

Private 5G/4G Cellular Networks Market for Utilities: Market drivers, challenges, Top Players, Key trends 2023 - 2030

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/EINPresswire.com/ -- [Private 5G/4G Cellular Networks Market](#) – also referred

to as NPNs (Non-Public Networks) in 3GPP terminology – are rapidly gaining popularity across a diverse range of vertical industries. The utilities sector is no exception to this trend and will see global spending on dedicated cellular

networks grow at a CAGR of 15% over the next three years. Estimated to account for nearly \$2 Billion in cumulative infrastructure spending between 2023 and 2026, private cellular networks for utilities range from wide area 3GPP networks – operating in 410 MHz, 450 MHz, 900 MHz and other sub-1 GHz spectrum bands – for smart grid communications to purpose-built 5G and LTE networks aimed at providing localized wireless connectivity in critical infrastructure facilities such as power plants, substations and offshore wind farms. Some notable examples are listed below:



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American utility companies have made substantial investments in acquiring 900 MHz and 3.5 GHz CBRS PAL (Priority Access License) spectrum within their service territories. Ameren, Evergy, Hawaiian Electric, LCRA (Lower Colorado River Authority), SCE (Southern California Edison), SDG&E (San Diego Gas & Electric), Southern Company and Xcel Energy are among the growing number of utilities that are implementing 3GPP-based private wireless networks in support of grid modernization programs.

450connect is rolling out a nationwide 450 MHz LTE network for the digitization of energy and water utilities as well as other critical industries in Germany.

Using its 410 MHz spectrum holdings, ESB Networks is implementing a national private mobile network to meet the wireless connectivity needs of smart grid applications for the control, protection and management of Ireland's utility assets.

French multinational electric utility group EDF is deploying private mobile networks to bring secure cellular connectivity to its nuclear power plants.

Enel's global private communications platform leverages a multi-national secure MVNO service for connectivity across the Italian energy giant's global footprint and end-to-end private LTE/5G networks to provide localized wireless coverage for reliable communications in business-critical areas.

Following the conclusion of pilots, pre-implementation testing and procurement contracts, PGE (Polish Energy Group) is implementing a 450 MHz mission-critical LTE network for the wide area operations of electricity and gas DSOs (Distribution System Operators) across Poland.

Bahrain's EWA (Electricity and Water Authority) has deployed a 410 MHz private LTE network as part of an effort to modernize, digitize and automate its distribution infrastructure for improved grid efficiency, performance and security.

CSG (China Southern Power Grid) relies on both LTE-based private cellular systems and end-to-end 5G network slicing over commercial mobile operator networks to fulfill the wireless communications needs of its smart electric power grid.

SGCC (State Grid Corporation of China) has deployed a private 5G NR-U (NR in Unlicensed Spectrum) network – operating in license-exempt Band n46 (5.8 GHz) spectrum – to support video surveillance, mobile inspection robots and other 5G-connected applications at its Lanzhou East and Mogao substations in China's Gansu province.

KEPCO (Korea Electric Power Corporation) has implemented private 5G network infrastructure – operating in 4.7 GHz and 28 GHz spectrum – at two of its substation sites to enhance real-time monitoring and control capabilities through digital twin technology, 5G-connected wearable cameras and autonomous robots.

Kansai Electric Power is using a local 5G network and 5G-connected drones at the Eurys Akita Port wind farm in Akita (Tohoku), Japan, to enhance the maintenance and inspection of wind turbine blades.

Edesur Dominicana relies on a custom-built 2.3 GHz LTE network to connect critical grid assets that require high availability close to 100%.

CPFL Energia has set up a 250 MHz private LTE network in São Leopoldo (Rio Grande do Sul), Brazil, to facilitate the automation of devices in distribution and transmission networks.

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The ""Private 5G/4G Cellular Networks for Utilities: 2023 – 2030"" research package provides detailed market analysis and forecasts for private 5G and LTE networks across 15 vertical

industries, including utilities. The package includes the full edition of SNS Telecom & IT's ""Private LTE & 5G Network Ecosystem: 2023 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts"" report and a datasheet with additional private 5G/4G infrastructure investment forecasts for the utilities sector.

