Sprinting to 5G

Opportunities & Challenges

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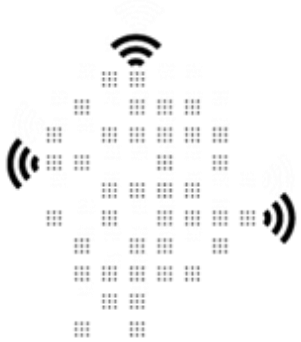
Legacy networks weren't designed to handle the demands of the connected future

Higher capacity

10x more traffic

Higher DL speeds

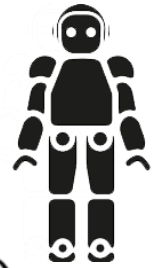
1-10 Gbps



Higher density

1,000x more devices

Low cost
Low power



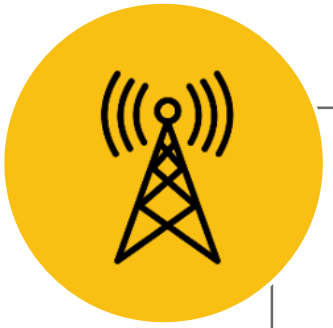
Low latency

Ultra reliable

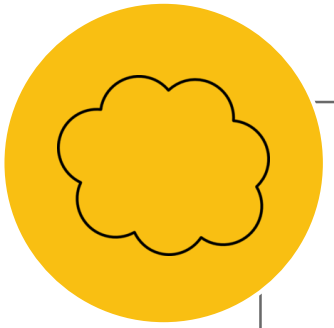
1st U.S. 5G mobile broadband

What it takes to build a 5G Mobile Network

Spectrum: Optimize spectrum plan for 5G and fill in market gaps



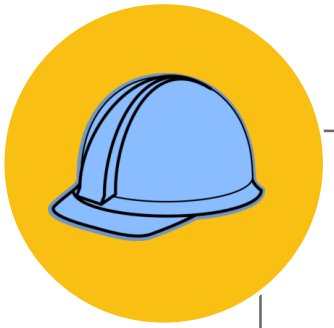
Sites: enable 5G+LTE dual capability on massive MIMO sites (for Sprint)



Core: Expand LTE Core and evolve to a Next-Gen 5G Core

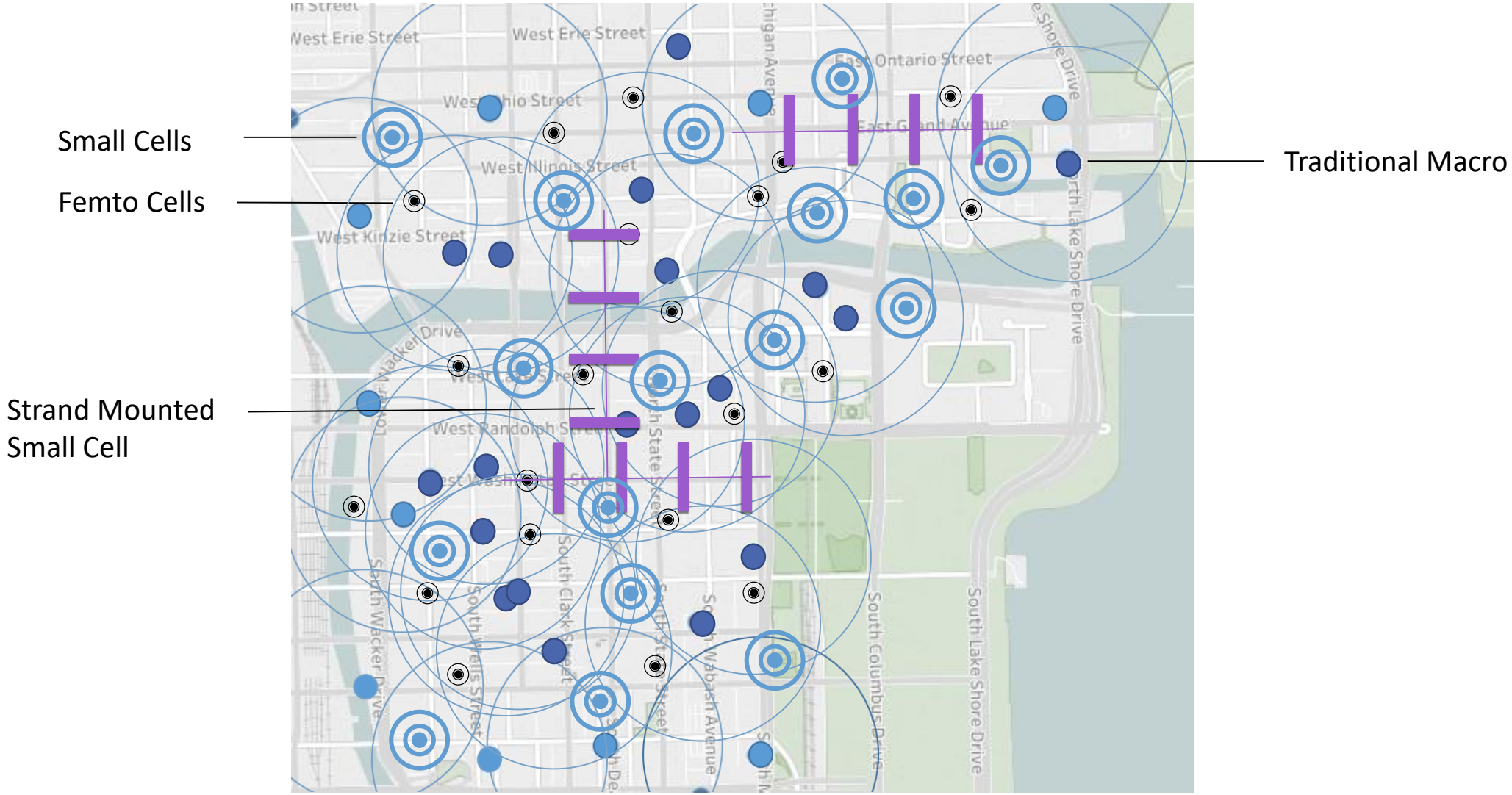
Backhaul: Upgrade all sites to support 5G peaks and averages

