

**CIGRE Study Committee C5**

**PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP**

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| <b>WG N° C5.34</b>  | <b>Name of Convenor:</b> Jessica Harrison (US) |  |
| <b>Strategic Directions #<sup>2</sup>:</b> 1, 2, 4, 5   |  | <b>Sustainable Development Goal #<sup>3</sup>:</b> 9 |
| <b>The WG applies to distribution networks:</b> <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No   |  |  |
| <b>Potential Benefit of WG work #<sup>4</sup>:</b> 1-5  |  |  |
| <b>Title of the Group:</b> Summary of Current Uses of Electric Vehicle Charge/Discharge Flexibility in wholesale energy markets and reliable grid operations  |  |  |
| <p><b>Scope, deliverables and proposed time schedule of the WG:</b></p> <p><b>Background:</b></p> <p>This working group will summarize the current uses of Electric Vehicles and EV charging networks in the operations and market optimization of the wholesale power grid. The evaluation will summarize the locations, purposes/services/pricing, participant roles, requisite technology and requisite regulatory frameworks of current uses of EVs in wholesale grids. The final report will provide insight into both the common and bespoke elements of current integrations providing a framework for assessing potential future standardization of EV integration. The final report will also identify areas of need for future assessment for successful standardization of EV integration.</p> <p><b>Scope:</b></p> <p>The working group will report on key parameters and aspects of EV integration, including where policies are in place for future development:</p> <ol style="list-style-type: none"> <li>1. Where are EV's currently participating in wholesale markets or for reliable grid operations             <ol style="list-style-type: none"> <li>1.1. Geography</li> <li>1.2. Transmission, Distribution or both</li> <li>1.3. Current market volume/market take-up</li> </ol> </li> <li>2. What services and pricing schemes are offered?             <ol style="list-style-type: none"> <li>2.1. Ancillary Services</li> <li>2.2. Energy</li> <li>2.3. Capacity</li> <li>2.4. Demand Response</li> <li>2.5. Black Start</li> <li>2.6. Resilience</li> </ol> </li> <li>3. How are EVs integrated?             <ol style="list-style-type: none"> <li>3.1. Managed by TSO/ISO</li> <li>3.2. Managed by DSO/Distribution Utility</li> <li>3.3. Third Party aggregator</li> <li>3.4. Self-managed/dispatched</li> </ol> </li> <li>4. Are there other actors or providers involved?             <ol style="list-style-type: none"> <li>4.1. Charging network operators</li> <li>4.2. Vehicle OEMs</li> <li>4.3. Third party "app" developers</li> <li>4.4. Internet of Things (IOT) players</li> <li>4.5. Internet of Energy (IOE) players</li> </ol> </li> </ol> |  |  |

5. What technology and parameters are required to integrate EVs into markets?
  - 5.1. Wireless internet
  - 5.2. Smart Charging
  - 5.3. Charge & discharge capability (including V2G)
  - 5.4. DC or AC
  - 5.5. Speed of charge/discharge
6. Forms of legal regulation of EVs and charging
  - 6.1. Franchise monopoly?
7. Overall summary of Use Cases for Integrating EVs into energy markets.

**Deliverables:**

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| <input checked="" type="checkbox"/> Technical Brochure and Executive Summary in Electra |   |
| <input type="checkbox"/> Electra Report   | <input type="checkbox"/> CSE                |
| <input checked="" type="checkbox"/> Future Connections                                  |   |
| <input checked="" type="checkbox"/> Tutorial  | <input checked="" type="checkbox"/> Webinar |

**Time Schedule:** start: May 2022

**Final Report:** August 2024

**Approval by Technical Council Chairman:**

Date: April 1<sup>st</sup>, 2022



Notes: <sup>1</sup>Working Group (WG) or Joint WG (JWG), <sup>2</sup>See attached Table 1, <sup>3</sup>See attached Table 2 and CIGRE reference Paper: Sustainability – at the heart of CIGRE's work. <sup>4</sup> See attached Table 3

**Table 1: Strategic directions of the Technical Council**

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| 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 |
| 2 | Making the best use of the existing systems  |
| 3 | Focus on 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  |

**Table 2: Environmental requirements and sustainable development goals**

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| CIGRE selected the 7 SDGs that are the most relevant to CIGRE. In case the WG work refers to other SDGs or do not address any specific SDG, it will be quoted 0. |  |
| 0  | Other SDGs or not applied  |
| 7  | <b>SDG 7: Affordable and clean energy</b><br>Increase share of renewable energy; e.g. expand infrastructure for supplying sustainable energy services; ensure universal access to affordable, reliable, and modern energy services; energy efficiency; facilitate access to clean energy research and technology   |
| 9  | <b>SDG 9: Industry, innovation and infrastructure</b><br>Facilitate sustainable infrastructure development; facilitate technological and technical support   |
| 11   | <b>SDG 11: Sustainable cities and communities</b><br>Increase attention on sustainable and resilient buildings utilizing local (raw) materials, power for electric vehicles, strengthening long-line transmission and distribution systems to import necessary power to cities, developing micro-grids to reinforce the sustainable nature of cities; protect and safeguard the world's cultural and natural heritage; reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and waste management |
| 12   | <b>SDG 12: Responsible consumption and production</b><br>E.g. Promote public procurement practices that are sustainable; address reducing use of SF6 and promote alternatives, encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle, address inefficient fossil-fuel subsidies that encourage wasteful consumption  |
| 13   | <b>SDG 13: Climate action</b><br>E.g. Increase share of renewable or other CO2-free energy; energy efficiency; expand infrastructure for supplying sustainable energy; strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; integrate climate change measures into national policies, strategies and planning; improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning   |
| 14   | <b>SDG 14: Life below water</b><br>E.g. Effects of offshore windfarms; effects of submarine cables on sea-life   |
| 15   | <b>SDG 15: Life on land</b><br>E.g. Attention for vegetation management; bird collisions; integration of substations and lines into the landscape  |

**Table 3: Potential benefit of work**

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| 1 | Commercial, business, social and economic benefits for industry or the community can be identified as a direct result of this work |
| 2 | Existing or future high interest in the work from a wide range of stakeholders   |
| 3 | Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry |
| 4 | State-of-the-art or innovative solutions or new technical directions   |
| 5 | Guide or survey related to existing techniques; or an update on past work or previous Technical Brochures                          |
| 6 | Work likely to contribute to improved safety.  |