



Connected City
Smart City

Connected Cities Tour 2020 "Getting to Smart" University of Miami



Mike Sarasti
Director of Innovation
and Technology
City of Miami.

1330 Miller Drive Coral Gables
February 11 | 9:00 am to 2:00 pm



Raimundo Rodulfo
Chief Innovation Officer
City of Coral Gables

Presenting Sponsor: **GraybaR**

"Getting to Smart" is a quick dose of knowledge to help you navigate in our increasingly mobile, always-on, information intensive, and SMART Society.

Network Technologies: 4G/5G, IoT, Fiber, Small Cells and WiFi are enabling new smart solutions that are transforming transportation, public safety, real estate and other critical aspects of society.

- 4G is evolving to 5G
- Small Cell deployments are being integrated into Smart Poles
- Cities are creating Smart Spaces with Video and AI
- IoT applications are creating terrabytes of data

Join Industry Thought Leaders and explore Business Models, Technology Architectures and First Hand Use Cases that are driving Innovation and Disruptive Solutions.



"Getting to Smart" Connected Cities Tour

5G



Connectivity and Bandwidth are the oil of the Gig Economy.

Network Technologies such as: 4G/5G, IoT, Fiber, Small Cell and Wi Fi are Transforming How Society Operates.

These sessions bring together thought leaders from Government, Enterprise, Academia and the Tech Community to look at the Business Models, Technology Architectures and action plans that City and Community ecosystems are using to build Dense Broadband Infrastructure.

Be part of the Solution



2020 Event Schedule

| | |
|--------------|---------------|
| March 12 | Tampa |
| April 23 | Dallas |
| May 14 | Raleigh |
| June 11 | Washington DC |
| June 18 | Chicago |
| August 13 | Boston |
| September 10 | Philadelphia |
| September 24 | Kansas City |
| October 6 | Detroit |
| October 22 | San Jose |
| October 29 | Los Angeles |
| November 12 | New York |
| December 3 | Phoenix |

9:00 Check In

9:10 "Getting to Smart"-Peter Murray, Executive Director, Dense Networks

9:15 Miami Update-Mike Sarasti, Director of Innovation and Technology, Miami

9:30 **Smart Connected Cities-Moderator, Peter Murray, Executive Director, Dense Networks**

-Mike Sarasti, Director, Innovation and Technology, Miami

-Jim Lockwood, CEO, Aero Wireless

-Mark Prohaska, Manager of Technology, FPL

-Lisa Youngers, CEO, Fiber Broadband Association

-Amanda Wood, Attorney, Grants, Becker & Poliakoff

10:15 Coral Gables-Raimundo Rodulfo, CIO, Coral Gables

10:30 Break

10:45 **Emerging Network Technologies**, Moderator, Peter Murray, Dense Networks

-Kurt Jacobs, Senior Director, JMA Wireless

-Raimundo Rodulfo, CIO, Coral Gables

-Brad Baumann, VP, Gabe's

-Daryl Sullivan, Senior Director, Hitachi Social Innovations

-Josh Broder, CEO, Tilson Technology

11:30 Smart Connected Real Estate

Moderator: Peter Murray

-Ernie Fernandez, University of Miami, CIO and VP

-Scott Jackson, Manager, Broadband, Graybar

-Leo Delgado, CEO, Converged Services Inc.

