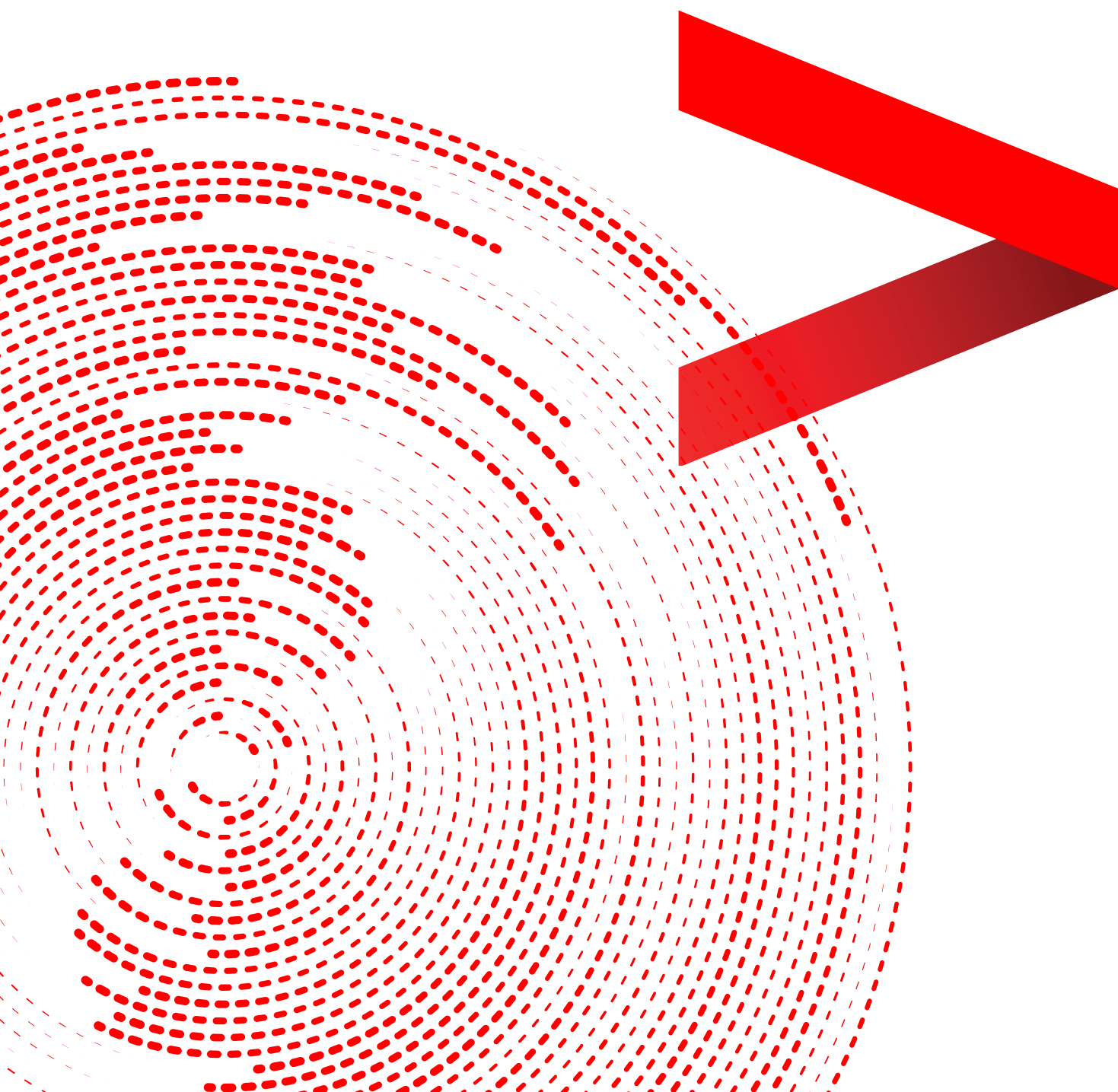


ACCELERATING FUTURE ECONOMIC VALUE FROM THE WIRELESS INDUSTRY



THE FUTURE OF THE WIRELESS INDUSTRY

History has proven that the deployment and adoption of next-generation wireless technology and supporting infrastructure spurs economic growth through job creation.¹ With deployment of fifth-generation (5G) wireless technology, the connectivity and computing capacity unleashed will drive new economic growth through innovative wireless use cases.

