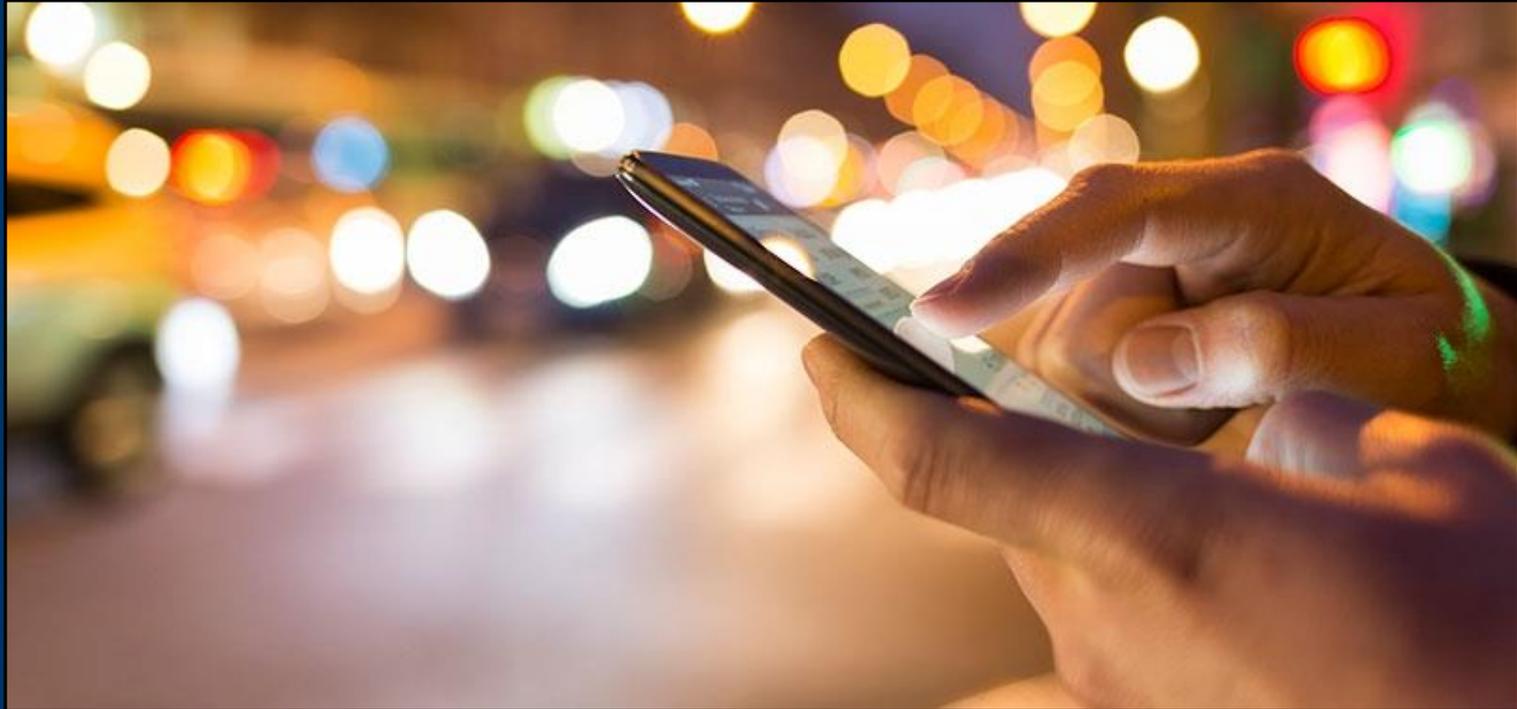


# Wireless Communications Initiative



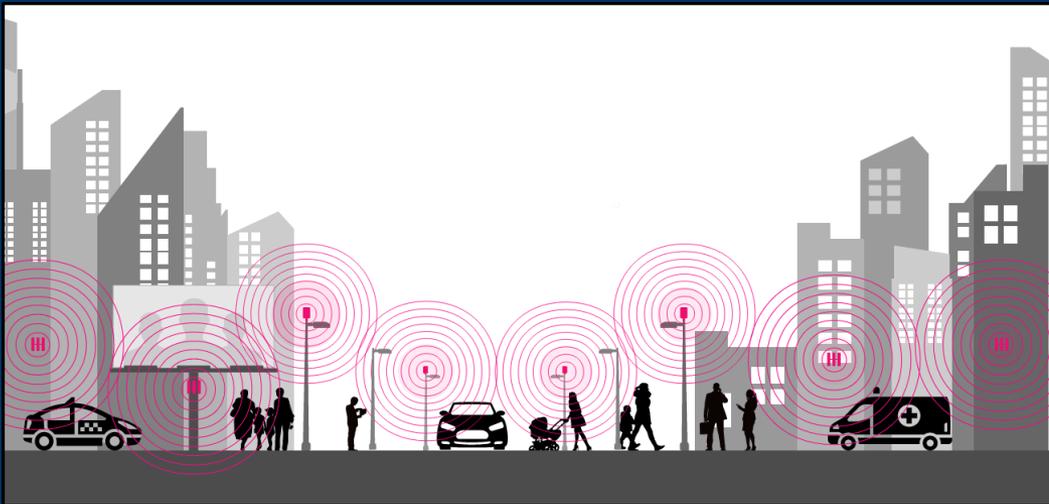
**Council Public Hearing**  
**WCI Master Plan and Ordinance**  
April 18, 2018



**TOWN OF CHAPEL HILL**

# Purpose

- Position the Town to benefit from coming improvements to wireless communications and minimize impacts
  - Develop a Wireless Master Plan, and
  - Amend LUMO with corresponding regulations



# Key Outcomes

- Better Wireless Service for Community
- More Predictable Permitting for WCF Types
  - Special Use Permits for larger-scale towers
  - Administrative approvals for smaller-scale facilities
  - Rules for Types and Locations of WCFs for Visual Impacts
- Congruence with Federal and State Laws



