

Community Meeting For Wireless Telecommunications Infrastructure Analysis

**BOROUGH OF HADDONFIELD
JUNE 5, 2023**

CityScape
CONSULTANTS, INC.



CityScape Consultants, Inc.

Exclusively Serving Government Clientele Nationwide since 1997



Project Team of Engineering, Legal and Planning Professionals



Experts in Federal Statutory, Decisional and Regulatory Law



Assists Local Governments with the Complexities of Wireless Communications

Wireless Communication Plan Tasks and Deliverables

Preliminary Research (January 2023)

Infrastructure Assessments (February 2023)

Project Initiation Meeting (February 8, 2023)

Inventory Catalog (March 2023)

Engineering Mapping and Analysis (June 5, 2023)

Regulatory Review and Regulations

Draft and Final Master Plan



Introduction to Wireless Telecommunications

INFRASTRUCTURE INITIALLY BUILT FOR CELLULAR PHONES NOW UPGRADED AND
CONSTRUCTED FOR CELLULAR PHONES, TABLETS AND SMART DEVICES

Wireless Telecommunications History



1G



2G & 3G



4G & 5G Enabled

- 1G service provided voice calls only.
- 2G service included voice, texting and data.
- 3G service offered in early 2000's improved data speeds.
 - These services are now obsolete
- 4G 2010 and increased data speeds; included new 700 and 2100 MHz frequencies.
- 4G LTE, 5G and beyond

Quick Facts:

- Over 49% of U.S. households have “cut the cord” and are wireless only
- 80% of an estimated 240 million 9-1-1 calls are made from wireless devices
- 45 million Americans use mobile phones as their primary Internet access device
- 2.4 million students connected
- Smart houses, smart cars, smart industry
- More use of data intensive applications such as Facetime, Internet, Streaming Music and HD Movies, Social Media, etc

A large graphic of the number 76% in a stylized font. The digits are composed of overlapping teal and lime green shapes. The percentage sign is a simple teal outline.

of travelers say a mobile phone is the most important trip accessory.

A large graphic of the number 85% in a stylized font. The digits are composed of overlapping teal and lime green shapes. The percentage sign is a simple teal outline.

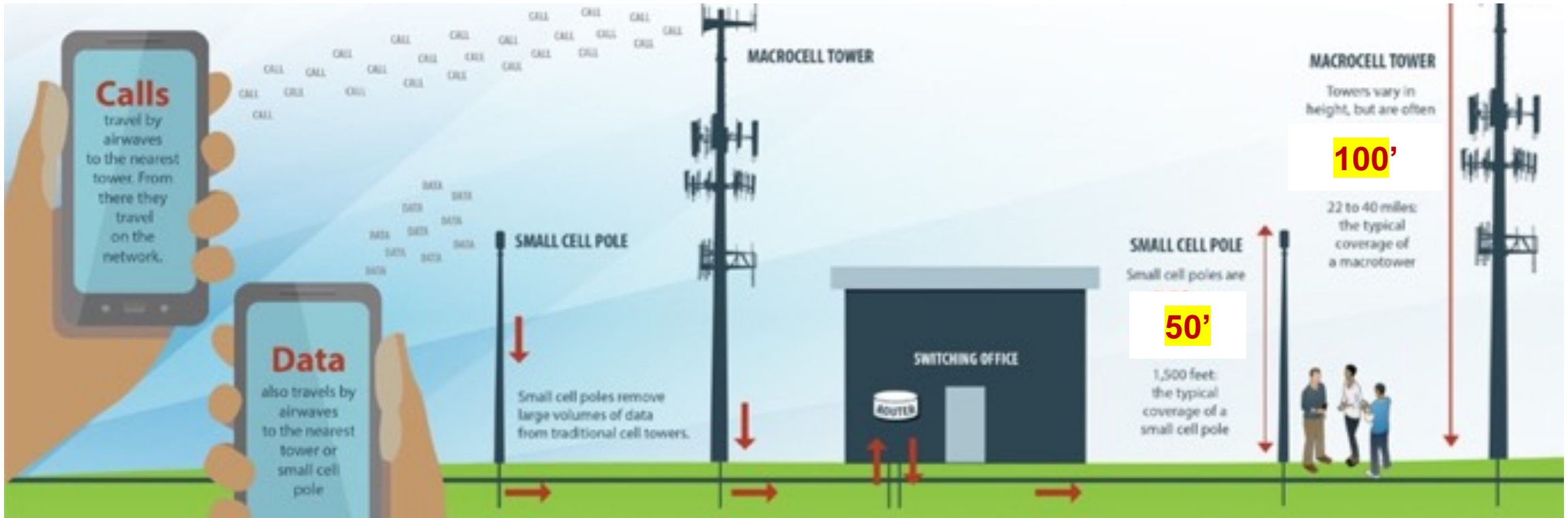
of photos taken in 2017 were captured on a smartphone

