WIA Wireless Infrastructure Association

Wireless Infrastructure By The Numbers

2025 Key Industry Statistics

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Content

Executive Summary

In today's always-on world, most Americans rarely venture far without their smartphones. Beyond the handset, a growing ecosystem of connected devices—tablets, smartwatches, laptops, and vehicle infotainment systems—plays a constant role in daily life. All of it runs on the indispensable backbone of wireless infrastructure, quietly enabling continuous connections to family, friends, colleagues, customers, and partners. As Artificial Intelligence (AI) becomes more deeply embedded in apps and services, these devices are evolving beyond simple connectivity tools. They are shifting toward intelligent, context-aware assistants capable of anticipating questions, streamlining decisions, and delivering personalized insights the moment they are needed.

Wireless infrastructure consists of various components, including towers, cell sites, antennas, radios, fiber networks, and data centers, which support cellular networks, Fixed Wireless Access (FWA) networks, and in-building wireless solutions. These networks operate across a broad spectrum, from 600 MHz, 700 MHz and 850 MHz to PCS, AWS, 2.5 GHz, Citizens Broadband Radio Service (CBRS), and C-band.

By the end of 2025, just over 638,909[1] structures supported wireless infrastructure across the United States. This includes dedicated cellular towers, broadcast TV and radio towers, water towers, rooftops, church steeples, billboards, utility poles, farm silos, and other buildings. While some of these sites accommodate macrocells and small cells, many are not in optimal locations or capable of supporting the microcellular equipment used by today's network operators. Others serve distinct functions, such as broadcasting TV, radio, or managing air-traffic control.

For the fourth year, this report provides a comprehensive analysis of the U.S. wireless infrastructure sector, covering purpose-built cellular towers, indoor and outdoor small cells, macrocell sites, annual infrastructure investments, and the American workforce sustaining this essential industry.

In 2025, the U.S. cellular industry invested more than $10.2 billion in expanding network capacity and coverage, excluding expenditures on spectrum, maintenance, and ongoing operations. Operating expenses for U.S. cellular networks reached nearly $54.7 billion in 2025. In total, wireless infrastructure investments—including construction, maintenance, and operations—amounted to nearly $65 billion.

The following key statistics show the strength of the U.S. wireless infrastructure industry at the end of 2025:

- **158,500 purpose-built cellular towers** were in operation;
- **254,850 macrocell sites**, not including small cells, were in operation;
- **198,100 outdoor small cells** were in operation;
- And **830,350 indoor small cell nodes** were in use, including DAS, small cells, private CBRS networks, mmWave, and other licensed frequency bands.

[1] Source: Ookla, 2026

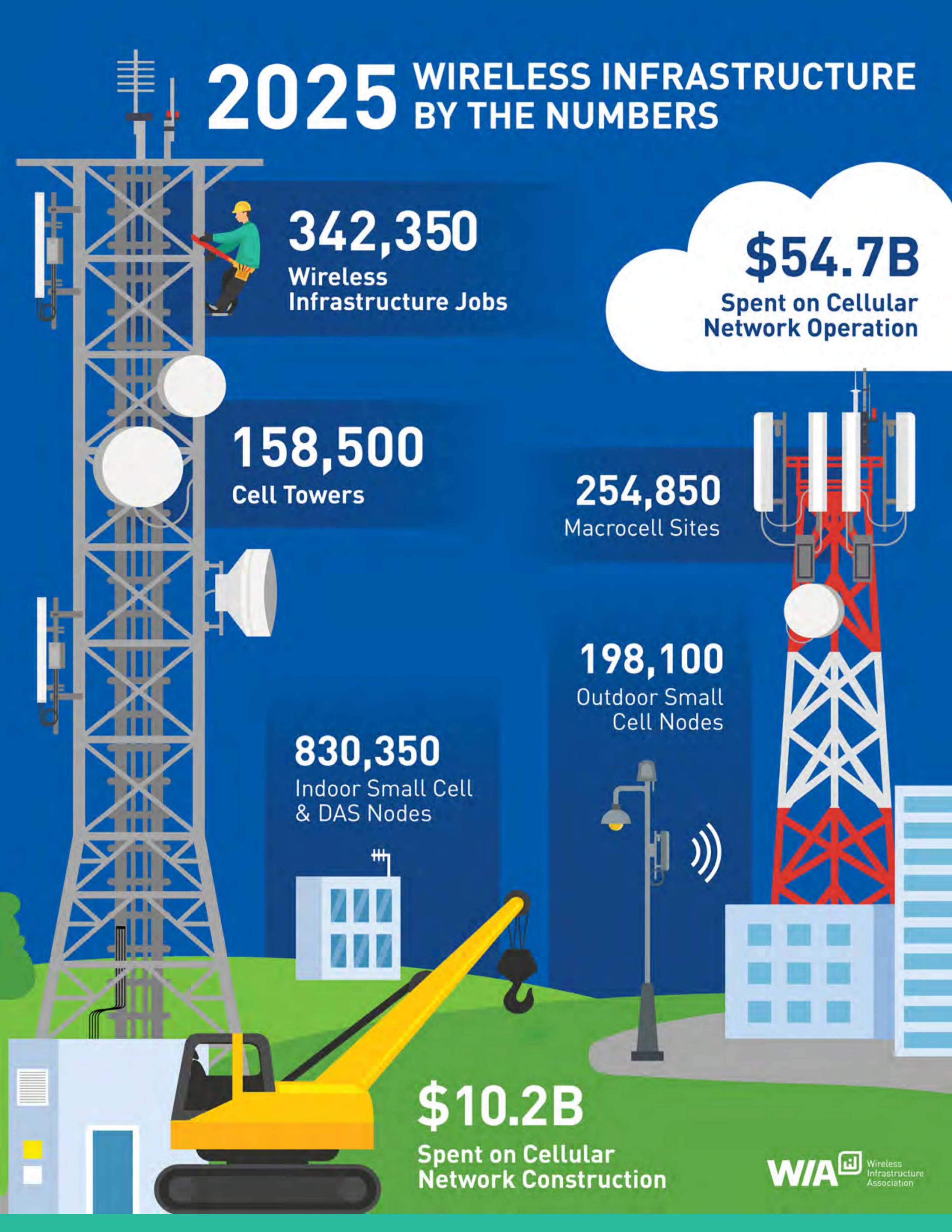
There are some interesting trends in the industry today:

