2024 EPSRC Supergen Energy Networks Hub Risk and Resilience Day Programme

09:30 – 09:35 Welcome and kick-off

09:35 – 10:20 Keynote 1 | Professor Liz Varga (University College London)

Energy resilience in the context of infrastructure resilience

10:20 – 11:05 Oral session 1 | Handling Hazards

O1.1 Mires, Wires, and Fires: Securing the National Grid Against Future Wildfire Risks

Joseph Preece, Daniel L. Donaldson, Nick Kettridge (University of Birmingham)

O1.2 Advancing the Cyber-Physical Resilience of Energy Infrastructures in Digital Era

Mazaher Karimi, Petra Berg, Bahaa Eltahawy, Linda Turtola (University of Vaasa, Finland)

O1.3 Enhancing electricity network resilience to extreme windstorms in the UK

Colin Manning, Sean Wilkinson, Hayley Fowler, Sarah Dunn (Newcastle University), Elizabeth Kendon (UK Met Office)

11:05 – 11:35 Poster introduction session (speed round)

P1 Energy risk from a changing climate over the coming decade

Ben Hutchins, David Brayshaw (University of Reading), Len Shaffrey (National Centre for Atmospheric Science), Hazel Thornton, Doug Smith (Met Office Hadley Centre)

P2 Uncertainty quantification and Sensitivity Analysis for Resilient Infrastructure Systems: application to national energy system modelling

Hannah Bloomfield (University of Newcastle), Francesca Pianosi, Gemma Coxon, Saskia Salwey (University of Bristol)

P3 Online Neural Dynamic Security Assessment

Mert Karacelebi, Jochen Cremer (Delft University of Technology, Netherlands)

P4 Quantifying the Effect of Renewable Transition on Cascading Failure Risk

Yitian Dai, Robin Preece (The University of Manchester)

P5 Uncertainty-aware resilient investment planning in local electrical energy systems under static and dynamic islanding security constraints

Agnes Marjorie Nakiganda (Technical University of Denmark), Shahab Dehghan (Newcastle University), Petros Aristidou (Cyprus University of Technology)

P6 Innovating substation basics, improving resilience– organising substation drawing management and facilitating easier consents for substation intrusive/non-intrusive works

Tinashe E Chikohora, Jonathan Gray (National Grid Electricity Transmission)

P7 Brokenwire: Wireless Disruption of CCS Electric Vehicle Charging

Sebastian Köhler, Richard Baker (University of Oxford), Martin Strohmeier (armasuisse S+T), Ivan Martinovic (University of Oxford)

P8 AI for Microgrid Resilience: A Data-Driven and Model-Free Approach

Dawei Qiu, Yi Wang, Goran Strbac (Imperial College London)

P9 Multiport power converters for distribution network soft open point applications

Sam Harrison (University of Strathclyde), Marti Dominguez Hernandez, Marc Cheah (Universitat Politecnica de Catalunya, Spain), Agusti Egea Alvarez (University of Strathclyde)

P10 Weather-Informed Adaptation for Grid Resilience Enhancement

Misael Alpizar Santana, Hongjian Sun, Ashraf Osman (Durham University)

P11 Data Driven Infrastructure Planning for Offshore Wind Farms

Isha Saxena, Behzad Kazemtabrizi, Matthias Troffaes, Christopher Crabtree (Durham University)

P12 HYDRA - Exploring co-occurring UK HYDRo-meteorologicAl extremes that exacerbate risk

John Hillier (Loughborough University), Hannah Bloomfield, Chris Kilsby (Newcastle University), Lee Chapman (University of Birmingham)

P13 Risk based planning for resilience enhancement in power distribution systems

Abodh Poudyal, Anamika Dubey (Washington State University, USA)

P14 Security Digital Twin of a Distribution Network in Jordan

Moath Qandil, Asma Alkhraibat, Hani Mohsen (German Jordanian University, Jordan)), Adib Allahham (Northumbria University), Alaaldeen Alhalhouli (German Jordanian University, Jordan

P15 Optimisation Framework for Resilient Microgrid Planning incorporating stationary and mobile energy storage systems

Mahir Oumaima (Sidi Mohamed Ben Abdellah University, Morocco), Bouthaina El Barkouki (Mohammed V University, Morocco), Ghennioui Hicham (Sidi Mohamed Ben Abdellah University, Morocco)

P16 A Unified Cooperative Distributed Control of Inverters, Voltage Regulators, and Capacitors in Systems with High Penetration of DGs

Shahrzad Mahdavi, Aleksandar Dimitrovski (University of Central Florida, USA)