A large graphic of the number 330% in a stylized font. The digits are composed of overlapping teal and lime green shapes. The percentage sign is a simple teal outline.

growth in health & fitness apps over the last three years.

A large graphic of the number 31B in a stylized font. The digits are composed of overlapping teal and purple shapes. The letter B is a simple teal outline.

connected devices predicted by 2023.



Wireless Network Planning/Mapping

MACRO AND SMALL WIRELESS FACILITIES FOR SEAMLESS CONNECTIVITY



Non-Concealed Macro Cell Towers



Concealed



Concealed

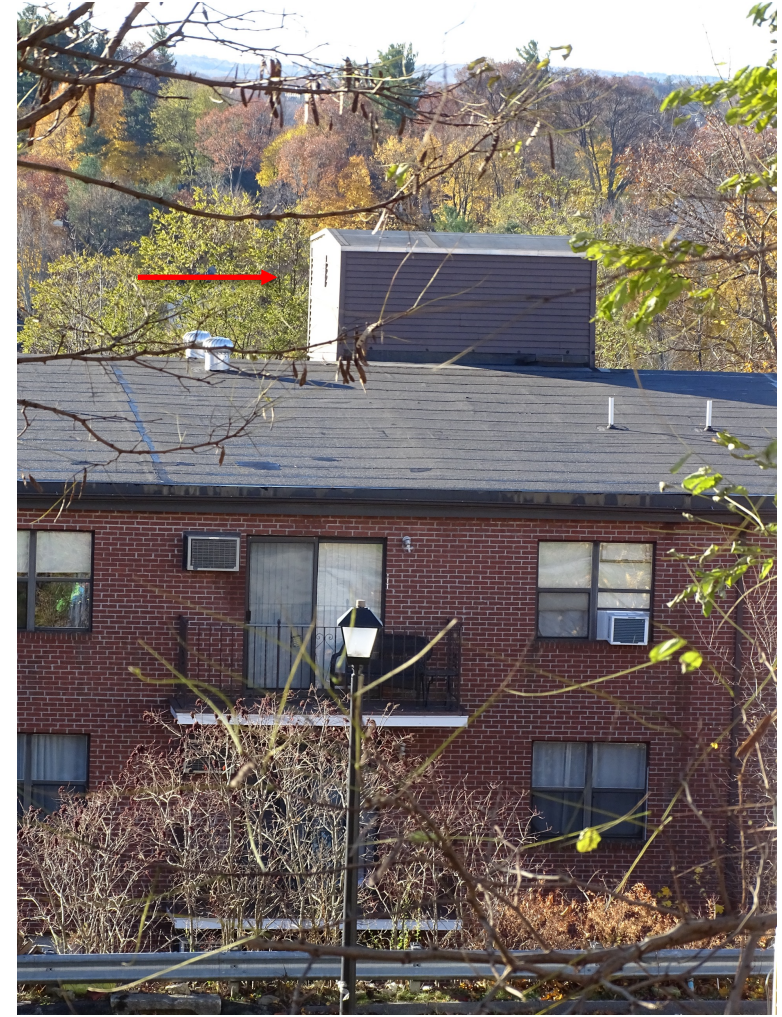


Semi-Concealed

Concealed & Semi-Concealed Macro Cell Towers



