



AT&T Small Cells – Washington

Enhancing our network to meet consumer demand today while preparing for the technologies and innovations of tomorrow.

Meridee Pabst – Wireless Policy Group



Why small cells?



Consumer and business demand for wireless data is on the rise.



Small cells are critical to provide reliable wireless service coverage

- 95% of Americans own a cellphone and 77% own a smartphone. ¹
- More than 62% of American households rely on wireless as their primary means of communication. ²
- 80 percent of all 911 calls came from cell phones. ³
- 470,000% increase in data traffic from January 2007 through December 2018. ⁴
- 98% of small businesses rely on wireless technology. ⁵
- Existing macro sites have limited capacity.
- Residents use smartphones, tablets, laptops at home—all drive the need for reliable and expanded connectivity.

1. <http://www.pewinternet.org/fact-sheet/mobile/>

2. <https://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201605.pdf>

3. <https://www.nena.org/page/911Statistics>

4. https://about.att.com/innovationblog/2019/01/restaurant_industry_5g_updates.html

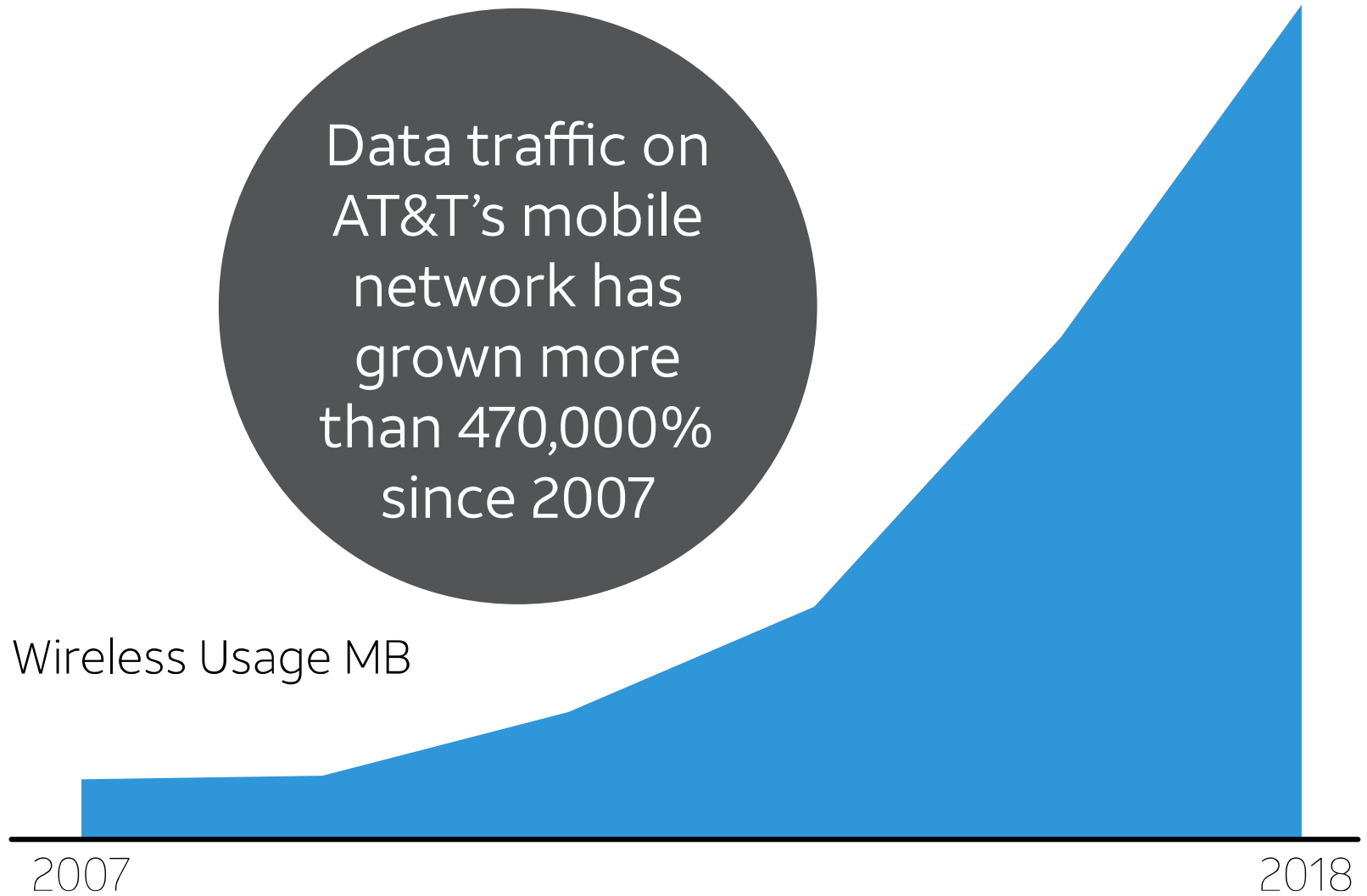
5. <https://smallbiztrends.com/2013/05/small-business-use-wireless.html>