# Process

Preliminary  
Scoping & Field  
Assessments

Council Work  
Session

Public  
Information  
Mtg / Poll

Assessment of  
Poll Results /  
Gap Analysis

Planning  
Commission  
– Status  
Report

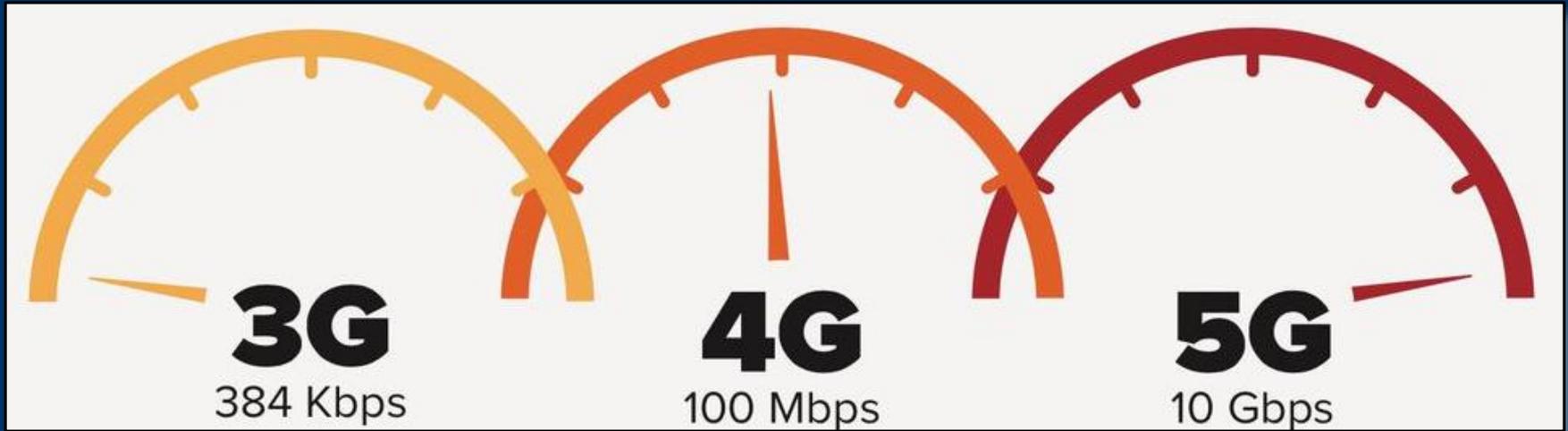
Joint  
Advisory  
Worksession

Advisory  
Board  
Meetings

Council  
Meetings