-Luke Lucas, Senior Manager, Engineering, T-Mobile

-Keith Jones, Director, Granite Telecom

12:15 **Comm/Infrastructure Outlook** Alex Gellman, CEO, Vertical Bridge

12:40 Lunch and Networking

2:00 Adjourn







Dr. Dean Bushey

Joins Dense Networks to Expand Focus
on Transportation and Public Safety

Retired Air Force Colonel

**Chief of Intelligence and Surveillance Operations,
US Air Force, Europe**

Pioneer in Military Aerial Drone Technologies

Professor, US Air Force Academy

General Manager, Voyage, Autonomous Vehicles



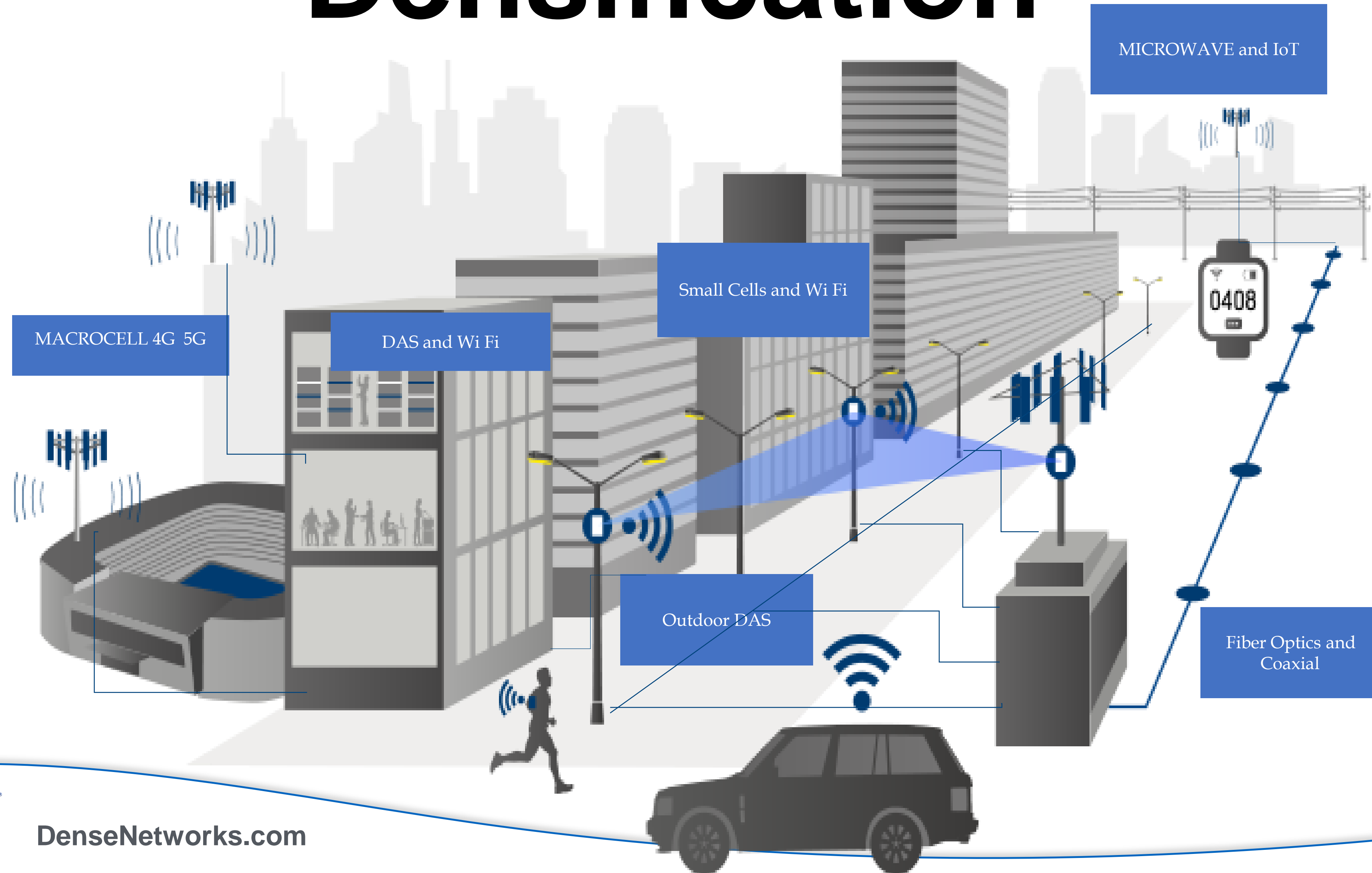
2019

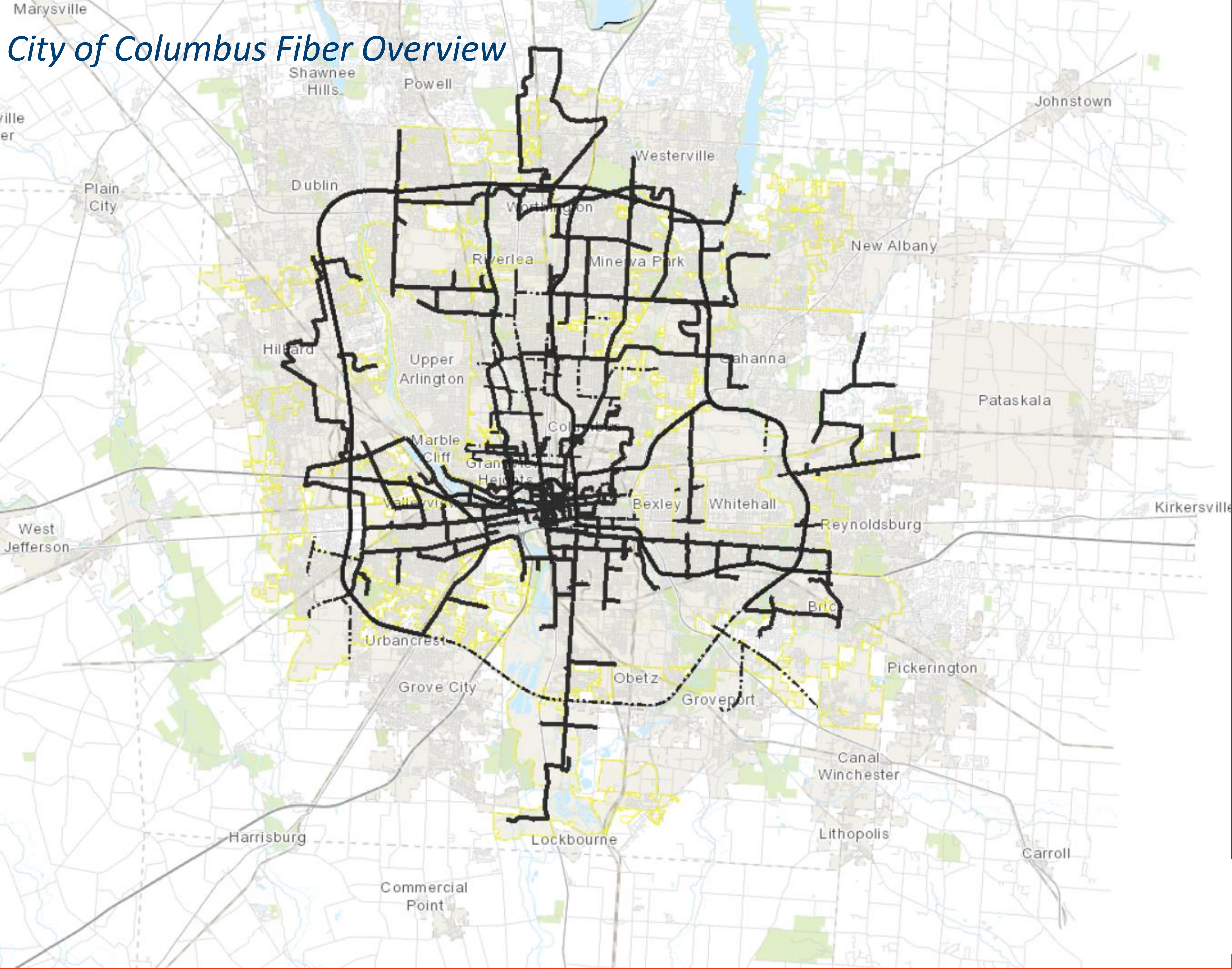


4 Terabytes Per Vehicle



Densification





City of Columbus Fiber Overview

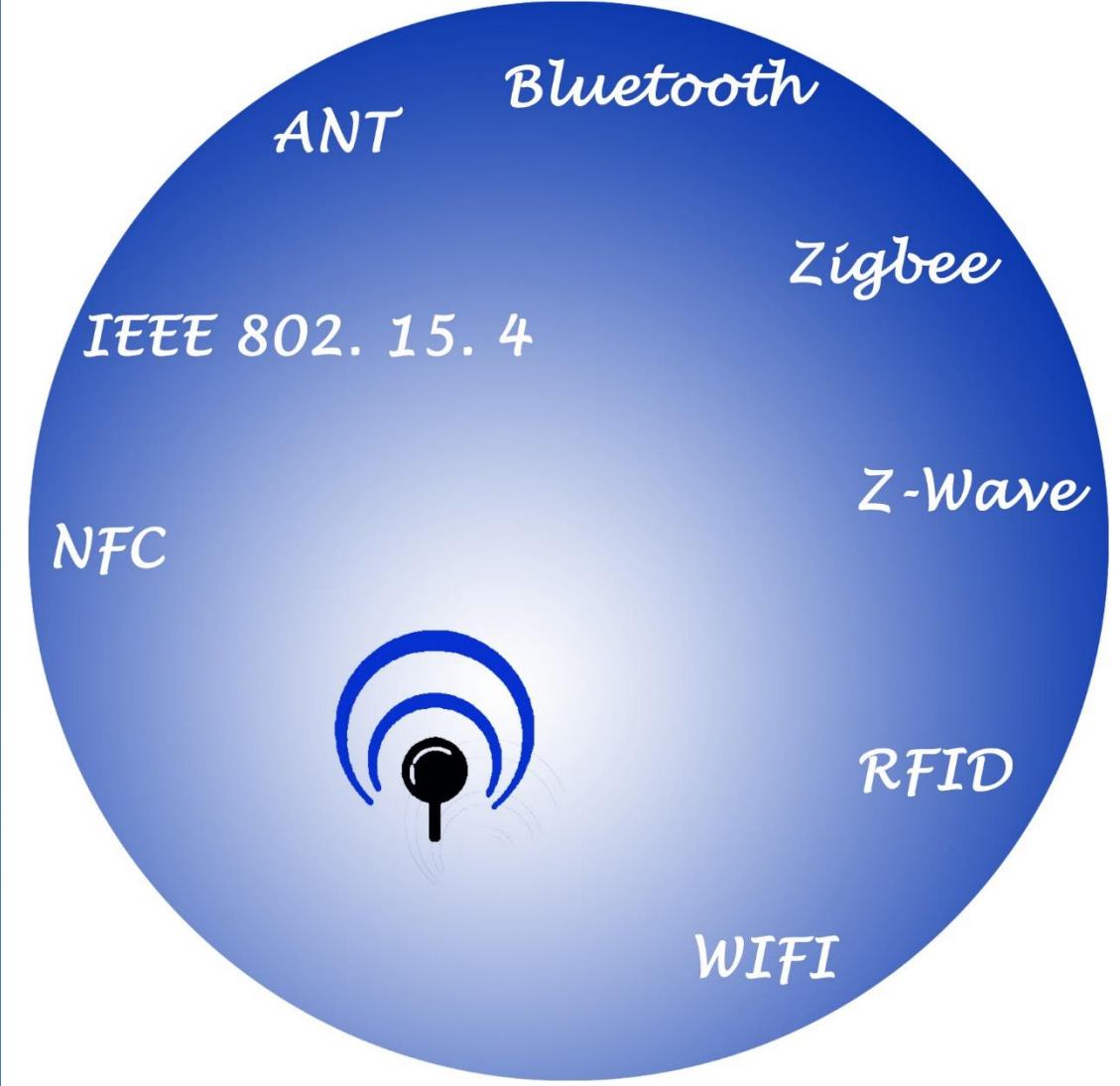
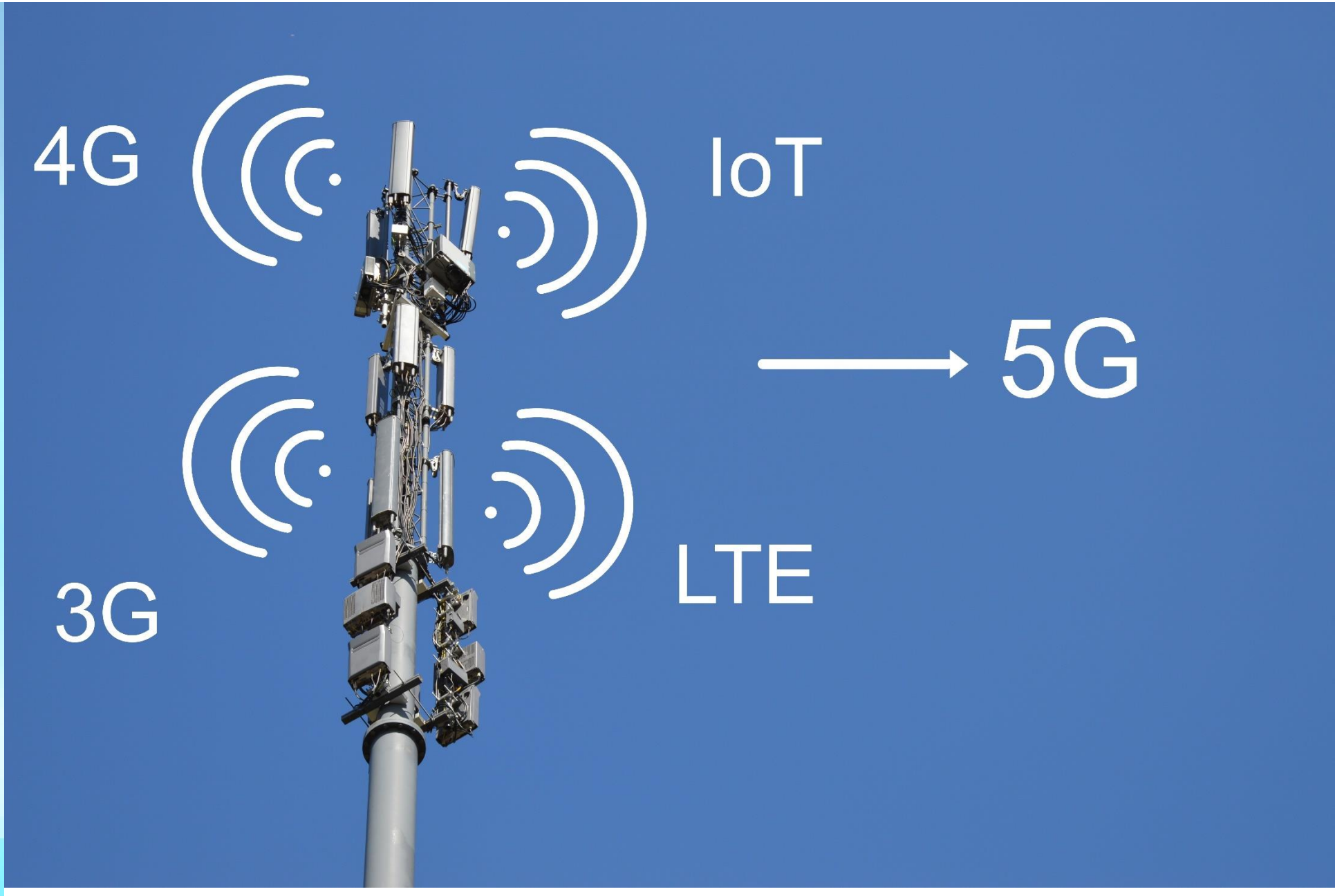
- Starting in 2015, the City offers excess capacity in its wholly owned 750 route-mile fiber optic network.
- Columbus program is currently a dark fiber program
- The City makes this capacity available through the use of an Indefeasible Right of Use (IRU)
- Customers include governments, higher education institutions, corporations and broadband providers and start-ups in Central Ohio
- Connected to multiple commercial data-centers across the region
- ~ 1,000 miles of fiber