A recent study by Accenture Strategy found that wireless providers will invest approximately \$275B in U.S. infrastructure over the next few years, which could create up to 3M jobs and boost annual GDP by \$500B.²

Unlocking the full potential of 5G depends on two key actions: spectrum availability and modernization of infrastructure guidelines. Effective execution of both of these actions results in significant benefits. In fact, Accenture Strategy estimates that **accelerating infrastructure deployment by one year could drive an additional \$100B in economic impact in the next three years.**

Accenture's previous studies have shown that 5G networks will create new jobs, unlock new industries, and deliver economic and community benefits through improvements to a variety of industries, including energy, public safety, and transportation. IoT, which has already driven substantial economic impact through the proliferation of connected devices, is likely to be the next significant area of value generation. Accenture's latest research demonstrates that the most impactful IoT use cases will depend on key 5G network attributes.³ Of the 29 billion connected devices estimated by 2022, 18 billion are predicted to be IoT related.⁴ A joint World Economic Forum and Accenture report projects that Industrial IoT (IIoT) will add \$14 trillion to global economic value by 2030.⁵

By 2022, there will be...



29B
CONNECTED
DEVICES



500M
5G
SUBSCRIPTIONS **...globally**

The sheer breadth and depth of IIoT use cases, from predictive maintenance to intelligent products, is what makes this opportunity noteworthy.⁶ Wireless carriers will play a crucial role in unlocking the full potential of IoT, as they enable the connectivity of sensors, devices, data centers and people.

Vital in realizing significant IoT use cases are the improvements in speed, latency and capacity expected from 5G.⁷ Further, emerging 3GPP (3rd Generation Partnership Project) 5G specifications will allow for different network requirements to power significant use cases, from consumer-oriented needs, to enterprise applications, to the remote control of critical infrastructure, medical procedures, and a smart energy grid.⁸

It is anticipated that by 2022 there will be more than 500 million 5G subscriptions worldwide, equal to 15 percent of the population.⁹ As noted earlier, an Accenture Strategy study has found that wireless carriers will invest approximately \$275B in U.S. infrastructure over the next few years, which could create up to 3 million jobs and boost annual GDP by \$500B.¹⁰

This impact is entirely incremental to the existing steady state GDP contribution of the wireless industry.¹¹ Accenture Strategy research has quantified the current contributions of the wireless industry: supporting 4.7M jobs, contributing \$475B in GDP and generating \$1T in economic output.¹² As 5G boosts US competitiveness, it represents a potential doubling of economic impact over the next several years. 5G's societal impact reaches far beyond those highlighted here.