# Is a Master Plan & Ordinance Needed?





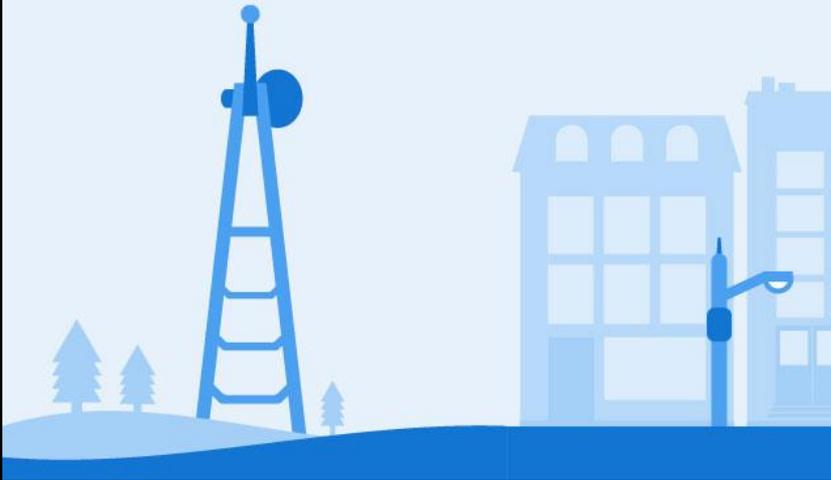
# Meeting The Demands

## Towers

Best for low-density populations.

## Small cells

Good complement for dense areas with high capacity needs.



## Towers

Good for voice. Data signal can degrade over distance.

## Small cells

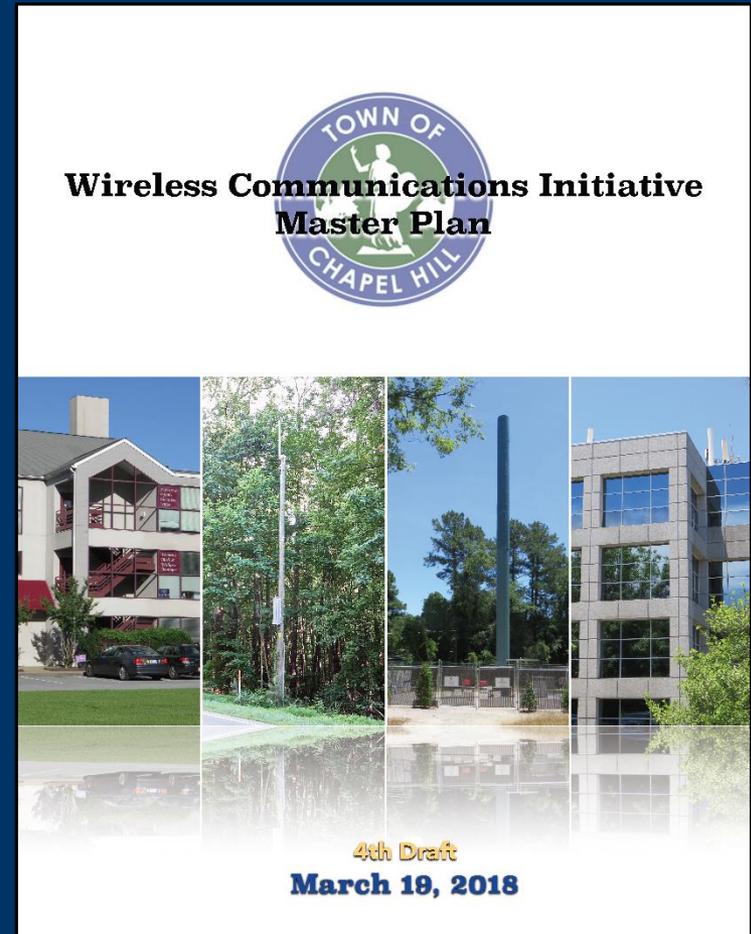
Good for voice and data.



