CLC Workshop “Impact of P2P trading at distribution grid level”

Workshop description form

- PART A – Workshop Summary
- PART B – Project Plan

PART A – Workshop SUMMARY

1	WS details		
1.1.	**Organization**	☐ CEN ☒ CENELEC ☐ Joint with ☐ CEN lead ☐ CENELEC lead	
1.2.	**Title**	CLC WS "Impact of P2P trading at distribution grid level."	
1.3.	**Scope**	The Workshop aims to agree on specifications leading to the publication of the following CEN-CENELEC Workshops Agreement (CWA): Impact of P2P trading at distribution grid level.	
1.4.	**Does this WS stem from an EU Research project?**	☒ YES Name of the project: OPENTUNITY - OPENing the electricity ecosystem to multiple actors in order to have a real decarbonization opportunity - Grant number: 101096333 End date 2026/12/31 And Name of the project: FEDECOM - FEDErated -system of systems- approach for flexible and interoperable energy COMmunities - Grant number: 101075660 End date 2026/09/30 ☐ NO	
1.5.	**Financial support**	☒ EU Research project ☐ EC/EFTA Grant reference: Type here ☐ Other Specify, if needed: Type here	
1.6.	**WS Proposer/Proposed Chair** **WS proposer**	Name: Organization: Postal address: Email: Phone: Webpage: Contact person (name and email):	Álvaro Nofuentes Prieto ETRA INVESTIGACIÓN Y DESARROLLO, S.A C/ Tres Forques, 147, 46014 VALENCIA (ESPAÑA) anofuentes.etraid@grupoetra.com +34963134082 www.grupoetra.com Lucas Pons Bayarri lpons.etraid@grupoetra.com
1.7.	**WS Secretariat**	Organization: Postal address: Email: Phone: Webpage: WS Secretary name: Email: Phone:	UNE - Spanish Association for standardization Génova 6, 28004 Madrid (Spain) info@une.org +34914326003 www.une.org Iker Iñigo iinigo@une.org +34696074680
1.8.	**CEN and CENELEC Management Centre (CCMC) contact**	Organization: Postal address: Webpage: CCMC Project Manager name: Email: Phone:	CEN and CENELEC Rue de la Science 23B - 1040 Brussels, Belgium https://www.cencenelec.eu/Pages/default.aspx Claire Van Thielen cvanthielen@cencenelec.eu +3225500831 +32478793545

1.9.	**Tentative date and place of the Kick-off Meeting**	Date: 2025-10-21	Place: Virtual meeting (Teams)
1.10.	**Does the proposed Workshop fall within the scope of existing CEN and/or CENELEC Technical Bodies?[1]**	☒ YES ☐ NO	Specify: CENELEC TC 8X
1.11.	**Are there other Technical Bodies or Joint Advisory and Coordination Groups potentially interested in the Workshop? ?[2]**	☒ YES ☐ NO	Specify: CLC/SR Smart Energy CEN/CLC/ETSI/CG-SG
1.12.	**Are the following aspects affected?**	Safety matters Management system aspects Conformity assessment aspects Security matters	YES[3] ☐ NO ☒[7] YES[4] ☐ NO ☒ YES[5] ☐ NO ☒ YES[6] ☐ NO ☒[8]
		Add information/explanations if Management System aspects and Conformity Assessment aspects are affected: Type here	
2	**WS Deliverables**		
2.1.	**CWA #1**		
2.1.1	**Title**	☒ Same as WS title (1.2) ☐ Other: Type here	
2.1.2	**Scope**		The P2P trading of energy communities (between members and/or between communities) may impact (relieve or increase congestion) in the Distribution Grid due to bidirectional electricity flows. In order to understand this impact, it is needed to be able to predict when the distributed PV will feed the grid (24 hours in advance would be required) and then to calculate which is the impact in the grid of this bidirectional flow (mainly to study the voltage variations in the affected line in the transient state). It is also possible to assess the energy import and export levels and how they change with the implementation of P2P trading. Finally, community generation and flexibility assets can be better harnessed by the grid with implementation of dynamic tariff models.
2.1.3	**Does the proposed CWA conflict with a published EN**	☐ YES ☒ NO	Specify: Type here In case the answer is 'yes', the development of the CWA shall be stopped

[1] Part A and Part B of this form shall be sent by the WS secretary to the secretary of the Technical Bodies identified in this section to inform them about the creation of the WS and register any possible objection within 30 days (45 during the holiday period).

[2] Part A and Part B of this form should be sent by the WS secretary to the Bodies identified in this section to inform them about the creation of the WS.