Non-Concealed & Semi-Concealed Macro Cell Base Stations



Concealed Macro Cell Base Stations



Non-Concealed Small Cell Base Stations



Concealed Small Cell Towers/Poles

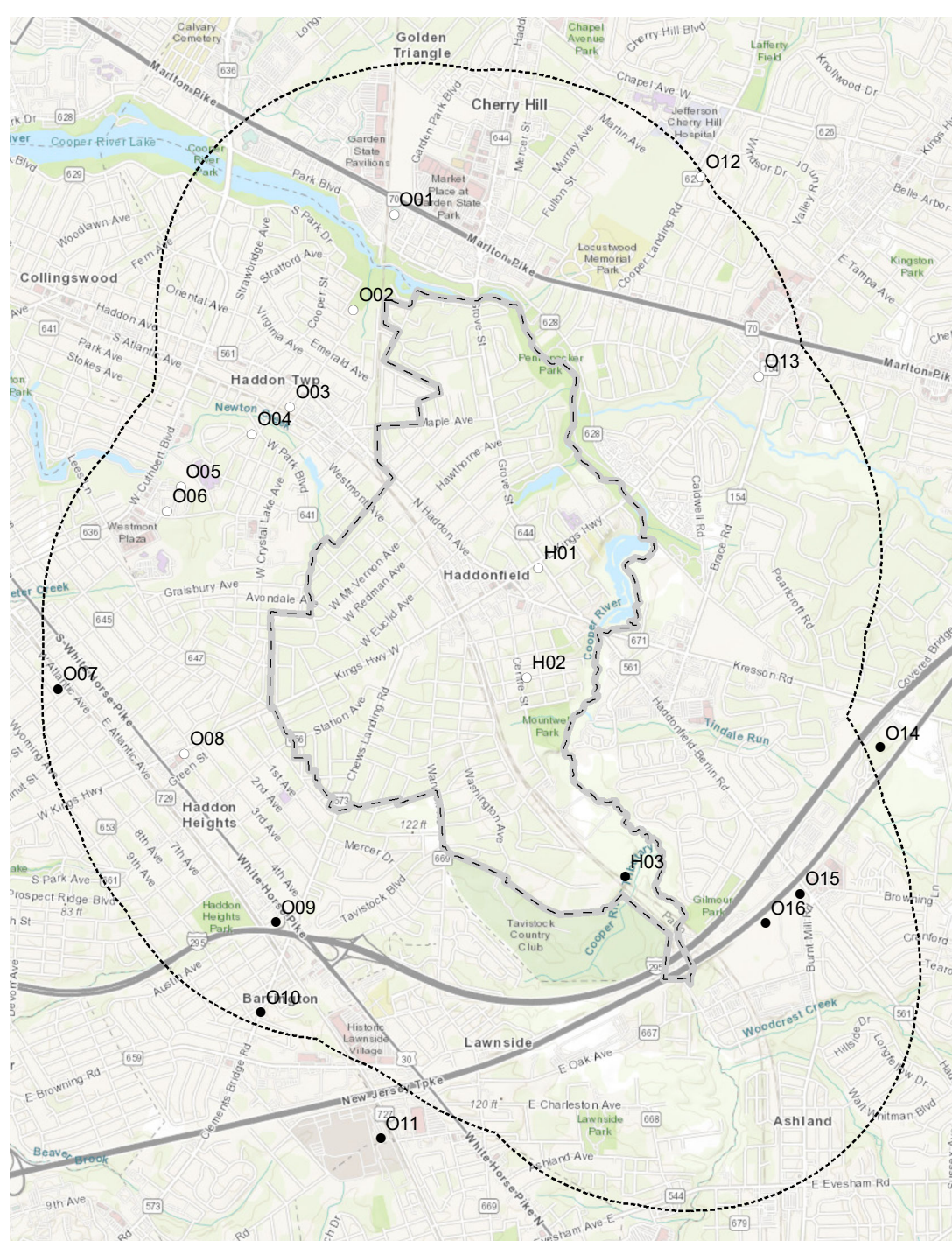
Haddonfield Inventory

Total Facilities

3 Existing Inside Borough (1 to be removed); 16 Outside Borough

Inside Haddonfield

- 2 Base Stations (H01 and H02); 1 Tower (H03)
- 2 Macro Cell Personal Wireless Service Facilities (H01 & H02); 1 Other (H03 Railroad)
- 1 Private Property (H01); 1 Public Property (H02); 1 ROW (H03)
- All 3 Sites are Non-Concealed
- Service Providers: AT&T, T-Mobile and Verizon (1 Dish Wireless Outside Borough)



