

# **From Gig City to Quantum City**

**Bento J. Lobo, Ph.D., CFA**

Research Fellow  
Center for Regional Economic Research  
UC Foundation Professor and First Tennessee  
Bank Distinguished Professor of Finance  
University of Tennessee at Chattanooga

## **Summary**

Chattanooga is home to the nation's first commercial quantum network, the EPB Quantum Network<sup>SM</sup>, which will accelerate the commercialization of quantum technology, aligning local job creation efforts with national priorities. With quantum networking set to be a cornerstone of secure global communications and distributed quantum computing, the local quantum network is expected to be a key enabler of the broader quantum economy and make a quantum global internet achievable. Strategic partnerships between EPB, IonQ, ORNL and UTC make Chattanooga a likely future quantum hub, bringing as much as \$1.1 billion in output, income, and taxes as well as over 2,000 new jobs to the region by 2035.

## Introduction

Quantum Technology (QT) is here, and Q-Day is coming. Will Chattanooga be ready?

For most, anything quantum is a headscratcher. Rightly so. QT and its subfields are recent commercial manifestations of quantum mechanics which can be dated back at least 100 years. Quantum mechanics is a fundamental branch of physics that describes the behavior of matter and energy at the smallest scales—typically at the level of atoms and subatomic particles.

More recently, the science of quantum mechanics has begun to be commercialized. New use cases of quantum technology are being identified in the fields of cybersecurity, medical imaging, drug discovery and materials science, navigation, financial risk analysis and fraud detection, machine learning, climate modeling, and many other fields.

The Quantum Economic Development Consortium (QED-C) pointed out, “With nearly \$1.5 billion in 2024 revenue from the quantum computing and quantum sensing industries and predicted annual growth of approximately 25 percent in the coming years, it is clear the quantum economy is real and on track to make significant impact across multiple sectors.”

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**Q-Day** is the point at which quantum computers can break classical encryption, expose sensitive data, and create an urgent need for quantum-safe security measures. It is expected to be here sooner than most expect, with a consensus pointing toward 2030-2035.

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According to McKinsey’s 2025 Quantum Technology Monitor the market size of the quantum computing space is \$28 - \$72 billion; growth of 11-14 percent each year is expected over 10 years. By then the business value of quantum computing for the automotive, chemical, financial services, and life sciences industries could total more than \$1.3 trillion. By 2035, the quantum communication market including quantum key distribution (QKD), post-quantum cryptography (PQC), and quantum internet infrastructure is projected to reach a value between \$10.5 billion and \$14.9 billion, growing at a compound annual growth rate (CAGR) of 23-25 percent. The quantum sensing market is the smallest segment, currently believed to be about \$7-\$10 billion in size. In 2024, the Boston Consulting Group estimated 191,000 quantum technology jobs in

quantum computing, communications, sensing, and supporting industries would be created across Illinois, Wisconsin, and Indiana by 2035 where over \$1 billion has already been invested.

The leading pure play listed companies in this space include IonQ (NYSE: IONQ), Rigetti Computing (NASDAQ: RGTT), Quantum Computing (NASDAQ: QUBT), and D-Wave Quantum (NYSE: QBTS). As of October 2025, the stock market capitalization of the pure-play quantum companies (IONQ, RGTT, QUBT, QBTS) is approximately \$50 billion. Big name firms in the applications space include IBM, Microsoft, Alphabet, Amazon, Intel, Honeywell, Nvidia and Fujitsu.

## What is the value of QT?

Five elements make up the QT value chain: equipment and components, hardware, systems software, application software, and services.

Funding for QT start-ups in 2024 nearly doubled year over year to \$2 billion. Most new start-ups are in equipment and components and application software. However, a shift of value from equipment and components to application software and services is expected over the next five to ten years.

A 2024 Boston Consulting Group analysis for the Chicago Quantum Exchange (CQE) projects that by 2035 quantum technology providers in Illinois, Wisconsin, and Indiana alone could generate \$60 billion in economic value. End users adopting quantum technologies could generate \$20 billion more. This growth is expected to create as many as 191,000 quantum technology jobs by 2035, with a significant portion (over 70 percent) being open to individuals without graduate degrees.