[3] Work on the proposed CEN and/or CENELEC Workshop shall not be initiated.

[4] The CEN and/or CENELEC Workshop proposal shall be submitted to the CEN/CENELEC BT(s) for decision.

[5] CEN-CENELEC Internal Regulations - Part 3, Clause 33 applies.

[6] For projects dealing with security matters the security risk analysis provided in Annex I shall be carried out.

[7] See Note 2 in CEN-CENELEC Guide 29, Clause 3.

[8] See Note 2 in CEN-CENELEC Guide 29, Clause 3.

PART B – Project Plan

1 Abstract

The **CEN/CENELEC Workshop** is initiated to address the need for a standardised solution to analyse the impact of P2P trading in the distribution grid. This includes the quantification of technical impacts resulting from bidirectional power flows in peer-to-peer (P2P) trading, such as voltage deviation, thermal loading, and network constraint violations at the low voltage (LV) and medium voltage (MV) levels. The CWA will define interoperable data models and assessment methodologies compatible with relevant standards, leveraging validated scenarios from FEDECOM and OPENTUNITY pilots, including 24-hour forecasting of distributed energy resources (DER) injections, grid state estimation, and performance-based flexibility remuneration schemes, to support replicability across distribution system operators (DSOs) and energy community configurations.

2 Status of the Project Plan

Draft Project Plan for public commenting (Version 1.0)

This draft Project Plan is intended to inform the public of a new Workshop. Any interested party can take part in this Workshop and/or comment on this draft Project Plan by sending an email to the WS secretary.

All those who have applied for participation or have commented on the Project Plan by the deadline will be invited to the Kick-Off Meeting of the Workshop on 2025-10-21.

3 Workshop proposer and potential Workshop participants

3.1 Workshop proposer

OPENTUNITY

One of the main objectives of the OPENTUNITY project is to ensure quality of supply in a context of increase of renewable energy sources (RES). In this respect, the great amount of distributed energy resources (DERs that are being continuously installed and connected to the distribution grids must be properly managed, especially considering the peer-to-peer (P2P) markets that are being created. Thus, OPENTUNITY is developing technology to analyse the short-term impact of DER in the distribution grid to support a proper feed into the grid from these DERs.

FEDECOM

FEDECOM is developing interoperable platforms and market mechanisms for data-driven coordination between DER, prosumers, and system operators. It pilots cross-community energy exchange scenarios—including P2P trading and sector coupling—across real environments in Europe, aiming to define, simulate, and validate their technical and economic impacts on distribution grids (e.g. voltage, import/export balance, congestion). A blockchain-based decentralised exchange has been developed to support peer-to-peer, peer-to-pool, and dynamic tariff transactions, with embedded measurement and verification (M&V) for performance-based remuneration. FEDECOM contributes validated forecasting, trading, and settlement tools (e.g. Dispa-SET), field data, and results from pilot and simulation activities. It also explores dynamic tariffs and federated data-sharing to unlock flexibility while ensuring grid stability and regulatory compliance.

3.2 Potential participants

This CWA will be developed in a Workshop (temporary body) that is open to any interested party. The participation of the following stakeholders would be helpful and is desired:

- Industry and commerce
- Government
- Consumer
- Academic and research
- Standards application
- Non-governmental organization (NGOs)
- DSOs

4 Workshop objectives and scope

This workshop will:

- Provide enhanced state estimation techniques to predict when the distributed PV will feed the grid, allowing for the calculation of the impact in the grid of this bidirectional flow and assessment of the energy import and export levels and how they change with the implementation of P2P trading.
- Allow community generation and flexibility assets to be better harnessed by the grid with the implementation of dynamic tariff models.

The development of this CWA “Impact of P2P trading at distribution grid level” is proposed by the Horizon Europe projects OPENTUNITY and FEDECOM in collaboration, to address the impact of P2P trading by either relieving or increasing congestion in the Distribution Grid.

4.1 Workshop background

This Workshop has been initiated in recognition of the aligned objectives of the Horizon Europe projects OPENTUNITY and FEDECOM, which share a common pilot site partner (AEM), and offer complementary approaches to assessing and managing the impact of P2P energy trading on distribution grid operations. P2P trading—whether within or between communities—can substantially affect local grid conditions by modifying net load profiles, reversing power flows, and influencing congestion patterns.

