km to Chadwell St Mary.

1.6 The entire Site lies within the administrative boundary of Thurrock Council.

1.7 The site itself extends to approximately 35 acres and is comprised of poor quality grass land, some farmland and corridors of land outside this area for the access route and gas supply line.

1.8 The land required for the Project will be leased.

1.9 The area surrounding the Site is predominantly flat and for the most part comprises agricultural land interspersed with small settlements to the north of the railway. The area is however separated by transport infrastructure, notably the railway line, (Essex Thameside) and the new proposed route for the Lower Thames Crossing lies approximately 1km to the east of the proposed site. The area is dominated by overhead electricity lines associated with the existing substation.

Project Justification

1.10 The 275kV circuit around London is an important part of the electricity infrastructure as it delivers power to the capital and the population within the M25. Further, the demand for electricity is likely to go up within the London metropolitan area despite the deployment of smart metering, higher efficiency from users and the further deployment of roof solar on local authority or private housing. Generally electricity demand is also more likely to increase with Government policy supporting substantial further housing provision within the M25, the general growth of the economy and electrification of road transport.

1.11 Against this rising demand and need for flexibility 1.145GW of generating capacity has been decommissioned from the 275kV transmission system since the 1970's. As a result at Tilbury 275kV substation there is 897MW of spare capacity which means that Thurrock Power has been able to secure a grid contract without the need to trigger significant transmission reinforcement on the wider system. There is also significant spare capacity in the 400kV area of the substation.

1.12 In the same time period at least 2.6GW of generating capacity has been decommissioned from the 132kV and 66kV circuits. The decommissioned power plants at Watford, Acton Lane, Croydon B, Fulham and West Ham were also connected at lower voltage and so represent a further 1GW of capacity that has been lost from the local transmission network. The decommissioned stations are listed below.

Site	Technology	MW	Decommissioned
Watford	Gas	100	1990
Acton Lane	Coal	150	1983
Tilbury A	Coal	150	1983
Bankside	Coal & Oil	89 & 300	1981
Barking A	Coal	600	1976
Barking B	Coal	144	1976
Barking C	Coal	220	1981
Barking Reach	CCGT	1000	Dormant 2016
Battersea A	Coal	243	1975
Battersea B	Coal	503	1983
Belvedere	Oil	480	1980s (LV)
Blackwall Point	Coal	100.5	1981
Brimsdown	Coal		1974 (LV)
Brunswick Wharf	Coal & Oil	340	1984
Littlebrook	Gas & Oil	1475	2015
Deptford East	Coal	156	1984
Deptford West	Coal	209	1974
Bulls Bridge	OCGT	280	1993 (LV)
Croydon	Coal	338	1984
Fulham	Coal	310	1978
West Ham	Coal	114	1983

1.13 A total of 4.5-5GW of generation on the local transmission system in the London metropolitan area has therefore been disconnected. Following disconnection of this generation, the electricity demand is met by other capacity connected on the wider 400 kV transmission system in the south-east and elsewhere in the country (there are substantial flows from north to south) with interconnectors e.g. between the UK and France, Belgium and The Netherlands playing an increasingly important role.

1.14 There are periods of time when the Transmission Network around London can experience constraints, particularly during maintenance periods when circuits are switched out for scheduled maintenance. Replacing the disconnected generation on the 275kV circuit with efficient, flexible generation therefore, will provide the ability to reduce the risk and impacts of system constraints. New generation will contribute to the resilience and security of supply to the London conurbation and reduces the risk that substantial infrastructure investment will be required in the future. Deferring and potentially avoiding the need for National Grid to make investment in transmission system improvement and reinforcement, by facilitating the connection of flexible generation to the system close to demand, can enable the realisation of potential benefits to the electricity customer both in terms of resilience, security and lower cost

The Proposed Development

1.15 The main components of the Proposed Development are summarised below:

- The GFEGS will comprise a number of large (up to 18MW) reciprocating gas engine units in a broadly linear configuration. Each gas engine is housed within a concrete case. Air cooling fans will be positioned on the side of the concrete cases. Exhaust stacks will protrude above the concrete casement, the height of each exhaust stack will be up to 45m from ground level.