A 2025 study of the potential economic impact of quantum technology in South Carolina using IMPLAN modeling points to potentially a 5.7 percent increase in firm productivity, an increase of 20,000 in the employment base and an increase of \$8.5 billion in annual economic output. Fifty-five percent of this output bump would be from firms adopting quantum technologies, and 45 percent due to multiplier effects.

## What is QT?

QT encompasses the three subfields of computing, communication, and sensing:

Quantum computing (QC) is a new computing paradigm leveraging the laws of quantum mechanics to provide significant performance improvement for certain applications and enable new territories of computing compared to existing classical computing.

Quantum communication (QCOMM) refers to the secure transfer of quantum information across distances and could ensure security of communication even in the face of unlimited (quantum) computing power.

Quantum sensing (QS) refers to a new generation of sensors, based on quantum systems, that provide measurements of various quantities (e.g., electromagnetic fields, gravity, time) and are orders of magnitude more sensitive than classical sensors.

## How is Chattanooga Positioned in the Quantum Space?

EPB established the nation's first commercial quantum network, known as the EPB Quantum Network<sup>SM</sup> in 2022. This network leverages Chattanooga's advanced fiber-optic infrastructure to support quantum computing and networking. Fiber optic cables are ideal for transmitting quantum bits encoded in photons because they help preserve the coherence of quantum states during transmission. Compared to other media, they offer low noise environments and minimal signal degradation, which is crucial for maintaining quantum entanglement.

Quantum networking is a cornerstone of secure global communications and distributed quantum computing. Telecommunications, hyperscalers, and cybersecurity firms are rapidly adopting quantum networking technologies, expected to make up 16-26 percent of the market by 2035 (McKinsey, 2025). Governments are expected to remain the largest customers, accounting for up to 66 percent of the market in 2023, with continued dominance through 2035 due to national security priorities. Recently, the U.S. federal government has expressed an interest in taking an equity stake in sensitive pure-play firms in exchange for federal funding.

The EPB Quantum Network<sup>SM</sup> aims to accelerate the commercialization of quantum technology (QT), aligning local job creation efforts with national priorities (Lobo and Plank, 2025).<sup>1</sup> The network is leased to entities wishing to test concepts and devices in the quantum space. Quantum networking is expected to be a key enabler of the broader quantum economy, which is projected to contribute \$1 trillion in value creation across industries and make a quantum global internet achievable.

Moreover, through a strategic partnership EPB will bring IonQ's Forte Enterprise Quantum Computer to Chattanooga in 2026. A quantum computer has processing power that is exponentially greater than that of classical digital computers. Quantum computers are still in their early development stage, but they are capable of running algorithms that would take several orders of magnitude longer if implemented with conventional computers. This computer will enable EPB, UTC and other interested stakeholders to train and develop other elements in the quantum space. Recently, EPB received a [\\$4 million National Institute of Standards and Technology \(NIST\) grant](#) to establish a Quantum Computing Fellowship program designed to accelerate quantum workforce development.

Quantum start-ups are increasingly consolidating into clusters characterized by a mix of academic excellence, government funding, private investment, and entrepreneurial ecosystems. Locally, the

**Table 1. The Tennessee Tri-Tangle**

Area	Institutions	Focus Areas
Chattanooga, TN Oak Ridge, TN Nashville, TN	UT Chattanooga; Oak Ridge National Laboratory; EPB Quantum Center; Chattanooga Quantum Collaborative; IonQ, IBM	Hybrid Classical-Quantum networking; Quantum communication; Quantum computing applications in electric grid cybersecurity, healthcare, finance, and robotics
Source: Lobo and Plank (2025)		

Chattanooga Quantum Collaborative (CQC) was formed as a partnership of government, business, and nonprofit groups working together to promote QT development in Chattanooga. This group brings together people with vision and capital to take quantum-powered breakthroughs beyond the realm of theoretical possibilities. As QT matures, growing commercial and public interest will further drive the growth of existing clusters and development of new, emerging clusters (Lobo and Plank, 2025).