Topics Covered & Forecast Segmentation:

Report 1: The Private LTE & 5G Network Ecosystem: 2023 – 2030 – Opportunities, Challenges, Strategies, Industry Verticals & Forecasts

This report covers the following topics:

Introduction to private LTE and 5G networks

Value chain and ecosystem structure

Market drivers and challenges

System architecture and key elements of private LTE and 5G networks

Operational and business models, network size, geographic reach and other practical aspects of private LTE and 5G networks

Critical communications broadband evolution, Industry 4.0, enterprise transformation and other themes shaping the adoption of private LTE and 5G networks

Enabling technologies and concepts, including 3GPP-defined MCX, URLLC, TSC, NR-U, SNPN and PNI-NPN, cellular IoT, high-precision positioning, network slicing, edge computing and network automation capabilities

Key trends such as the emergence of new classes of specialized network operators, shared and local area spectrum licensing, private NaaS (Network-as-a-Service) offerings, IT/OT convergence, Open RAN, vRAN (Virtualized RAN) and rapidly deployable LTE/5G systems

Analysis of vertical industries and application scenarios, extending from mission-critical group communications and real-time video transmission to reconfigurable wireless production lines, collaborative mobile robots, AGVs (Automated Guided Vehicles) and untethered AR/VR/MR (Augmented, Virtual & Mixed Reality)

Future roadmap of private LTE and 5G networks

Review of private LTE and 5G network installations worldwide, including 100 case studies spanning 15 verticals

Database tracking more than 6,000 private LTE and 5G engagements in over 120 countries across the globe

Spectrum availability, allocation and usage across the global, regional and national domains

Standardization, regulatory and collaborative initiatives

Profiles and strategies of more than 1,800 ecosystem players

Strategic recommendations for LTE/5G equipment and chipset suppliers, system integrators, private network specialists, mobile operators and end user organizations

Market analysis and forecasts from 2023 till 2030

Datasheet 2: Private 5G/4G Cellular Networks for Utilities: 2023 – 2030 – Infrastructure Spending

Forecasts

This datasheet provides private 5G/4G infrastructure forecasts for each of the following submarkets and their subcategories:

Infrastructure Submarkets

RAN (LTE & 5G NR Radio Access Network)

Base Station RUs (Radio Units)

DUs/CUs (Distributed & Centralized Baseband Units)

Mobile Core (EPC & 5GC)

Transport Network

Technology Generations

LTE

5G

Cell Types

Small Cells

Macrocells

Regional Markets

North America

Asia Pacific

Europe

Middle East & Africa

Latin & Central America

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List of Companies Mentioned:

10T Tech

1NCE

1oT

29Metals

3D-P

3GPP (Third Generation Partnership Project)

450 MHz Alliance

450connect

4K Solutions

4RF

5G Campus Network Alliance

5G Forum (South Korea)
5G Health Association
5G Media Initiative
5G OI Lab (5G Open Innovation Lab)
5GAA (5G Automotive Association)
5G-ACIA (5G Alliance for Connected Industries and Automation)
5GAIA (5G Applications Industry Array)
5GCT (5G Catalyst Technologies)
5GDNA (5G Deterministic Networking Alliance)
5GFF (5G Future Forum)
5G-MAG (5G Media Action Group)
5GMF (Fifth Generation Mobile Communication Promotion Forum, Japan)
5GSA (5G Slicing Association)
6G Finland
6GEM Consortium
6G-IA (6G Smart Networks and Services Industry Association)
6G-RIC (Research and Innovation Cluster)
6Harmonics/6WiLLnk
6WIND
7Layers
7P (Seven Principles)
A Beep/Diga-Talk+
A*STAR (Agency for Science, Technology and Research, Singapore)
A1 Hrvatska
A1 Telekom Austria Group
A10 Networks
A5G Networks
AAEON Technology
Aalborg University
Aalto University
AAR (Association of American Railroads)
Aarna Networks
ABB
ABB Robotics
ABDI (Brazilian Agency for Industrial Development)
ABEL Mobilfunk
ABiT Corporation
ABP (Associated British Ports)
ABS
Abside Networks
Abu Dhabi Police
Accedian
AccelerComm