This CWA aims to define a harmonised methodology for analysing the grid impact of P2P trading and to support DSOs with actionable insights for the reliable integration of DERs. While impact assessment is within scope, the definition of corrective actions by DSOs remains outside the CWA’s remit. With the growing number of national

regulatory sandboxes on P2P energy trading and the 2025–2026 timeline for several Horizon Europe pilot validations, this CWA is timely. It ensures that results from FEDECOM, OPENTUNITY, and other projects can converge into a replicable framework while also informing EU standardisation policy discussions. This effort also supports the European Commission's "Digitalising the Energy System" initiative (COM(2022) 552), which emphasises the role of interoperable data sharing, digital flexibility markets, and decentralised coordination mechanisms to enable a secure and consumer-centric energy transition. OPENTUNITY contributes state estimation models for low-voltage (LV) networks, enabling short-term impact assessments. In parallel, FEDECOM complements this with simulated and real-world P2P trading use cases and grid interaction scenarios, including key performance indicators (KPIs) for evaluating voltage stability, import/export shifts, and community-level self-consumption. The resulting CWA is expected to benefit DSOs, aggregators, energy communities, and regulators seeking practical guidance for integrating distributed trading models into grid operation and planning. Small DSOs often lack fine-grained, real-time observability across their networks, limiting their ability to assess localised impacts of P2P activity. This motivates the need for enhanced state estimation techniques, as well as interoperable data exchange protocols and system architectures. OPENTUNITY addresses these gaps by advancing LV state estimation capabilities, while FEDECOM contributes a federated architecture, dynamic tariff simulations, and blockchain-based trading with embedded M&V. Additionally, current legal constraints prevent DSOs from directly controlling small prosumer inverters without regulatory or contractual agreements. This underscores the importance of developing neutral coordination mechanisms and interoperable tools—such as those foreseen in this CWA—that support grid stability without requiring direct asset control. The outcome will provide practical, technology-agnostic guidance that supports regulatory alignment, enables market uptake of P2P trading models, and ensures grid stability across varied European contexts.

Market environment:

P2P energy trading is transitioning from pilot projects to more structured implementations across the European Union. Countries like the Netherlands, Italy, Spain, Slovenia, and Belgium have initiated frameworks that allow consumers and prosumers to directly buy and sell electricity, fostering decentralized energy systems and promoting renewable energy integration. Despite these advancements, the market lacks standardized methodologies for assessing the impact of P2P trading on distribution grids. Current initiatives often operate within regulatory sandboxes, leading to fragmented approaches that hinder scalability and interoperability. The proposed CWA aims to address this gap by developing a harmonized framework that evaluates the technical effects of P2P energy trading, such as voltage variations and congestion, on distribution networks. By aligning with existing standards and incorporating insights from projects like FEDECOM and OPENTUNITY, the CWA will facilitate broader adoption of P2P trading models, ensuring they contribute positively to grid resilience and the EU's energy transition goals.

Legal environment:

The European Union's legal framework for renewable energy is anchored in Directive (EU) 2018/2001 (RED II)[9], which sets a binding target for the EU to achieve at least a 32% share of energy from renewable sources in gross final consumption by 2030. This directive supports mechanisms such as feed-in tariffs, renewable energy obligations, and green certificate schemes to promote renewable energy integration. Additionally, the EU's 2030 Climate and Energy Framework aims for a 40% reduction in greenhouse gas emissions compared to 1990 levels[10],

[9] Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast). Official Journal of the European Union, L 328, 82–209. Available at: https://eur-lex.europa.eu/eli/dir/2018/2001/oj/eng

[10] European Commission. (2014). A policy framework for climate and energy in the period from 2020 to 2030. COM(2014) 15 final. Available at: https://www.eea.europa.eu/policy-documents/euco-169-14

reinforcing the commitment to decarbonization. The Energy Roadmap 2050 outlines a long-term strategy to reduce emissions by 80-95% by 2050[11], emphasizing the need for a nearly carbon-free energy system. Furthermore, the EU and its member states have ratified the Paris Agreement, legally binding them to limit global temperature increases and to pursue efforts to limit the increase to 1.5 °C[12], necessitating systemic decarbonisation measures across sectors, including the electricity distribution domain—further validating the need for coordination tools such as those addressed in this CWA.