- **More towers and cell sites are being deployed but the amount spent building networks is declining:** Industry spent more than $10.2 billion deploying new network equipment. As wireless network technologies continue to mature and evolve, the network equipment becomes more efficient and cost effective. This is especially true of the new generation of 5G equipment. Overall, the industry continues to get more bang for the buck.
- **More macrocells are being deployed than new towers:** Simply because the industry is putting more equipment on existing tower facilities and increasing the rate of colocation. As the need for more network capacity increases, the density of the radios rises, resulting in more macrocell sectors and more macrocells on the towers.
- **The number of new indoor small cells increased:** Private wireless networks and upgrading older 4G DAS and indoor small cell deployments have resulted in an overall increase in indoor small cell deployments.
- **The number of outdoor small cells increased slightly:** The number of small cells in use has dropped in the past few years following the pandemic. 2025 showed a very slight increase in deployments and may indicate the start of a recovery for this market.
- **The amount spent on maintaining and operating the cellular networks increased, but build spending dropped again:** As discussed above, the cost per Gigabyte (GB) of network capacity is dropping. But more equipment is being added to the towers and small cells, which means more fiber is needed to connect the cells to the core network. In addition, more core compute capacity is required to process the mobile bandwidth, and more towers and cell-site locations are needed. All of this means more equipment to maintain, increased lease costs for fiber and cell-site locations; hence increased operating costs.

The deployment and operation of wireless infrastructure drives significant employment across the U.S. By the end of 2025, an estimated 342,350 full-time workers or equivalents were engaged in building, maintaining, and operating the nation's cellular networks, supporting 5G, 5G Advanced, indoor and outdoor coverage, and private network deployments.

A key factor behind the success of the U.S. wireless ecosystem is the efficiency of colocation. Cellular towers and macro cell sites often host equipment from multiple network operators on the same physical structure—whether a tower, small cell, or building—optimizing space and reducing costs

With mobile video, AI-powered applications, hybrid workplace connectivity, and ever-growing mobile bandwidth consumption on the rise, the demand on wireless infrastructure is set to grow in the coming years. Expanding the colocation of more powerful, advanced, and efficient network equipment will help meet increasing bandwidth needs while enhancing economic viability and minimizing environmental impact.



2025 WIRELESS INFRASTRUCTURE BY THE NUMBERS
342,350
Wireless Infrastructure Jobs
$54.7B
Spent on Cellular Network Operation
158,500
Cell Towers
254,850
Macrocell Sites
198,100
Outdoor Small Cell Nodes
830,350
Indoor Small Cell & DAS Nodes
$10.2B
Spent on Cellular Network Construction
WIA
Wireless Infrastructure Association

Wireless Infrastructure Key Statistics

The U.S. wireless infrastructure spans all 50 states and nearly 3.8 million square miles, ensuring seamless connectivity for consumers and businesses while contributing to a national GDP of $30.6 trillion (2025), up from $29.4 trillion in 2024. But just how vast is the country's cellular network? How many towers, cell sites, and small cells are in operation? And how many workers are responsible for building and maintaining this critical infrastructure?

Towers

By the end of 2025, an estimated 158,500 cellular towers were in operation across the United States. This number includes only towers specifically designed to support cellular networks, excluding those built for broadcasting, municipal, government, emergency services, educational institutions, or other purposes. To be counted, a tower must be constructed to accommodate cellular equipment—the structures commonly seen along highways and in neighborhoods, equipped with multiple antenna arrays and radios. While these towers primarily support cellular networks, they may also host additional equipment for broadcasters, utilities, and government agencies.

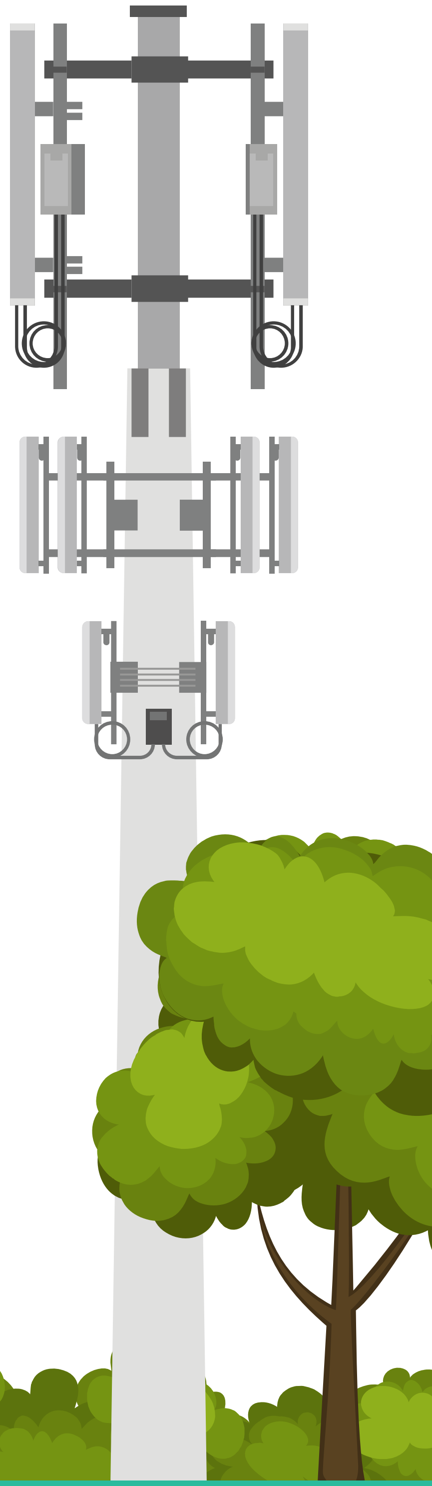
In some areas where a dedicated cellular tower is unavailable, cell sites are instead deployed on broadcast towers or rooftops. When these sites are factored in, the total number of towers rises to approximately 175,000.

