

## CCEM Strategy 2026-2035 – Executive Summary

**President:** G Rietveld

**Periodicity:** 2 years

**Last meeting:** March 2025

**Members:** 27, **Observers** 2

**Executive Secretary:** M Stock

**Working Groups:** Low Frequency (WGLF), Radiofrequency Quantities (GT-RF),

RMO Coordination (WGRMO)

**Task Groups:** TG-DIG, TG-Graphene, DG-Magnetics

| Comparison activity             | Completed                           | In progress | Planned |
|---------------------------------|-------------------------------------|-------------|---------|
| CCEM KCs (& CC Supplementary)   | 36 + (2)                            | 9           | 8       |
| RMO KCs (& SCs)                 | 58 + (115)                          | 10 + (17)   | ?       |
| BIPM comparisons (all on-going) | 5                                   |             |         |
| CCEM Pilot studies              | 1                                   | 0           | 2       |
| CMCs                            | 4692 CMCs in 191 service categories |             |         |

### CCEM Vision

To be the recognized international focus for electrical metrology, ensuring trustworthy and traceable measurements are embedded at the heart of science, industrial innovation and global economy.

### Executive Summary

An updated strategy was prepared in 2026 by the Consultative Committee for Electricity and Magnetism (CCEM). Its intended audience is mainly members of the CCEM, decision makers at NMIs, industry stakeholders, members of the CIPM and delegates of the CGPM.

The **strategic global importance** of electrical technologies can hardly be overstated, particularly in the context of the CIPM Strategy 2030+. The CIPM identified monitoring the global environment, health and life science, food and water safety, energy, and advanced manufacturing as the five main areas in which the need for metrology arises from global challenges. Accurate and traceable measurement of electrical quantities plays a crucial role in enabling advancements in these areas, in particular in the energy transition and the growth of digital infrastructures. A general challenge for the CCEM community is the ubiquitous application of electricity and electrical measurements that leads to a large number of electrical quantities, having wide ranges of values and frequencies ranging from DC far into the GHz range. Novel quantum technologies continue to develop at a remarkable pace, and this will continue to have a significant impact on the future of electrical metrology.

The CCEM does not operate R&D projects on its own but provides **leadership and vision** to NMIs and DIs with a focus on quantum-based measurement standards and new and existing technologies enabling precision metrology. The CCEM wishes to involve all concerned parties in advancing electromagnetic metrology and sharing expertise efficiently. Therefore, the CCEM will continue to organize workshops and selected technical presentations and webinars in key emerging areas. These knowledge-transfer activities are closely linked to the BIPM Capacity Building & Knowledge Transfer (CBKT) Programme.

The CCEM supports the global **comparability of measurements** by implementing the CIPM MRA through the organization of key comparisons and coordination of RMO key and supplementary comparisons. It maintains an extensive list of service categories for which CMCs can be submitted. Electricity and Magnetism is the second-largest area after Chemistry in terms of the number of CMC entries in the BIPM Key Comparison Database. Therefore, efficient management remains of strategic importance.

The CCEM actively engages with **stakeholders** with the goal to better understand stakeholder needs and to increase the impact of CCEM activities addressing them. This engagement will be deepened by collaborating more closely with international standardization bodies and by inviting stakeholders to participate in CCEM events.

The CCEM oversees the work programme of the **BIPM electricity laboratories**. The BIPM comparison services form an integral part of the CCEM comparisons and allow NMIs to uniquely demonstrate their measurement capabilities at the best uncertainty levels. BIPM has developed special expertise in quantum electrical standards that is exploited in on-site key comparisons at NMIs, which in many cases lead to an improvement of the NMI's standard. The BIPM calibration services provide traceability to a significant number of NMIs without their own primary realizations.