

Future of Wireless

March 2018



CTIA Represents the U.S. Wireless Industry

Members Include:

- Wireless carriers
- Device manufacturers
- Suppliers
- App companies



Wireless is Everywhere

TODAY, NEARLY EVERY AMERICAN HAS HIGH-SPEED MOBILE BROADBAND



- There are **395.9 million** wireless connections in the U.S. — more than our population
- **99.6%** of Americans have access to 4G LTE networks

The Wireless Industry Powers Our Economy

CREATING NEW AMERICAN JOBS AND OPPORTUNITIES



The wireless industry adds **\$400B** annually to our economy.



The Brattle Group

MAY 2015

4.6 M
JOBS

Americans jobs rely directly or indirectly on the wireless industry.

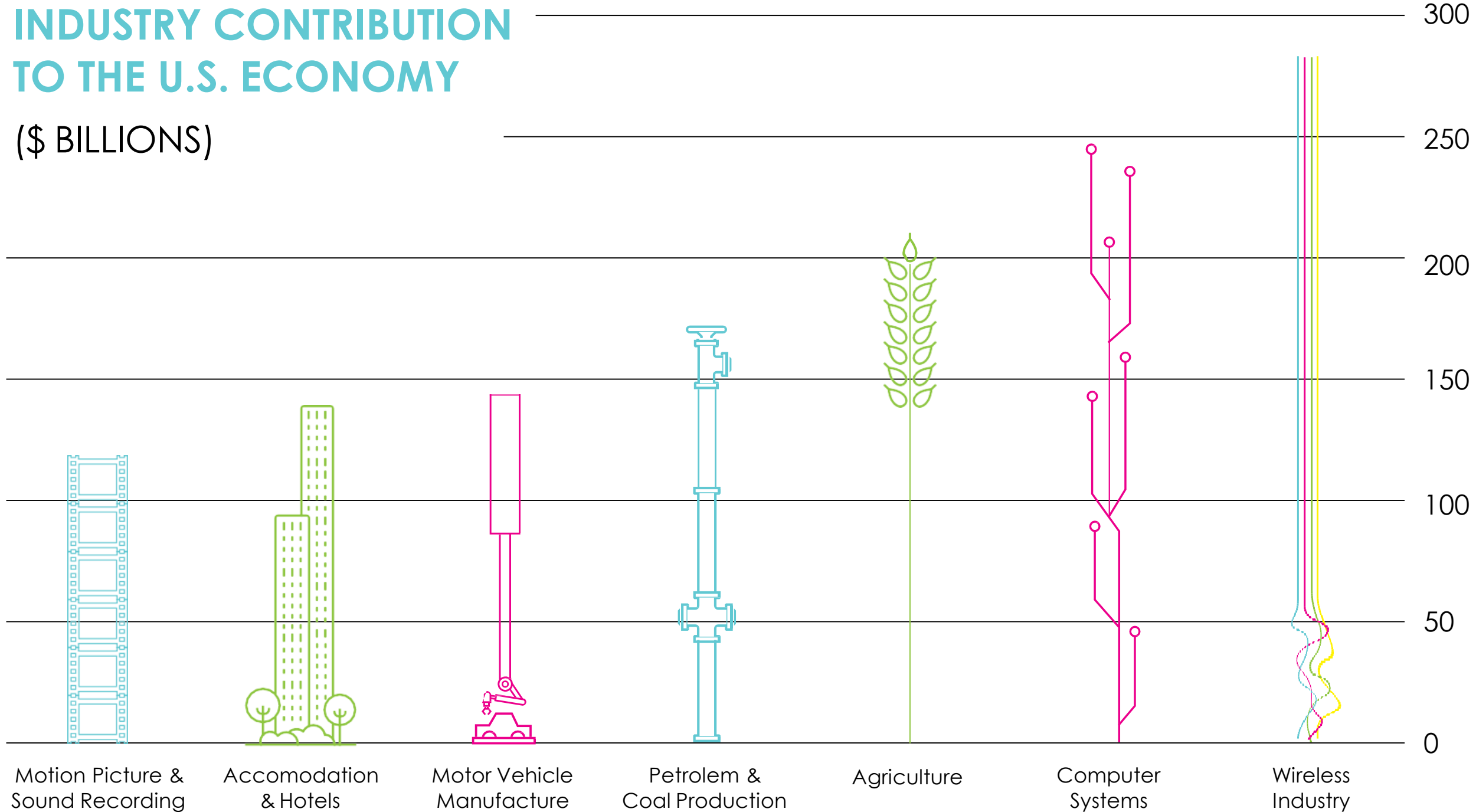
JOB
MULTIPLIER

6.5 jobs are created every time the wireless industry employs **one** person.