The Digital Divide Defined

A **digital divide** is an economic and social inequality in the access to, use of, or impact of information and communication technologies (ICT). The divide within countries (such as the digital divide in the United States) may refer to inequalities between individuals, households, businesses, or geographic areas, usually at different socioeconomic levels or other demographic categories. The divide between differing countries or regions of the world is referred to as the global digital divide, examining this technological gap between developing and developed countries on an international scale.

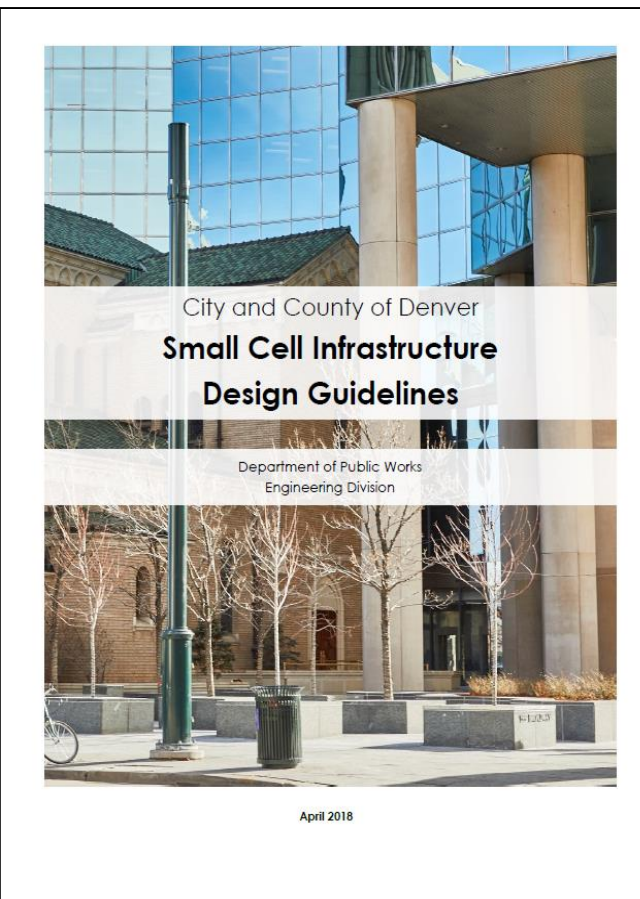
How Many Networks?

Capacity, Coverage, Compliance



Establish Design Guidelines

– Supports Expediting Small Cell Deployments

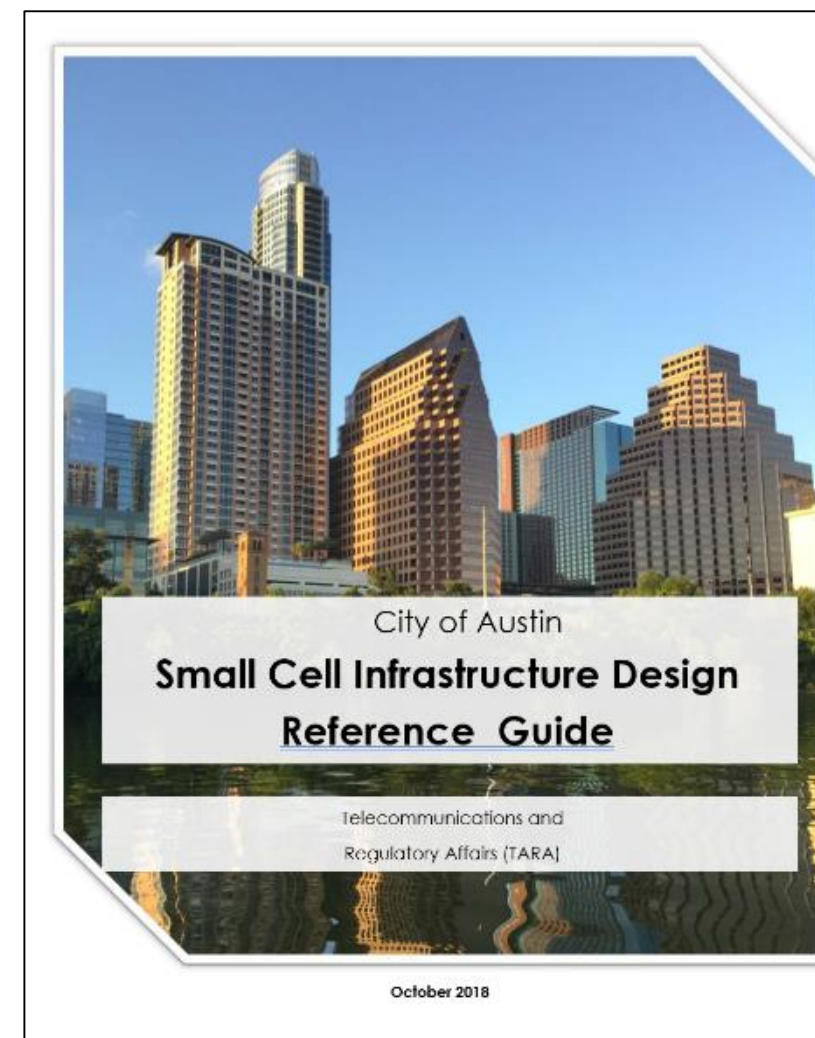


- ❑ Public-facing review process including Districts, City Departments, Neighborhood Orgs
- ❑ Policy for co-location first
- ❑ Notification of adjacent property owner
- ❑ Restricting new pole density through min 250' spacing
- ❑ Restricting placement (along parks, historic & residential frontages)
- ❑ Restricting placement in front of residential & valuable sight lines
- ❑ Requiring camouflage and concealment
- ❑ Limiting height and equipment size
- ❑ Opportunity to coordinate fiber conduit