What the demand looks like on AT&T's network:

Data traffic on AT&T's mobile network has grown more than 470,000% since 2007

Wireless Usage MB



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Ways to Increase Wireless Network Capacity

①

Deploy more spectrum

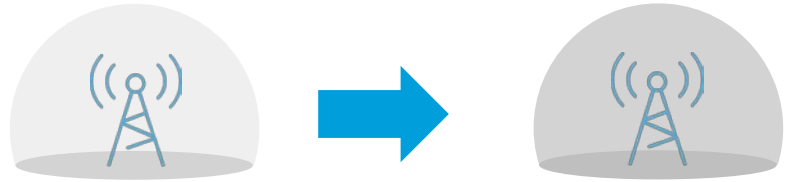
- Spectrum is *not readily available*



②

Improve spectrum efficiency

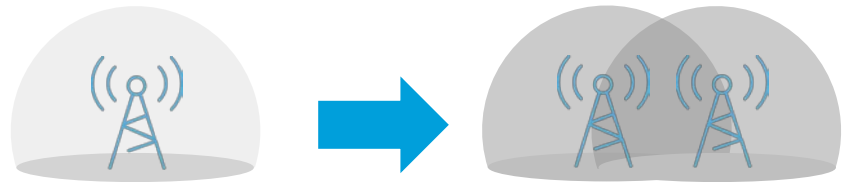
- Repurposing existing spectrum
- e.g., 3G carves for LTE