Device: Work with the device ecosystem to build new 5G devices

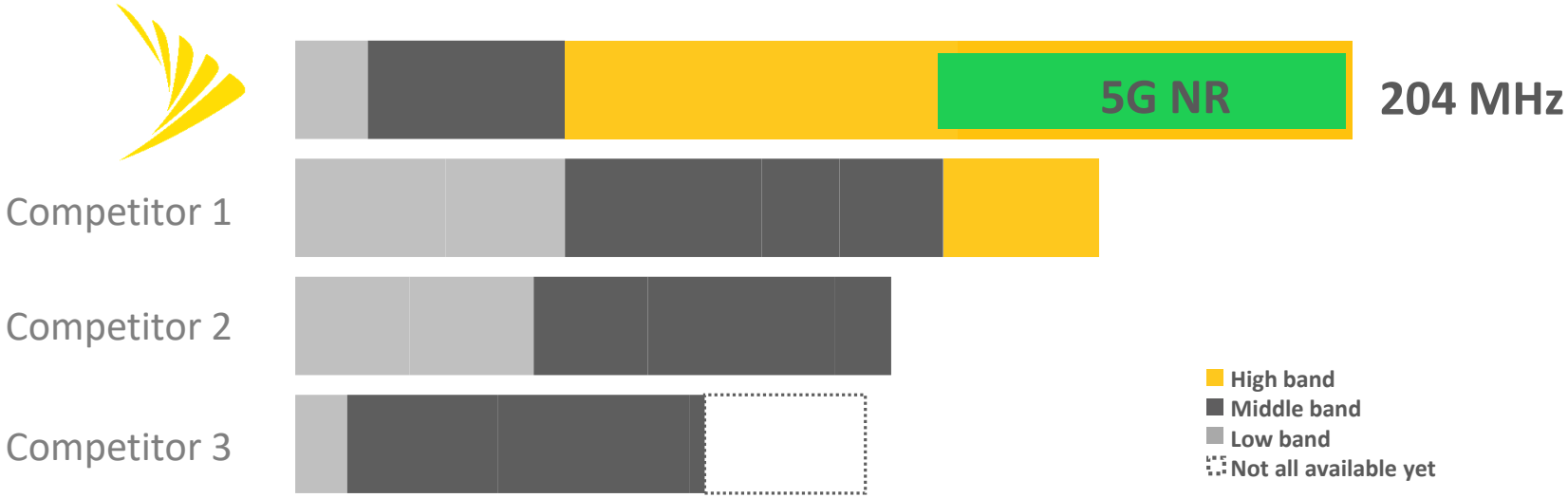


Deployment: Densify and upgrade sites, evolve to 5G

Network Densification for 5G