- The BSF will comprise steel cabins enclosures, known as E-Houses which are likely to be 15 m long, 6m wide and 5m high (7m high if the air conditioning units are roof mounted), which house banks of lithium-ion batteries. These E-Houses may be double stacked increasing the height to 14m. There will also be a number of Medium Voltage units which house the transformers and inverters. These may be 8m long 3m wide and 3.5m high.

- The Compounds will be protected with a 2.5 m high steel mesh fence and landscaping and planting around the sites will also be undertaken to minimise visual intrusion.

- Each facility will include a customer substation and the 275kV substation will be shared. The electrical equipment within the substations will be up to 12m high.

- An underground gas supply pipeline will connect the GFEGS to the National Transmission System.

1.16 The Proposed Development also includes a temporary construction laydown area for the accommodation of plant and materials and contractors' compounds and facilities during the construction phase, which would last up to for approximately 2 years. This would be provided on land outside the operational area of the site.

2 AGREED MATTERS

2.1 The parties are agree on the following matters:

Grid Connection

2.2 Meetings between Thurrock Power and NGET have been taking place since September 2016.

2.3 Thurrock Power has secured a connection agreement and construction agreement with National Grid for a grid connection to the 275kV network at Tilbury (Ref: A/THUR/17/2608-EN(O). A Mod–App is being submitted to increase the connection from 600 to 750MW.

2.4 National Grid has conducted power system analysis and development & costing work examining a range of options in conjunction with Thurrock Power Ltd and has provided the most economic, coordinated and efficient design to connect the project at Tilbury 275 kV substation.

Justification

2.5 Replacing lost generation on the 275kV circuit and the loss of 4.5-5GW of generation on the local transmission system with 1.5-2GW of much more efficient, lower cost and flexible generation is becoming increasingly important to reduce the need for flows across from the 400KV and provide power to cover the imbalance from renewables. Following disconnection of the old generation electricity demand is met by other capacity connected on the wider 400 kV transmission system in the south- east and elsewhere in the country (there are substantial flows from north to south) with interconnectors e.g. between the UK and France, Belgium and the Netherlands playing an increasingly important role.

2.6 There are periods of time when the Transmission Network around London can experience constraints, particularly during maintenance periods when circuits are switched out for scheduled maintenance. Replacing the disconnected generation on the 275kV circuit wit efficient and flexible generation therefore will provide the ability to reduce the risk and impacts of system constraints. New generation will contribute to the resilience and security of supply to the London conurbation and reduces the risk that substantial infrastructure investment will be required in the future. Deferring and potentially avoiding the need for National Grid to make investment in transmission system improvement and reinforcement, by facilitating the connection of flexible generation to the system close to demand, can enable the realisation of potential benefits to the electricity customer both in terms of resilience, security and lower cost.

2.7 In recent years NG has seen a shift towards decentralised smaller scale generation; a point recognised by NG's Electrical System Operator in its 'Future Energy Scenarios' document which looks at future trends and requirements. In all of those scenarios, decentralisation is predicted and connections to ten 275kV network are likely to be the preferred economic option for medium scale generating stations.

3 Conclusion

3.1 The 275kV orbit electrical network around Greater London supplies power to many of the highly populated areas in the Capital.

3.2 Much generation has been lost from the network over the last 40-50 years.

3.3 The Tilbury 275kV substation on the orbital network is critical in the supply of electricity to the Capital so generators connecting at this 275kV substation (and at 400kV) will therefore benefit the UK customer and specifically London.

4 MATTERS TO BE AGREED

4.1 The form of the protected provisions to be granted to Statera Energy Limited is not yet agreed. Negotiations between the parties are ongoing and it is expected that agreement on the form of the protective provisions will be reached shortly.

4.2 This includes impact assessment of Final design, layout and construction methodology of the planned works by Statera Energy Limited in proximity of National Grid Gas Plc and National Grid Electricity Transmission Plc assets.

Signature [redacted]

Mark Beasley – NGET

Date 29 October 2018

Signature [redacted]

Andrew Troup – Statera Energy Limited

Date 29th October 2018