1.66M
JOBS

The app economy means more jobs for Americans.

THE WIRELESS INDUSTRY IS CRUCIAL TO THE NEW U.S. ECONOMY



Wireless Powers New York

- **193,000 JOBS:** The number of jobs the industry supports in New York, which doesn't include related construction jobs.
- **\$28.2 BILLION:** The amount the industry generates for New York's GDP.



For decades, the evolution of communications technology has laid the foundation for broad economic growth across the United States benefitting towns and cities large and small.



Accenture Strategy

JANUARY 2017



Mobile Data Traffic

WILL CONTINUE TO SURGE

By 2021:

- Mobile data will be **5x** 2016's record levels
- Mobile connections will increase **30%**



5G is the Answer to Consumers' Growing Data Usage

4G MADE NETWORKS FASTER AND OUR LIVES EASIER

5G WILL BE A MASSIVE LEAP



5G Benefits And Wireless Network Investment

IMPROVE COMMUNITIES ACROSS AMERICA



3M

NEW JOBS



\$500B

CONTRIBUTION
TO GDP



\$275B

NEW WIRELESS
INVESTMENT



\$160B

SMART CITY BENEFITS
AND SAVINGS

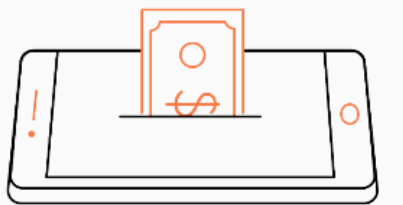
"How 5G Can Help Municipalities Become Vibrant Smart Cities," Accenture Strategy, Jan 12, 2017, available at: https://newsroom.accenture.com/content/1101/files/Accenture_5G-Municipalities-Become-Smart-Cities.pdf

5G Economic Benefits: New York

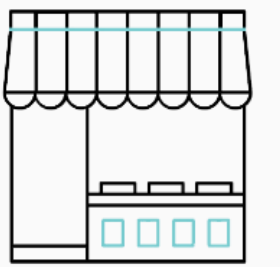
- **New York City**
 - 80,000 jobs created
 - Over \$4.9 billion in Smart City benefits
 - \$13 billion in estimated GDP growth
- **Hempstead**
 - Over 7,100 jobs created
 - Over \$444 million in Smart City benefits
 - \$1.1 billion in estimated GDP growth
- **Albany**
 - 900 jobs created
 - Over \$56 million in Smart City benefits
 - \$149 million in estimated GDP growth
- **Syracuse**
 - Nearly 1,300 jobs created
 - Over \$82 million in Smart City benefits
 - \$218 million in estimated GDP growth
- **Buffalo**
 - Over 2,300 jobs created
 - Over \$148 million in Smart City benefits
 - \$391 million in estimated GDP growth
- **Rochester**
 - Over 1,900 jobs created
 - Nearly \$120 million in Smart City benefits
 - \$318 million in estimated GDP growth

Improving Communities Across America,
from small towns to big cities.