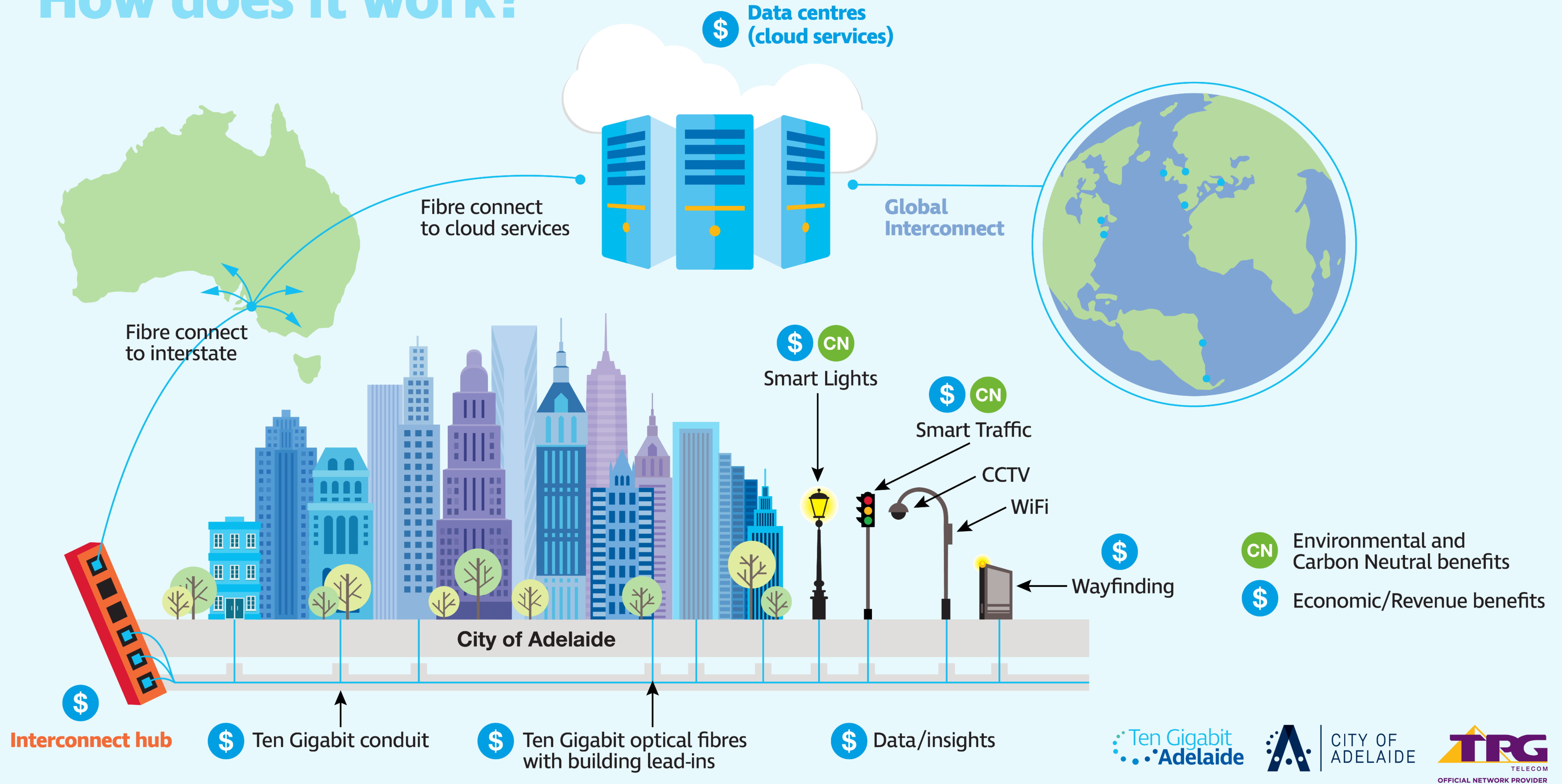
Detailed PROCESS Guidance

Each Municipality is Unique, and Each Should Create its Own Plans Informed by the Local Stakeholders

The Important Part: There's a Plan



How does it work?



Capacity

Coverage



Bandwidth

ENTER

[click here for more information](#)

A Smart Miami is:

- *Connected*
- *Equitable*
- *Resilient*
- *Sustainable*
- *Transparent*
- *Self-Aware*





NEXTcity™

NETWORKS

A NEXTERA ENERGY COMPANY



DenseNetworks.com

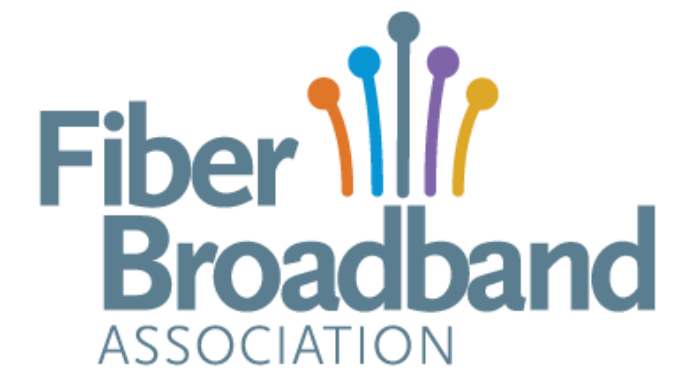


- **20 years – Innovative Wireless Infrastructure**
- **Smart Pole Concealment Solutions**
- **Wireless Infrastructure Planning Product Solutions**
- **Professional Engineering Services**
 - Municipalities
 - Wireless Operators
 - Public and Private Utilities



About Becker

- Government law and lobbying have been a core practice for the firm since its founding in 1973 in Florida, and with establishment of our Washington, DC Office in 2010.
- The DC team includes former chiefs of staff and senior legislative staff to US Senators and Members of Congress, which provides our clients with valuable insights into the legislative, administrative, and regulatory processes, and helps clients navigate the maze of government.
- Amanda Wood served as Legislative Director to Senator Bob Graham (D-FL), where she was responsible for developing and implementing the Senator's legislative agenda and strategy. Since leaving the Hill 14 years ago, her primary focus has been assisting clients (both public and private) with federal funding needs.



Future of Fiber

Lisa R. Youngers

President and CEO

Fiber Broadband Association

About the Fiber Broadband Association



- **Fiber Broadband Starter Kit & Workshop** for companies, organizations, communities to learn how to build **all-fiber networks**.
- **Thought leadership** on all things fiber through our **Optics** online magazine.
- **Collaborate** with industry allies to propel fiber deployment forward for a **broadband future** here and around the **globe**.
- **Connect** vendors, manufacturers, contractors, network operators, engineering firms and all contributors to fiber deployment – **“the Fiberverse”**.
- **Remove barriers** to deployment while supporting pro-fiber policies in all forums.