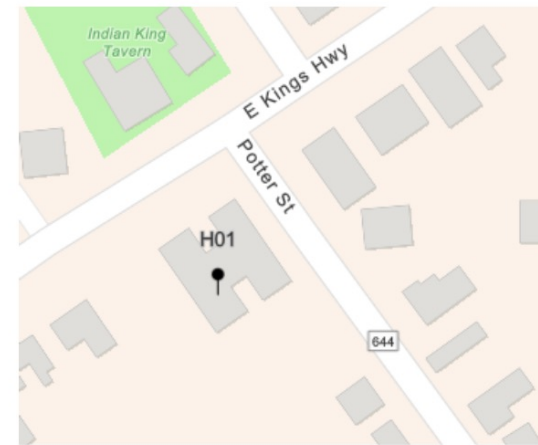


Haddonfield Sites

Inventory

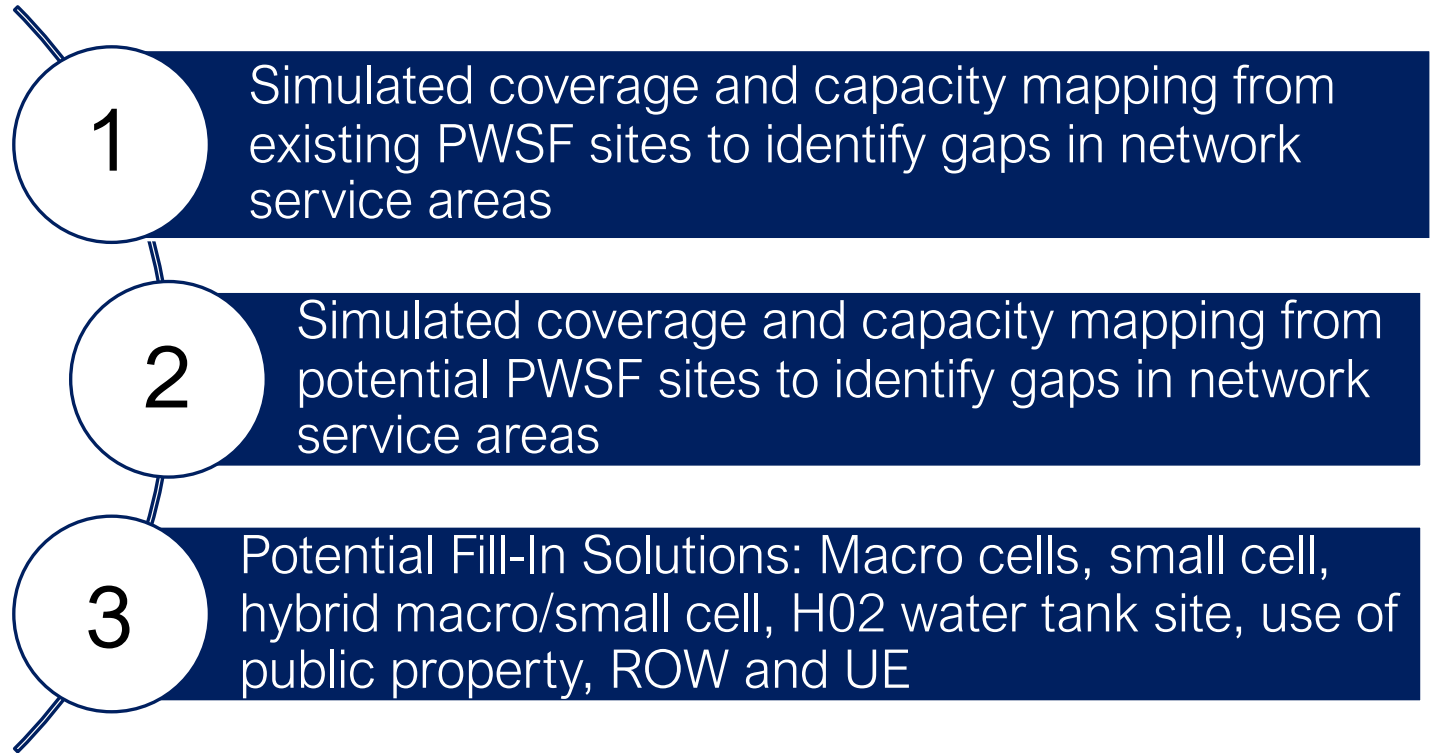
Site H01 **274 Kings Highway E** **Haddonfield**

STRUCTURE TYPE:	Base Station
FACILITY TYPE:	Roof
ANTENNA TYPE:	Macro
DESIGN TYPE:	Non-Concealed
LOCATION:	Private Property



FACILITY OWNER/ID:	Unknown
FACILITY SITE NAME:	The Kingway Apartments
SERVICE PROVIDERS:	Unknown
FCC ASR:	None
HEIGHT:	55'
LATITUDE/LONGITUDE:	39.89889, -75.02935
NOTES:	Ground equipment inside building. Cell Linq indicates VZW.