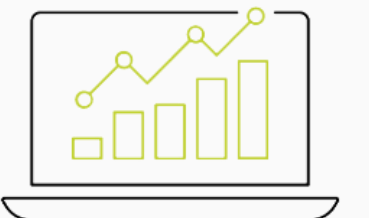
✓ \$275B New Wireless Investment



✓ 3 Million New American Jobs

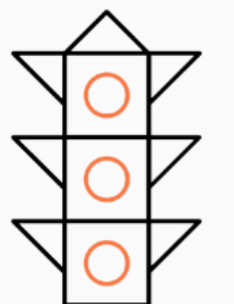


✓ \$500B Contribution to GDP

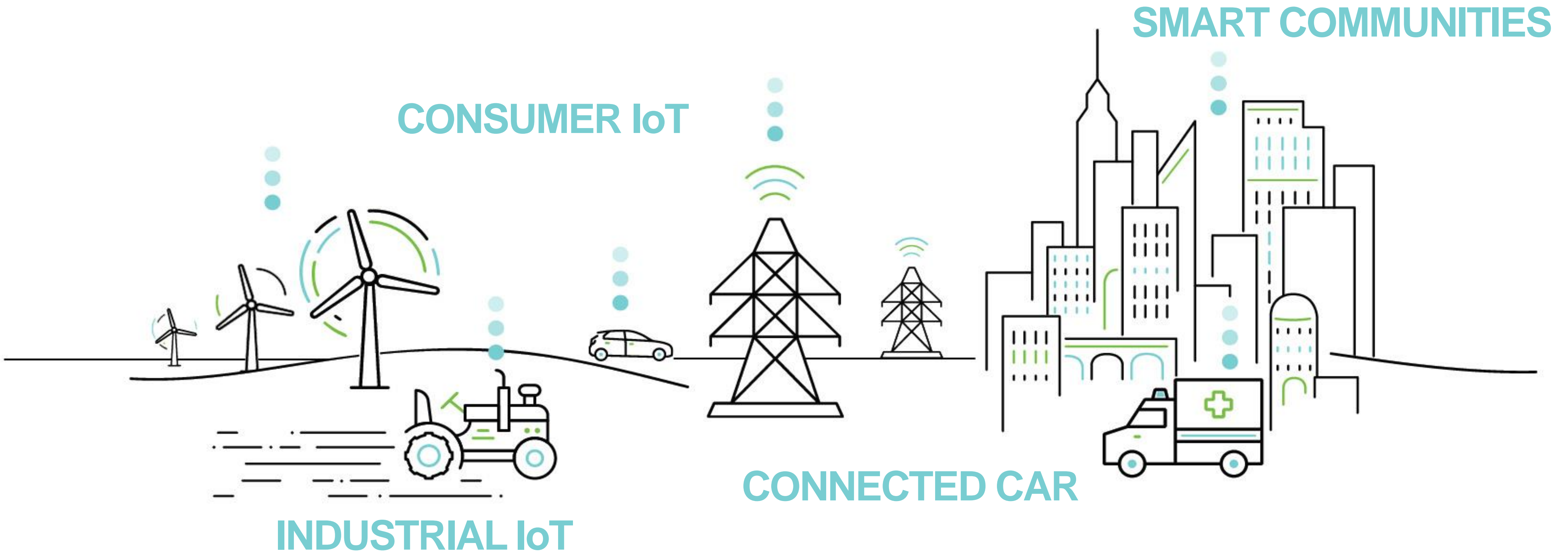


✓ \$160B in Smart Community
Benefits & Savings

by reducing energy usage, decreasing traffic
congestion and reducing fuel costs



| 5G Connecting Everything



Consumer and Industrial IoT

SAFER LIVES



HEALTH CARE

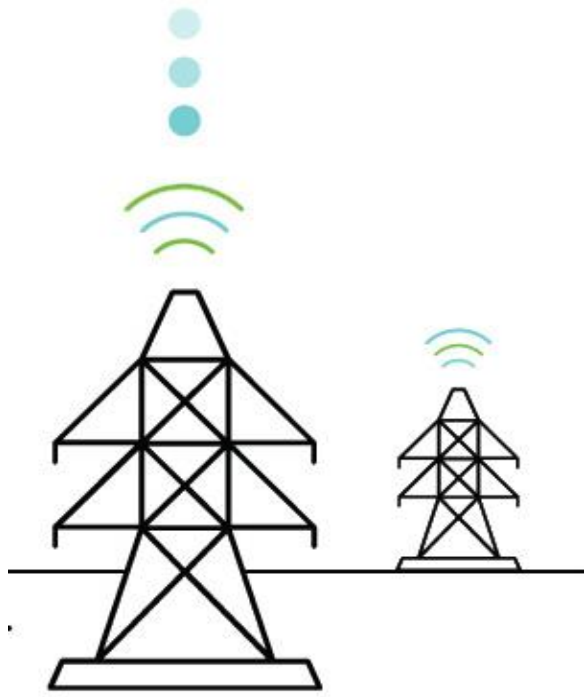
Wireless connectivity will save lives and \$305B per year in health costs.



PUBLIC SAFETY

5G can help save lives. A 60 second improvement in first responder response time translates to a reduction of 8% in mortality.

Smart Communities and Connected Car



SMART GRIDS

Wireless-enabled energy distribution can help save \$1.3T



AUTONOMOUS CARS

Wireless-powered self-driving cars could save over **20,000 lives**, and nearly \$450B, each year.

