

Introduction to CIGRE Next Generation Network (NGN)



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For power system expertise



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Next Generation
Network

What is CIGRE NGN?

CIGRE Next Generation Network (NGN) is the affiliation of CIGRE for **young members** (<35 years or less than approx. 5-10 years in the power industry, including students).

The purpose of NGN is to enable young engineers to get to know CIGRE, and learn from and contribute to the expertise in the CIGRE community.

Ireland: <https://form.jotform.com/240423364677358>

Sweden: <https://ngncigresweden.wordpress.com/>

United Kingdom: <https://cigre.org.uk/ngn/join-ngn/>



About the

CIGRE

Next Generation Network (NGN)

Who are we?

- A professional network for students & young engineers in the power industry
- To engage with CIGRE's activities ("The Gateway to CIGRE")
- To develop knowledge, skills and contacts within the power industry.

How can I get Involved?

- Participate in NGN events (Technical webinars, site visits, educational events)
- Get involved in CIGRE activities (Join international Working Groups, Attend CIGRE conferences)
- Become a CIGRE NGN committee member



Benefits of Joining the NGN

- Free
 - For students
- NGN events
- Get involved in CIGRE activities:
 - Join international Working Groups
 - Join the NGN Steering Committee
 - Publish Papers in Working Groups and CIGRE conferences
- Personal Development and Networking
- Remember: You don't need to be an expert to join!



CIGRE Next Generation Network Sweden

Henrik Ekestam

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CIGRE NGN SE

- The NGN Sweden interim board was formed in October 2022
- Currently represented by members from NKT, Svenska kraftnät, Vattenfall
- Svk: Henrik Ekestam, Jorunn Cardell, Oscar Lennerhag
- NKT: Adeep Santosh
- Vattenfall: Shubham Sethi



NGN Events

Events organized in **2022-2023**:

- Webinar
“Challenges & Opportunities for Grid Integration of Renewable Power Plants”,
Event organized in collaboration with NGN Denmark.
December 2022
- Webinar
“Career Avenues in the Swedish Power Sector”,
Event organized by NGN Sweden
May 2023
- Technical Visit
“Anneberg-Skanstull tunnel”,
Event at tunnel boring project in Stockholm.
May 2023

Anneberg-Skanstull



Joining CIGRE NGN SE

Become a CIGRE member (**free** for students)

More information on membership

<https://ngncigresweden.wordpress.com/>

<https://energiforsk.se/program/cigre-sverige/bli-medlem/>



Cigré NGN Sweden



CIGRE Next Generation Network Ireland

Robert Fenlon

Robert.Fenlon@Eirgrid.com



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CIGRE Ireland NGN – Committee Overview

Irish NGN – Subcommittee's

Student Membership Team

- Hamid Shokrani
- David Byrne
- Jack Herring
- Kevin Crowe

General Membership team (Organisations)

- James Hayes
- Robert Fenlon
- Sean Ritson
- Jennifer Harrington
- Keith Keady

Events Team 1

- James Hayes
- Keith Keady
- Robert Fenlon

Communications

- Jack Herring
- Chandira Prabu Jianchandran
- Jennifer Harrington

Events Team 2

- Hamid Shokrani
- Chandira Prabu Jianchandran
- Kevin Crowe
- Sean Ritson

Notes

- Team specific goals
- Easier team meeting attendance
- Progress on many fronts



Latest sample events held

1) Dublin Waste to Energy Facility – Site Visit



2) NGN Presentation Competition – Winner to present at the YM Showcase in Paris August



CIGRE Paris Session 2022

CIGRE NGN Booth & CIGRE Ireland NGN Representation :



NGN Ireland

Students(12)

Cigre young members (92)
→ People less than 35 years

Founded in 2018
→ Today there are 7 companies represented in the executive committee
→ 30% annual increase in membership numbers

GOAL
→ Develop knowledge among young engineers in the power system industry
→ Provide valuable networking opportunities
→ Provides a platform where early-career professionals can feel comfortable sharing their ideas