Simulated Propagation Coverage Maps



Coverage Map

All Providers At Each Site

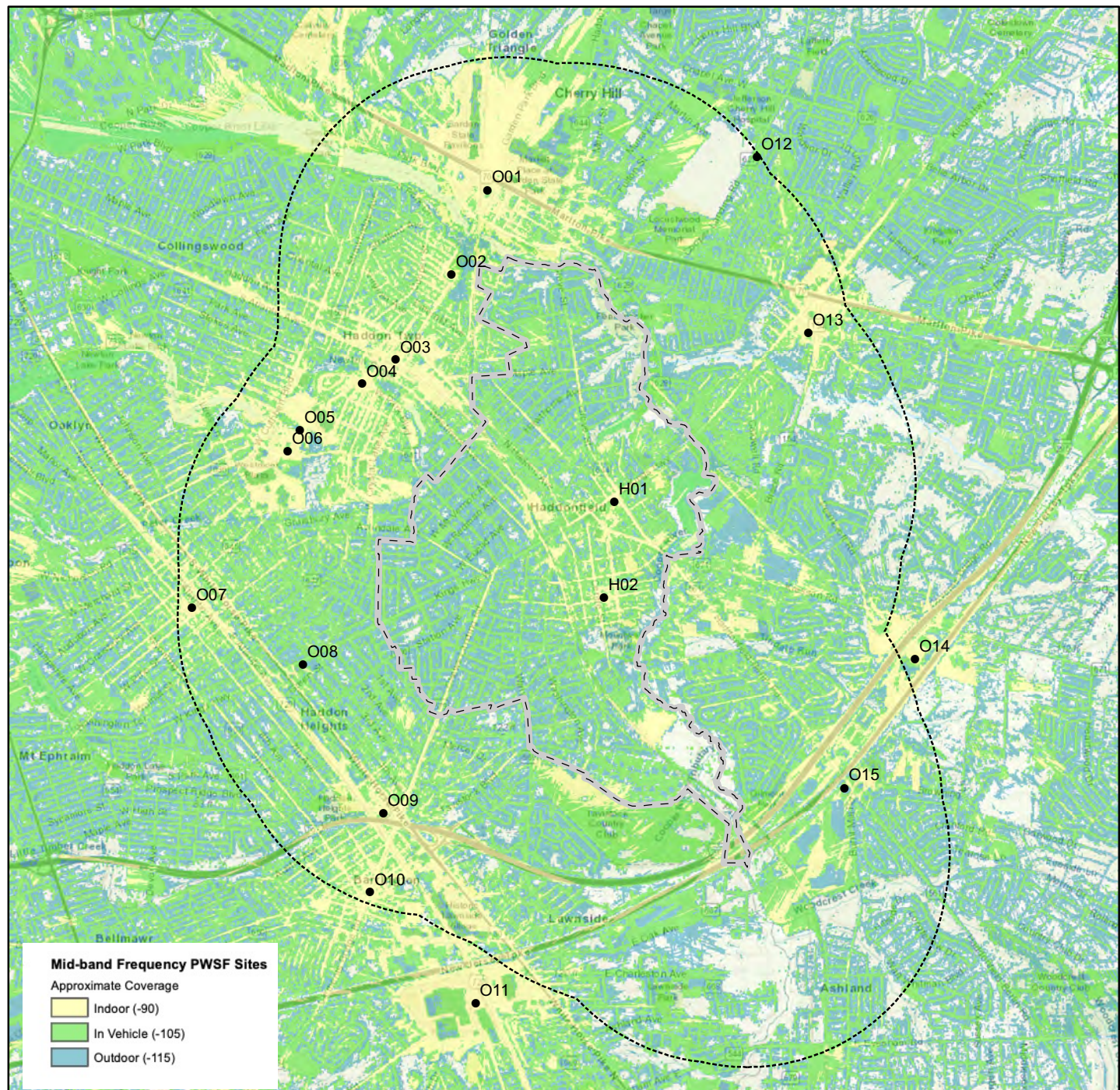
- Mid-band frequency coverage map
- Assumes same provider at each site
- Level of propagation signal strength is shown through the gradation of colors from yellow to blue or no color