Why Fiber: Smart Communities



Smart
Grid

Energy Efficiency

EPB in Chattanooga built out a fiber network to reliably manage its energy and electrical systems



Smart
Health

Healthier Cities

Hiawatha Broadband in Minnesota piloting project to use its fiber as a platform for home monitoring of patients with dementia



Sensor
Network

Civic IoT

US Ignite and cities around the U.S. (and the world) are developing a smart city app store predicated on big bandwidth



Smart
Mobility

Safer Streets

Verizon and the City of Boston are using sensors and advanced traffic signal controls to measure traffic, improve safety



City
Wi-Fi

Connected Community

Santa Monica City Net provides fiber-supported Wi-Fi to its residents in public places



OUC Approach

Secure



Connected



Mobile



Sustainable



Energy



Water



Resilient



Sample USDOT Funding Sources

| Opportunity | Annual Funding |
|---|----------------|
| Miami Underline | \$20,000,000 |
| Mobility Innovation Demonstration Program | \$15,000,000 |

Why Fiber: Smart Communities

According to 2018 research from RVA, LLC:

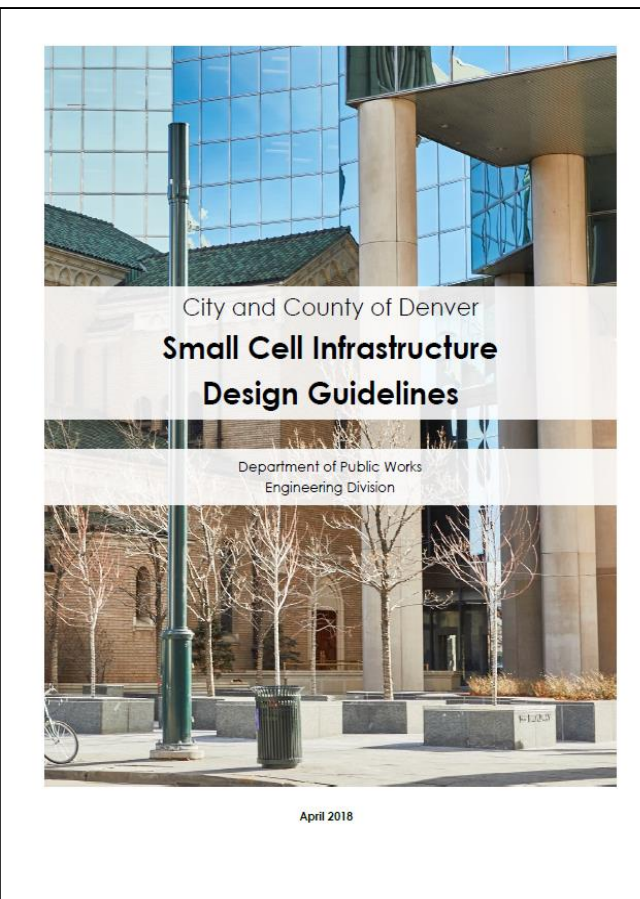
Fiber Cities are more likely to be Smart Cities

- Cities with fiber have, on average, **37% more deployed small cells** and just **over 35% more smart city applications**
- **33% of cities without fiber** report small cell activity, versus **60% of cities with fiber** to the residence



Establish Design Guidelines

– Supports Expediting Small Cell Deployments

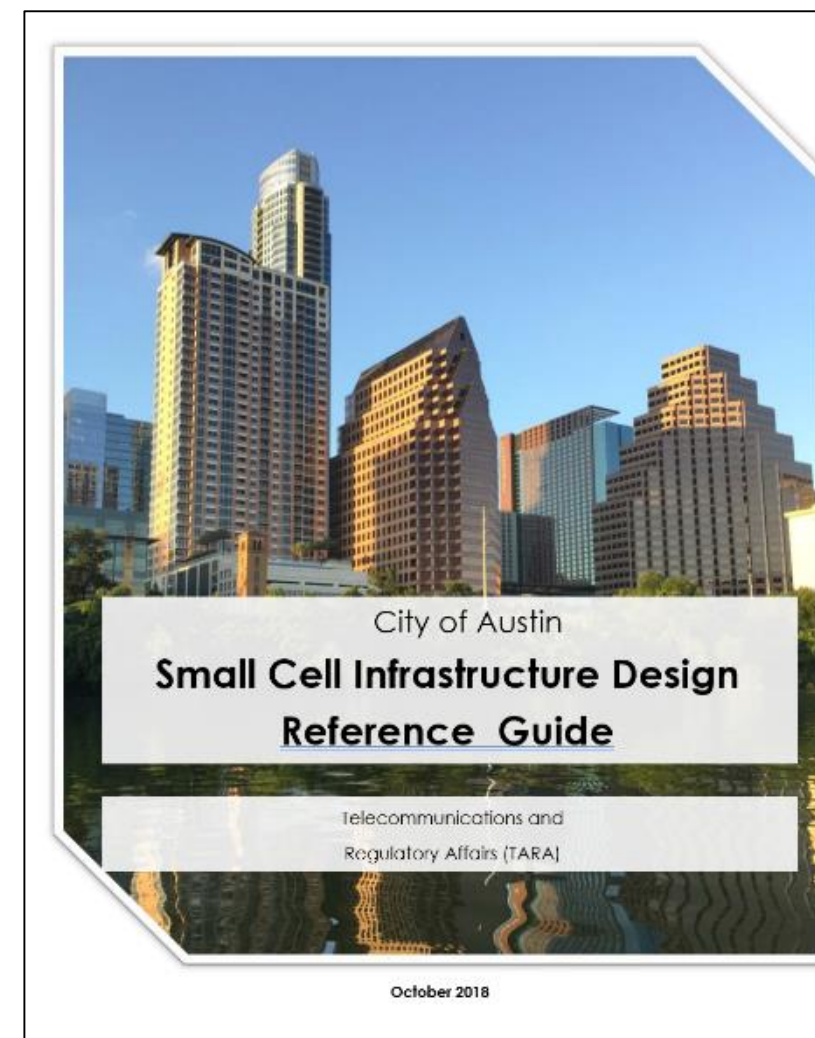


- ❑ Public-facing review process including Districts, City Departments, Neighborhood Orgs
- ❑ Policy for co-location first
- ❑ Notification of adjacent property owner
- ❑ Restricting new pole density through min 250' spacing
- ❑ Restricting placement (along parks, historic & residential frontages)
- ❑ Restricting placement in front of residential & valuable sight lines
- ❑ Requiring camouflage and concealment
- ❑ Limiting height and equipment size
- ❑ Opportunity to coordinate fiber conduit

Detailed PROCESS Guidance

Each Municipality is Unique, and Each Should Create its Own Plans Informed by the Local Stakeholders

