EUTC

EUTC | Contribution to the European Commission's Call for Evidence

EU Quantum Act

1. Statement of interest

EUTC welcomes the European Commission's initiative to develop an EU Quantum Act and strongly supports the implementation of the Quantum Europe Strategy. Utilities are operators of essential services and critical infrastructures and rely on telecommunications networks to ensure safety, resilience, and continuity of supply.

Quantum technologies, including quantum-safe communications, quantum sensing, and applied quantum and hybrid high-performance computing, will directly impact the security, operability, and efficiency of Europe's energy, water, and broader utility systems.

2. Main observations

Utilities should be recognised as a priority critical sector for quantum deployment, with utility telecommunications serving as a strategic bridge between research, industry, and societal use cases. EU-level strategic projects and coordinated procurement for quantum-secure communications, including hybrid PQC and QKD architectures across EuroQCI/IRIS² and terrestrial utility networks, should be supported, with certification and conformance testing aligned to ENISA and ETSI standards.

Open, shared utilities-grade testbeds and reference architectures that integrate quantum technologies with operational and IT environments, such as SCADA, EMS, DMS, and AMI, are essential to ensure interoperability, resilience, and operational certification before field deployment. The transition to post-quantum cryptography should be accelerated with sector-specific milestones and tooling, while piloting QKD on high-risk corridors. Harmonised spectrum management and streamlined permitting for quantum-enabled utility sites will further support deployment.

Quantum sensing should be prioritised for grid stability, asset integrity, and predictive maintenance, including technologies such as gravimetry, magnetometry, and inertial sensing, with alignment to relevant standards and roadmaps for critical infrastructures. Building operator-focused skills is equally important, including a Utilities Quantum Skills track within the European Quantum Skills Academy and the promotion of micro-credentials for telecom, cybersecurity, and OT staff.

Finally, a robust EU supply-chain monitoring and security framework is needed to ensure control over key components, such as cryogenics, lasers, control electronics, and photonics, for deployments within critical infrastructures.

3. Recommendations to the European Commission

Pillar 1 – Research & innovation

EUTC supports integrating quantum R&I into EuroHPC JU and calls for strategic projects focused on:

- Quantum-safe networking (PQC + QKD) for critical utility communications, e.g., securing TSO–DSO interconnects and substation WANs.
- Quantum sensing pilots for grid stability and asset integrity, e.g., gravimetry for underground cable monitoring or magnetometry for transformer health.
- Hybrid HPC–Quantum workloads for energy optimization, e.g., unit commitment and grid reconfiguration using quantum accelerators.

These initiatives should include reference architectures and interoperability testing aligned with EU standards.

Pillar 2 – Industrial capacity & investment

We recommend dedicated EU tools to:

- Fund utilities-grade testbeds, e.g., open-access labs for PQC+QKD integration with SCADA systems.
- Launch pilot lines for telecom-grade quantum components, e.g., ruggedized QKD modules for harsh substation environments.
- Enable coordinated procurement, e.g., TSOs acting as early adopters for quantum-secure corridors.

Streamlined permitting and harmonized spectrum planning are essential to accelerate deployment.

Pillar 3 – Supply chain resilience & governance

EUTC supports EU-level monitoring and governance measures:

- Establish trusted supply chains, e.g., EU-based suppliers for cryogenics and photonics used in QKD systems.

- Develop EU certification schemes, e.g., security-by-design certification for hybrid PQC+QKD deployments in critical infrastructures.
- Promote standards and interoperability frameworks, e.g., ETSI profiles for quantum-classical network integration.

Conclusion

EUTC welcomes the European Commission's initiative to advance the EU Quantum Act and supports the development of a coordinated European approach to quantum-ready critical infrastructures.

Ensuring that policy objectives are translating into secure, interoperable, and operationally feasible deployments is essential. Drawing on cross-sector experience between telecommunications technologies and utility operations, practical insights can help achieve resilient implementation and deliver tangible benefits for citizens and the European economy.

Constructive engagement with EU institutions, regulators, and stakeholders will be key to supporting a future-proof European digital infrastructure ecosystem.