Notably, outdoor small cells are not part of this count. The Federal Communications Commission defines small cells as installations under 50 feet in height, while towers are classified as any free-standing structure exceeding this threshold. Several tower designs are commonly used, including monopoles, guyed towers, and stealth towers.

Today, most towers in the U.S. are owned and managed by independent tower companies, with mobile operators controlling only a small fraction. Beginning in the late 1990s and early 2000s, carriers began selling off their tower assets, fueling the growth of independent tower companies, a trend that continued in 2025. This shift allowed operators to reinvest capital into network expansion and other core business areas, ultimately strengthening the wireless industry.

Macrocell Sites

Macrocells are designed to provide coverage over large geographic areas, often spanning several miles. These sites house multiple antennas and radios, enabling mobile network operators (MNOs) to deliver service across various spectrum bands. The majority of macrocell sites are located on towers, where two or more MNOs frequently share the same structure—a practice known as colocation, which is explored further in this report.



At the end of 2025, there were 254,850 macrocell sites in operation across the U.S., excluding small cells. This count includes macrocells deployed on towers and rooftops but only accounts for those supporting cellular and FWA networks. Sites dedicated solely to municipal, government, and emergency services networks are not part of this total.

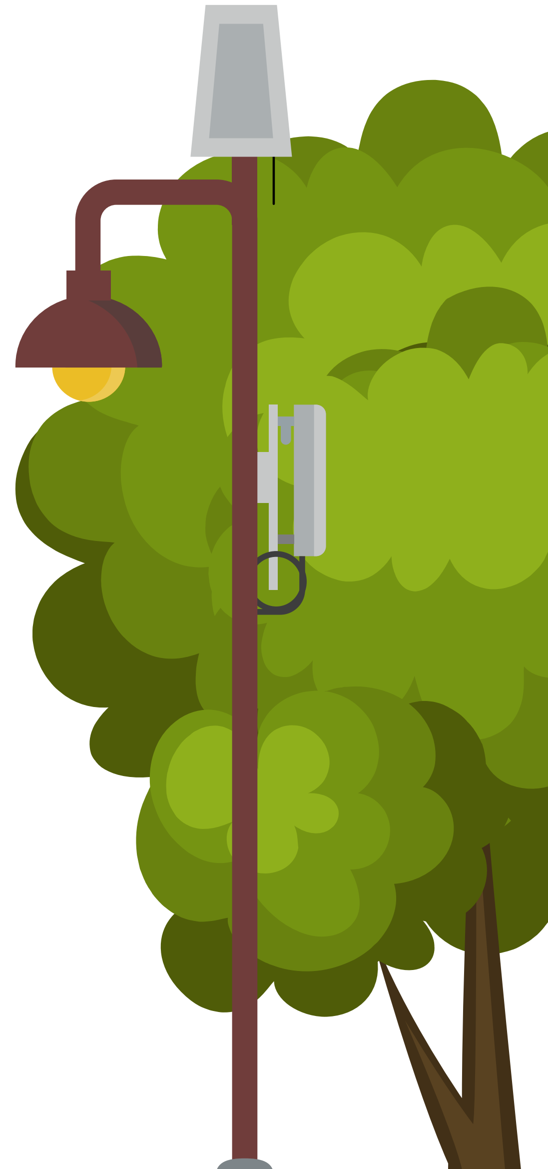
Most macrocells are installed on towers, while a smaller share is placed on rooftops or other structures such as broadcast towers, water towers, and utility structures.

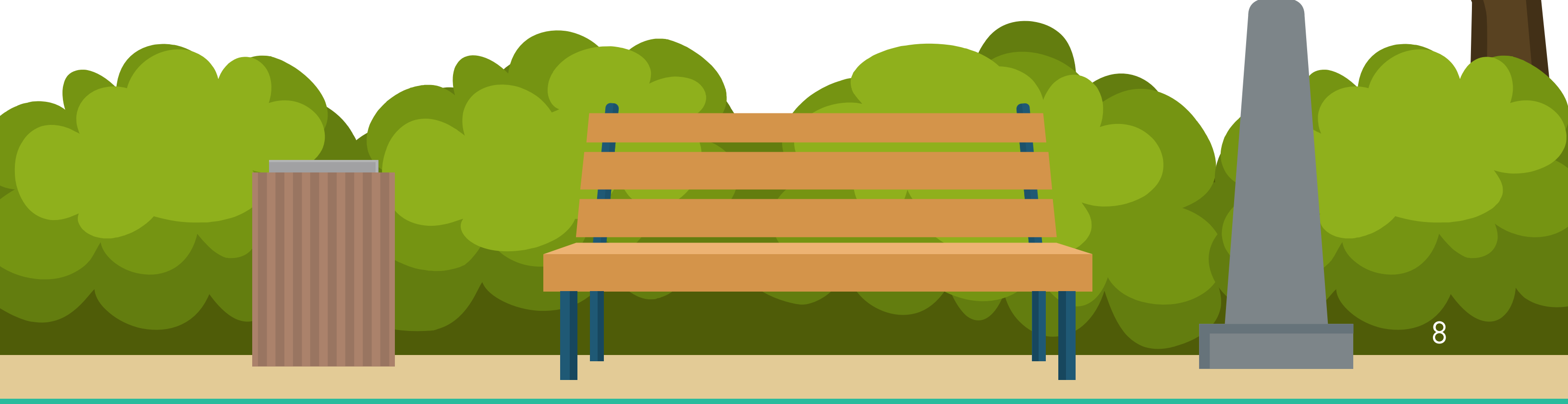
Outdoor Small Cells

Outdoor small cells, often referred to by the FCC as "small wireless facilities," are deployed by mobile operators and cable multiple system operators (MSOs) to enhance coverage in targeted locations, fill coverage gaps, and increase capacity in high-traffic areas.