# Wireless Communications Initiative

## Wireless Master Plan

- Identifies existing wireless infrastructure
- Identifies theoretical network gaps and
- Estimates general location and frequency of needed future infrastructure



# Wireless Communications Initiative

## Wireless Ordinance

- Regulatory framework for future infrastructure
- Guided by the 2020 Comprehensive Plan, federal & state regulations, and public participation

### ORDINANCE A

(Enacting the Land Use Management Ordinance Text Amendment proposal)

#### AN ORDINANCE AMENDING THE CHAPEL HILL LAND USE MANAGEMENT ORDINANCE, TO CHANGE PROVISIONS PERTAINING TO WIRELESS COMMUNICATIONS FACILITIES (2018-\_\_-\_\_/O- )

WHEREAS, the Council of the Town of Chapel Hill has considered the proposed text amendments to the Land Use Management Ordinance to change provisions pertaining to wireless communications facilities and finds that the amendments are necessary to comply with enabling legislation and are consistent with the goals of the Chapel Hill 2020 Comprehensive Plan.

NOW, THEREFORE BE IT ORDAINED by the Council of the Town of Chapel Hill as follows:

**Section 1. That Article 3, Section 3.7, Use Groups table 3.7-1, the *Use Matrix*, and Appendix A - is hereby revised as follows.**

~~Radio, television or wireless transmitting and/or receiving antenna~~

Collocation on existing tower or base station

New concealed base station

New non-concealed rooftop base station

New concealed dual-purpose tower

New non-concealed base station

New non-concealed tower

**Section 2. That Article 3, Section 3.8.3(b)(3) - Exceptions to Setback and Height Regulations as follows.**

(3) Spires, smokestacks, water tanks, windmills, ~~radio and television transmitting towers, or relay towers,~~ provided such structures do not exceed in height the horizontal distance therefrom to the nearest lot line.

**Section 3. That Article 3, Section 3.8.3(b)(4) - Exceptions to Setback and Height Regulations as follows.**

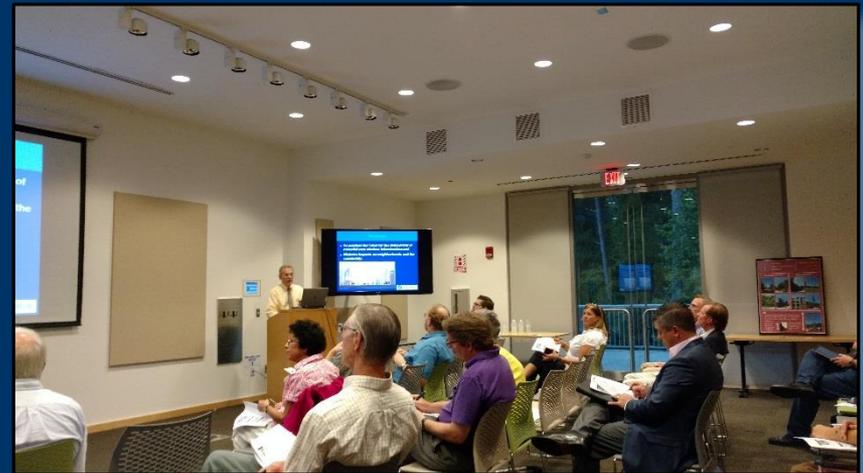
(4) Utility transmission poles, towers, and cables.

**Section 4. That Article 6, Section 6.11- Radio, television or wireless transmitting and/or receiving facility as follows.**