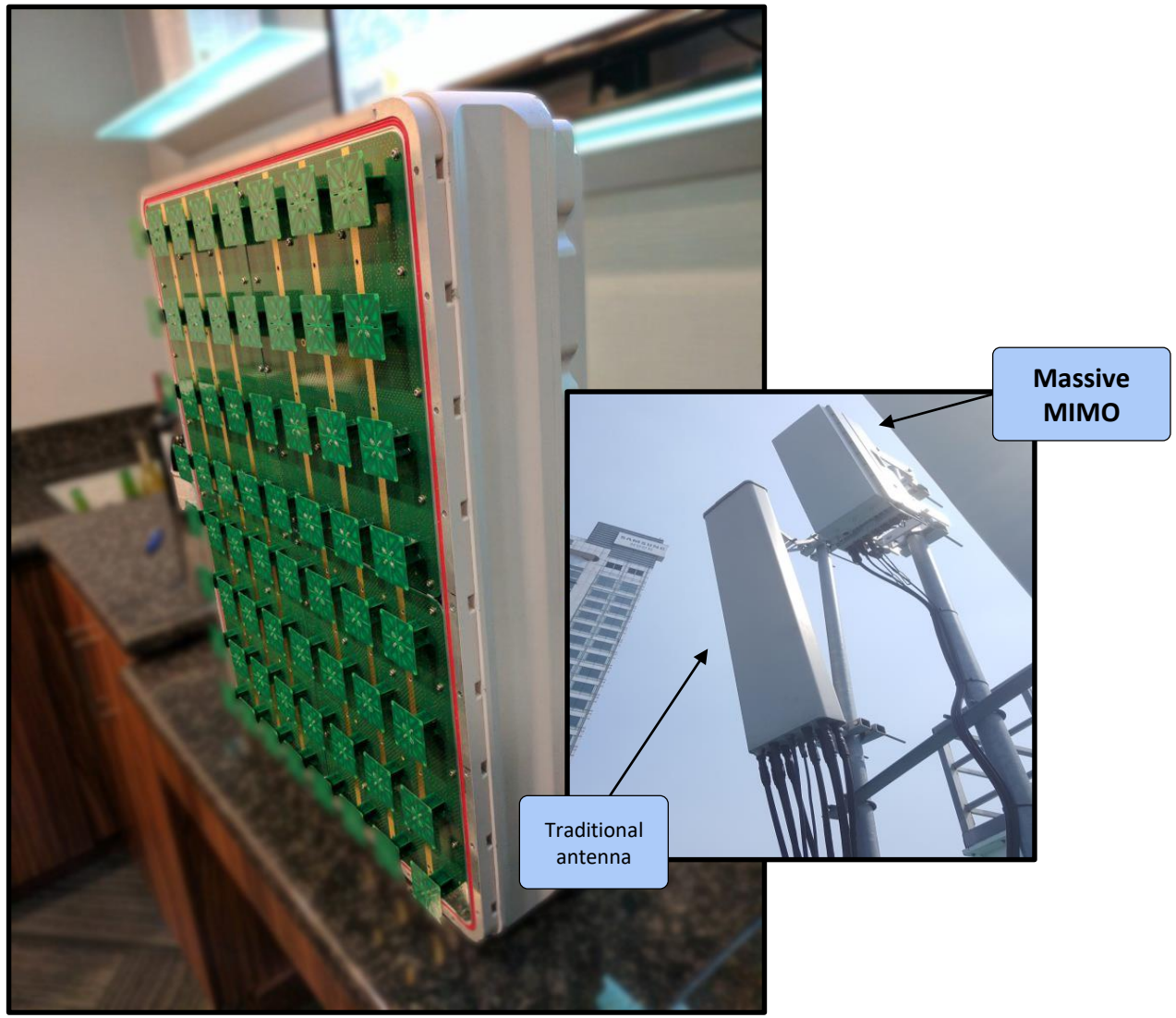


Sprint's 5G Build will Leverage our Strong Spectrum Position in 2.5 GHz



UL/DL MHz combined.
Relative holdings based on Nationwide, population-weighted average spectrum.

