

CIGRE Study committee C5

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG C5.41

NAME OF THE CONVENOR

Poupart Xavier (FRANCE)

TITLE

Regulation and market design to foster decarbonation through industry electrification

THE WG APPLIES TO DISTRIBUTION NETWORKS: YES

ENERGY TRANSITION

- 4 / Sustainability and Climate Change
- 7 / Consumers, Prosumers and Electrical Vehicles
- 8 / Sector Integration

POTENTIAL BENEFIT OF WG WORK

- 1 / commercial, business, social, economic benefits
- 2 / potential interest from a wide range of stakeholders
- 4 / state-of-the-art or innovative solutions or directions
- 5 / Guide or survey on techniques, or updates on past work or brochures
- 7 / Addressing environmental requirements & sustainable dev. goals

STRATEGIC DIRECTION

- 1 / The electrical power system of the future reinforcing the End-to-End nature of CIGRE: respond to speed of changes in the industry by preparing and disseminating state-of-the-art technological advances
- 3 / Focus of the environment and sustainability (in case the WG shows a direct contribution to at least one SDG)
- 4 / preparation of material readable for non-technical audience

SUSTAINABLE DEVELOPMENT GOAL

- 9 / Industry, innovation and infrastructure

BACKGROUND :

Power systems are facing major challenges to address climate change issues by converting non-electric carbon-intensive energy usages to low-carbon electricity. For example, European energy roadmaps target a rate of electrification of energy usage reaching 60% in 2050 against 23% in 2020. This means that energy users must change their processes. At this stage, large industrial players tend to investigate new technical processes to comply with climate change requirements – especially related to CO₂ emissions. This also requires massive investments.

To mitigate risks, investors expect visibility on electricity price and value/quality of services in the long run. Regulatory authorities and market designers are developing electrification frameworks based on e.g. economic incentives, constraints on industrial sectors, or accelerated network connection processes.

PURPOSE / OBJECTIVE / BENEFIT OF THIS WORK :

The proposed work aims to assess electrification issues in competitive environments, review practical cases of regulatory measures to foster the electrification of industrial processes in a wide range of countries, and identify challenges and good practices.

SCOPE :

The Working Group will investigate the following topics:

1) Industrial needs

- Technical requirements – high reliability/supply redundancy, especially on-site back-up generation vs. network solutions.
- Valuation of flexibility services provided by industrial sites.
- Long-term visibility on electricity prices and regulation.

2) Challenges for power systems

- Hosting capacity.
- Reliability requirements.
- Security of supply.
- Intermittency of load demand.

3) Practical cases of support mechanisms & regulation

- Fast-track connection procedures.
- Long-term pricing of energy and services for industrial loads.
- Grants and subsidies: comparative analysis on different practices (direct funding, outputs feed-in tariffs for different industrial sectors, surrounding infrastructure support, tax eases, etc.).

4) Good practices to accelerate and secure decarbonation through electrification.

- Market integration challenges related to regulatory schemes supporting electrification.
- Good practices and recommendations.

DELIVERABLES AND EVENTS

Deliverables Types

Annual progress and activity report to Study Committee

Future connections

Technical Brochure and Executive Summary in Electra

Tutorial

Webinar

Deliverables schedule

Annual progress and activity report Q2 2025 Work plan

Technical Brochure Q1 2027 Technical Brochure

Webinar Q3 2027 Tutorial/Webinar

Time schedule

Q1 2025 Recruit members (National Committees, WiE, NGN)

Q2 2025 Develop final Work Plan

Q3 2025 International Survey

Q3 2026 Workshop

Q4 2026 Draft Technical Brochure

Q1 2027 Final draft Technical Brochure

Q3 2027 Tutorial / Webinar

APPROVAL BY TECHNICAL COUNCIL CHAIRMAN:

Rannveig S. J. Løken

January 13th, 2025