



T-Mobile

Small Cells, a tool in the Carriers Tool Kit

August 15, 2017

# About T-Mobile

As America's Un-carrier, T-Mobile US, Inc. (NASDAQ: TMUS) is redefining the way consumers and businesses buy wireless services through leading product and service innovation. The Company's advanced nationwide 4G LTE network delivers outstanding wireless experiences to 72.6 million customers who are unwilling to compromise on quality and value. Based in Bellevue, Washington, T-Mobile US provides services through its subsidiaries and operates its flagship brands, T-Mobile and MetroPCS.

## Headquarters

Bellevue, Washington

## Coverage

T-Mobile USA is a national provider of wireless voice, messaging, and data services capable of reaching over 308 million Americans where they live, work, and play.

## Number of Employees

Approximately 50,000 employees.

## Ownership

T-Mobile US, Inc. (NASDAQ: "TMUS") is a publicly traded company. Deutsche Telekom AG (OTCQX:DTEGY) maintains approximately 65% ownership (approximately 63% upon preferred stock conversion).

<https://www.t-mobile.com/company/company-info/overview/quick-facts.html>

# Small cells – Co-existence with existing facilities

## Wireless Usage Growing

As wireless usage grows due to explosion of smart phones, we are relying on our phones more and more to perform tasks which were done at home on a computer. Apart from watching videos, streaming music and social media on the phone, we also use them for vital tasks like work emails, home security, banking, shopping etc. This is created a big demand for data and is causing capacity constraints on our network.

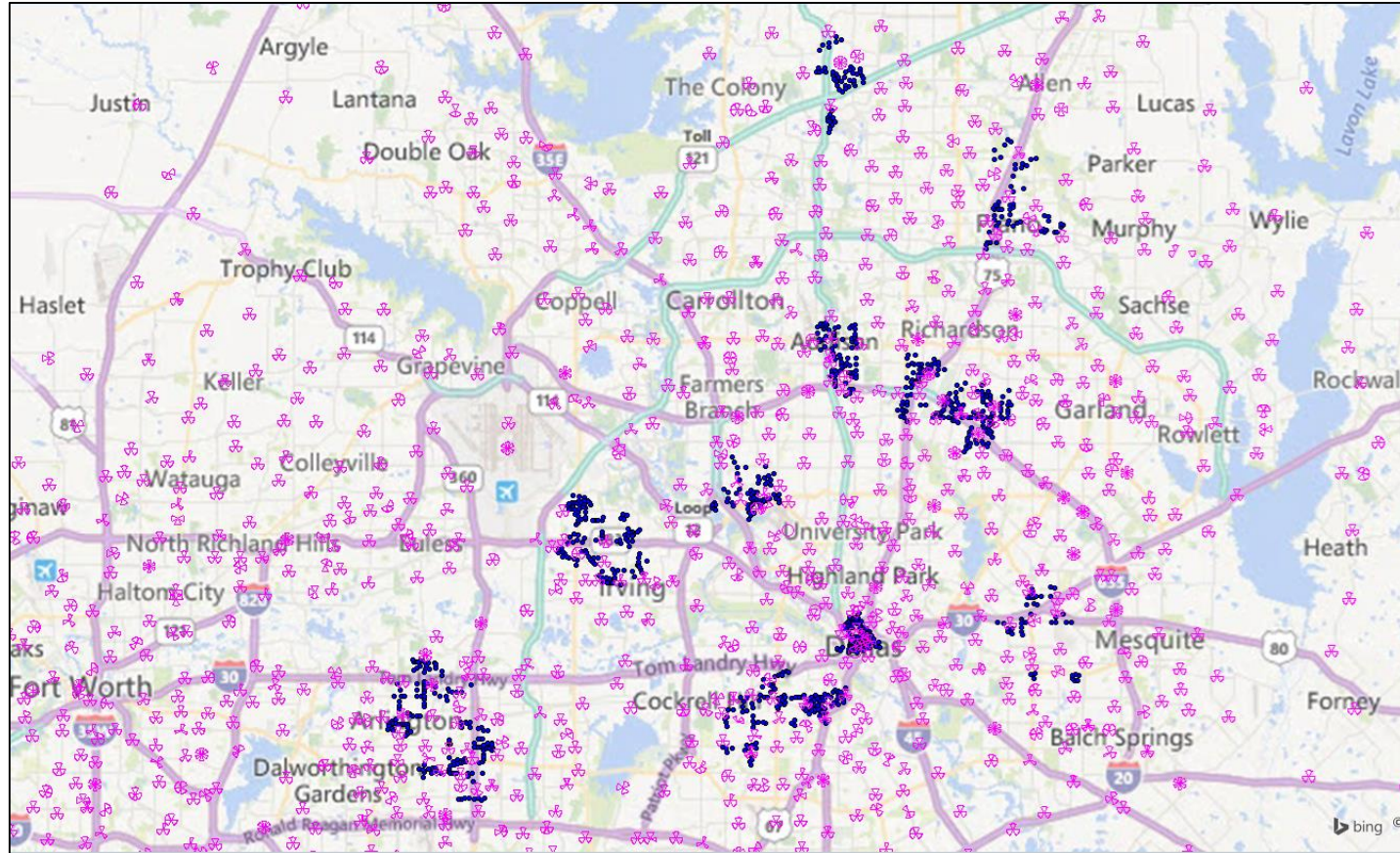
## Small cells

- New innovations like small cells allow us to add more capacity to densely populated or high traffic areas.
- Small cells add much required capacity to a highly targeted area which allow the existing overlay facility to provide better service in terms coverage and capacity.

## Small Cell features

- Discreet. Lower to the ground.
- Low powered. Each node covers a small area.
- Typically in the public right-of-way.
- Good complement for dense areas with high capacity needs.