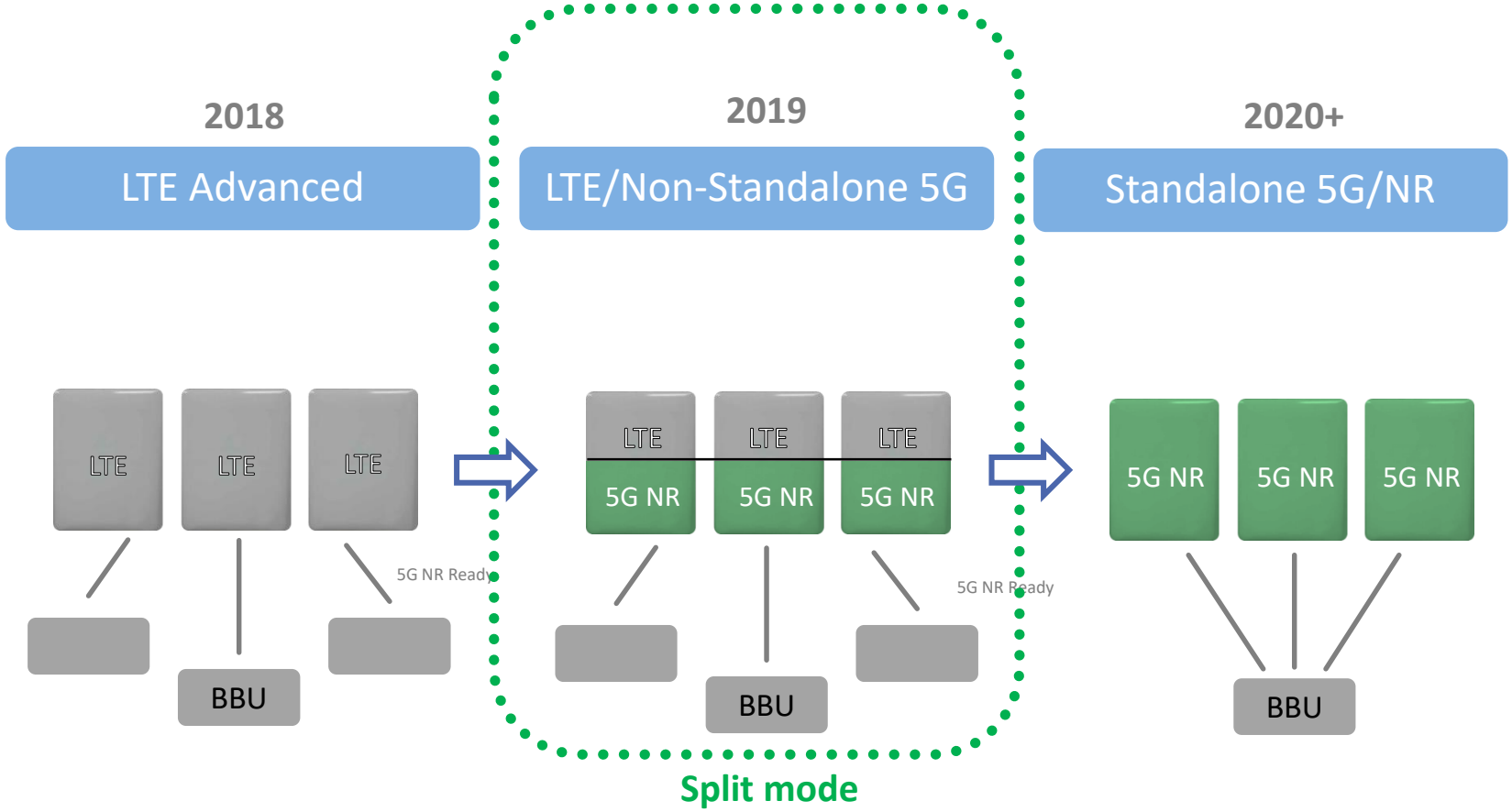
We will leverage Massive MIMO for 5G



Massive MIMO leverages a massive number of antennas and advanced antenna beamforming to improve performance

- Key enabler of 5G Technology
- Sprint will deploy 64T64R Massive MIMO (128 Antenna Elements) at 2.5 GHz
- Upgrade thousands of 2.5 GHz sites with Massive MIMO to support LTE and 5G simultaneously at existing sites

Sprint's Evolution to 5G with TDD Massive MIMO



- Split Mode will support LTE and 5G simultaneously on the same Hardware
- Will use dedicated spectrum chunks for LTE Advanced and for 5G

Support needed to win the global race for 5G

- **Reform NEPA/NHPA REVIEW PROCESSES**
  FCC completed on March 22, 2018
- **Create streamlined and predictable process to build wireless sites on public structures**
- **FCC to release more spectrum for 5G**
- **Reduce fees required for small cell installations**