The Important Part: There's a Plan



Broadband Strategy

Emerging landscape for voice and DATA

Effective in Dense Urban, Urban, and Suburban

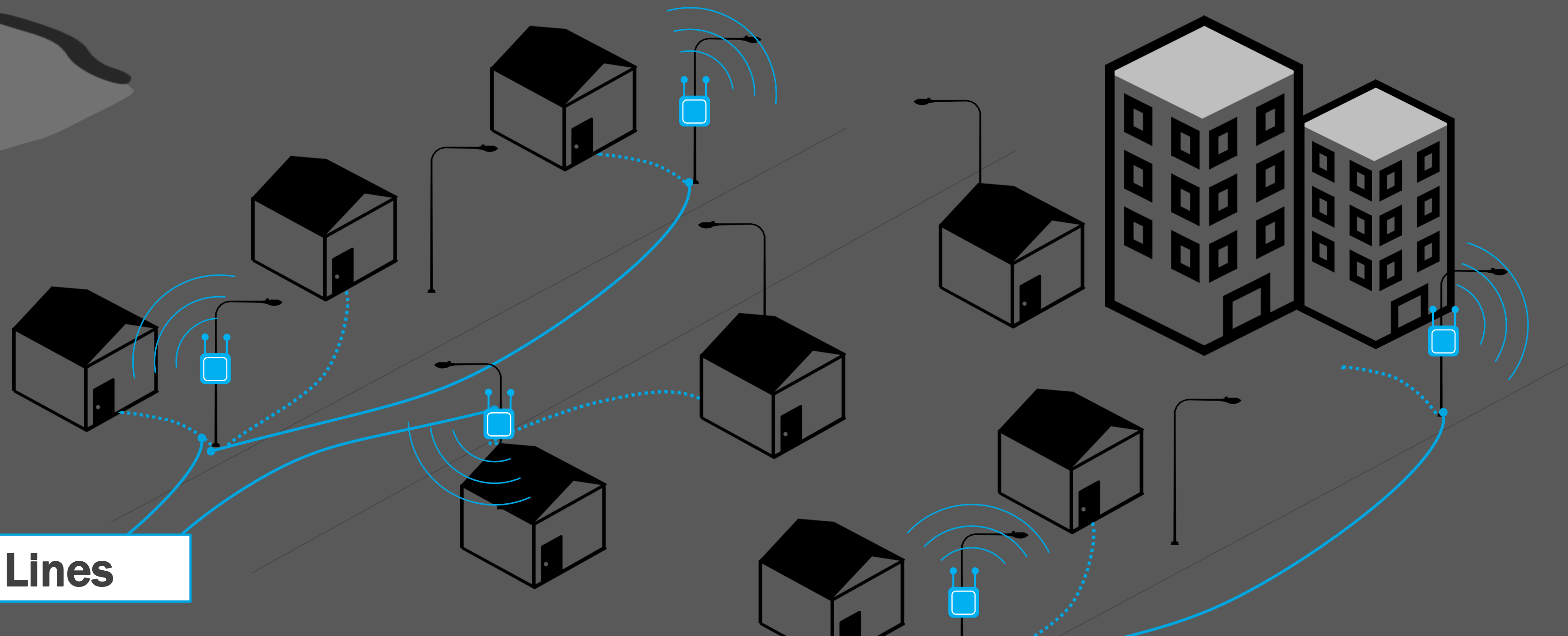
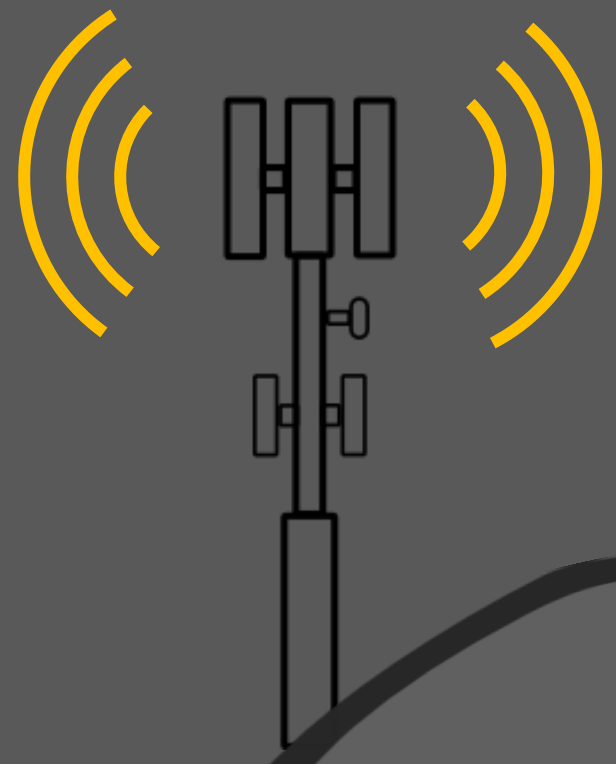
Cell towers: carry all mobile voice & some data

 **4G/5G Small-Cells**

Gigabit speed
up to 50x faster

Fiber Lines

Light pole is most valuable asset for broadband



Future Proof Poles - Interchangeable Equipment Modules



Flex Space for Multiple Equipment Loadouts.

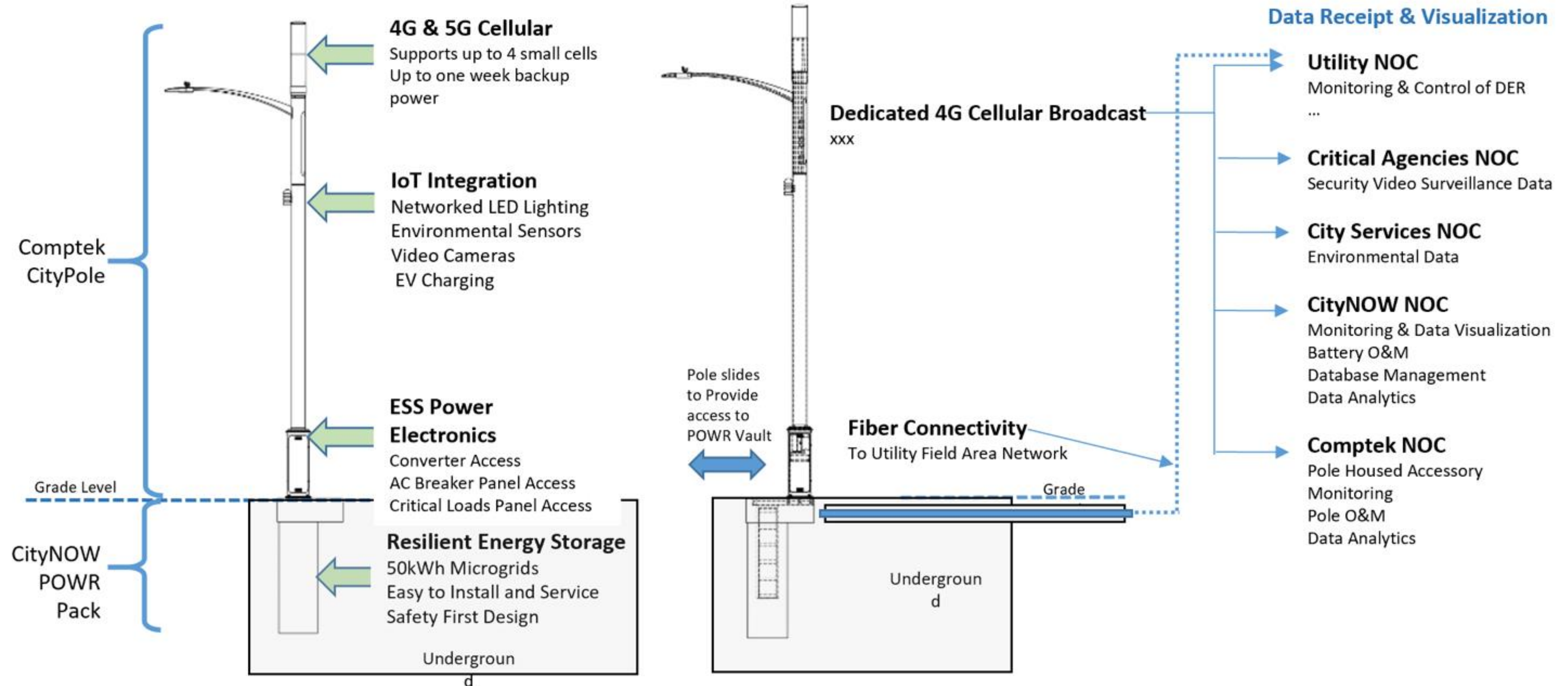
Allows New Pole Configurations with minimal impact.

Flex-Rail System to simplify mounting.

Thermal Management System and remote monitoring.