Existing standards and standard related activities and documents:

The following summarizes relevant standards and specifications that set the framework for the new Workshop:

- EN 50160:2022 “Voltage characteristics of electricity supplied by public electricity networks”
- EN 60038:2011 “CENELEC standard voltages”
- EN 60059:1999 “IEC standard current ratings”
- EN 60196:2009 “IEC standard frequencies”
- EN IEC 61968 & IEC 61968 series of standards “Application integration at electric utilities - System interfaces for distribution management” and “Enterprise business function interfaces for utility operations”
- EN IEC 61970 & IEC 61970 series of standards “Energy management system application program interface (EMS-API)” (Common Information Model – CIM)
- EN IEC 62934:2021 “Grid integration of renewable energy generation - Terms and definitions”
- IEC TR 63043:2020 “Renewable energy power forecasting technology”
- IEC TS 63531 ED1 “Specification for evaluation of renewable energy power forecasting results” (Under development)
- prEN 50763 “Assessment of electrical flexibility services from power network perspective” (Under development)

To ensure alignment with existing standards and ongoing activities, the following related standardisation initiatives and technical bodies will be informed about the CEN/CLC/WS and invited to participate:

- CLC TC 8X – Focuses on system aspects of electrical energy supply, including integration of DERs and grid management strategies at distribution and transmission levels.
- CLC/SR Smart Energy – Addresses standardisation needs related to smart grids, metering, and energy services to support the digital energy transition.
- CEN/CLC/ETSI/CG-SG (Coordination Group on Smart Grids) – Acts as a coordination platform for smart grid standardisation activities across CEN, CENELEC, and ETSI to ensure coherence and alignment with EU policy goals.
- CENELEC/TC 57 – Power Systems Management and Associated Information Exchange: Addresses standardisation of information models relevant to TES integration in energy systems.
- BRIDGE Data Management Working Group – Ensures harmonisation of energy data exchange formats and ontologies across EU-funded smart grid and energy community projects.

[11] European Commission. (2011). Energy Roadmap 2050. COM(2011) 885 final. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52011DC0885

[12] Council Decision (EU) 2016/1841 of 5 October 2016 on the conclusion, on behalf of the European Union, of the Paris Agreement adopted under the United Nations Framework Convention on Climate Change. Official Journal of the European Union, L 282, 1–3. Available at: https://eur-lex.europa.eu/content/news/paris-agreement.html

- ETIP SNET Standardisation Working Group – Guides priorities for smart energy system standardisation to support flexibility, digitalisation, and cross-sector integration.
- Gaia-X and IDSA frameworks – Promote federated data governance, identity management, and secure sharing of industrial data, aligning with the CWA's focus on data-driven P2P coordination and distributed ledger integration.

By aligning the development of the CWA "Impact of P2P trading at distribution grid level" with these standards and activities, the Workshop will ensure broad applicability, interoperability, and alignment with industry best practices—enhancing the replicability of energy community deployments and minimising unintended impacts of P2P trading on distribution grid operations.

5 Workshop programme

5.1 General

The Kick-Off Meeting is planned to take place on 2025/10/21 in an online meeting.

A total of 5 Workshop meetings (including the Kick-Off Meeting) are initially foreseen, during which the content of the CWA(s) will be presented, discussed and approved. The final number of meetings will depend on the progress of the drafting works and agreement discussions.

The working language (language of meetings, minutes, etc.) of the WS will be English. The CWAs will be written in English.

5.2 Workshop schedule

Table 1: Workshop schedule (preliminary)

CEN/CENELEC Workshop	May 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26
Initiation												
1. Workshop description form submission and TC response												
2. Open commenting period on draft Project Plan (mandatory)												
Operation												
3. Kick-Off Meeting												
4. CWA(s) development												
5. Open commenting period on draft CWA(s) (optional)												
6. CWA(s) finalized and approved by Workshop participants												
Publication												
7. CWA(s) publication												
Dissemination (see 6)												
Milestones						K		V	V		V	

CEN/CENELEC Workshop	May 26	Jun 26	Jul 26	Aug 26	…
Initiation					
1. Workshop description form submission and TC response					
2. Open commenting period on draft Project Plan (mandatory)					
Operation					
3. Kick-Off Meeting					
4. CWA(s) development					
5. Open commenting period on draft CWA(s) (optional)					
6. CWA(s) finalized and approved by Workshop participants					
Publication					
7. CWA(s) publication					
Dissemination (see 6)					
Milestones		**V/ A**		**p**	

K Kick-off
M Workshop meeting
V Virtual Workshop meeting
A Adoption of CWA
P Publication of CWA
D Online distribution of CWA

6 Resource planning

All costs related to the participation of interested parties in the Workshop's activities have to be borne by themselves. This principle should be stated in the Project Plan.

The Workshop secretariat costs will be financed within the framework of the OPENTUNITY Horizon Europe project.