③

Add more macro (cell sites) cells

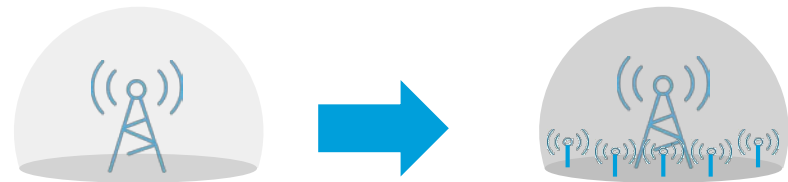
- Optimal for low concentration areas



④

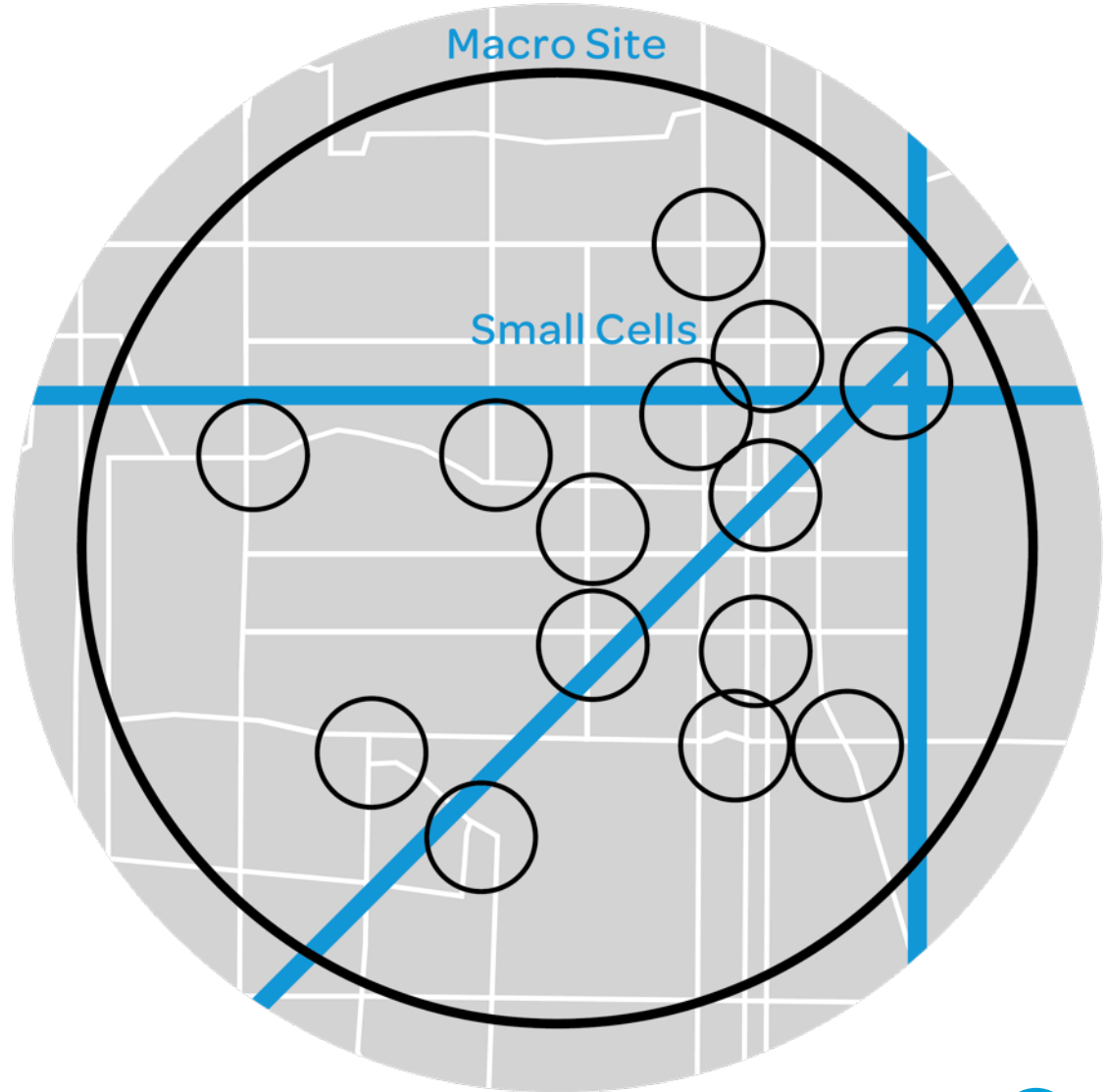
Add more small cells

- Offloads surrounding macro sites





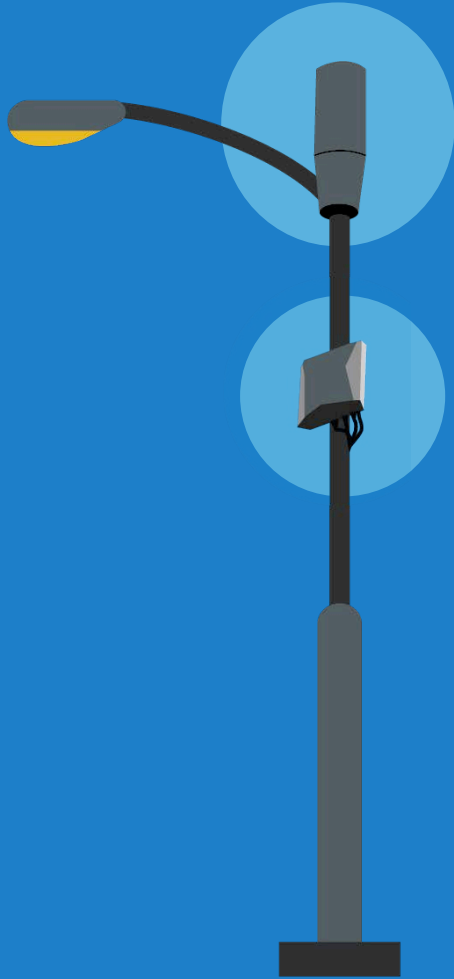
Small cells can
densify our
network to
meet customer
demand



What is a small cell?



What is a Small Cell?



A new network architecture is needed

Small cells are **flexible, targeted** network solutions that cover a radius up to 1200+ feet & can be readily deployed to specific locations, including:

- Where customers are prone to experience connectivity issues
- Heavily populated areas that need more network capacity
- Areas that can't effectively be served by a traditional macro cell

This allows us to provide a better LTE experience today while also allowing us to prepare for the technologies of the future such as 5G, smart cities and new developments in the Internet of Things (IoT).

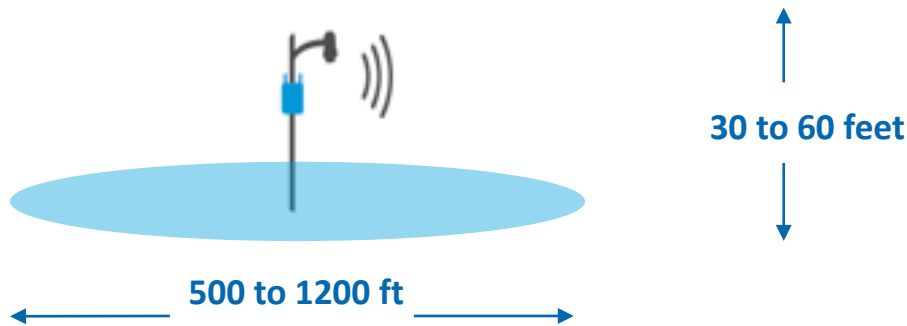
This photo depicts an example of what a small cell could look like. Actual size, shape and dimensions may vary by location.