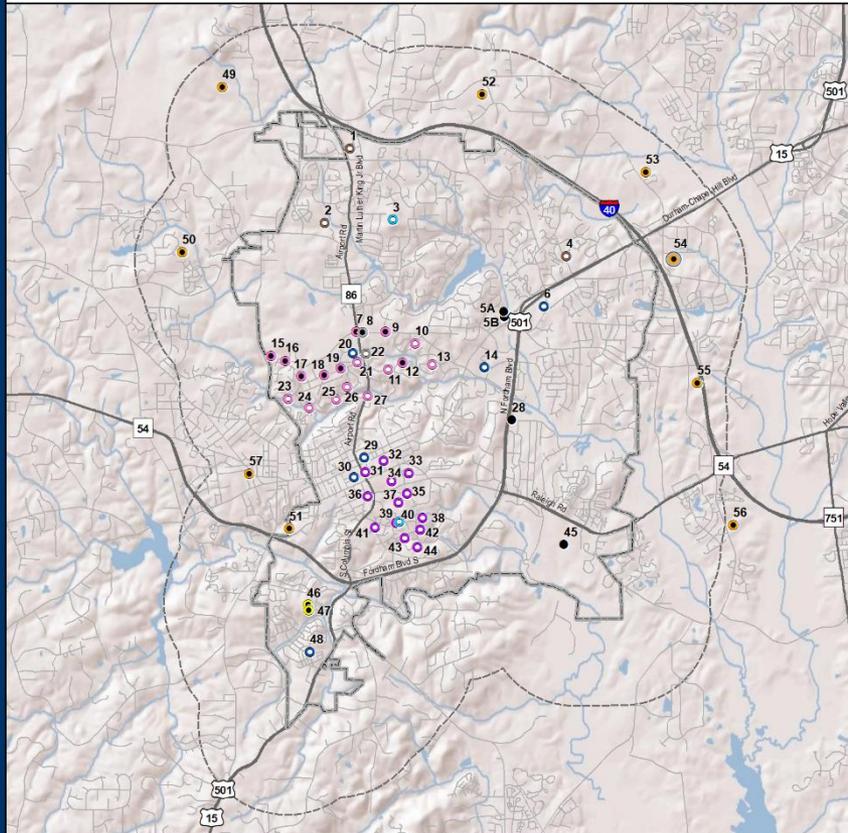
# Poll Results & Public Meetings

- 87% Quality of wireless service is important
- 71% Rely on mobile device to great extent
- 36% Poor coverage where they live
- Overall preference for minimizing visual impacts



# Wireless Communications Inventory

Chapel Hill Tower Inventory



**Towers**

- Outside Right-Of-Way
- Small Cell Inside Right-Of-Way
- Concealed
- Dual Purpose
- Outside Study Area

**Base Stations**

- Rooftop
- Water Tower
- Utility Easement
- Small Cell Inside Right-Of-Way
- Small Cell Rooftop
- Concealed



Study Area



Corporate Limits



One Mile Buffer



Major Roads



Minor Roads

Sources: US Census Bureau, CityScape Consultants, Inc, USGS

Map Created by CityScape Consultants, Inc. on November 7, 2017

0 0.25 0.5 1 Miles



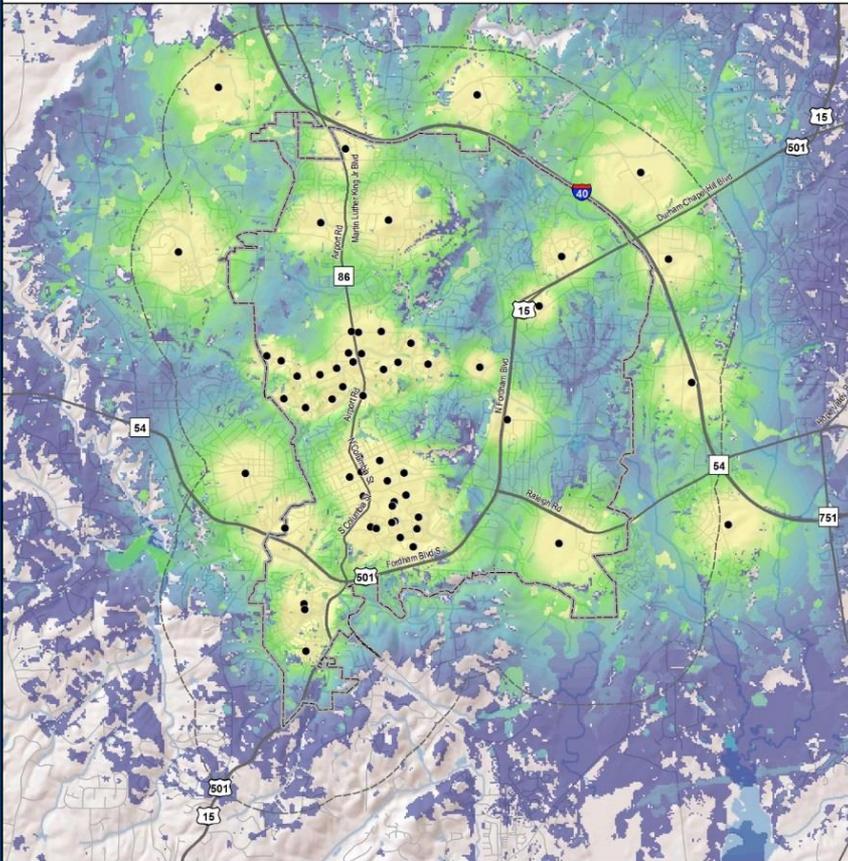
- 58 Total Facilities
  - 49 within Town limits
  - 9 outside Town limits
- More base stations than towers
- Blend of macro and small cell sites