Chair person:
Conor Mulholland
Project Manager for EirGrid (TSO)

2021-22 HIGHLIGHTS

EVENT 1 : Irish and French Interconnection Event
Interconnection & the Celtic Interconnector

Goal – to increase NGN collaboration internationally and address a broader audience on a topical subject

Collaborative webinar event between the Irish & French NGN on the Celtic Interconnector

Irish NGN & French NGN: Interconnection & The Celtic Interconnector

2021 CIGRE - French & Irish NGN Webinar
06/10/2021

EVENT 2 : Power Systems Operation Event
Power System Operations Event

Goal – to showcase more technical topics with regards to power grid operation among newer engineers

Webinar on smart metering, grid operation tools, and adaptive operation of data centres to reduce grid load

Power Systems Operations

2022 CIGRE Irish NGN Webinar
03/04/2022

EVENT 3 : 2022 Wind Energy Event
The development of Wind Energy in Ireland

Goal – to give young engineers onsite experience and trial in-person events Post-Covid

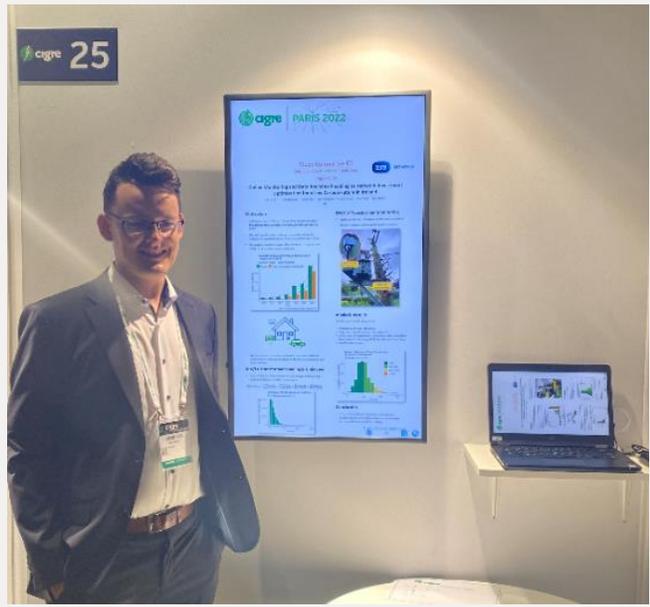
Presentations on offshore wind development in Ireland followed by a site visit to a wind farm

