

Private 5G/4G Network Deployment Tracker & Forecasts: 2024 – 2030

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Abstracts

Historically a niche segment of the wider cellular communications industry, private 5G/4G cellular networks – also referred to as NPNs (Non-Public Networks) in 3GPP terminology – have rapidly gained popularity in recent years due to privacy, security, reliability and performance advantages over public mobile networks and competing wireless technologies as well as their potential to replace hardwired connections with non-obstructive wireless links.

Private cellular networks are continuing their upward trajectory with deployments targeting a multitude of use cases across various industries. These range from localized wireless systems for dedicated connectivity in factories, warehouses, mines, power plants, substations, offshore wind farms, oil and gas facilities, construction sites, maritime ports, airports, hospitals, stadiums, office buildings and university campuses to regional and nationwide sub-1 GHz private wireless networks for utilities, FRMCS (Future Railway Mobile Communication System)-ready networks for train-to-ground communications and hybrid government-commercial public safety broadband networks. Custom-built cellular networks have also been implemented in locations as remote as Antarctica, and there are even plans for installations on the moon's surface and outer space.

The expanding influence of the private 5G/4G network market is evident from the recent use of rapidly deployable network-in-a-box systems for professional TV broadcasting, enhanced fan engagement and gameplay operations at major sports events, including Paris 2024 Olympics, 2024 UEFA European Football Championship, North West 200 Motorcycle Race, 2024 World Rowing Cup III, New York Sail Grand Prix, 2024 PGA Championship, 2024 UFL Championship Game and 2024 NFL International Games, as well as the Republican and Democratic national conventions in the run up to the 2024

United States presidential election. Other examples of high-impact private 5G/4G engagements include but are not limited to multi-site, multi-national private cellular deployments at the industrial facilities of Airbus, BMW, Chevron, John Deere, LG Electronics, Midea, Tesla, Toyota, Volkswagen, Walmart and several other household brand names; Aramco's (Saudi Arabian Oil Company) 450 MHz 3GPP network project and ADNOC's (Abu Dhabi National Oil Company) 11,000-square kilometer private 5G network for connecting thousands of remote wells and pipelines; defense sector 5G programs for the adoption of tactical cellular systems and permanent private 5G networks at military bases in the United States, Germany, Spain, Norway, Japan and South Korea; service territory-wide private wireless projects of 450connect, Ameren, CPFL Energia, ESB Networks, Evergy, Neoenergia, PGE (Polish Energy Group), SDG&E (San Diego Gas & Electric), Tampa Electric, Xcel Energy and other utility companies; and the recent implementation of a private 5G network at Belgium's Nobelwind offshore wind farm as part of a broader European effort to secure critical infrastructure in the North Sea.

There has also been a surge in the adoption of private wireless small cells as a cost-effective alternative to DAS (Distributed Antenna Systems) for delivering neutral host public cellular coverage in carpeted enterprise spaces, public venues, hospitals, hotels, higher education campuses and schools. This trend is particularly prevalent in the United States due to the open accessibility of the license-exempt GAA (General Authorized Access) tier of 3.5 GHz CBRS spectrum. Some examples of private network deployments supporting neutral host connectivity to one or more national mobile operators include Meta's corporate offices, City of Hope Hospital, SHC (Stanford Health Care), Sound Hotel, Gale South Beach Hotel, Nobu Hotel, ASU (Arizona State University), Cal Poly (California Polytechnic State University), University of Virginia, Duke University and Parkside Elementary School.

SNS Telecom & IT estimates that global spending on private 5G and 4G LTE network infrastructure for vertical industries will grow at a CAGR of approximately 20% between 2024 and 2027, eventually accounting for more than \$6 Billion by the end of 2027. Close to 60% of these investments – an estimated \$3.5 Billion – will be directed towards the buildout of standalone private 5G networks, which will become the predominant wireless communications medium to support the ongoing Industry 4.0 revolution for the digitization and automation of manufacturing and process industries. This unprecedented level of growth is likely to transform private cellular networks into an almost parallel equipment ecosystem to public mobile operator infrastructure in terms of market size by the late 2020s. By 2030, private networks could account for as much as a fifth of all mobile network infrastructure spending.

The "Private 5G/4G Network Deployment Tracker & Forecasts: 2024 – 2030" datasheet includes an extensive database of more than 7,300 global private 5G/4G network engagements across 130 countries – as of Q4'2024. In addition, it provides global and regional market size forecasts from 2024 to 2030. The forecasts cover three infrastructure submarkets, two technology generations, four spectrum licensing models, 15 vertical industries and five regional markets.

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