

## Supporting Energy Communities- Operational Research and Energy Analytics (SEC-OREA)

Join us online – help to define the algorithmic needs of Local Energy Communities!

**What:** SEC-OREA Kickoff Workshop

**Where:** Hybrid - Q233, Quinn School of Business, UCD Dublin and Zoom (Register [here](#))

**When:** Friday 26<sup>th</sup> Nov 2021, 10:00 – 12.00 (UCT, note that's 11.00 – 13.00 CET)

**Why:** The primary purpose of a Renewable Energy Community (REC) is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits<sup>1</sup>. We use the term Local Energy Community (LEC) as a synonym for REC<sup>2</sup>. SEC-OREA aims to enable LECs to participate in the decarbonisation of the energy sector by developing advanced efficient algorithms and analytics technologies.

This workshop aims to explore 1) business models, and 2) system architecture and algorithmic issues for LECs. This workshop aims to gather requirements from relevant stakeholders to identify the algorithmic needs of an LEC and so refine our understanding of LEC definitions and document LEC algorithmic requirements from the SEC-OREA perspective.

### Workshop Format

- Introductions/Webinar etiquette for those attending remotely, Dr Paula Carroll
- Invited Speaker: Malte Zieher ([REScoop](#) and BBEn), *Flexibility Business Models for Renewable Energy Communities*, ~20 minutes;
- Invited Speaker: Dr Fabiano Pallonetto, *Technicological Challenges for LECs – algorithms and data issues*, ~20 minutes;
- Coffee and Networking – 15 minutes
- Moderated open discussion and live collaboration to capture stakeholder responses to SEC-OREA draft definition of an LEC. in two breakout groups: Group 1 will focus on the LEC business and legal forms. Group 2 will focus on the LEC technological challenges of network (topology) design and optimal electricity management of the LEC supply and demand.
- Response – SEC-OREA: Meeting the challenges – ~5 minute summary of each breakout room conclusions, synergies with existing work, next steps;

### Speaker and Consortium Bios



Malte Zieher works for Bündnis Bürgerenergie, the German citizen energy alliance, networking citizen energy actors at a national level. He has co-founded several citizen energy projects in the region of Bremen, in Northwest Germany. After studying political sciences and sustainability economics and management, he worked for six years as a project manager for virtual power plants at energy & meteo systems in Oldenburg, Germany.

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<sup>1</sup> COM (2018) DIRECTIVE (EU) 2018/2001 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the promotion of the use of energy from renewable sources

<sup>2</sup> CoR (2019) Opinion of the European Committee of the Regions on 'Models of local energy ownership and the role of local energy communities in energy transition in Europe' (2019/C 86/05)



Dr Fabiano Pallonetto is a lecturer in the Management Information Systems department of the School of Business at Maynooth University. His academic research addresses industrial needs by applying his multidisciplinary industry and entrepreneurship experience to build solutions and solve technical challenges for the deployment and integration of the smart grid and its associated carbon footprint reduction and promoting Sustainable Development Goals.

SEC-OREA are a multi-disciplinary group: INRIA in France, IPE in Latvia, UCD in Ireland and ULB in Belgium. The UCD team led by Dr.s [Paula Carroll](#) and [Conor Sweeney](#) will build on existing climate service models to develop climate scenarios for renewable energy generation (RES). The INRIA team led by [Prof Luce Brotcorne](#) will use advance computational techniques to model and solve the challenging problem of deciding how to dispatch and share RES generation, and how to address demand side management problems. The ULB team led by [Prof Bernard Fortz](#) will develop efficient (decomposition and ensembling) algorithmic techniques to solve realistic size dispatch instances using deterministic data and extend to a robust approach to address uncertainty in the RES scenarios. The IPE team led by Dr Anna Mutule will assess the LEC-grid environment and address LV congestion management arising from the LEC RES transmission and the LEC net demand.

This workshop aims to 1) explore business models, and 2) system architecture and algorithmic issues to support LECs. We aim to gather requirements from relevant stakeholders to answer (some) of the following questions:

### **LEC Markets, Regulations, Codes, Policies**

1. What legal frameworks are in place to serve as templates, or need to be developed?
2. What market structures and grid codes, regulations and standards exist or need to be created or amended?

### **LEC Components**

1. What infrastructure/physical elements does the LEC model include?
  - a. RES - what types and sizes?
  - b. What types of buildings and devices such as electric vehicles, heatpumps and traditional appliances are connected?
2. Who are the actors?
  - a. Municipalities?
  - b. Citizen Coops?
  - c. Distribution System Operators?
  - d. What are the objectives of the actors?
3. What families of constraints apply to the optimisation of the LEC operation?
  - a. Supply availability – RES-W, RES-S, grid?
  - b. Demand – a function of the connected buildings or devices, or at an aggregate level?
  - c. Physical infrastructure usage – LV line capacities?
  - d. Market rules?