A city once infamous for the smoke-belching foundries that blanketed its buildings and streets with a heavy layer of soot is turning to lightning-fast Internet speeds to try to transform itself into a vibrant tech hub.

Through a combination of political will and federal stimulus money, 175-year-old Chattanooga became the first U.S. city to broadly offer a gigabit per second internet speeds—nearly 50 times the national broadband average.

Whether that's enough to turn a modest southern city into a mini Silicon Valley remains to be seen, but local leaders are betting they've positioned themselves well for what lies ahead in the global economy.

"This is an old town with a new vision," said Aaron Welch, who became a hero of the emerging tech scene when he sold his app that reserves specific tables at restaurants to a rival for $11.5 million.

Other startups migrating to the "Gig City" to tap into the government-owned broadband network include 3D Ops, which converts MRI or CT scans into anatomical replicas to help doctors prepare for surgeries; shoemaker Feetz, which makes custom footwear using 3D printing technology; and moving service Bellhops, which coordinates the logistics of managing 8,000 college student contractors nationwide.

The nascent tech scene is the latest development in Chattanooga's decades-long effort to reinvent itself after a 1969 federal study called it the most polluted U.S. city.

A downtown revival over the last two decades was anchored by the Tennessee Aquarium and a $120 million redevelopment of the Tennessee River waterfront. German automaker Volkswagen in 2008 cited the city's turnaround in its decision to build a $1 billion assembly plant on the site of a former TNT plant.

The city inaugurated its fiber optic network—with a $111 million boost from the 2009 federal stimulus package—even as larger cities like Atlanta and Nashville wait for private providers like AT&T and Google to roll out comparable service.

"We're at a pivotal time in the relationship between cities and communications networks," said Susan Crawford, a professor at Harvard Law School who has written extensively about the power of Internet providers. "And there are mayors all over the country who are watching Chattanooga with envy and wishing and planning for fiber optic networks of their own."

While commercial providers pick and choose which neighborhoods to serve, Chattanooga's network covers the city.
"The whole point is that you want everyone to have this capacity, and not to leave anyone behind," said Crawford.

In this Nov. 17, 2014, photo, men walk by a sign in Chattanooga, Tenn., promoting it as Gig City. The city's municipal fiber optic network provides Internet speeds at more than 50 times the national average. (AP Photo/Erik Schelzig)

Chattanooga's fiber network grew out of efforts to install a smart electric grid in a city where tornados and ice storms have caused serious power outages. During the upgrade, the Electric Power Board, or EPB, also issued $226 million in bonds to help fund a fiber optic network, hoping the super fast phone and Internet service would attract new business.

According to the Federal Communications Commission, the average broadband speed in 2013 was 21.2 megabits per second. A gigabit equals 1,000 megabits.

"Our competitors have said things like, 'Oh nobody needs a gig,'" EPB's president and CEO Harold DePriest said at a recent tech forum in a converted downtown church. "That's absolutely true. But how many of us need color TV? We have color TV because we want color TVs.

"And in America we have this unique way of making wants into needs," he said.

The fiber network has upload speeds matching downloads, bringing near real-time transfer of information between high-bandwidth users. It let musicians T Bone Burnett in Los Angeles and Chuck Mead in Chattanooga play a live concert together while thousands of miles apart in December 2013.

Jonathan Taplin, director of the Annenberg Innovation Lab at the University of Southern California, which helped organize the concert, said entertainment executives might be intrigued.

James Cameron, director of the movies "Avatar" and "Titanic," wants to make films at double the current ultra-high definition 4K standard, Taplin said. The 500 megabits per second needed would be out of reach for most, but Chattanooga's fiber customers "could handle that today."

The municipal network has been criticized for unfairly crowding out private providers.

"EPB's entire network is propped up on the backs of ratepayers and taxpayers," said Justin Owen, head of the Beacon Center of Tennessee, a conservative think tank.

In this Nov. 17, 2014, photo, tech entrepreneur Aaron Welch poses in front of a bank of television screens in the conference room of Luken Communications in Chattanooga, Tenn. Welch is one of the early success stories of Chattanooga's focus on fostering the digital economy. Welch's restaurant reservation app called Quickcue sold to Open Table for $11.5 million in 2013. (AP Photo/Erik Schelzig)
Mayor Andy Berke counters that the city had no other option.

"No one was begging to come to Chattanooga to put up a fiber optic network," he said.

EPB initially charged $350 a month for the gigabyte speed, but has slashed that to $70, driving subscriptions from fewer than 100 to more than 4,700. Another 55,000 residential customers get the cheaper 100-megabyte service.

Tech startup guru Sheldon Grizzle founded The Company Lab to hold tech competitions and mentorship programs that take advantage of the city's internet capacity—and to connect entrepreneurs with investors. They included Welch, who first hashed out his reservation app idea in one of the lab's 48-hour startup competitions.

Grizzle in 2011 persuaded Welch to quit his day job by helping land a $65,000 investment in his company, Quickcue, which was sold to reservation giant Open Table in 2013. Welch went on to found Iron Gaming, which hosts competitions for gamers, and is working on creating a television network for computer geeks.

But Welch said developers still struggle to lure financial backers in a city long associated with heavy industry, the Chattanooga Choo-Choo and the country's first Coca-Cola bottling plant—though there are signs that venture capitalists in cities like San Francisco and Los Angeles might finally be paying attention.

"Now, it's like 'Oh, yeah, they have that really forward-looking, advanced infrastructure,'" Grizzle said.

Other cities, including Austin, Texas; Santa Monica, California; and Kansas City, are coming online with their own fiber networks, while several others have plans to build them. Berke sees that as a good thing for his city.

"If nobody else has it, there's nothing for us to develop that will work elsewhere," he said. "So it's