TOWN OF CHAPEL HILL

# Gap Analysis

Theoretical High Frequency Coverage From All Potential Identified Sites Considering Topography, Vegetative Cover and Population Density



## High Frequency Signal Coverage

- Light Areas – Strongest Signal
- Dark Areas – Weakest Signal

Existing Sites  
● Tower or Base Station

Approximate Coverage  
■ Indoor  
■ In Vehicle  
■ Outdoor

Study Area Corporate Limits  
One Mile Buffer  
Major Roads  
Minor Roads

Sources: US Census Bureau, Chapel Hill GIS, CityScape Consultants, Inc, USGS

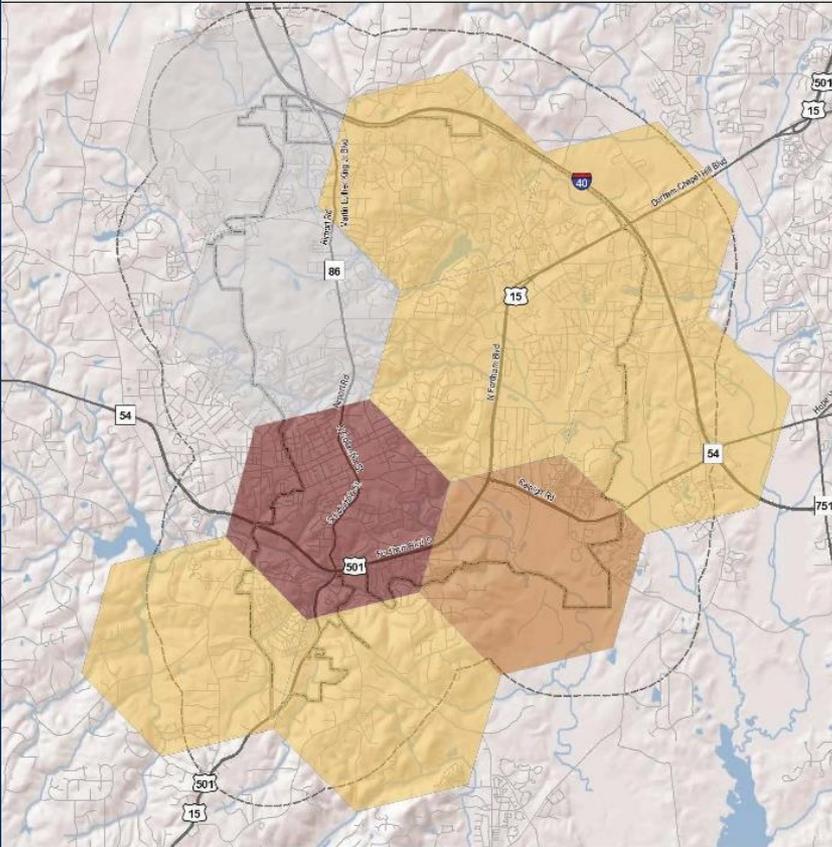
Map Created by Cityscape Consultants, Inc, on November 8, 2017  
0 0.25 0.5 1 Miles



TOWN OF CHAPEL HILL

# Predicted Infrastructure Needs

Approximate Additional Macro Sites Needed for All Providers to Accommodate Capacity at Peak using 4G, 10 Year Projection