Chattanooga is making strides toward becoming a Quantum hub. In 2024, UTC received a \$3.5 million NIST grant to establish the UTC Quantum Center, which has since been augmented by extramural funding from NIST, NSF and TVA to over \$5 million (Lobo and Plank, 2025). UTC is currently the only school in the country directly linked to a commercial quantum network. The grant enables UTC to offer a program in Quantum Information Science and Engineering (QISE) that involves departments and colleges across the university with key efforts in R&D infrastructure, education, use-case-driven R&D, and quantum workforce development.

In September 2025, UTC was awarded a \$1.33 million planning grant from the U.S. National Science Foundation (NSF) to develop a blueprint for a QuantumGrid Innovation Hub in Chattanooga, a collaborative testbed where researchers, utilities, startups and industry partners will develop cybersecurity solutions for the nation's power grid. This award places the work at UTC at the intersection of national security and emerging technology. U.S. Rep. Chuck Fleischmann said, *"This investment shows Chattanooga's quantum ecosystem is becoming an essential part of our nation's defense industrial base."*

Federal support in the form of a new Collaborative for Energy Resilience and Quantum Science (CERQS) was announced in January 2024. This initiative builds on over \$180 million in joint research between EPB and ORNL through the Chattanooga-Oak Ridge partnership. CERQS will focus on utilizing Chattanooga's highly advanced energy and communications infrastructure to develop technologies and best practices for enhancing the resilience and security of America's power grid while accelerating the commercialization of quantum technologies to power our economy into the future.

Cybersecurity is a top priority of the U.S. Department of Energy, especially as it pertains to the country's power grid. At TVA, a team of cybersecurity experts in downtown Chattanooga monitors more than one billion potential cyberthreats every day.<sup>ii</sup> Nicholas Peters, group leader for the Quantum Science Research Group at ORNL said, "*This is probably the most advanced quantum network in the country, especially considering that this is in a real utility environment.*"

A distinctive culture of public-private partnerships in Chattanooga has led to the rapid development of innovation, entrepreneurship, and venture funding. This "Chattanooga Way" of getting things done, has been supported by an entrepreneurial ecosystem that includes the CO.LAB accelerator, which has been described as "*the front door for entrepreneurship in Chattanooga,*" the INCubator, which houses the Tennessee Small Business Development Center, The Enterprise Center which leads development of Chattanooga's downtown Innovation District, the Chattanooga Smart Community Collaborative which addresses community issues with community resources, and the River City Company which is focused on spurring economic development in downtown Chattanooga.

EPB's existing strategic partnerships with Oak Ridge National Laboratory (ORNL) and IonQ, along with UTC's strides in promoting QISE studies and Chattanooga's "can-do" entrepreneurial spirit make Chattanooga a favorable location for a quantum hub.<sup>iii,iv</sup>

## Quantum Value for Chattanooga

The quantum initiative in Chattanooga has already begun to garner high quality media awareness and coverage. As of December 2024, there were 1,169 stories covering the fiber infrastructure in Chattanooga with particular focus on the quantum initiative. The advertising equivalency value of media coverage for the fiber infrastructure and quantum initiative was estimated at **\$34.6 million** (Lobo and Plank, 2025). A sampling of articles since 2020 is below:

[The New York Times](#) – How A.I. Could Reshape the Economic Geography of America

[CNET](#) – Say Hello to the Country's Fastest Residential Internet Plan – in Chattanooga, Tennessee

[Bloomberg](#) – Chattanooga to Open First Commercial Quantum Network in July

[AP News](#) – EPB Quantum Network powered by Qubitekk hosts Oak Ridge National Laboratory's first run on a commercial quantum network

[MarketWatch](#) - The Next Austin? This Booming City in Tennessee is About to Take a Leap Into Quantum Networking.