# DFW Metroplex – Macro Site and Small Cells Map

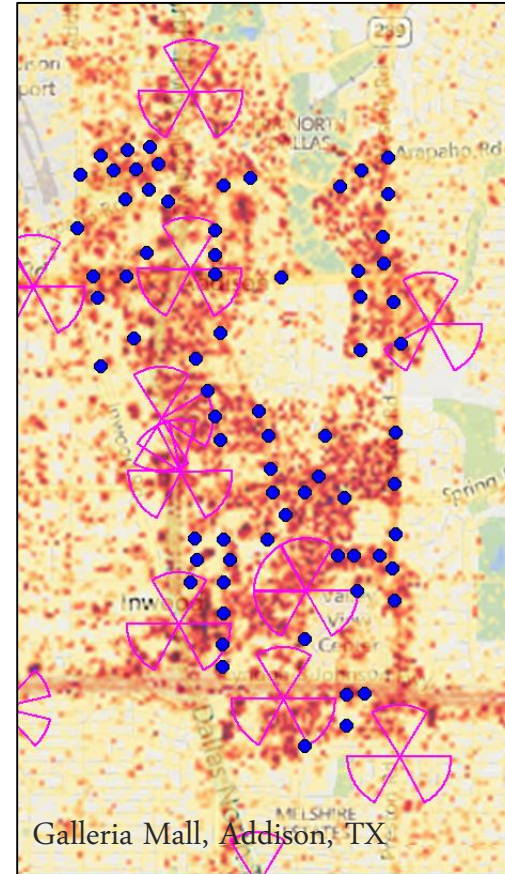
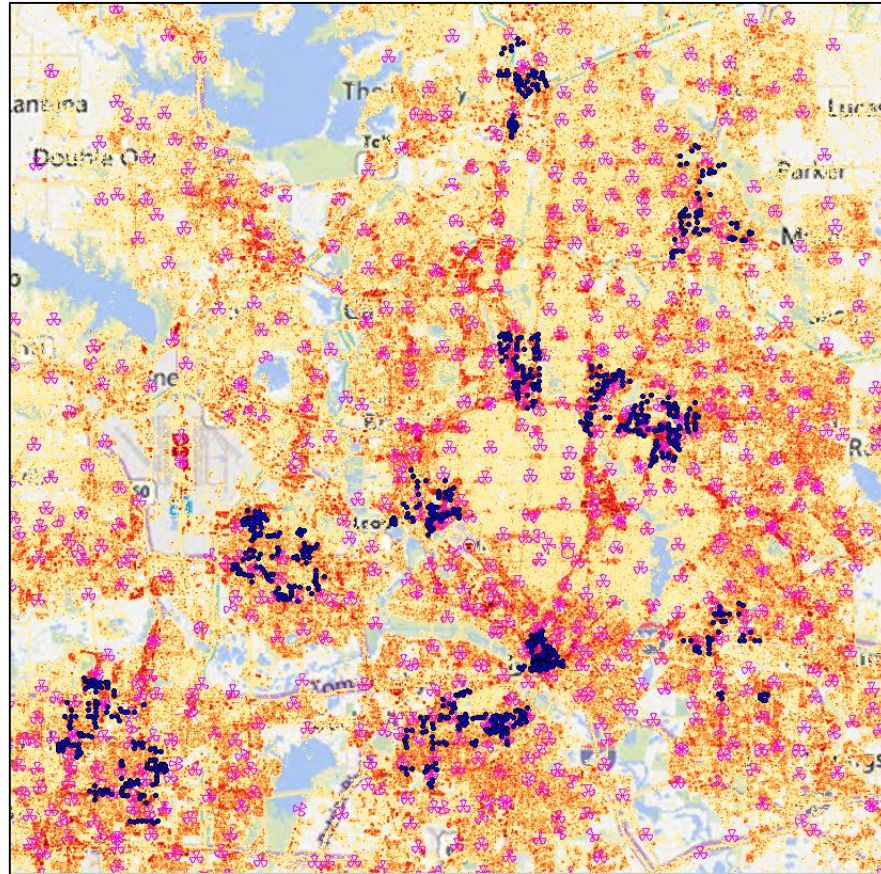


 On Air Sites

 Small Cells



# DFW Metroplex – Map with Traffic Density



 **On Air Sites**

 **Small Cells**

 **Very High Traffic**

 **High Traffic**

 **Medium Traffic**

- Small Cells are designed to address capacity concerns and are placed within the coverage footprint of congested macro sites. They are good complement in dense areas with high capacity needs.
- By positioning Small Cells at high traffic areas (Galleria Mall in Addison as an example), they will relieve congestion of macro sites and as a

result, will improve overall customer

# Small Cell Equipment



**Strand mounted equipment and  
antenna**

**Pole mounted equipment and  
antenna**

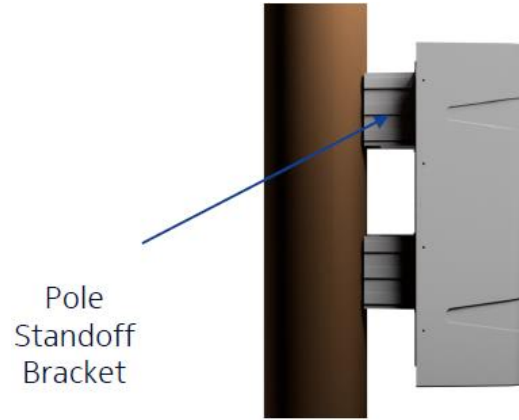


# Small Cell Equipment

- Outdoor Enclosure



Shroud



Pole  
Standoff  
Bracket



# Q&A



T-Mobile®

THE UN-CARRIER®