



A specialist energy consultancy

Grid connection services

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TNEI is an independent specialist energy consultancy providing technical, strategic, environmental and consenting advice to organisations operating within the conventional and renewable energy sectors.

Grid connection services

We provide grid and network connection assessments and applications for projects such as wind farms, solar PV farms, CHP / biomass plants, wave and tidal farms and hydro generators, energy storage, as well as short term operating reserve (STOR) and other conventional generation. TNEI has experience of gas applications for CHP plants and gas generators to the local gas distribution network or to the National Grid gas transmission network for bigger projects.

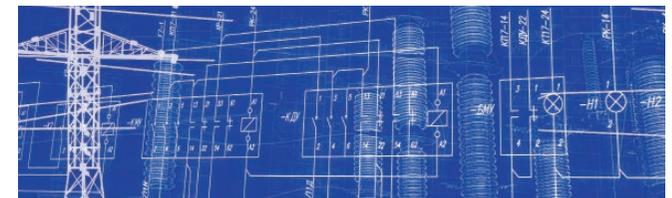
Our expert advisory service covers the key sectors of generation, transmission and distribution, providing support to both public and private sector organisations around the world.

TNEI has experience in the DNO / TSO connection process and can provide both high level grid connection feasibility assessments as well as detailed grid connection feasibility investigations, including risk management and costing. We can submit connection applications on behalf of clients and provide full technical, commercial and planning reviews of received connection offers. TNEI also provides training sessions on grid connection issues and strategy.

We have built up excellent working relationships with commercial and design engineers within DNOs and are well placed to provide technical support in discussions with network operators.

A range of studies depending on the level of detail required for grid connection and grid feasibility can be provided and a summary of services which can be tailored to meet specific needs is below:

- High level and detailed grid feasibility assessments
- DNO connection applications
- BELLA/BEGA/BCA applications to National Grid
- Advice on Statement of Works process and Bilateral Agreements
- Review of grid connection offers
- Technical support at meetings with DNOs or TNOs
- Grid connection training
- Technical support at meetings with network owners and operators
- Constraint analysis
- Grid connection due diligence
- Capital and operational cost benchmarking
- Regulatory and commercial advice
- Support with understanding and determining network charging
- Support with grid related determinations and disputes.



Case studies

Service: Grid feasibility studies
Client: Wind, PV, biomass, STOR and energy storage developers

TNEI has provided grid feasibility studies to a large number of clients, helping at the early stages of a project to filter out sites where grid connection costs and timescales may render the project unviable. Following the feasibility work, hundreds of MWs of generation have been progressed by TNEI through the connection application process, to successfully obtain a cost effective connection offer. TNEI also attended meetings with DNOs, providing a technical review of the connection and ongoing engineering support during the design and construction of the grid connection.

Service: Grid connection due diligence
Client: Developer

TNEI undertook a due diligence assessment for a portfolio of sixteen UK wind projects for a developer, varying in capacity from 20MW to 100MW, with a mixture of transmission and distribution connected schemes. The assessment of the grid connection opportunities and risks for each project were used by the developer in their preparation of a bid for the portfolio of wind farm projects. TNEI provided a review and assessment of the connection documentation available and an assessment of the grid connection costs including use of system charges and embedded benefits. Based on TNEI's extensive in-house cost database, a bottom up approach was used to build up reasonable benchmark costs for each project from the component level. Advice on the timescale of the connection, network constraints and potential curtailment was also provided.

Service: Grid constraint analysis
Client: Renewable energy developer

TNEI was commissioned to perform a wind power curtailment (constraint) assessment for a wind farm in Ireland. The transmission network model in power systems software was used to identify constraints and potential network overloads. Whole year analysis was carried out using the half-hourly data for the system demand, and total system wind power output. The objective of this simulation was to determine the wind power curtailment at the particular wind farm to eliminate the identified constraints and overloads. A number of sensitivity studies were carried out to investigate the impact of different phenomena on the wind power curtailment figure.

Service: Regulatory advice and determinations
Client: Ofgem

TNEI provided independent technical and financial analysis support to Ofgem for the assessment of connection offers and reinforcement schemes produced by DNOs, under the determinations process. TNEI provided industry experience in terms of the technical validity of a given grid connection design, common issues encountered, and whether costs presented were reasonable or minimum scheme.

Service: Wind and PV private wire generation feasibility study
Client: Renewable energy developer

TNEI was commissioned to determine the feasibility of connecting a single 500kW wind turbine to the existing electrical infrastructure at the Ford Motor Company production plant in Bridgend. TNEI undertook load flow studies to examine the maximum circuit and transformer loading conditions and voltage profile across the existing Ford Motor Company network as a result of the connection of the wind turbine. Fault level studies were undertaken to determine the maximum fault levels after the connection of the wind turbine to the Ford Motor Company network, and to calculate the fault contribution from the wind turbine to the DNO network. The connection options for a further 5MW of solar PV units were also considered. TNEI also liaised with the DNO to agree permission for the site to export power in the event of the generated renewable energy not being used by Ford Motor Company. The turbine is now fully installed and operational.

Service: PV private wire feasibility studies and grid connection agreement review
Client: Industrial client

TNEI was commissioned by a developer to undertake feasibility studies to establish the suitability of a private wire connection to a solar park. Load flow and fault level studies were undertaken to calculate the impact of connection of the proposed 7MW of PV to their site and the resulting fault level contribution to UKPN's network. It was known that there were fault level constraints at the local substation which required switchgear upgrades and it was desired by the developer to connect the PV prior to these upgrades being completed. TNEI's study showed that the existing network could be reconfigured to allow the connection of the solar park within this timeframe.

TNEI also provided ongoing technical advisory services to both the developer and the industrial customer, including reviewing the grid connection agreement between the two parties.

Key contacts

Jonathan Oguntona
Grid Connections Lead



Jonathan is a Senior Consultant and Grid Connections Lead with 10 years' experience working as an electrical engineer and grid connection specialist. Jonathan has experience managing the delivery of grid connections for onshore wind, large biomass and battery energy storage projects within the UK. He has also overseen the delivery and construction of Contestable Works. He also has significant experience in power systems analysis specifically providing power quality grid compliance studies (P28 & Harmonics).

James Hollender
Director of Developer Support



James is a Chartered Civil Engineer and has been with TNEI since 2015. He has over 15 years' experience in the renewable energy sector, working as a designer, project manager, owner's engineer and bank's engineer / technical advisor. His work has included feasibility studies, detailed designs and project management of onshore and offshore wind, solar, STOR and battery storage projects. James is the main contact for advice and support needed to take projects from conception through to construction.

Get in touch

We are a specialist, independent company. That's why we can offer a flexible, personal service and help our clients quickly and efficiently, without all the big corporate distractions.

But most of all, we love to solve problems.

For more information about our grid connection services, please contact **Jonathan Oguntona**. Email: jonathan.oguntona@tneigroup.com or call: +44 (0)191 211 1404.



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For more information about who we are and what we do, please contact: info@tneigroup.com

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