Wireless industry contribution to the U.S. economy¹³



SUPPORTING
4.7M
JOBS



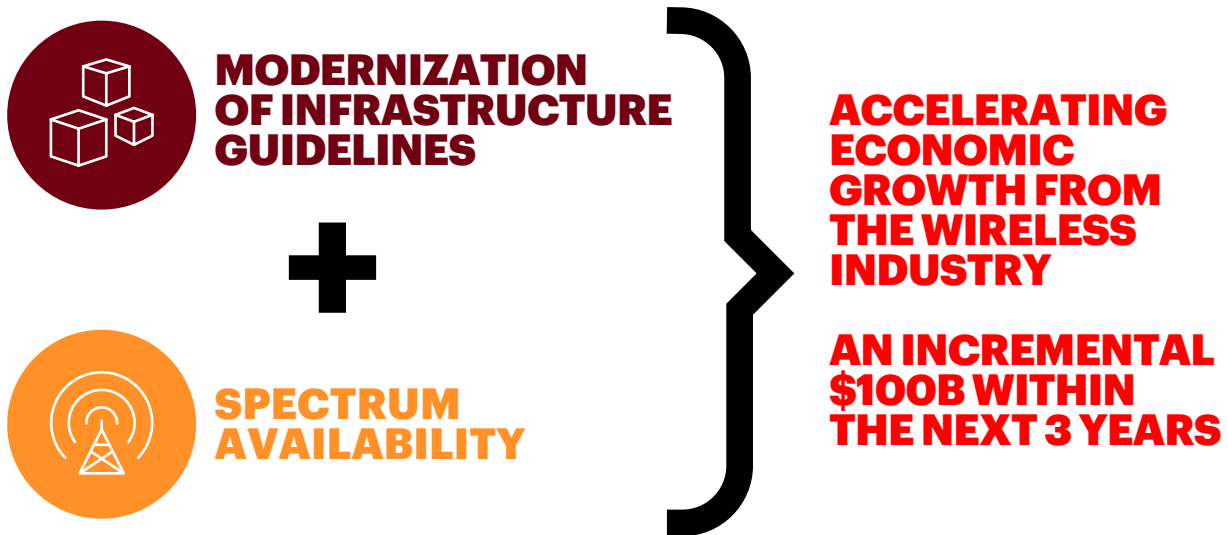
CONTRIBUTING
\$475B
IN GDP



GENERATING
\$1T
IN ECONOMIC
OUTPUT

REALIZING THE FUTURE GR WTH POTENTIAL IN THE WIRELESS INDUSTRY

To fully realize the benefits from these emerging opportunities, businesses and government will each need to do their part in enabling the wireless industry to stay at the forefront of innovation and economic growth:



MODERNIZATION OF INFRASTRUCTURE GUIDELINES



Given that 5G connectivity will require a system of wireless infrastructure significantly denser than that required by 4G, **modernization of infrastructure guidelines** will be key to decreasing the time required for a 5G network rollout. Recognizing that 300,000 small cells need to be deployed in the next three to four years—roughly double the number of macro towers built over the past 30 years—current approval processes pose a challenge.¹⁴

Modernizing rules for the deployment of small cells in Public Rights of Way through streamlining permitting and processes, and creating reasonable fee structures will help with deployment timelines.¹⁵ Currently, many applications for small-cell implementations can take up to 18 to 24 months for approval, and can involve time-consuming pole-by-pole assessments which leave plenty of room for improvement.¹⁶ Present processes can divert both time and capital investment away from network deployment. Reducing these deployment barriers has tangible financial impacts.

Accelerating 5G deployment approval timelines by just one year could add over \$100B to the U.S. economy within the next three years.¹⁷

Accenture derived this figure by building on its economic model developed in the paper: **How 5G Can Help Municipalities Become Vibrant Smart Cities**. Adjusting the model to estimate how accelerated 5G deployment timelines, driven by the modernization of wireless infrastructure, can shift the overall adoption curve forward with significant economic impact.

**Accelerating
5G deployment
by one year...**



**...adds \$100B
to the GDP within
the next 3 years**

AVAILABILITY OF SPECTRUM



With exponential growth in wireless data, and increasing demand for higher throughput and bandwidth across wireless (radio) access, the **availability of sufficient spectrum** to meet these demands is a real concern.