CityPole Power Vault - Network Resiliency



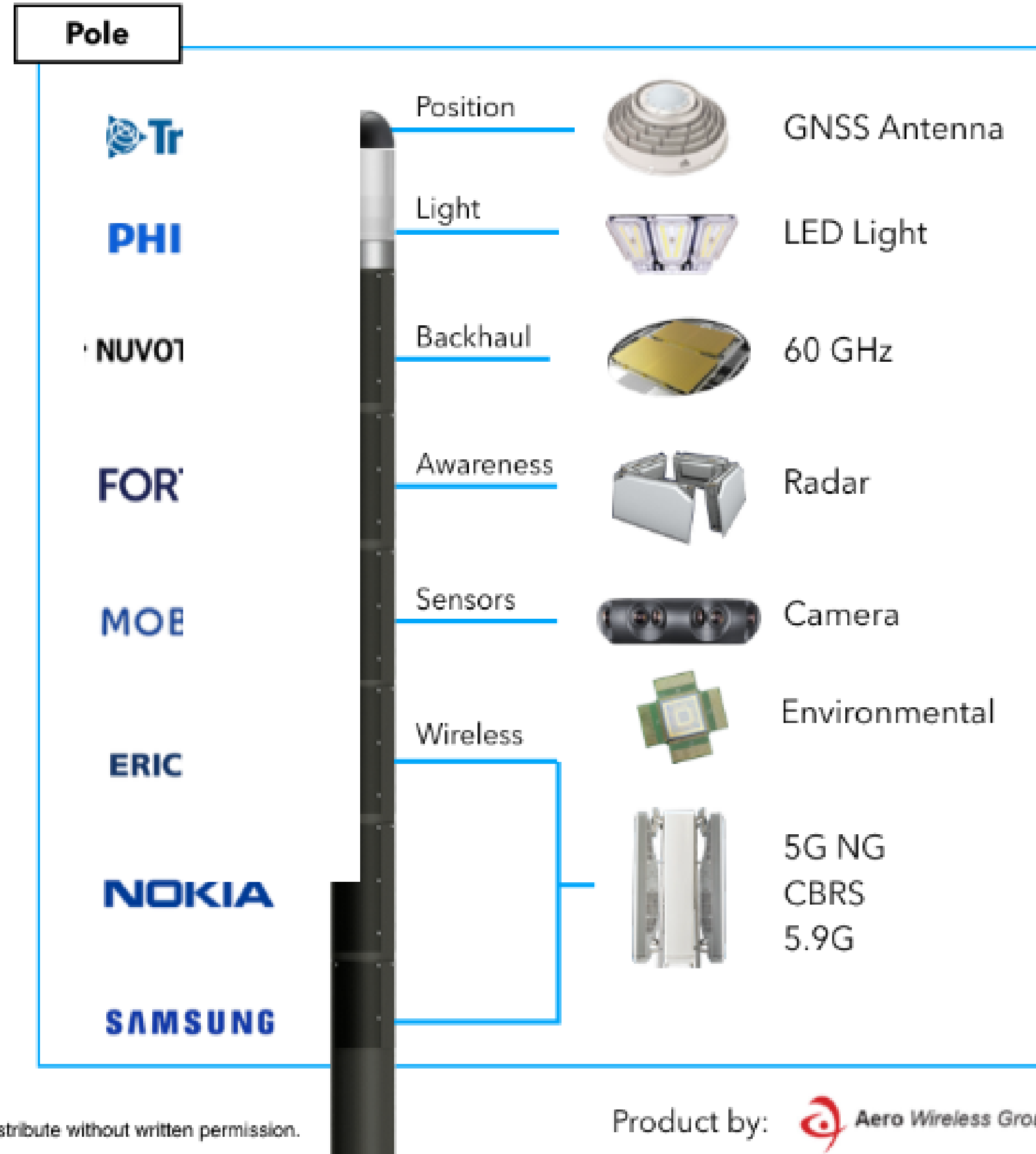
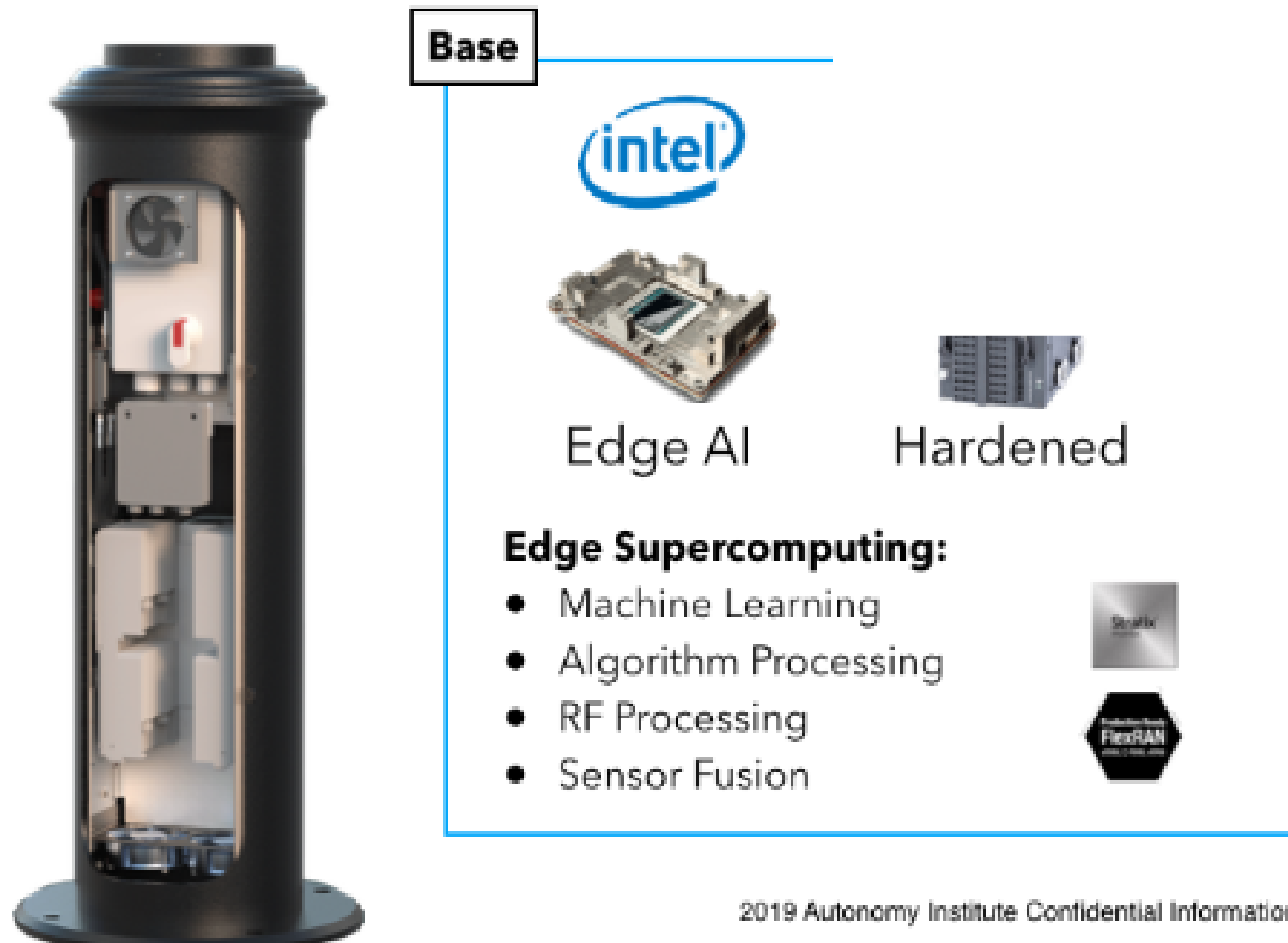


Public Infrastructure Network Node (P)

AIRE - RAAS CERTIFIED PLATFORM

Unified City Infrastructure:

- Radio Access Networks (5G)
- Edge Computing
- Situational Awareness (Radar, cameras, sensors)
- Precision Navigation
- Intelligent Transportation Systems