By the end of 2025, the U.S. had 198,100 outdoor small cells supporting 462,750 small-cell nodes. Because multiple nodes are often installed on a single small-cell pole or enclosure, this total reflects various licensed spectrum bands, including C-band and CBRS, as well as small cells used for fixed wireless and mobile services. Outdoor Wi-Fi hotspots are not included in this count.

The deployment of outdoor small cells from 2020 to 2025 lagged behind initial industry forecasts due to the pandemic and shifting mobile data demands. The market has yet to recover, although increases are expected in the coming years as the industry moves to densify the 5G networks.





Indoor Small Cells And DAS

Indoor small cells are essential for delivering wireless coverage and capacity inside large buildings such as stadiums, airports, convention centers, hotels, office complexes, and multi-unit residences. As businesses transition back to office settings and hybrid work environments grow, demand for in-building wireless solutions is rising. Companies and property owners are leveraging improved indoor connectivity as a key incentive to bring employees back to the office, rather than waiting until after occupancy increases.

At the end of 2025, there were 830,350 indoor small-cell nodes in operation across the U.S. This figure includes DAS, private CBRS networks, and other licensed frequency bands. Each system comprises multiple nodes per building, but indoor Wi-Fi access points for private or public networks are not included in this count.

Every in-building wireless network is designed with multiple nodes to ensure adequate coverage and capacity for the facility.

The Success Of Colocation

Colocation has been a major factor in the success of the U.S. wireless infrastructure model, benefiting both the industry and the environment. By allowing multiple operators to share network infrastructure, colocation enhances cost efficiency while reducing the physical footprint of wireless deployments.

In wireless networks, colocation refers to the placement of multiple network components—such as radios, spectrum bands, and operator equipment—on the same physical structure. Rather than each mobile operator building or leasing its own towers, multiple operators share space on a single tower, improving efficiency and reducing redundant infrastructure.

Colocation is not always possible in regions with limited existing infrastructure, such as rural areas. However, even in these locations, the ability for multiple carriers to lease space on a single tower increases the financial viability of expanding coverage. When tower owners can generate revenue from multiple operators, it creates a stronger business case for building towers in remote areas, improving network reach where it might not otherwise be feasible.

Shared infrastructure not only optimizes tower construction and maintenance costs but also allows multiple operators to benefit from additional resources, such as backup power, security enclosures, and site maintenance. By colocating on existing towers, mobile operators can allocate more capital toward network upgrades and expansion rather than constructing redundant infrastructure.

Not every tower or small cell hosts every operator, as each carrier has unique network requirements based on spectrum allocation, coverage needs, and bandwidth demand. However, as demonstrated in this report, the number of macrocells exceeds the number of towers, illustrating that multiple macrocells can be colocated on a single structure. In urban and suburban environments, it is common for two or three operators to share the same large tower, whereas in rural areas, colocation rates tend to be lower.

Colocation is also applicable to small cells. In some cases, two or more operators share equipment on a single small-cell pole or rooftop installation. Given the challenges of deploying outdoor small cells in urban environments—such as zoning restrictions, permitting requirements, fiber access, and power supply constraints—colocation is expected to become more prevalent as the small-cell market matures.

The U.S. colocation model has proven so successful that it is now being adopted in other parts of the world. In Europe, for example, operators have traditionally built and managed their own tower infrastructure, sometimes leading to inefficient deployments where multiple towers are constructed side by side. However, this approach is gradually shifting as European operators are beginning to divest their tower assets to independent infrastructure providers, which then prioritize colocation to maximize efficiency.

Colocation also extends to in-building wireless networks. DAS systems deployed in venues such as stadiums, hotels, hospitals, convention centers, and airports allow multiple mobile operators to share a single antenna installation, reducing deployment and maintenance costs. This shared approach minimizes the need for excessive wiring and equipment inside buildings, which is particularly beneficial in locations with limited space or in sensitive environments—such as hospital operating rooms—where strict radio signal controls are required.

2025 Wireless And Mobile Infrastructure Spending

2025 Build Spending

The U.S. cellular industry spent more than $10.2 billion **building additional capacity and coverage** into the nation's wireless networks in 2025. This figure is only for the deployment of new and upgraded networks, including the cost of network equipment, installation, construction of new towers and sites, engineering and design and associated network deployment costs. The cost of building and deploying private CBRS networks and in-building wireless networks is also included.

The $10.2 billion can be further divided by RAN (radio access network), fronthaul/backhaul and core spending:

- RAN comprises the majority of the network build spending at $8.1 billion. This is base station equipment. In 5G technology, this is the gNodeB. Tower modifications, site costs and small-cell costs are also included.
- Spending on new or upgraded fronthaul and backhaul (essentially the fiber networks connecting the RAN to the 5G core) totaled over $1.6 billion in 2025.
- Finally, spending on new and upgraded 5G core network equipment in 2025 amounted to $512 million. Edge compute also has a role here for both applications and content at the edge of the network, but also to support RAN and core software.

Importantly, this does not include any spending on spectrum, and it does not include any spending on maintenance or ongoing operations.

2025 Operating Spending

Operating expenses for U.S. cellular networks in 2025 totaled nearly $54.7 billion. This includes spending on tower and small-cell leases, network equipment maintenance, fiber and backhaul leases, power expenses and associated network operations costs. Again, this is for both outdoor and in-building wireless networks, including private CBRS networks.

This figure does not include any expenses for billing, customer care or support costs associated with the subscriber base.

2025 Total Network Spending

Total network expenses for U.S. cellular networks in 2025 was nearly $65 billion – this includes operating expenses, network upgrade costs and the cost of adding new network capacity.

Again, this is for both outdoor and in-building wireless networks, including private networks. This does not include any spending on spectrum. And this does not include any expenses associated with billing, customer care or support costs associated with the subscriber base.

