



## Agenda Item 4 – 18<sup>th</sup> Session of the Group of Experts on Cleaner Electricity Systems

### Attaining carbon neutrality in the UNECE Region

#### Session 2

19 September 2022, 15h00 – 16h45 CEST (Geneva time)

**Objective:** The Group of Experts will discuss the implications of the electrification of transport and buildings sectors on the electricity system and will propose next steps to design more resilient electricity systems.

**Context:** Electricity continues to be a pacing factor for energy systems' transformation. Forecasts that look ahead to the middle of the century suggest demand for electricity will grow substantially, making it the most important source of energy in the 21st century. Electricity demand is projected to triple by 2050 as sectors such as transport and buildings electrify. Electricity's share of final energy consumption is also set to grow. Never before has the energy system offered so many possibilities as it does today. But energy systems are changing and how we handle energy must be rethought.

The power system will need to deliver greater demand flexibility and responsiveness as transport and buildings sectors are becoming more electrified. Further integration of e-mobility and electric heating and cooling will add a significant load to the system, leading to potential congestion in conventional power networks, as these are not designed for shifts in electricity demand. A well-planned integration of emerging electricity uses is necessary to reduce the need for vast grid expansion and to enable a resilient electricity system for the region.

**Next steps:** Findings from this discussion are expected to define activities of the Group of Experts for 2023 and to kick-start inter-sectoral cooperation between energy, transport and buildings sectors.

#### Setting the scene: Deep electrification of the energy system in the UNECE region. Emerging trends in transport and buildings sector

Keynote speech: Mr. David Porter, Senior Director Electrification & Sustainable Energy Strategy, Electric Power Research Institute (EPRI)

#### Case Study Presentations & Discussion:

**Electrification of transport sector in California:** Ms. Lora Anguay, Chief Zero Carbon Officer, Sacramento Municipal Utility District (SMUD)

**Electrification of transport sector in Geneva:** Mr. Olivier Augé, Head of Engineering, Geneva Public Transport (TPG)

**Role of heat pumps in decarbonization of buildings sector** – Mr. Dave Winningham, Lennox and Ms. Ashley Armstrong, Department of Energy, United States

- What are the implications of the electrification of transport and buildings sectors on the electricity system?
- How can inter-sectoral cooperation be improved and more sustainable?
- What are the challenges that the grid operators will be facing as the deep electrification of transport and buildings sectors happens? How can the risks be mitigated?
- What the region needs to do to upgrade its grid network? What are the alternatives?

**Moderator:** Jim Robb, Chair of the Group of Experts on Cleaner Electricity Systems

**Panellists:**

Ms. Lora Anguay, Chief Zero Carbon Officer, Sacramento Municipal Utility District (SMUD)

Mr. Dave Winningham, Engineering Manager, Lennox

Ms. Ashley Armstrong, Department of Energy, United States

Mr. Olivier Augé, Head of Engineering, Geneva Public Transport (TPG)

**Discussion & next steps:**

Launch of a cross-sector activity between the UNECE Sustainable Energy, Transport and Housing & Cities Divisions, as well as with the analytical institutions such as Electric Power Research Institute (EPRI), to help countries enhance understanding about the implications of the electrification of transport and buildings sectors on the electricity system.

Ms Chair, Working Party on Transport Trends and Economics (WP.5), UNECE

Roel Janssens, Secretary, Working Party on Transport Trends and Economics (WP.5), UNECE

Gulnara Roll, Regional Advisor, Forests, Land and Housing Division, UNECE

Ms. Iva Brkic, Secretary, Group of Experts on Cleaner Electricity Systems, UNECE

Mr. David Porter, Senior Director Electrification & Sustainable Energy Strategy, Electric Power Research Institute (EPRI)