7 Workshop structure and rules of cooperation

7.1 Participation in the Workshop

The Workshop will be constituted during the Kick-Off meeting. By approving this Project Plan, the interested parties declare their willingness to participate in the Workshop and will be formally named as Workshop participants, with the associated rights and duties. Participants at the Kick-Off Meeting who do not approve the Project Plan are not given the status of a Workshop participant and are thus excluded from further decisions made during the Kick-Off Meeting and from any other decisions regarding the Workshop.

As a rule, the request to participate in the Workshop is closed once it is constituted. The current Workshop participants shall decide whether any additional members will be accepted or not.

Any new participant in the Workshop at a later date is decided on by the participants making up the Workshop at that time. It is particularly important to consider these aspects:

a) expansion would be conducive to shortening the duration of the Workshop or to avoiding or averting an impending delay in the planned duration of the Workshop;
b) the expansion would not result in the Workshop taking longer to complete;
c) the new Workshop participant would not address any new or complementary issues beyond the scope defined and approved in the Project Plan;
d) the new Workshop participant would bring complementary expertise into the Workshop in order to incorporate the latest scientific findings and state-of-the-art knowledge;
e) the new Workshop participant would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
f) the new Workshop participant would ensure wider application of the CWA.

All Workshop participants who approved the publication of the CWA or its draft will be named as authors in the European Foreword, including the organizations which they represent. All Workshop participants who did not approve the publication of the CWA will not be named in the European Foreword.

7.2 Workshop responsibilities

The Workshop Chair is responsible for content management and consensus building. The Workshop Chair is supported by the Workshop Vice-Chair (if any) and the responsible Workshop secretariat, whereby the Workshop secretariat will always remain neutral regarding the content of the CWA(s). Furthermore, the Workshop secretariat shall ensure that CEN-CENELEC's rules of procedure, rules of presentation, and the principles governing the publication of CWA(s) have been observed. Should a Workshop Chair no longer be able to carry

out her/his duties, the Workshop secretariat shall initiate the election of a new Workshop Chair. The list below covers the main tasks of the Workshop Chair. It is not intended to be exhaustive.

- Content related contact point for the Workshop
- Presides at Workshop meetings
- Ensures that the development of the CWA respects the principles and content of the adopted Project Plan
- Manages the consensus building process, assesses when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received
- Ensures due information exchange with the Workshop secretariat
- Represents the Workshop and its results to exterior

The Workshop secretariat, provided by a CEN and/or CENELEC Member, is responsible for organizing and leading the Kick-Off Meeting, in consultation with the Workshop proposer. Further Workshop meetings and/or web conferences shall be organized by the Workshop secretariat in consultation with the Workshop Chair. The list below covers the main tasks of the Workshop secretariat. It is not intended to be exhaustive.

- Administrative and organizational contact point for the Workshop
- Ensures that the development of the CWA respects the principles and content of the adopted Project Plan and of the requirements of the CEN-CENELEC Guide 29
- Formally registers Workshop participants and maintains record of participating organizations and individuals
- Offers infrastructure and manages documents and their distribution through an electronic platform
- Prepares agenda and distributes information on meetings and meeting minutes as well as follow-up actions of the Workshop
- Initiates and manages CWA approval process upon decision by the Workshop Chair
- Interfaces with CEN-CENELEC Management Centre (CCMC) and Workshop Chair regarding strategic directions, problems arising, and external relationships
- Advises on CEN-CENELEC rules and brings any major problems encountered (if any) in the development of the CWA to the attention of CEN-CENELEC Management Centre (CCMC)
- Administrates the connection with relevant CEN or CENELEC/TCs

7.3 Decision making process

The CEN and/or CENELEC Workshop Chair is responsible for ensuring that the development of the CWA follows the principles and content of the Project Plan described in this document and the requirements of CEN-CENELEC Guide 29. The CEN and/or CENELEC Workshop Chair may take decisions on the conduct of the CEN and/or CENELEC Workshop based on the comments expressed by the participants and of CEN-CENELEC Guide 29.

Decisions shall be taken based on consensus of the WS participants.

8 Dissemination and participation strategy

Potential participants identified in section 2.2 and potential interested stakeholders identified in Part A should be informed of the open commenting phase, if any, and of the publication of the CWA.

In addition to the CCMC website, the final CWA might be advertised on:

- OPENTUNITY specific newsletter
- CENELEC TC 8X and other related Technical Committees and standardisation groups
- social media, such as
    - LinkedIn
    - X
- EC Newsroom

FEDECOM and OPENTUNITY also commit to disseminating the published CWA via project websites, public webinars, and their networks in the EU energy community ecosystem.