Small Cells

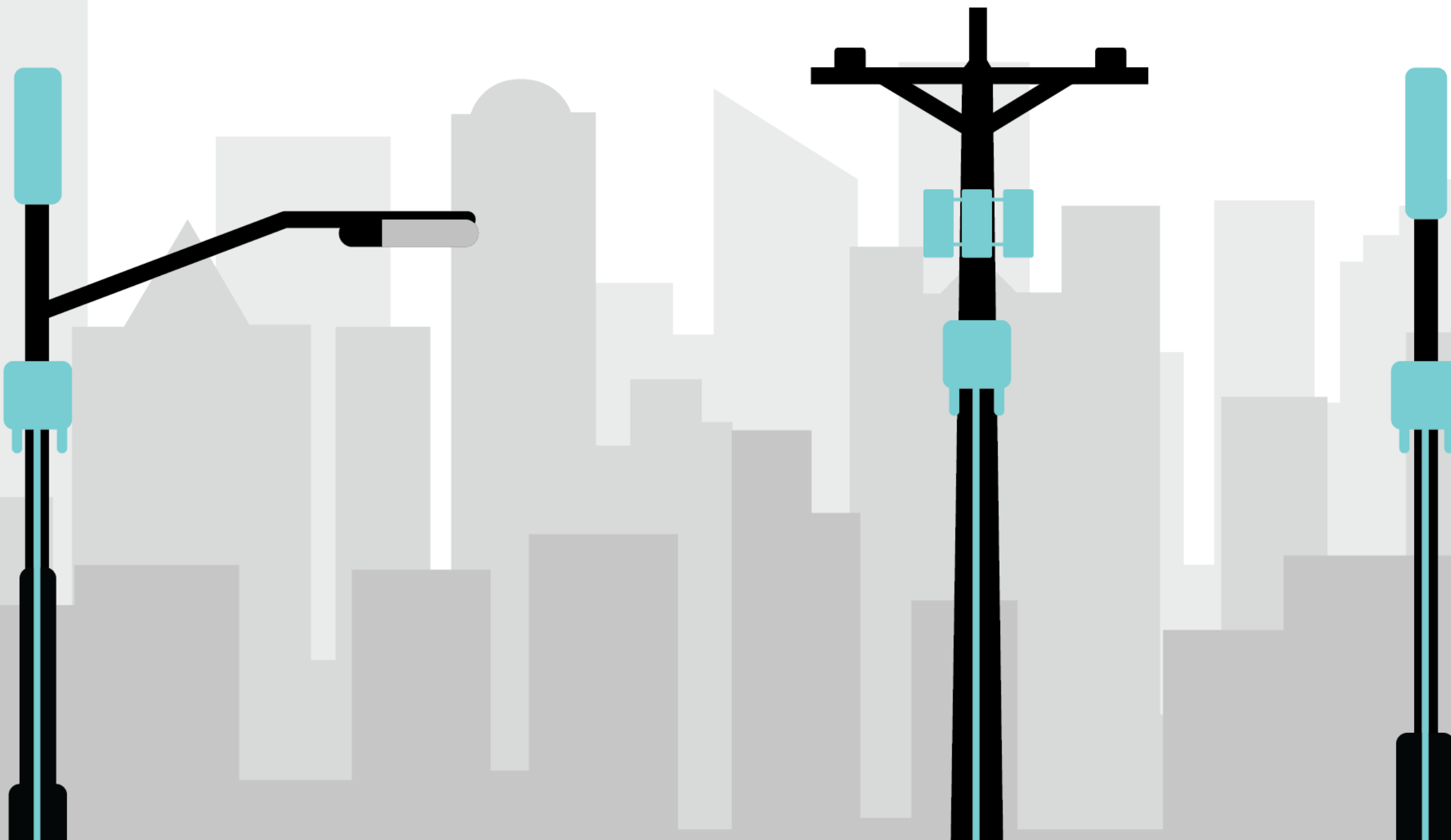
WHAT'S NEXT

- **NEW OPPORTUNITIES.** Network can now be extended on common structures like municipal street lights and utility poles
- **~300K.** Number of small cells needed in next 3-4 years



Small Cells

Small cells are wireless antennas that can be placed on an existing structure such as a streetlight, rooftop, utility pole.