P17 Batteries on congested “windy” networks: solution or problem? A Scottish case study

Susan Brush, Graeme Hawker, Keith Bell (University of Strathclyde)

P18 Probabilistic forecasting of solar production using gridded numerical weather predictions

Ben Griffiths, Matteo Fasiolo (University of Bristol)

P19 A Decentralized Investment Model for the Planning of Distribution Networks and PV Installations Considering Tariffs and Socio-Economic Constraints

Miguel Sanchez-Lopez (Universidad de Chile, The university of Manchester), Andrey Churkin, Robin Preece (The University of Manchester), Rodrigo Moreno (Universidad de Chile), Eduardo A. Martinez Ceseña (The University of Manchester)

P20 Toward a sustainable and resilient transition: Energy management of a grid-connected microgrid based on artificial neural networks

Bouthaina El Barkouki, Oumaima Mahir, Mohammed Ouassaid (Mohammed V University, Morocco)

P21 On the Resilience of Distribution Networks to Load-Altering Attacks

Sajjad Maleki, Subhash Lakshminarayana (University of Warwick), E. Veronica Belmega (CY Cergy Paris University, France)

P22 Managing Risks Associated with Net Zero with a Real-time Power System Simulation Facility

Fabian Moore, Colin Foote, Asif Khan (The National HVDC Centre)

P23 Learning latent dynamic interactions for better spatio-temporal characterisation of power system cascading events

Tabia Ahmad (University of Strathclyde), Panagiotis N Papadopoulos (The University of Manchester)

P24 Resilient by Design: Embedding Power Electronics into Grid-Scale Energy Storage

Walid Nassar, David Greenwood, Matthew Deakin (Newcastle University), Jorn Reniers (Brill Power)

P25 Adaptive and Resilient Electrical Grid Management with Smart Buildings

Mischa Ahrens (FZI Research Centre for Information Technology, Germany)

P26 Optimal siting of distributed generators in renewable-based community energy system for self-sufficient operation during prolonged outages

Laiz Souto (University of Bristol)

P27 Enhancing Cybersecurity Measures for Implementing Morello Hardware in Industrial Sectors

Rabia Khan, Kinan Ghanem (Power Networks Demonstration Centre)

11:35 – 12:00 Poster session and refreshments

12:00 – 12:45 Oral session 2 | Wild Weather

O2.1 “EXTRASTRONG” (Resilience Evaluation by Experimental and Theoretical Approaches in Electrical Distribution Systems with Underground Cables)

Andrea Mazza (Politecnico di Torino, Italy), Luigi Calcara (Università di Roma “La Sapienza”, Italy), Paolo Roccato (Istituto Nazionale per la Ricerca Metrologica – INRiM, Italy)

O2.2 Rethinking Reserve Power Supply: Balancing Services Value from Weather-Sensitive Surplus

James Fallon, David Brayshaw, John Methven (University of Reading), David Greenwood (Newcastle University), Kjeld Jensen, Louise Krug (BT Group plc)

O2.3 Advancing Power System Resilience through Enhanced Load Forecasting considering Extreme Weather Conditions

Jinjie Liu, Hongjian Sun (Durham University)

12:45 – 13:45 Lunch and posters

13:45 – 14:30 Keynote 2 | Martin Queen (Ofgem)

Risk and resilience: a regulator's perspective

14:30 – 15:15 Oral session 3 | Industrial Innovation

O3.1 CommsConnect – Resilient communication for the electricity network through improved data sharing with mobile network operators

Ross McPherson, Kinan Ghanem (Power Networks Demonstration Centre), Scott Flynn (UK Power Networks)

O3.2 Resilience assessment of offshore wind to green hydrogen production systems

Natalia-Maria Zografou-Barredo, Sara L Walker, Kandavel Manickam (Newcastle University), James Ferguson, James Withers (Offshore Renewable Energy Catapult)

O3.3 Risks and resilience of demand side response systems

Andrew Larkins (Sygensys)

15:15 – 15:40 Poster session and refreshments

15:40 – 16:25 Oral session 4 | System Security

O4.1 Transforming Electricity Balancing: from proof of concept to implementation

Waqquas Bukhsh (University of Strathclyde)

O4.2 Constraint-Driven Deep Learning for N-k Security Constrained Optimal Power Flow

Bastien Giraud, Ali Rajaei, Jochen Cremer (Delft University of Technology, Netherlands)

O4.3 Revisiting Britain's security standard

Keith Bell (University of Strathclyde)

16:25 – 16:30 Closing remarks

16:30 – 17:30 Drinks reception