2025 Wireless And Mobile Infrastructure Employment

A total of 343,350 people or full-time equivalents were employed in the U.S. wireless infrastructure sector at the end of 2025 to build, maintain and operate the nation's wireless networks, including outdoor cellular networks, private networks, in-building wireless and FWA networks.

All employees at the tower companies are included in this calculation, since their workforces, by definition, are directly involved in the deployment and support of the mobile networks.

This figure does not include all the people employed by the mobile operators, original equipment manufacturers (OEMs), and construction companies as a whole, but includes those who are involved directly in the deployment, maintenance and operation of the mobile networks. Specific job functions included are:

- Network engineers to design, test, build and operate the networks;
- Network equipment engineers for design, manufacturing, and deployment;
- Tower and small-cell design, construction, deployment, and maintenance;
- Fiber and backhaul design, construction, deployment, and maintenance;
- Legal, financial, and support functions associated with network design, deployment, maintenance, and operations.

In the case where a job function is split between the cellular industry and another industry (for example, landline telecom or utilities), only the portion of the job associated with the wireless infrastructure industry is included.

Wireless infrastructure employment does not include any employment for billing, customer-care, retail sales, or support costs associated with the mobile operators, FWA providers, or cable MSOs.

Conclusion

Wireless infrastructure—including cellular towers, small cells, networks, and the essential hardware and services that power them—plays a vital role in keeping consumers and businesses connected. It is a driving force behind economic growth and social connectivity nationwide.

This infrastructure supports cellular mobile networks, FWA, and in-building wireless systems, operating across various spectrum bands such as low- and mid-band frequencies. The continued expansion and deployment of this critical technology directly contribute to the creation of more than 343,350 high-quality American jobs.

Methodology

The source for all data, unless otherwise stated, is WIA based on WIA's ongoing detailed wireless industry research.

Network Spending

The network cost model is based on the amount of data the network is expected to be able to support and deliver. The cost model is based on the estimated cost required to add 1 GB of data capacity to the network and then to operate that capacity. Since the capacity of the network is known (based on the network technology), the cost of network buildout is dependent on the subscriber growth and the data usage of each subscriber. These known/estimated variables provide the total GB the network is likely able to deliver.

Note that these costs do not include the cost of spectrum; the build spend is only associated with the cost of purchasing the necessary equipment and installing it in the network.

RAN: This is base station equipment; in 5G, the gNodeB. Tower modifications, site costs and lease costs are also included. Small cell costs and remote radio heads are also included over the period as the industry moves to small base stations. RAN costs associated with virtualization and Open RAN, such as COTS hardware, are also included.

Front/Backhaul: This is the connection from the base station or radio to the core network. For today's wireless network, front/backhaul is provided by fiber.

Core, Including Edge/Data Center/Central Office (CO): For 5G, this is the virtualized 5G core. In some cases, MNOs are still running the old 4G core in parallel.

Edge compute also has a role here for both applications and content at the edge of the network but also to support RAN and core software. For 5G, this means storage, servers, content and application processors located at or near the cell site. This could be in a local data center, CO or in a specific edge computing housing at the cell site or the cloud.

Employment Estimates

The wireless infrastructure employment number was calculated by WIA using both a top-down and bottom-up approach:

1. Defined the companies involved in each aspect of wireless infrastructure: mobile operators, tower companies, equipment OEMs, construction companies, etc.
2. Ranked the companies in order of size and obtained employment numbers for public companies.
3. Estimated the employment for private companies using existing research and public sources, where available. This included an allowance for announced layoffs in 2025.
4. Estimated the percentage of employees, for each company, directly in the deployment, maintenance and operation of the mobile networks. Specific job functions included are:
    - Network engineers to design, test, build, and operate the networks;
    - Network equipment engineers for design, manufacturing, and deployment;
    - Tower and small cell design, construction, deployment, and maintenance;
    - Fiber and backhaul design, construction, deployment, and maintenance;
    - Legal, financial, and support functions associated with network design, deployment, maintenance and operations.
5. For companies such as tower companies, all employees were included since by definition the whole company is involved in the build and support of wireless infrastructure. In the case where a job function is split between the wireless and mobile telecom industry and another industry (for example, landline telecommunications or utilities), only the portion of the job

associated with the wireless infrastructure industry is included.

6. This detailed methodology was then compared with a top-down analysis using data from the U.S. Bureau of Labor Statistics (BLS). Data on individual job functions for the telecommunications industry and specifically wireless communications, was then sourced.
7. This BLS data was then segmented into individual job functions – the jobs associated with the direct build and support of wireless infrastructure were then summed.
8. Using these two approaches resulted in two employment estimates that differed by less than one percent.
9. Note that this methodology was specifically developed in order to be repeatable to provide tracking over subsequent years.