[American Thinker](#) - Chattanooga Goes Brave New World

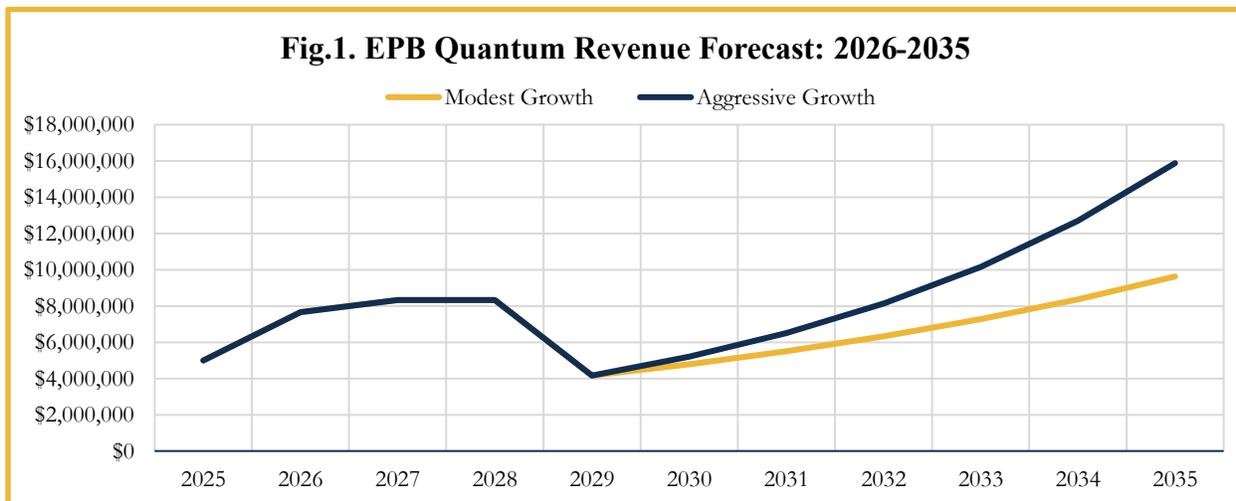
With the deployment of the nation’s first gigabit speed community-wide broadband network in 2010, Chattanooga gained global recognition as an innovative city, earning the moniker “Gig city.” The cachet from this venture built on a robust fiber optic backbone has led to the next big innovation by EPB, a first-of-its-kind commercial quantum network in the U.S. To estimate the likely value of quantum technology in Chattanooga and Hamilton County by 2035, Lobo and Plank (2025) use a hybrid method of IMPLAN (input-output) modeling and analytical estimates.

They begin by describing two end-point conceptual scenarios:

**Scenario 1. Modest Growth:** *The EPB quantum network is a testbed for commercial and academic uses; the network generates access fees and revenues. Some start-ups locate here, and some state/federal funding supports the efforts of EPB and its partners. UTC’s Quantum Information Science and Engineering graduate program begins to gather momentum. Firms prefer to cluster around national labs and Tier 1 academic institutions.*