Small Cells



Small Cells

THE CHALLENGES

- **DENIED ACCESS.** Rules do not contemplate small cells
- **DELAY.** 2+ year process to site a single small cell
- **COST.** Fees that do not correspond to actual cost

New Networks, New Rules

- **GREATER ACCESS.** Improved access to municipal facilities and rights of way
- **REDUCED COSTS.** Reasonable cost-based fees for new 5G deployments
- **MODERNIZED PROCEDURES.** Improved timelines and more uniform standards



Cities and towns which are first to facilitate the wireless infrastructure evolution will see the greatest benefit.



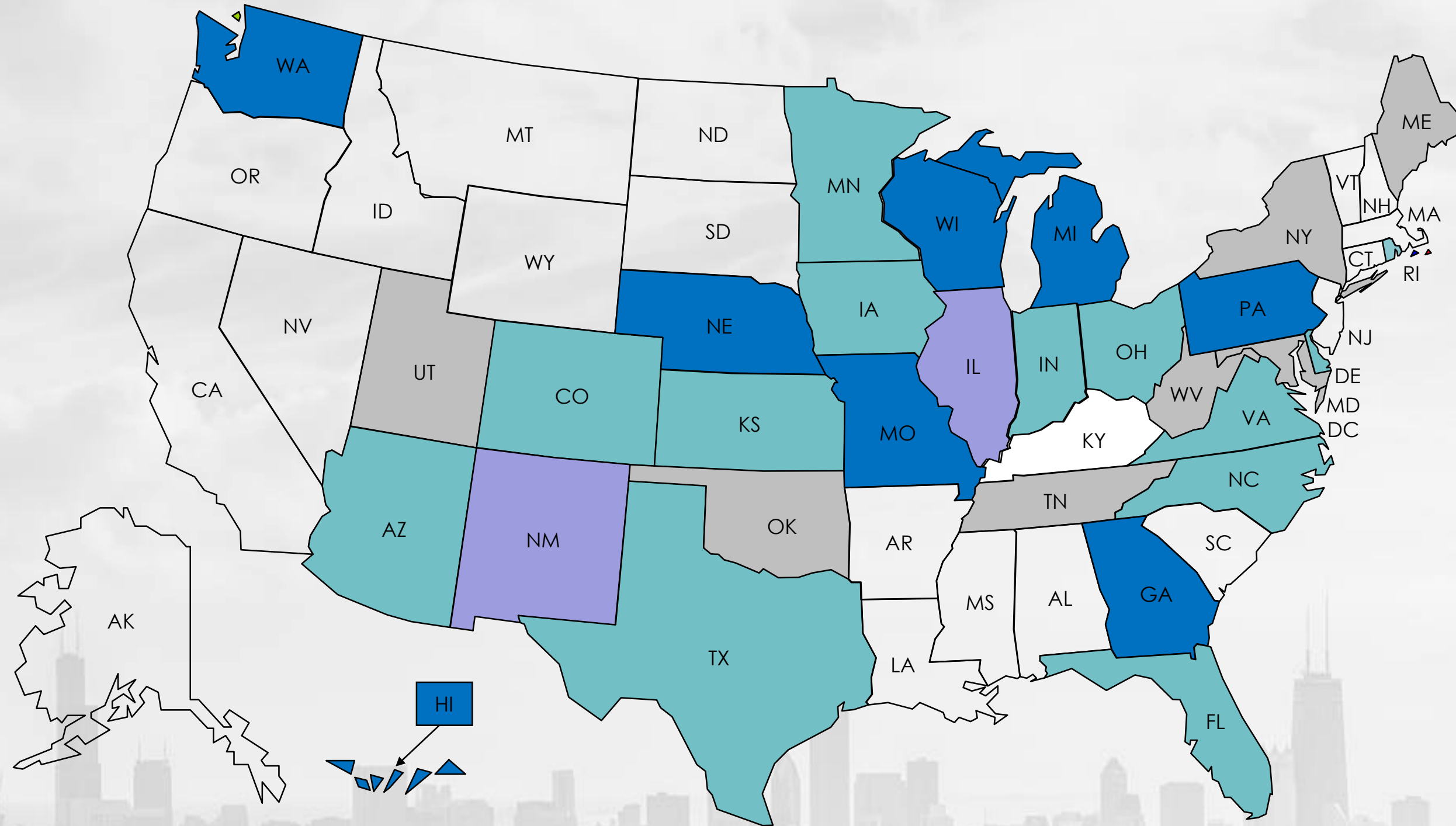
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Municipalities' Key Role

- Cities and towns retain **local oversight** over the permitting process, and have the right to deny an application that does not meet objective requirements
- Municipalities **retain requirements** for building, electrical and public way use permits