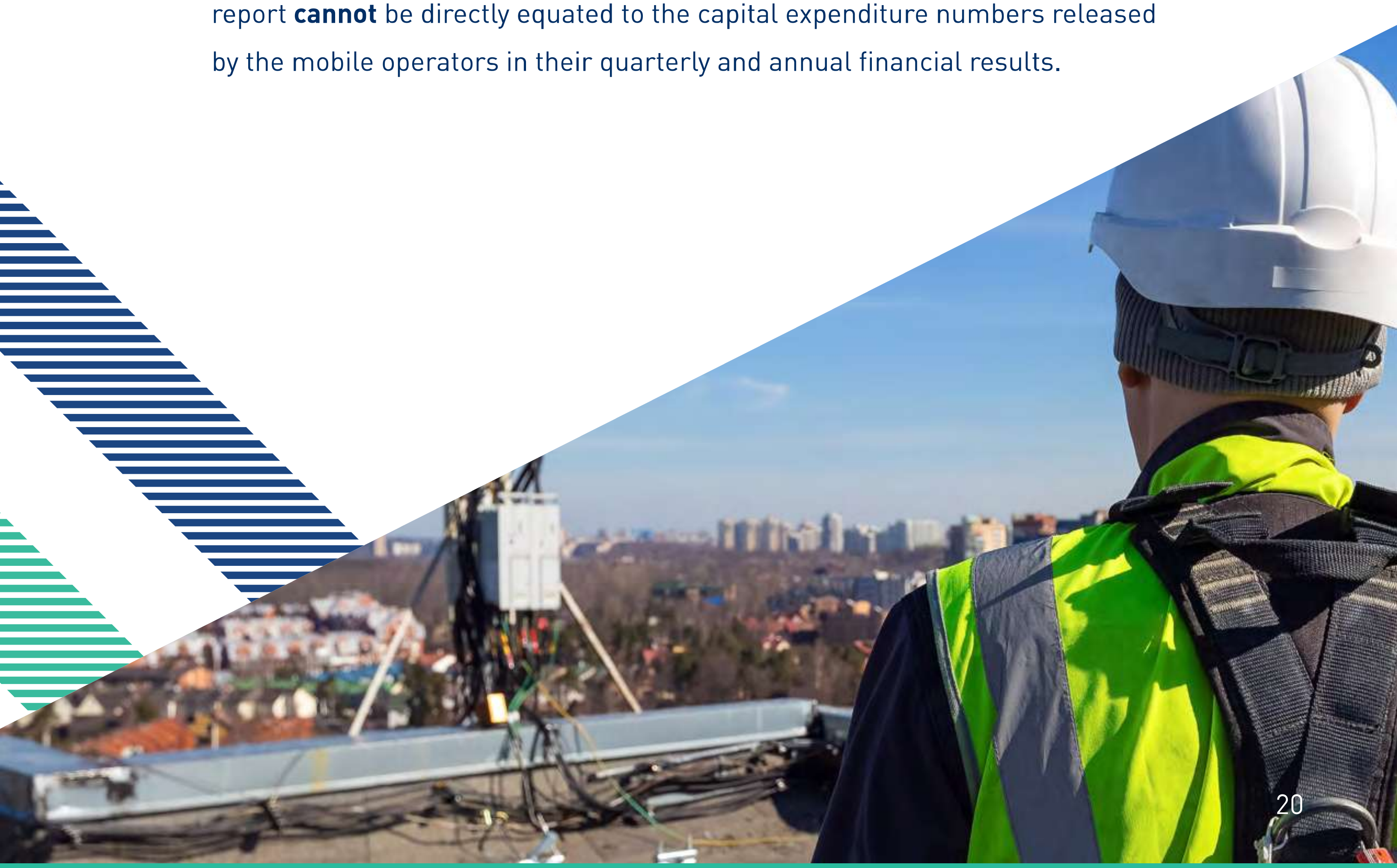
Equating Network Spending To Capital Expenditure In Financial Statements

Many mobile operators release capital expenditure statistics in their quarterly and annual financial results. These numbers are reported in accordance with Generally Accepted Accounting Principles (GAAP) and each company's own policies with respect to how they book revenue, costs, assets and liabilities, among other items. All that reporting is subject to third-party and Securities and Exchange Commission scrutiny. Reconciling public companies' reported financial results with these network spending numbers is difficult because it is hard to derive network build and operating expenditures purely from the mobile operators' financial statement, for the following reasons:

- Some operators do not break out their mobile-only capital expenditures from the total, especially those that have extensive landline and fiber networks. The "network capital spending" figure from some operators includes other items aside from wireless network spending.

- Operators may include other non-network items in their capital expenditure statistics. For example, some mobile operators include the cost of building new retail stores in the capital expenditure numbers. Other non-network items are also likely included.
- Due to the details of some contracts, some operators have included future maintenance costs in network capital expenditures.
- Depending on how operators interpret accounting rules, other items not related to network building, operation or maintenance may be capitalized.
- Some operators include spectrum spending in their capital expenditures.

Thus, it is important to understand that due to accounting policies at the various mobile operators, the infrastructure build spending forecast presented in this report **cannot** be directly equated to the capital expenditure numbers released by the mobile operators in their quarterly and annual financial results.