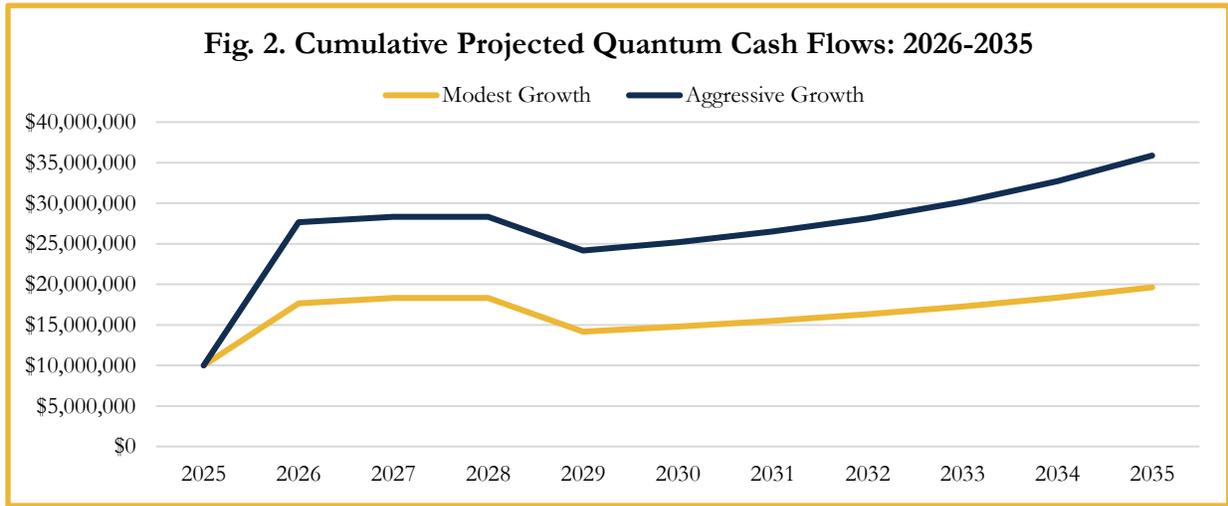
**Scenario 2. Aggressive Growth:** *Chattanooga and the region become a true quantum hub with innovation clusters made up of start-up and mature firms, a well-developed quantum workforce, a well-developed Quantum Information Science and Engineering program at UTC, strong industry and government partnerships, and strong capital inflow to scale-up and commercialize the quantum value chain.*

Next, a 10-year IMPLAN model based on current levels of state/federal support and EPB’s quantum revenue forecasts is estimated. Projections are based on current trends in QT and the particular emphasis of UTC on QCOMM and of the city on hybrid networking. **Fig. 1** shows the annual revenue effects from 2026 to 2035. EPB’s revenue forecasts go through to 2029 based on existing and expected contracts. Thereafter, in Scenario 1, revenues are assumed to grow at the rate of 15 percent per year, and in Scenario 2, at the rate of 25 percent per year.



Private and public funding supporting the quantum efforts in Chattanooga are assumed to be \$50 million each under the modest growth scenario and \$100 million each under the aggressive growth scenario over

the ten-year period to 2035. **Fig. 2** shows the cumulative investments in the quantum industry in Chattanooga through to 2035.



To accommodate the limitations of the IMPLAN model in not accounting for likely quantum effects and to accommodate the beneficial effects of being an early mover in this space, we scale up the output multiplier by a factor of 1.0x based on current trends in QT.

The output effects estimated are augmented with the expected ad-equivalency of media publicity over the next ten years. The total value of the quantum industry in Chattanooga/Hamilton County is presented in **Table 2**.

	<b>Scenario 1. Modest Growth</b>	<b>Scenario 2. Aggressive Growth</b>
Total Output Effect	\$651,859,849	\$1,073,522,145
Expected Media Publicity	\$35,000,000	\$35,000,000
<b>Total Benefit</b>	<b>\$686,859,849</b>	<b>\$1,108,522,145</b>

Source: Lobo and Plank (2025)

The model results suggest a ten-year value of between \$687 million and \$1.1 billion for the Chattanooga region due to the quantum initiative.

### Employment Effects

According to the QED-C, North America saw a 4.9 percent increase in new quantum-related job postings over the trailing 12 months as of April 2025. The *Quantum Insider* reports that quantum computing will likely

create 840,000 new jobs by 2035, spanning a range of industries, from software development and systems integration to research and development. Industries set to benefit the most from quantum computing include finance, defense, life sciences, telecommunications, and manufacturing.<sup>v</sup>

In 2024, the Boston Consulting Group estimated 191,000 quantum technology jobs in quantum computing, communications, sensing, and supporting industries would be created across Illinois, Wisconsin, and Indiana by 2035 where over \$1 billion has already been invested (see **Table 3**). The jobs represent roughly 1.59 percent of the expected 12 million working age population in the region by 2035. The employment estimate was based on rapid scaling of quantum commercialization resulting in 200 percent job growth between 2027-2030 and 550 percent growth from 2030-2035.