2022 CIGRE Irish NGN Webinar
06/10/2022

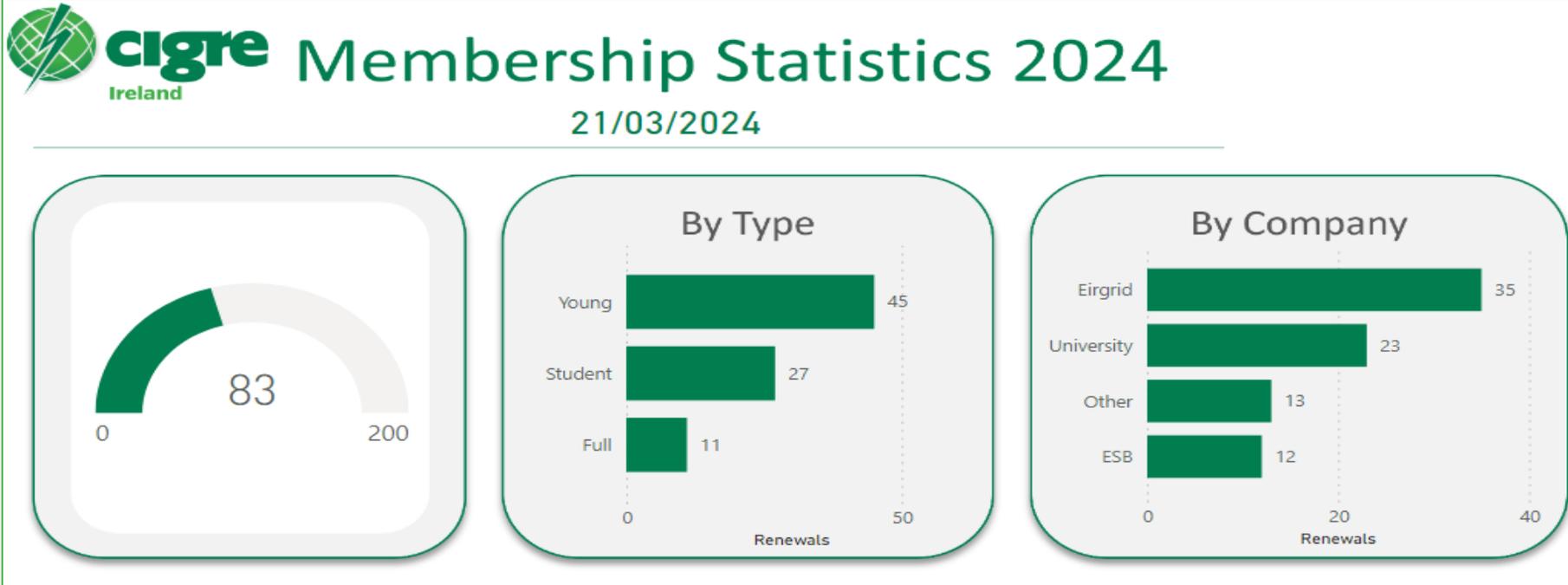
Notable VS Results

Measurement	EV	DMG	DMG Relative to EV
Total Energy (GWh)	947.11	530.86	55%
Fossil Fuels (GWh)	174.57	156.31	89%
Renewable Energy (GWh)	172.23	474.55	275%
Water (kWh)	25.25	31.96	127%
VOC (kg)	95.58	98.41	103%
CO ₂ (kg)	22.95	240.32	1047%
NOx (kg)	35.72	28.17	79%
PM10 (kg)	6.64	4.18	63%
PM2.5 (kg)	3.58	1.97	55%
SOx (kg)	329.80	25.22	8%
CH4 (kg)	36.77	31.35	85%
CO ₂ e (kg)	12899.03	20027.50	155%
CR0-100 (kg)	13884.08	12002.30	87%

CIGRE Paris Session 2022



NGN Membership - Overview



If you want to get involved with CIGRE Ireland NGN, please scan the applicable QR code below and get involved today:



Student Membership Sign-Up



Young Membership Sign-Up



CIGRE Next Generation Network UK

Maria Oancea

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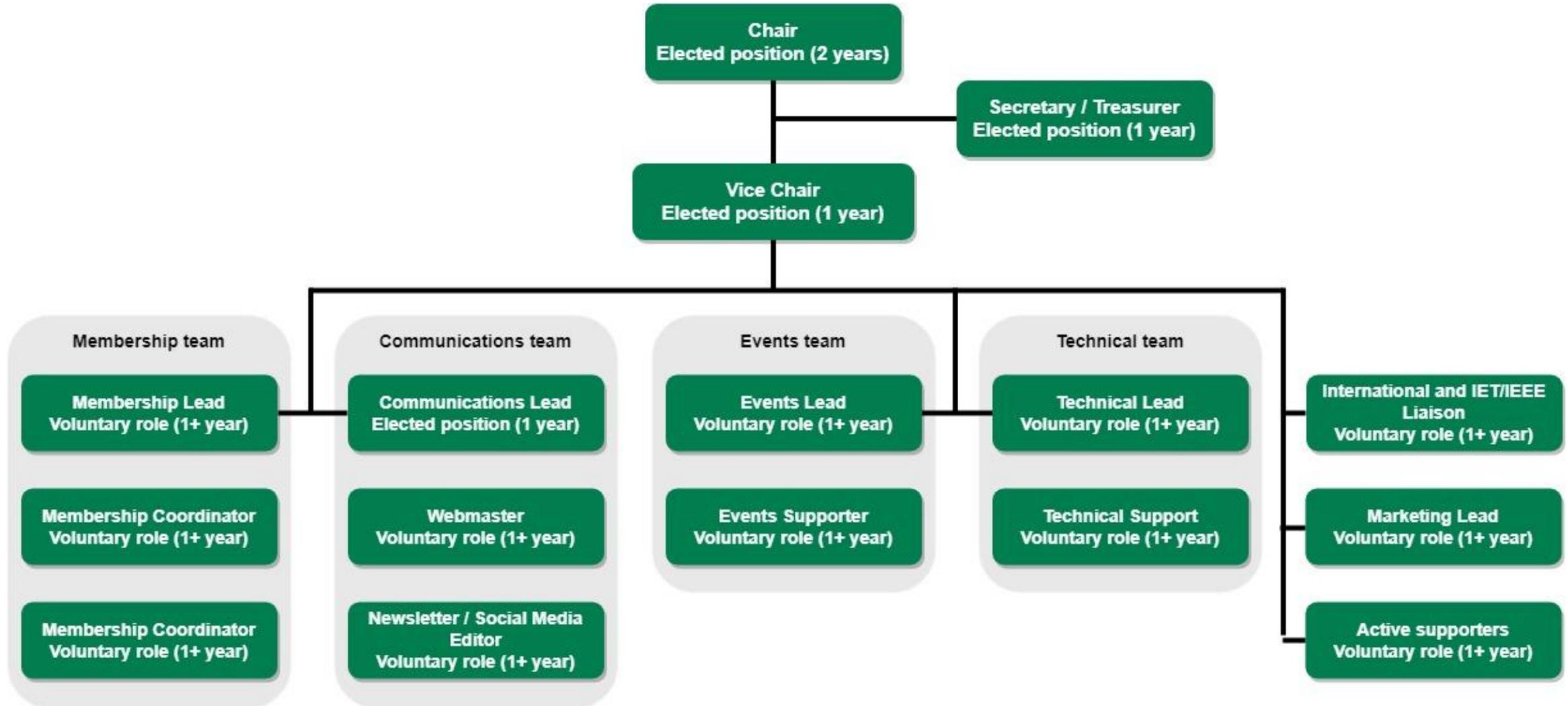


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Organisation Chart of the NGN



Introduction – The Team



Jianing Li
Chair



Jiajie Luo
Vice-Chair



Nan Chen
Secretary and Treasurer



Siva Kaviya,
Trichy Siva Raman
Membership Team Lead



Maria Oancea
Events Team Lead



Margi Shah
Technical Team Lead



Wei Gan
Communications Team Lead



Introduction – The Team



Jingyi Wan



Mark Kent



Keerthi Kandukur



Lois Efe



Zhou Yue



Yiliang Fan



CIGRE NGN PARIS 2022



Modelling Assumptions

Objective:

- Jointly maximising the value of the wind farm and energy storage assets and of hydrogen production

Constraints:

- Limit the grid export for the wind generator and the energy storage unit by the grid connection setting
- Limit the power sent to the electrolyser by the sum of actual wind power and energy storage discharge
- Wind power sent to the electrolyser and the energy storage and wind export level equal to the actual wind power
- Limit on minimum and maximum electrolyser capacity and energy storage charge/discharge
- Limit on minimum and maximum storage levels of the hydrogen tank, and also of the energy storage tank

Overall:
The existing energy storage unit of GEM Storage LCO model is used as a back-up in combination with the wind farm to maximise the revenue from hydrogen production and selling of wind energy.

Questions to be examined: Is wind surplus (wind above maximum electrolyser capacity) used to store energy to the energy storage unit or selling energy to the grid is prioritised? Does wind deficit (wind below maximum electrolyser capacity) mean the energy storage unit will prioritise giving energy to the electrolyser or sell it to the grid?

Paris Session 2022
8th - 10th Sept

CIGRE NGN UNITED KINGDOM

2021-22 HIGHLIGHTS

Students (712)
Cigre young members (78)
→ People less than 35 years

Founded in 2007
→ Today there are 15 companies represented in the executive committee

GOAL
→ For students and young engineers in the power industry to engage with CIGRE's activities and develop their knowledge, skills and contacts within the industry.

