NATIONAL RESILIENCE IN THE QUANTUM ERA

Quantum technologies are becoming increasingly important to US economic competitiveness, national security, and critical infrastructure resilience. Governments around the world, ally and adversary alike, are accelerating investments in quantum computing, networking, sensing, and enabling technologies. China, in particular, has invested aggressively in quantum technologies as part of its broader strategy to challenge US technological leadership and military advantage. To maintain US leadership in this critical technology area, Congress should support policies that accelerate the development of secure, scalable, and commercially relevant quantum capabilities. These efforts should emphasize post-quantum cybersecurity preparedness, resilient infrastructure, secure supply chains, technology-neutral innovation, public-private collaboration, and long-term workforce development.

POST-QUANTUM CYBERSECURITY & COMMUNICATIONS RESILIENCE

Continuing advances in quantum computing increase the urgency of migration to post-quantum cryptography (PQC) and resilient communications infrastructure. Sensitive government, defense, and commercial data harvested today represents a vulnerability to future decryption, and this vulnerability persists as long as migration PQC efforts are delayed. Congress should continue supporting federal post-quantum cryptography migration efforts across civilian, defense, and intelligence agencies; expand coordination between government, industry, and standards bodies; and prioritize replacement of vulnerable public-key cryptography across critical systems and networks.

QUANTUM SENSING & POSITION, NAVIGATION, AND TIMING (PNT)

Quantum sensing technologies are already improving PNT capabilities in environments where GPS signals are degraded or denied, supporting more resilient military, intelligence, and critical infrastructure operations. Emerging sensing technologies will create strategic advantages for nations that successfully develop and deploy them first. Continued investment in quantum sensing R&D, testing, and deployment readiness will help ensure the US maintains leadership in this critical capability area.

QUANTUM NETWORKING & SECURE INFRASTRUCTURE

Quantum networking technologies can contribute to the development of secure communications architectures, distributed quantum systems, and resilient infrastructure for government and critical-sector applications. As these technologies mature, Congress should support interoperable, scalable, and technology-neutral approaches that encourage innovation across multiple technical pathways while strengthening long-term infrastructure resilience.

ADVANCED COMPUTING, MODELING, & DECISION SUPPORT

As defense and critical infrastructure systems generate increasingly large and complex data streams, advanced computational capabilities will become increasingly important for logistics optimization, operational planning, materials modeling, intelligence analysis, and high-fidelity simulation. Continued investment across the full quantum ecosystem—including computing, networking, sensing, and enabling technologies—will help ensure the US can evaluate, test, and deploy mission-relevant quantum capabilities as the technology matures.

SUPPLY CHAIN, STANDARDS, & WORKFORCE DEVELOPMENT

Maintaining long-term US leadership in quantum technologies will require resilient domestic supply chains, robust technical standards, and a highly skilled workforce. Congress should support collaboration between government, industry, academia, national laboratories, and allied partners and participation in standards setting organizations to strengthen benchmarking, interoperability, and scalable manufacturing, and workforce development programs while ensuring procurement and investment decisions prioritize demonstrated capability, reliability, scalability, and mission relevance.