The footprint, or service area, of a site is determined by height and by frequency band



Macrocell (4G LTE)

The common form factor for wireless communication. Higher height and lower frequencies used result in the larger service area.



Current Small Cell (4G LTE)

Uses the same frequencies as macrocells, in addition to utilizing unlicensed spectrum. Due to lower height, footprint is smaller. Increases capacity or coverage in target areas.



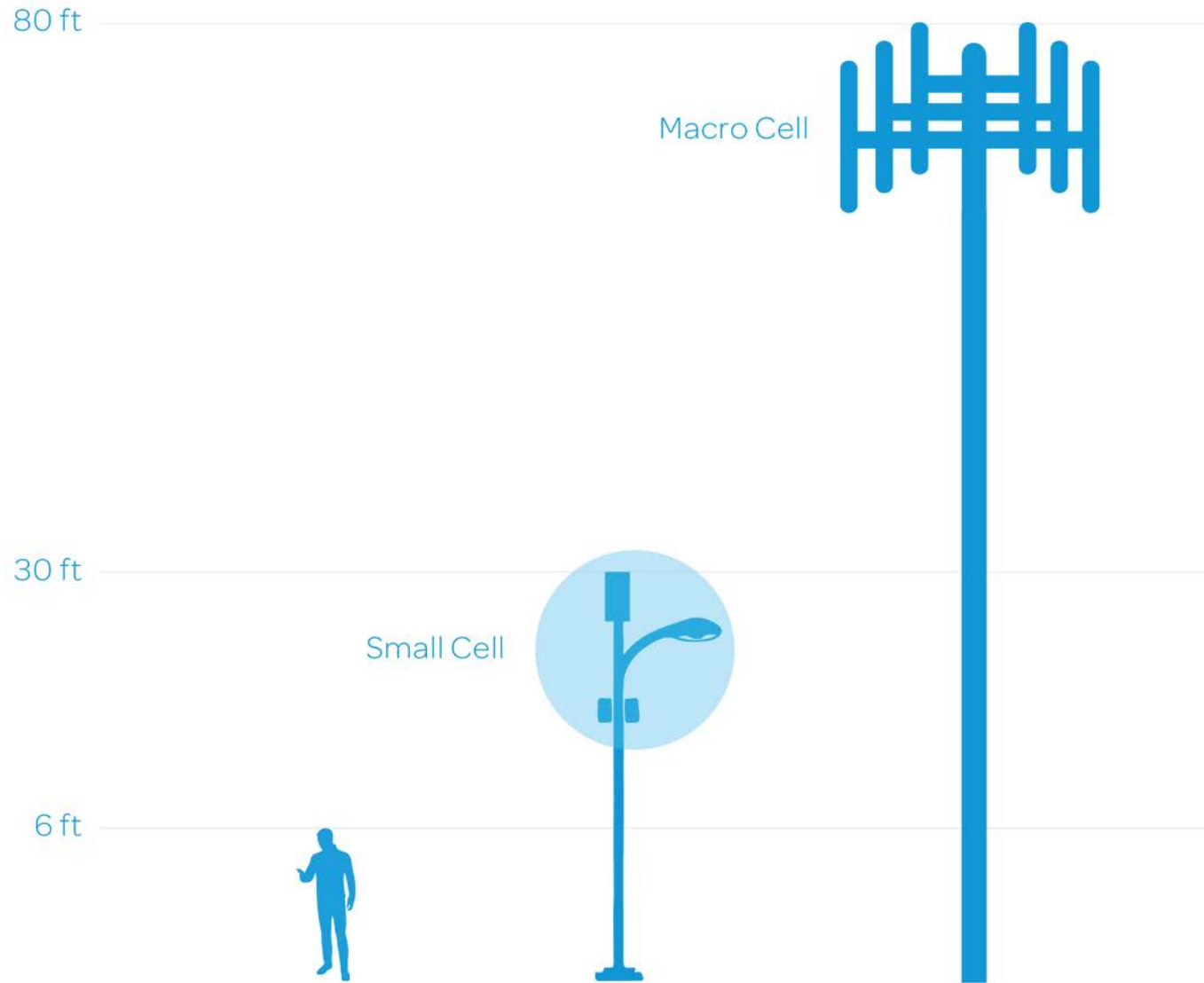
Future Small Cell (5G)

Very high frequencies enabled by future 5G technology will result in a smaller footprint, but can be used to meet the exponential increased capacity demand. These frequencies are not used for wireless service today.

- Heights and service areas are approximations
- Small cell sites supplement vs. replace macrocell sites



Different technology, different process



This slide depicts a graphical representation of small cells and macro cells. The actual equipment, size and design may vary.



Examples of small cells deployed in communities



Eugene, OR



Dallas, TX



Indianapolis, IN



San Francisco, CA



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