**Table 3. Quantum Job Creation in Illinois-Wisconsin-Indiana**

Category	Role (degree requirement)	2027	2030	2035
Research & Development	Scientist (Ph.D., master’s)	2,000	6,000	26,000
	Engineer (bachelor’s)	3,000	10,000	52,000
	Technician (associate’s, tech training)	<1,000	3,000	26,000
Business/ Translation	Applied scientist (Ph.D., master’s)	Few	<1,000	26,000
	Consultant (master’s, bachelor’s)	Few	<500	3,000
	Support (bachelor’s, associate’s)	<1,000	3,000	23,000
Adjacent	Construction/Manufacturing (associate’s, tech training)	2,000	7,000	35,000
<b>TOTAL</b>		<b>9,000</b>	<b>29,000</b>	<b>191,000</b>

Notes: High-end projections, rounded to nearest 1k; assumes continued government investment. Reproduced from Boston Consulting Group (2024).

By comparison, the Chattanooga area has seen very little investment in this space as of 2025. Using the Chicago Quantum Exchange results as a guide, Lobo and Plank (2025) model employment in the two scenarios based on growth in the working age population in the following focus areas: finance, manufacturing, education, healthcare, information, and utilities. These focal areas make up roughly 53 percent of Hamilton County employment. The results for Hamilton County can be seen in **Table 4**.

**Table 4. Expected Quantum Employment in Hamilton County by 2035**

	Assumptions	# of new jobs created
Scenario 1 (Modest Growth)	Focus area workforce grows by 2X the 2011-2025 average of 0.51%	678
Scenario 2 (Aggressive Growth)	Focus area workforce grows by 4X the 2011-2025 average of 0.51%	2,034

We expect that by 2035, the quantum initiative in Chattanooga will have generated between 678 and 2,034 new jobs, over and above normal workforce growth in the focal industries. These jobs will span the gamut of the quantum industry from quantum hardware and software development to cybersecurity, education and training, research and development, infrastructure, and support services.

## Conclusion

Quantum Technology is here, and Q-Day is coming. This white paper explains the dynamics of the quantum space in Chattanooga. With the country's first commercial quantum network already in place, Chattanooga will also have a quantum computer by 2026. The estimates from Lobo and Plank (2025) show that the value of the quantum initiative locally could result in as much as \$1.1 billion in income and output over the next ten years, generating as much as 2,000 new jobs in the field. The "value of quantum" in Chattanooga is both technological and economic—positioning the city as a launchpad for quantum innovation and a strategic destination for future-focused businesses. Gig City will be transitioning to Quantum City soon.

## ENDNOTES

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<sup>i</sup> Lobo and Plank (2025): From Gig City to Quantum City: The Value of Fiber Optic Infrastructure in Hamilton County, TN 2011-2035. Available [here](#).

<sup>ii</sup> See Flessner (2020) available [here](#).

<sup>iii</sup> IonQ, a key pure-play firm in the quantum space and a key partner recently achieved 99.99% two-qubit gate fidelity, setting a new global benchmark in quantum computing. This milestone, enabled by its proprietary Electronic Qubit Control (EQC) technology, positions IonQ ahead of competitors and paves the way for scalable, fault-tolerant quantum systems. [\[tmcnet.com\]](#).

<sup>iv</sup> In December 2025, Vanderbilt University and EPB [announced a partnership](#) to establish the Institute for Quantum Innovation. Pending final approvals, Vanderbilt anticipates placing up to 260 faculty, staff and graduate students in Chattanooga to further build out the academic side of the quantum evolution.

<sup>v</sup> The job creation estimates were based on projected QC investments, along with two alternative methods: first, estimating jobs created per dollar invested, and second, estimating jobs created per dollar generated in new revenue. These were triangulated to the trajectory of other sectors such as High-Performance Computing (HPC) and Artificial Intelligence (AI).