Accelink Technologies
Accelleran
Accenture
ACCESS CO.
Access Spectrum
Accesso
AccessParks
ACCF (Australasian Critical Communications Forum)
Accton Technology Corporation
Accuver
ACE Technologies
AceAxis
AceTel (Ace Solutions)
Achronix Semiconductor Corporation
ACMA (Australian Communications and Media Authority)
ACOME
ACPS (Albemarle County Public Schools)
ACS (Applied Computer Solutions)
Actelis Networks
Actemium (VINCI Energies)
Action Technologies (Shenzhen Action Technologies)
Actiontec Electronics
Active911
Actus Networks
AD Plastik
Adani Data Networks
Adani Group
Adax
Adcor Magnet Systems
Addis Ababa Light Rail
Adecoagro
Adelaide Airport
Adeunis
ADF (Australian Defence Force)
ADI (Analog Devices, Inc.)
Adif (Spanish Railway Infrastructure Administrator)
Adif AV (Alta Velocidad)
ADLINK Technology
ADMIE/IPTO (Independent Power Transmission Operator, Greece)
ADNOC (Abu Dhabi National Oil Company)
ADRF (Advanced RF Technologies)
ADT
Adtran

ADVA
Advanced Energy Industries
AdvanceTec Industries
Advantech
Advantech Wireless Technologies
AE Aerospace
AECC (Aero Engine Corporation of China)
AECC Commercial Aircraft Engine Company
AEG
Aegex Technologies
Aerial Applications
Aeris
Aero Wireless Group
AeroFarms
AeroMobile Communications
Aerostar International
Aethertek
Aetna Group
AFC (Asian Football Confederation)
Affarii Technologies
Affirmed Networks
AFL Global
AFRY
AGC
AGCO Corporation
AGCOM (Communications Regulatory Authority, Italy)
Agile (Agile Interoperable Solutions)
AGIS (Advanced Ground Information Systems)
AGM Mobile
Agnico Eagle Mines
AG-Placid
AgriFood Connect
Agroamb
Aguas de Valencia
AGURRE (Association of Major Users of Operational Radio Networks, France)
AH NET (MVM NET)
AI-LINK
AINA Wireless
Air China
Air France
Airband Community Internet
Airbus
Airfide Networks

Airgain
AirHop Communications
Airlinq
Airport Authority Hong Kong
Airspar Networks
Airtower Networks
Airwaive
Airwave Developers
Airwave Solutions
Airwavz Solutions
AIS (Advanced Info Service)
AiVader
Ajman Police
Akamai Technologies
Aker Solutions
AKIS International
AKOS (Agency for Communication Networks and Services of the Republic of Slovenia)
Akoustis Technologies
Alaska Airlines
Alaxala Networks Corporation
ALBEDO Telecom
Albemarle Corporation
albis-elcon
ALBO (Hijos de Carlos Albo)
Alcadis
Alcatel-Lucent International
Alcobendas City Council
Aldenhoven Testing Center
ALE (Antarctic Logistics & Expeditions)
Alea
Alef (Alef Edge)
Alepo
Alestra
Alibaba Group
Aliniant
Allbesmart
Allen Vanguard Wireless
Allerio
Alliander
Allied Telesis
Allot
Alnan Aluminium
Alpha Networks

Alpha Wireless
Alphabet
Alsa
Alsatis Réseaux
Alstom
Altaeros
Altair Semiconductor (Sony Semiconductor Israel)
ALTÁN Redes
Altice Group
Altice Labs
Altice Portugal
Altistar
ALVIS (Argentina)
AM Telecom
AMA XpertEye
AMAGGI
Amantya Technologies
Amarisoft
Amata Corporation
Amazon
Ambra Solutions-ECOTEL
Ambulance Victoria
Ambulancezorg Groningen
AMD (Advanced Micro Devices)
Amdocs
Ameren
América Móvil
American Tower Corporation
AMI (American Megatrends International)
AMIT Wireless
AMN (Africa Mobile Networks)
AMPC (Australian Meat Processor Corporation)
Ampere Computing
Amphenol Corporation
Ampleon
Amtele Communication
ANA (All Nippon Airways)
ANACOM (National Communications Authority, Portugal)
Anatel (National Telecommunications Agency, Brazil)
ANAX Metals
ANCOM (National Authority for Management and Regulation in Communications, Romania)
Andesat
ANDEX (Sendai)

ANDRA
ANDRO Computational Solutions
Anek Lines
Anglo American
AngloGold Ashanti and more...

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