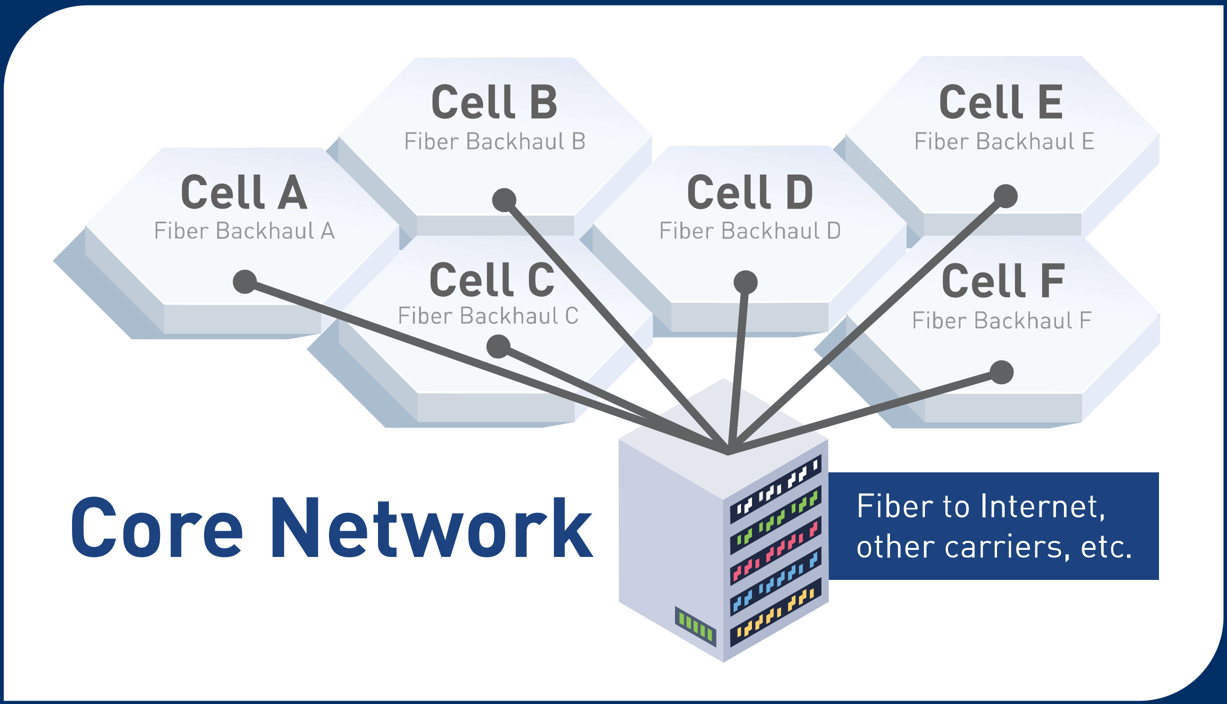


Appendix: A Primer on Wireless Infrastructure

Basic Architecture

How are the nation's cellular networks constructed? The following graphic provides a basic overview of what a cellular network looks like. Each cell comprises a tower (or small cell) with radios, base stations and antennas. The size of each cell varies according to the spectrum used and network design. Each cell is connected, usually by fiber, to the mobile network operator's (MNO's) core network. There is usually one core per market (often centered in a city) and is hosted at a local data center. Each core network is interconnected with the MNO's other cores.

Figure: Basic Mobile Network Architecture



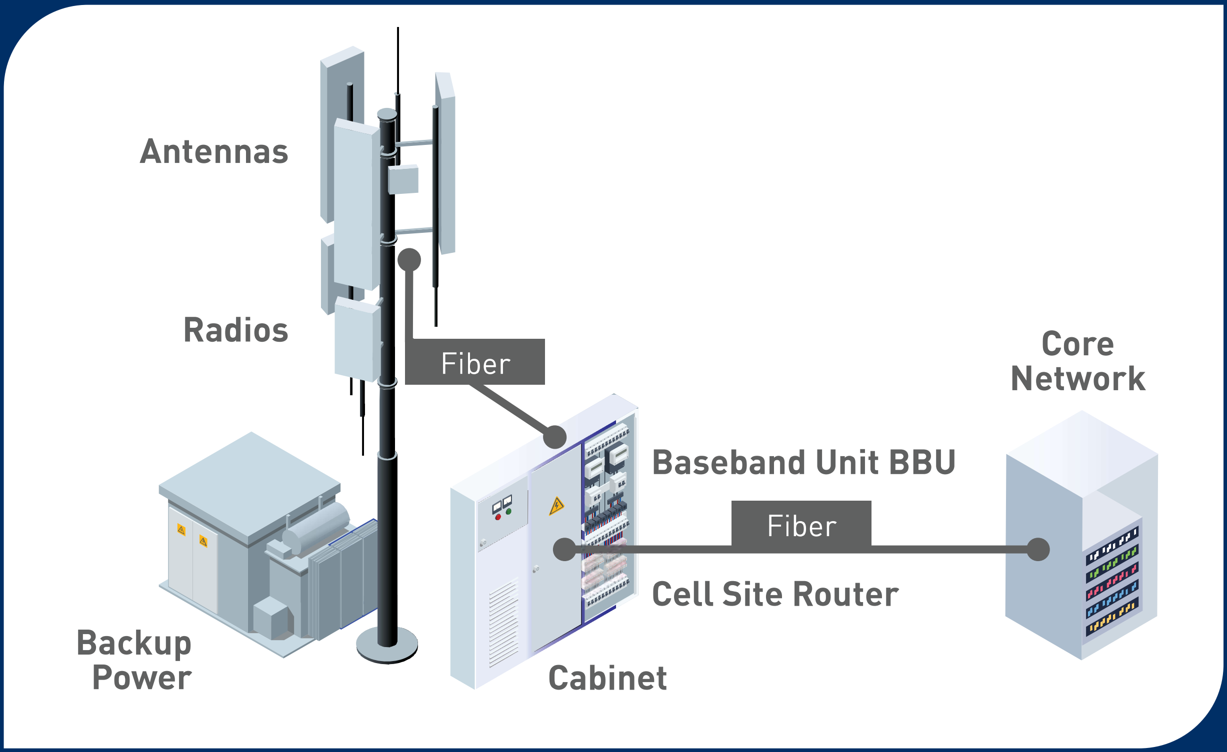
Source: WIA, 2026

Macrocells

To increase the network capacity and support more simultaneous users, cells are split into sectors. Macrocells are typically split into three sectors (but there could be more). Each sector acts as a cell site with its own equipment.

Each macrocell site contains specialized equipment, as shown in the following graphic. The majority of macrocell sites are deployed on a tower, but they can also be located on building roofs, inside church steeples, on water towers and in some areas of the country on electric transmission infrastructure, well above power lines.

