

# SMART COMMUNITIES PLAN FOR MOBILE

T-Mobile

## Preparing for 5G & the Internet of Things

### Harnessing Wireless Technology to Build Vibrant Communities

Nearly all Americans own a mobile phone and a vast majority of them own smartphones. Wireless is essential to our lives but the nation's wireless infrastructure is under pressure to keep pace with consumer demands for faster data speeds, more coverage, and new services. At the same time, cities and towns are looking to smart technology to feed their economic development while realizing cost savings and efficiencies.

T-Mobile is already designing and testing 5G wireless networks that will enhance our lives, communities and economies. This next generation of wireless connectivity will innovate and accelerate the modern realization of smart cities, homes and buildings.

### 4G: The Building Blocks for the 5G Revolution

Most American consumers currently experience wireless connectivity on 4G networks – and are aware of the profound impact on daily life that has occurred from this connectivity. The emerging standard in voice and data telecommunications – 5G – is poised to transform America's reliance on densely populated wireless infrastructure.

T-Mobile's industry-leading vision incorporates 4G and 5G technologies to offer ultimate quality, speeds and mobile broadband capabilities that consumers and businesses cherish. T-Mobile and our other flagship brand, MetroPCS, are ensuring that 4G coverage remains affordable and accessible to all. Our strategy will provide connectivity to populations of millions that rely on wireless broadband rather than home-anchored cable or high-speed fixed line broadband.

**5G will be 10x times faster than 4G and support 100x more internet enabled devices. (CTIA)**

### Burgeoning Benefits of 5G & IoT

Next generation wireless infrastructure won't be operational until 2019 or 2020. In fact, the global standard for 5G is still being defined. The new standard will be imperative for building safe, livable and economically vibrant communities. Building smart communities will help attract businesses, create jobs, and generate government efficiencies.

### The Five Generations of Wireless Technology

#### 1G

Voice only, analog cellular phones

#### 2G

Digital phone calls, text messaging and basic data services

#### 3G

Integrated voice, messaging mobile internet, first broadband data for an improved internet experience and use of applications

#### 4G

Voice, messaging, high speed internet and high capacity mobile multimedia, faster mobile broadband

#### 5G

A revolution in technology, connecting trillions of devices in the IoT (Internet of Things), supporting smart homes, smart buildings and smart cities

- **Rocket Fuel for Economic Growth** – According to one report, for every 100,000 residents 5G and smart technologies will boost city or county annual gross domestic product (GDP) by approximately \$125 million and gain approximately 650 new permanent jobs. (2017 report, 5G, Smart Cities & Communities of Color, the Joint Center for Political and Economic Studies)
- **Leaping Beyond the Digital Divide** – 5G will enable new services and applications, helping to fill connectivity gaps in underserved populations and geographic areas. A growing share of low-income Americans are smartphone-only internet users with no broadband at home. With 5G's increased speed and capacity, mobile users will be able to do more on their mobile devices than ever before. In rural communities, 5G will support the development of smart industries, and bring healthcare closer to home with enhanced telehealth capabilities.
- **Generating Government Efficiencies** – Local governments that plan for 5G will be delivering core services with greater efficiency and cost-effectiveness across any connected device. Monitoring critical infrastructure, improving energy efficiency, managing vehicle traffic and electrical grids, and enhancing public safety are the tip of the iceberg. In urban centers, tiny, embedded devices will regularly gather and process data for such things as traffic, air quality and noise pollution, disasters, security incidents and crowd management.
- **Multiplying Civic Engagement** – Mobile technology will engender community and citizen participation while improving government transparency through social media and e-government applications.

**“Leadership in wireless technology unlocks the innovation and investment that drives jobs and growth across the entire economy.”**

**— Meredith Attwel Baker, CEO of CTIA**

America's wireless companies stand ready to invest \$275 billion into building these next-gen 5G networks, according to Accenture. This will create 3 million new jobs and add \$500 billion to the economy.

## Internet of Things (IoT)

IoT is the universe of connected devices, sensors and objects that require internet connectivity. It is sometimes called the Internet of Everything.

**“The total number of connected devices worldwide grew 31% between 2016 and 2017, to 8.4 billion devices.” (Gartner).**

**“By 2025, the number of worldwide connected devices is forecast to grow to 81 billion.” (IDC).**

## Making Communities Ready for the 5G Mobile Revolution

Local policies can accelerate or delay the successful build-out of wireless networks. Keeping up with ever growing consumer demand by expanding wireless networks and building the next generation of wireless technologies will require clear policies and regulations from local governments.

To meet the demand for mobile broadband services, address coverage and capacity issues, and take advantage of emerging 5G/IoT technologies, optimizing the network with existing and new macro sites as well as dense smaller cell antennas, often using rights of way and public corridors, is essential.

Achieving this connectivity will require a cooperative effort. Careful consideration must be given to our collective challenges:

- **Streamlined permitting and processes** – Building a network that will depend in part on hundreds of small sites will require updated permitting policies and processes to avoid permitting bottlenecks.
- **Right-of-way applications** – Access to sites such as government-owned utility poles, streetlights and other street fixtures will greatly facilitate 5G network deployment.
- **Fee structures** – A reasonable fee structure scalable for 5G network deployment will take into consideration the need for a large number of small sites, and the significant community benefits of building the infrastructure needed for smart communities to flourish.

## Learn More

For more information, check out [HowMobileWorks.com](https://www.howmobileworks.com).