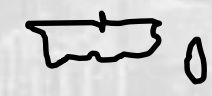
State Small Cell Legislative Activity



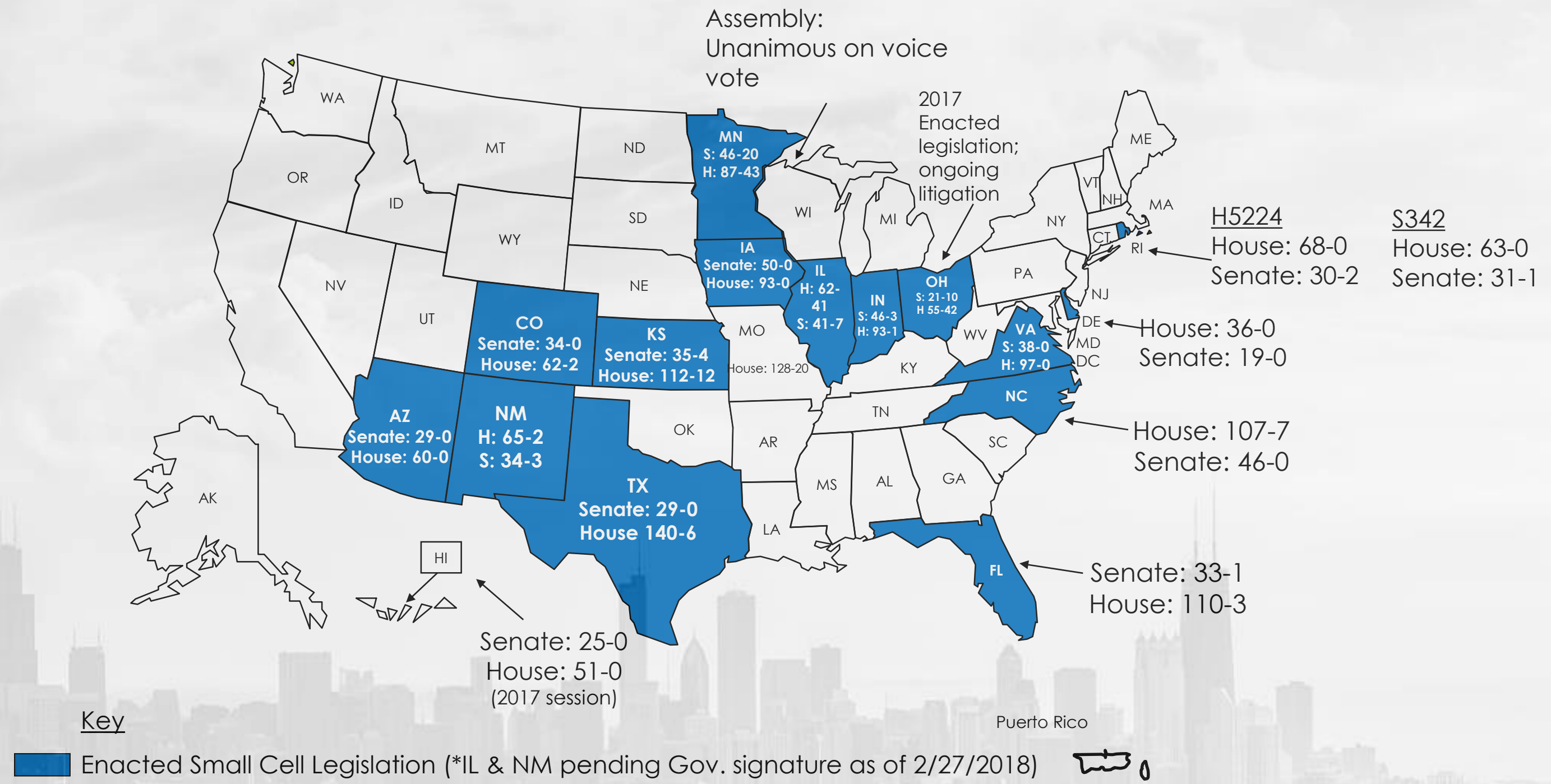
Key

- Enacted Small Cell Legislation
- Pending/Carryover Legislation from 2017 Session
- 2018 Introduction
- Pending Governor signature (as of 2/26/18)

Puerto Rico



Small Cell Legislation: Nonpartisan Issue





Beth Cooley

Senior Director, State Legislative Affairs
CTIA



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