Figure: Equipment At Every Cell Site



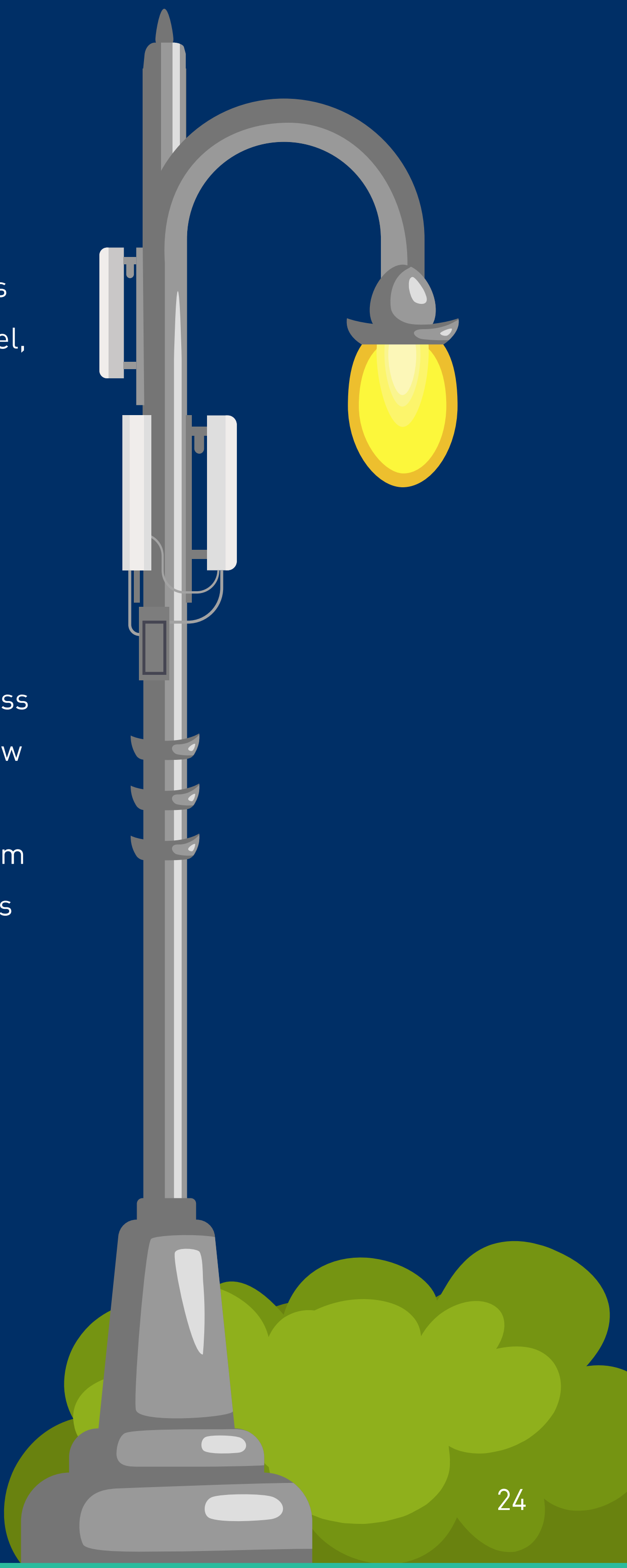
Source: WIA, 2026

As shown on page 22, each macrocell site includes the following equipment:

- **Tower:** There are several designs (monopole, guyed, stealth), but all cellular equipment is usually high up on the tower. Most municipalities have strict ordinances on what equipment can go where.
- **Radios located at top of the tower:** Modern cell sites locate the radios (which transmit and receive the radio signal to and from the end users) near the antennas. This cuts down on interference and signal losses.
- **Antennas:** These are usually inside an antenna array, which houses multiple antennas that work across independent RF bands. Separate antennas for each frequency band and for transmit and receive are required. Antennas are connected directly to radios, usually by short coaxial cables. Active antenna arrays are units that fully incorporate antennas and radios inside of one unit.
- **Baseband Units (BBUs):** These are the processing units that translate the signals telling the radios what to transmit. In most pre-5G installations, these units are deployed at the cell site. For newer 5G technology, the BBUs have a new standardized architecture that allows them to be split into a distributed unit (DU) and a centralized unit (CU). Depending on what the MNO requires, these units can either be deployed at the cell site itself or at a more central location, or both.
- **Cell site router:** The router connects all the fiber inputs/outputs to the BBU, enabling connectivity to and from the site.
- **Fiber connectivity:** Typically, redundant fiber links are used to provide connectivity to and from the cell site. These fiber links connect users to the internet and the MNO's equipment back to its core network.
- **Core:** The 5G Core provides the control necessary to manage each user in the network, as well as policy and security enforcement and billing/rating.
- **Backup power:** All macrocell sites are connected to some type of

backup power (e.g., battery bank, diesel generator). There is a growing trend to connect small cell sites to backup power.

Outdoor Small Cells



In heavily congested areas or in areas where there are cellular dead spots, mobile operators may deploy an outdoor small cell. This essentially uses the same technology as on a macrocell but is deployed at a smaller scale on a pole at street level, the roof or side of a building, on street furniture (such as street poles, traffic signals or signs) or on utility poles.

Various definitions for small cells are used in the industry, but to keep things simple this paper defines an outdoor small cell as any "small wireless facility" (SWF) that is deployed outdoors at or below 50 feet from ground level and is used for mobile/cellular voice/data connectivity. SWF is the acronym used by the FCC to distinguish between small cells and other types of outdoor cellular deployments (e.g., on macrocell towers/sites).

Various technical solutions may be deployed as outdoor small cells, including outdoor distributed antenna systems (DAS), a metrocell or a remote radio head (RRH). Small cells may incorporate multiple nodes and spectrum bands – in essence, a small cell node is equivalent to a sector on a macrocell site.

In-Building Wireless

This market is characterized by DAS and/or indoor small cells that provide wireless/cellular service inside a building and/or on a campus. Good examples include office buildings, colleges/universities, stadiums/arenas, convention centers, medical facilities, hotels, casinos, and warehouses.

All the equipment required at a macrocell site is also required inside a building. This is the typical process associated with deploying an in-building wireless (IBW) system:

- The building owner contracts with a third party to build and operate a wireless network. The third party is a company that has expertise in installing in-building networks.
- The third party builds the network to MNO specifications using MNO spectrum bands. The MNO provides a "signal source" (equivalent to a base station), which is installed inside the building, as well as a connection to their core network. The in-building network then functions as a part of the MNO's network and the MNO will balance its outdoor, macrocell-based network to not interfere with the in-building installation.
- The IBW network is tested and certified by MNOs as necessary. Note that most IBW systems host two or more MNOs, though single-MNO IBW systems exist.

In-building wireless networks usually co-exist with Wi-Fi networks – they complement each other and use separate equipment.

The Wireless Infrastructure Association advocates for the deployment of wireless infrastructure across the United States, representing the companies that make up the wireless infrastructure ecosystem.

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