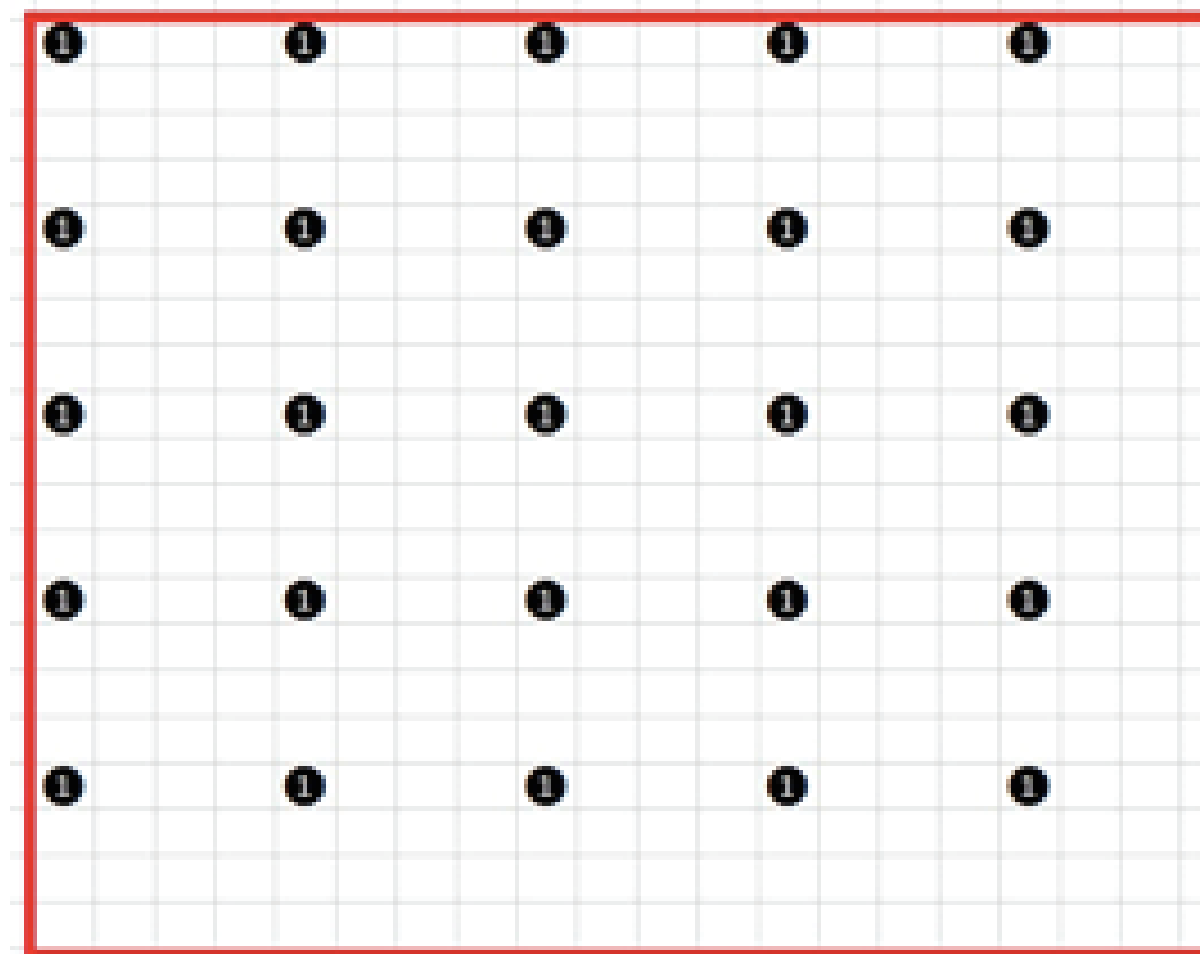
Why Fiber: 5G Densification

To go to 4G requires 25X more fiber

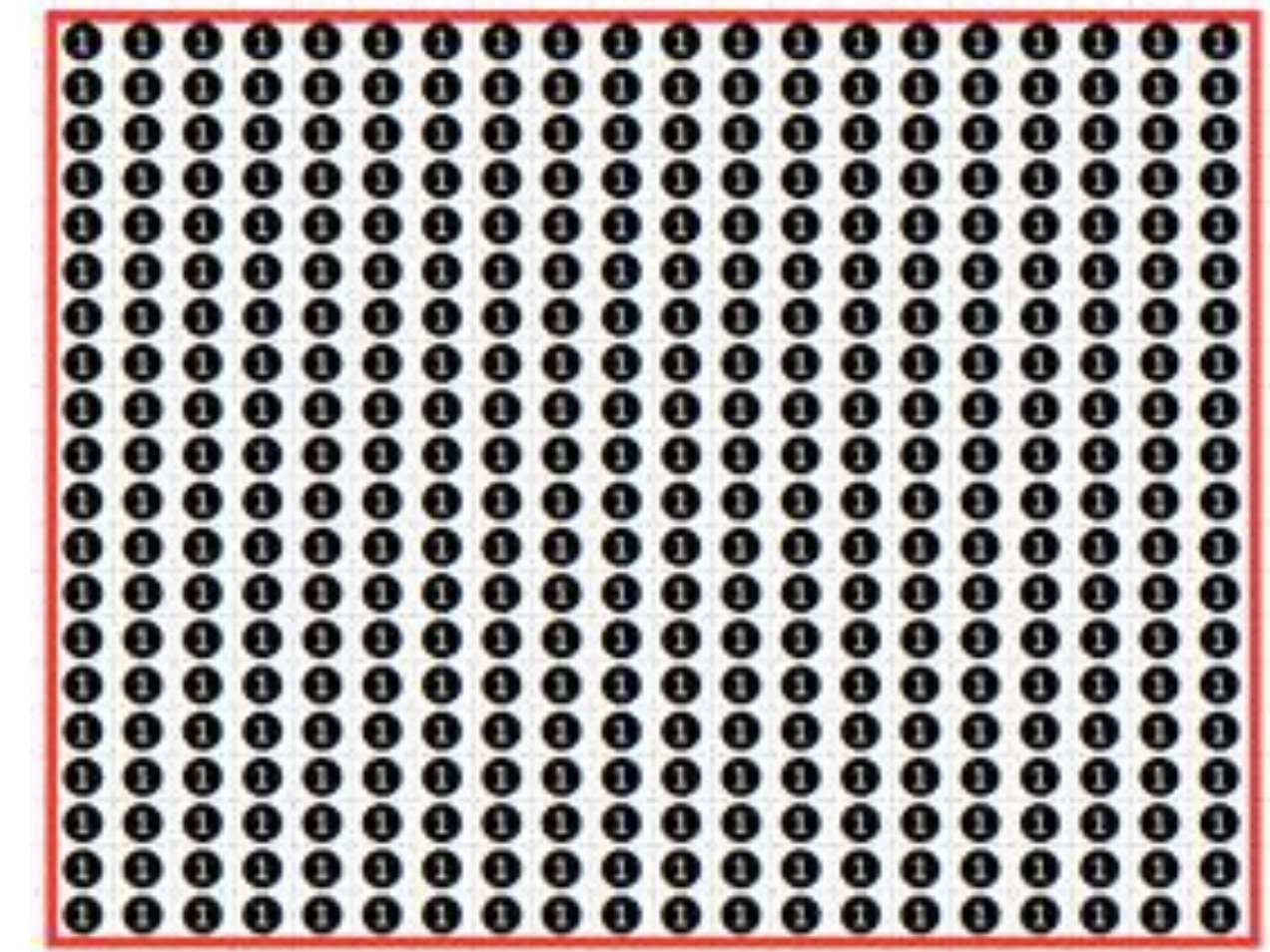
To go to 5G requires at least 16X more fiber



3G
1 site every 10 km
Cell density=1 cell/100 km²



4G
1 site every 2km
Cell density= 5 x 5
= 25 cells/100 km²



5G
1 site for every 0.5 km
Cell density= 20 x 20
= 400 cells



Getting Your Fair Share

There are currently over **1,000** grant programs administered by **26 federal agencies** providing more than **\$400 billion** to states and local governments through grants, formula allocations and other payments

Who is Funding Smart Technology Purchases?

Funds are primarily available from:

Department of Justice

Department of Homeland Security

Department of Housing and Urban Development

Department of Transportation

- There is no penalty for pursuing multiple federal funding sources
- The majority of these funding opportunities do not have a match requirement.



Sample USDOJ Funding Sources

| Opportunity | Annual Funding |
|--|----------------|
| Strategies in Policing Innovation | \$4,500,000 |
| Comprehensive School Safety Initiative | \$65,000,000 |
| Community Policing Development Grant | \$3,000,000 |
| Byrne Criminal Justice Innovation Grant | \$3,000,000 |
| Body-Worn Camera Policy and Implementation Program | \$23,000,000 |
| Reprogramming of Prior Year Funding | Unlimited |

Key Indicators of Funding Success

- Have a plan to improve quality of life for your residents using smart technology as a tool (its about the use case, not the shopping list)
- Show a local commitment to this effort, including community partners, both government and non-government
- Have early conversations with federal program managers
- When needed, identify and establish researcher partnerships early
- Compile data to support your request
- Arm your federal elected officials to advocate for you
- Demonstrate a history of solid stewardship of grant funding (funding begets funding)