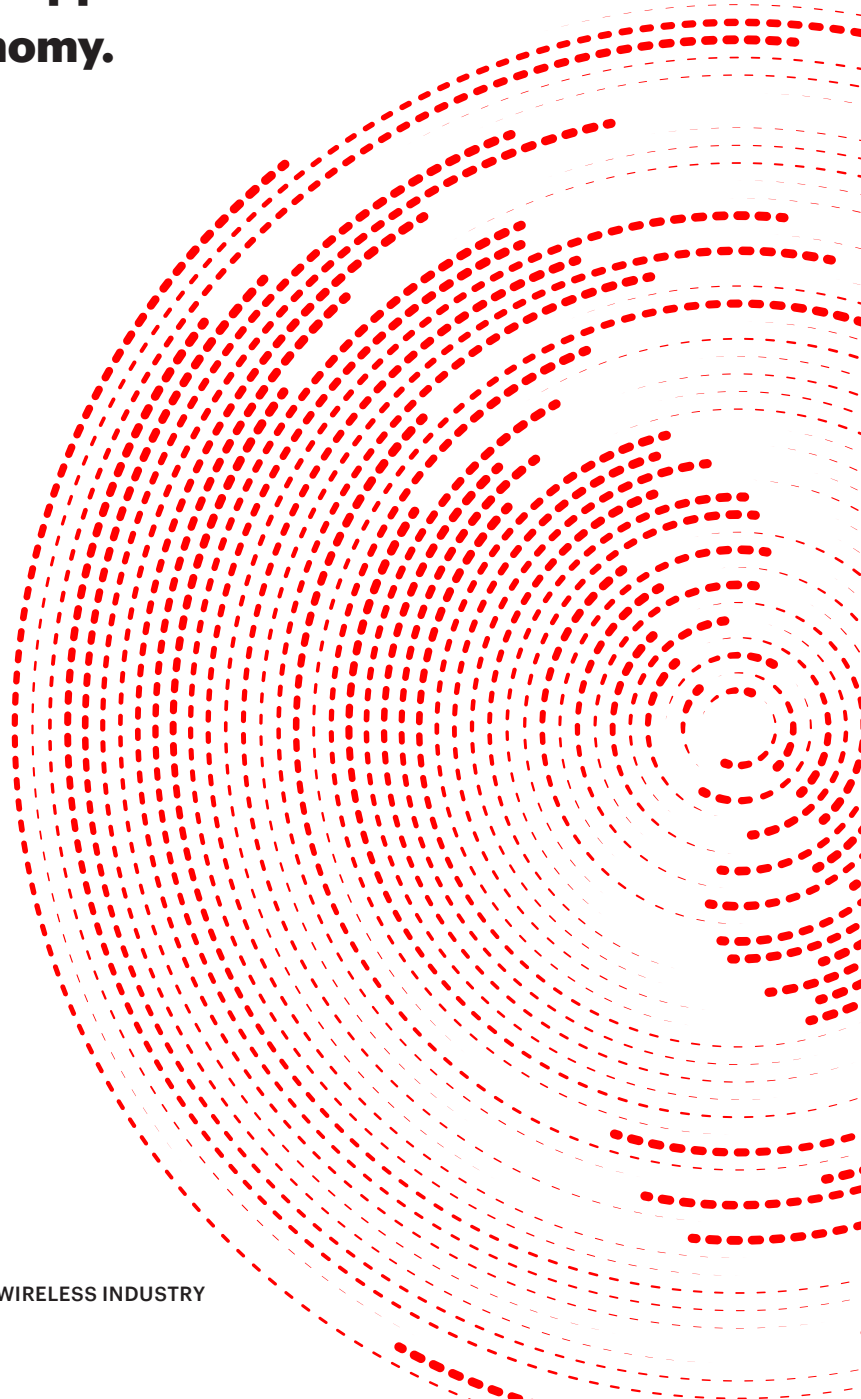
Recent wireless technology advancements, including LTE Advanced and the early revisions of 5G, will permit a more efficient use of spectrum. These advances, combined with the additional usage of high-millimeter bands—once they are made available on a 5G network—show promise for enhancing network capacity and speeds.

Nevertheless, the government will need to make additional spectrum available if carriers are to realize the transformative benefits that 5G offers. A keen eye to proactively managing spectrum availability and taking full advantage of technology improvements will be key, especially as IoT use cases bring forth additional network demands.

With increasing demands on the network, additional spectrum is needed for carriers to realize the transformative benefits that 5G offers.

America's wireless industry is not only a significant contributor to the economy today, but it continues to advance other industries, even triggering the development of completely new, innovative sectors and business models.