Chair person:
Yue Zhou
Lecturer in Cardiff University
Change, Development & New Thinking

EVENT 1: CIGRE UK NGN Mentoring Scheme (2021 & 2022)
The scheme pairs you with a senior CIGRE member willing to share advice and career expertise, helping you further develop a career roadmap, and expand your professional network.

EVENT 2: CIGRE UK NGN Young Members Showcase
The competition provides an opportunity for early career electrical engineers to showcase their work to the wider CIGRE community.

EVENT 3: Innovation & Creativity Event 2022
The event is about objective innovation in the energy sector and share general theory and process of creativity.

NGN Activities – 2023 and 2024 So Far

1. Successful Events and Workshops

- 12th March 2024, Substation Fundamentals Training and Site Visit at GE Stafford in collaboration with Study Committee B3
- 24th January 2024, CIGRE UK NGN Young Members Showcase, Cardiff University
- 4th December 2023, CIGRE UK NGN AGM, Birmingham
- 3rd November 2023, CIGRE UK NGN and Netherlands NGN collaborative event on “Data Interoperability and CIM”
- 4th August 2023, CIGRE UK NGN National Grid ESO Control Room in person visit
- 19th July 2023, CIGRE UK NGN and NGN Ireland collaboration event on "Hydrogen and Energy Storage, Enabling the Net Zero Transition"
- 26th June 2023, CIGRE UK NGN and NGN Austria collaboration event "How to succeed in Net-zero transition – Technical & Economical aspect"
- 17th May 2023, CIGRE UK Technical Webinar "Protection of Future Power Networks Dominated by Converters: Recent Learnings on Challenges and Potential Solutions"

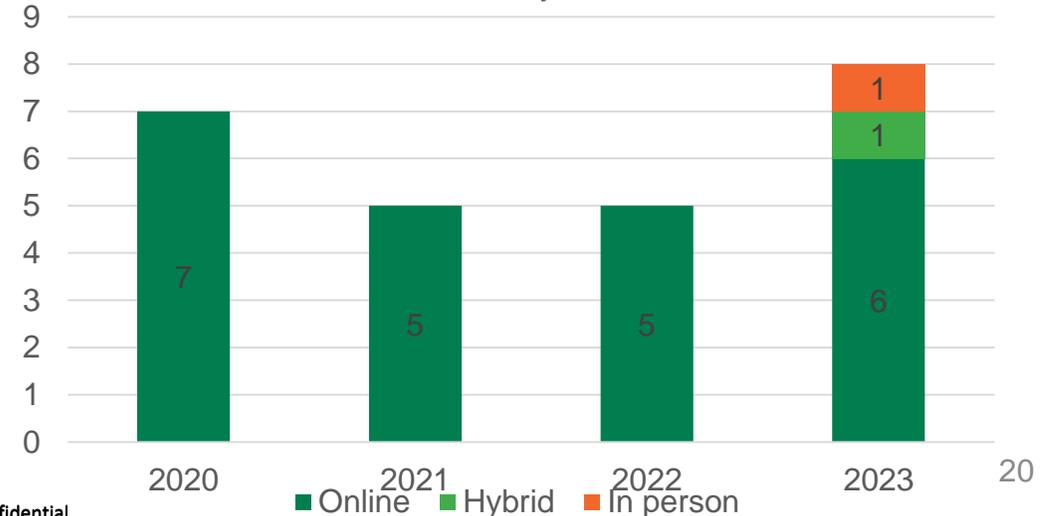
2. Support SC activities

3. Collaboration with IEEE, CIGRE NGN International Committee

4. Ambassador Programme

5. CIGRE UK Awards

6. CIGRE UK NGN Process Review



Upcoming Events

- LinkedIn page - <https://www.linkedin.com/company/cigre-uk/>
- Newsletter subscription - <https://cigre.org.uk/ngn/>