



Yaxley Synchronous Condenser Community Forum 30th May 2023

Agenda

1. Introductions
 2. About Conrad Energy
 3. Terms of Reference review and agreement
 4. Yaxley Synchronous Condenser project overview
 5. Next steps
 - a. Project timeline
 - b. Designing for the community
 - c. Supporting the community
 - d. Keeping updated
 6. AOB
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Introductions



About Conrad Energy

Our ambition is to contribute to a more sustainable future by supporting renewable energy growth through installing flexible generation and storage, as well as investing in renewables.

- We are the largest platform for flexible generation in the UK. Supporting the country's transition to a low carbon economy is key and we have placed this at the heart of our business strategy.
- We have 70 sites across the UK in operation or construction, which together provided a combined installed capacity of 800MW.
- We are an Independent Power Producer (IPP) focused on flexible power generation, battery storage and energy management services for network and commercial customers. We specialise in innovative energy solutions that provide critical grid support to 'keep the lights on'.
- We employ more than 160 experts dedicated to supporting our critical national infrastructure and the UK's energy transition to a low-carbon economy.



Terms of Reference review

For discussion:

- Meeting timings and regularity
- Meeting venue
- Membership
- Other

Project Overview



Energy supply within the UK

The Challenge

The UK is moving from traditional fossil fuelled generation to new clean, green sources of renewable energy such as wind and solar power.

These new sources of energy are less stable and can cause the national transmission network to become less reliable.

To manage and stabilise power flows costs National Grid around **£20 million each month**, by paying renewable energy generators to disconnect from the grid. A cost that impacts consumers.

New specialist equipment, including synchronous condensers, is needed to stabilise the network.



Energy supply within the UK

Supporting the Transmission Network

To respond to this, National Grid is developing an initiative to stabilise the generation of renewable electricity within the grid, which will nationally **save consumers up to £128 million over six years** – this initiative is referred to as the Stability Pathfinder 3.

Our technology and the Yaxley development supports this initiative and will support the grid network in East Anglia.

It will help further facilitate renewable energy development and support energy security and stability within the region. This is increasingly important during the UK's transition to increased renewables within the energy mix.



Synchronous condenser technology

Does not generate power but provides stability and voltage support to the electricity network, particularly when system faults occur within the power grid.

Traditional coal/gas/nuclear plants have rotating generators providing synchronous generation. Wind and solar generation is non-synchronous, as the power electronics do not have a rotating mass.

Synchronous condensers provide the same synchronous inertia as coal or gas plants, without the associated CO₂ emissions and high running costs.

Its primary purpose is to adjust conditions on the transmission grid, to either dynamically absorb or supply reactive power as needed to adjust the grid's voltage, or to improve power factor.



Site location



Consented design

Set back from Leys Lane and contained within a purpose-built acoustic enclosure.

The equipment will be located within a steel framed, clad building which is connected to a National Grid substation.

The building will clad and look similar to the buildings on the National Grid site.

Ancillary infrastructure includes external cooling fans, enclosed diesel generator and small fuel tank, transformers, flywheel, cabling and containerised control equipment.

Landscaping has been incorporated into development plans on all visible sides of the development.



Current consented design of Yaxley synchronous condenser site, next to the National Grid substation site (left)

Updates to the consented design – S. 73

A further application to make a minor amendment to the layout and configuration of the development following contract awards by National Grid.

- Overall footprint remains the same.
- Reduction of synchronous condensers from two to one.
- Transformers on site are reduced to one and a reduced compound area of 0.9 hectares (reduced from 1.68 hectares).
- Layout revisions to maximise efficient use of the site area, including increased soft landscaping mitigation.
- Access to be further east on the track with vehicle routing reduced to encircle the perimeter of the building, with additional gated security.



Updated design of Yaxley synchronous condenser site, , next to the National Grid substation site (left)

Minimising community and environmental impacts

Noise levels – There will be some noise associated with the development, typically a buzzing or humming sound - similar to a substation. To minimise noise externally, the equipment will be enclosed within a steel building with acoustic cladding. This will ensure no increase in background at closest sensitive receptors.

Lighting – There will be fixed illumination within the main compound and on the plant buildings. These lights will be motion-sensitive and designed to be downward facing to minimise any light-spill, keeping disturbance to the local community and ecology minimal.

Screening – Our landscaping approach includes extensive screening and will explore opportunities for colouring of the building to meet the natural aesthetic.

Flooding - The flooding risk to the site is low based on the flood risk designation of the area and there being no reported incidents of surface water flooding at this location. The site design will incorporate a sustainable drainage strategy with mitigation measures such as maximising permeable surfacing and on-site attenuation.

Ecology – Assessments have determined there would be no detrimental harm on protected species. We are proposing appropriate mitigation measures such as installing bat sensitive lighting and arboricultural management practices. The landscaping strategy will also incorporate a range of biodiversity net gain opportunities across the site.



Next Steps



Project timeline



Designing for the community

Further to what is already consented, what can Conrad Energy do to enhance the project for the local community?

- Building colour
- Lighting
- Landscaping and planting
- Security
- Construction processes / programme
- Other...

We are open to discussion and thoughts around how we can make this project and the construction process the best it can possibly be for the community.

Supporting the community

We want to make a positive difference through our work for local communities, the environment and the wider world.

The Conrad Energy Community Fund provides support for events, charities, schools, and group activities that are local to our sites across the UK.

Some examples of what our fund has supported:

- Child brain tumor research charity campaign sponsorship and donations.
- Football shirts and sports coaching for a local youth team.
- Funded woodland planting and a sensory garden.
- Refurbished a community dance studio.
- Funded creative workshops for female refugees, asylum seekers, vulnerable migrants and their children.
- Sponsored a theatre scholarship.

We are keen to hear suggestions and proposals from local people that support community interests.



Forests for our Future

Making a Difference

Berkshire
Buckinghamshire
Oxfordshire



Keeping updated

There are various ways that the community can keep updated as the project progresses.

- Visit our website page for project information and updates
www.conradenergy.co.uk/yaxley
- Register for regular email updates on our website

You can also email the Project Manager, Jonathan Cooper at yaxley@conradenergy.co.uk



Thank you