IoT use cases, powered by 5G, will continue to drive new growth opportunities and power the U.S. economy.



ABOUT THE RESEARCH

The accelerated economic impact of 5G was calculated from an economic model developed for the paper: **How 5G Can Help Municipalities Become Vibrant Smart Cities.**¹⁸

In this study commissioned by CTIA, Accenture forecasted 5G rollout and adoption. The employment impact was then estimated using research that studied the impact of previous generational shifts in wireless technology - specifically the economic impact of 3G technology in the U.S.¹⁹ GDP growth was calculated from this, using historical estimates for employment elasticity with respect to growth for the U.S.

This model was then adjusted to estimate the impact of an accelerated deployment and adoption timeline, as in the case of removing small-cell approval barriers.

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NOTES

¹ Shapiro, Robert J. and Hassett, Kevin A., "The Employment Effects of Advances in Internet and Wireless Technology: Evaluating the Transitions from 2G to 3G and from 3G to 4G", January 2012, Accessed December 1, 2016: http://ndn.org/sites/default/files/blog_files/The%20Employment%20Effects%20of%20Advances%20In%20Internet%20and%20Wireless%20Technology_1.pdf

² How 5G Can Help Municipalities Become Vibrant Smart Cities: <https://api.ctia.org/docs/default-source/default-document-library/how-5g-can-help-municipalities-become-vibrant-smart-cities-accenture.pdf>

³ Tactile Internet Enabled By Pervasive Networks, Accenture, 2017: <https://www.accenture.com/in-en/insight-tactile-internet-enabled-pervasive-networks>

⁴ <https://www.ericsson.com/assets/local/mobility-report/documents/2017/ericsson-mobility-report-june-2017.pdf>

⁵ Digital Transformation Initiative, Telecommunications Industry, World Economic Forum Whitepaper in Collaboration with Accenture, January 2017: <https://www.accenture.com/us-en/company-event-wef-2017-digital-transformation-initiative>

⁶ Accenture Publication: Driving Unconventional Growth through the Industrial Internet of Things, 2015: https://www.accenture.com/ph-en/_acnmedia/Accenture/next-gen/reassembling-industry/pdf/Accenture-Driving-Unconventional-Growth-through-IIoT.pdf

⁷ <https://www.qualcomm.com/invention/5g/what-is-5g>

⁸ Ibid

⁹ How 5G Can Help Municipalities Become Vibrant Smart Cities: <https://www.ctia.org/docs/default-source/default-document-library/how-5g-can-help-municipalities-become-vibrant-smart-cities-accenture.pdf>

¹⁰ Ibid

¹¹ Ibid

¹² <https://www.accenture.com/us-en/insight-smart-cities#block-how-the-wireless-industry-powers-the-us-economy>

¹³ Ibid

¹⁴ How 5G Can Help Municipalities Become Vibrant Smart Cities: <https://www.ctia.org/docs/default-source/default-document-library/how-5g-can-help-municipalities-become-vibrant-smart-cities-accenture.pdf>

¹⁵ Ibid

¹⁶ Ibid

¹⁷ Accenture analysis in conjunction with previous research from How 5G Can Help Municipalities Become Vibrant Smart Cities: <https://www.ctia.org/docs/default-source/default-document-library/how-5g-can-help-municipalities-become-vibrant-smart-cities-accenture.pdf>

¹⁸ How 5G Can Help Municipalities Become Vibrant Smart Cities: <https://www.ctia.org/docs/default-source/default-documentlibrary/how-5g-can-help-municipalities-become-vibrant-smartcities-accenture.pdf>

¹⁹ Shapiro, Robert J. and Hassett, Kevin A., "The Employment Effects of Advances in Internet and Wireless Technology: Evaluating the Transitions from 2G to 3G and from 3G to 4G", January 2012, Accessed December 1, 2016, http://ndn.org/sites/default/files/blog_files/The%20Employment%20Effects%20of%20Advances%20In%20Internet%20and%20Wireless%20Technology_1.pdf

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