Number of Macro Sites Needed



 = 2.5 miles across

 Study Area Corporate Limits  
 One Mile Buffer  
 Major Roads  
 Minor Roads

Sources: US Census Bureau, CityScape Consultants, Inc, USGS

Map Created by CityScape Consultants, Inc. on November 28, 2017

0 0.25 0.5 1 Miles



## Macro-Tower WCFs Ten-Year Prediction

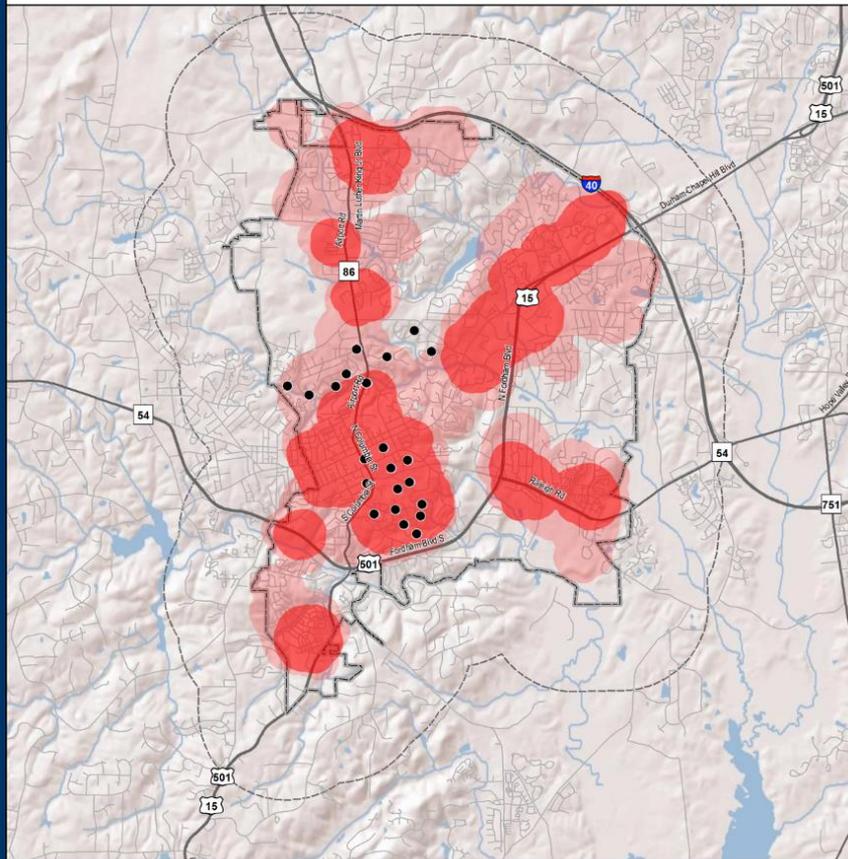
- Light Hexagons – 1 Tower
- Med. Hexagon – 2 Towers
- Dark Hexagon – 3 Towers



TOWN OF CHAPEL HILL

# Predicted Infrastructure Needs

Areas With Peak Population Density for Potential Small Cell Deployment



- Current Node Deployment
- Moderate Peak Population Density Area
- High Peak Population Density Area
- ▭ Study Area Corporate Limits
- One Mile Buffer
- Major Roads
- Minor Roads

Sources: US Census Bureau, CityScape Consultants, Inc, USGS

Map Created by CityScape Consultants, Inc, on November 9, 2017

0 0.25 0.5 1 Miles



## Small-Cell WCFs Key Deployment Areas

- Lighter Areas – Lesser Demand
- Darker Areas – Greater Demand



TOWN OF CHAPEL HILL

# Managing Visual Impacts

## Small-Cell WCF Examples



# Hierarchy of Preferences - WCFs

## 1. Collocate on *Existing* Tower or Base Station



# Hierarchy of Preferences - WCFs

## 2. New Concealed Base Station



# Hierarchy of Preferences - WCFs

## 3. New Non-Concealed Roof-top Base Station



# Hierarchy of Preferences - WCFs

## 4. New Concealed Dual-Purpose Tower



# Hierarchy of Preferences - WCFs

## 5. New Non-Concealed Base Station



# Hierarchy of Preferences - WCFs

## 6. New Non-Concealed Tower



# Location Preferences

## Future Wireless Infrastructure

- A. Town-owned land
- B. Other publicly owned land
- C. Private property
- D. In rights-of-way
  - 1. Non-residential districts
  - 2. Multi-family districts (where permitted)
  - 3. Single-family residential districts (where permitted)





# Key Advisory Board Changes

- ✓ Simplify Permitted Use List
- ✓ Add Landscape Buffer Requirement
- ✓ Conceal Auxiliary Equipment
- ✓ That Town Inventory Existing Utility Poles



# Industry Comments

- ✓ Involved Industry Throughout Process
- ✓ Incorporated a Number of Comments
- ✓ Draft Ordinance - Balance of Community Protection and Efficient Deployment



# Next Steps

Continuation of Public Hearing: May 23, 2018

## Wireless Communications Initiative

- Adoption of Master Plan Resolution
- Adoption of Resolution of Consistency with the 2020 Comprehensive Plan
- Enactment of Land Use Management Ordinance Text Amendment



# Recommendation





TOWN OF CHAPEL HILL