→ **Yellow** – superior; strong enough to operate within most buildings

→ **Green** – average; strong enough to operate in vehicle but not inside most buildings

→ **Blue** – acceptable; strong enough to operate outside but not in most vehicles or buildings

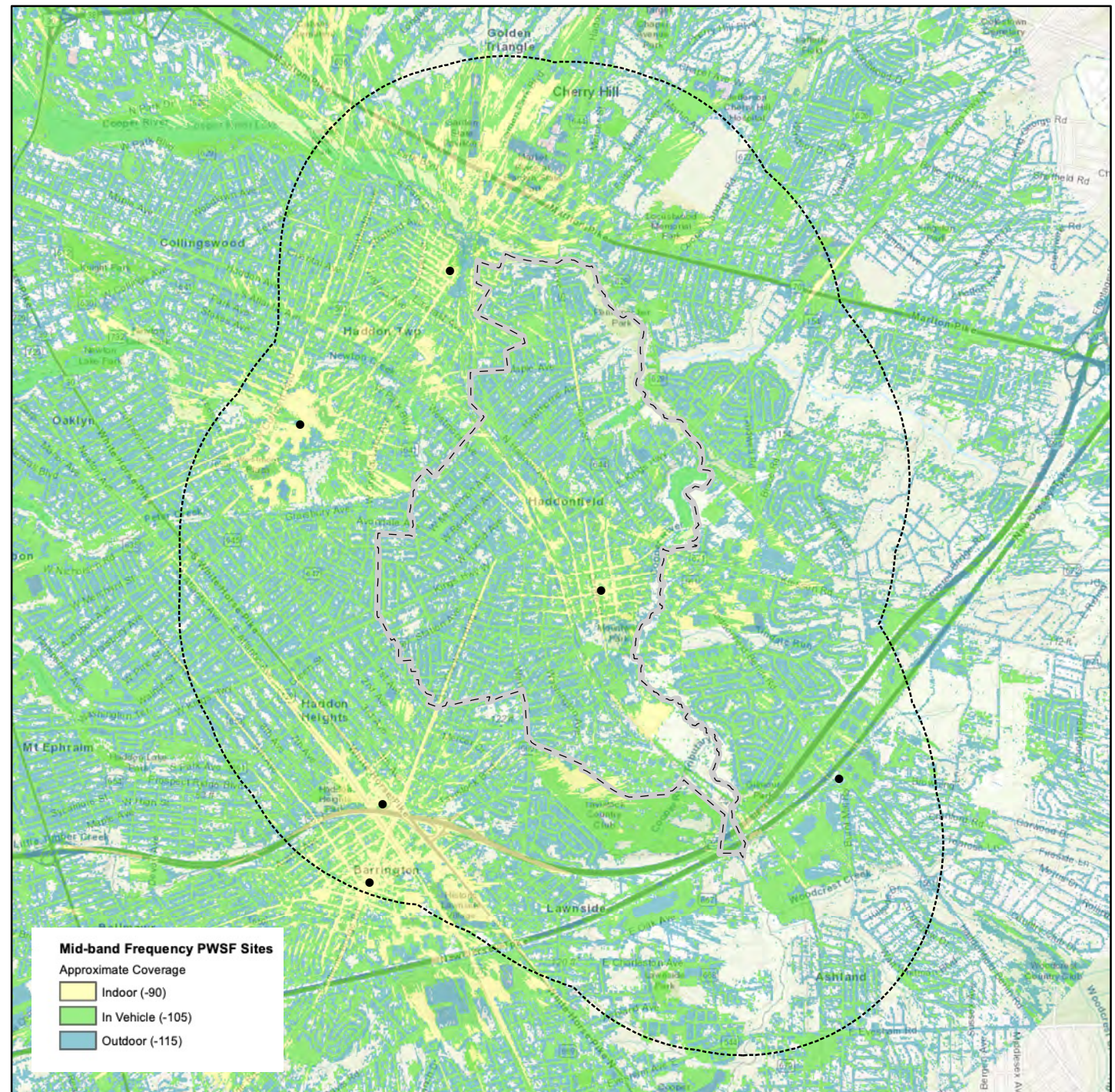
→ **No color** – poor; no service or dropped calls; gaps where new sites will be needed



Coverage Map

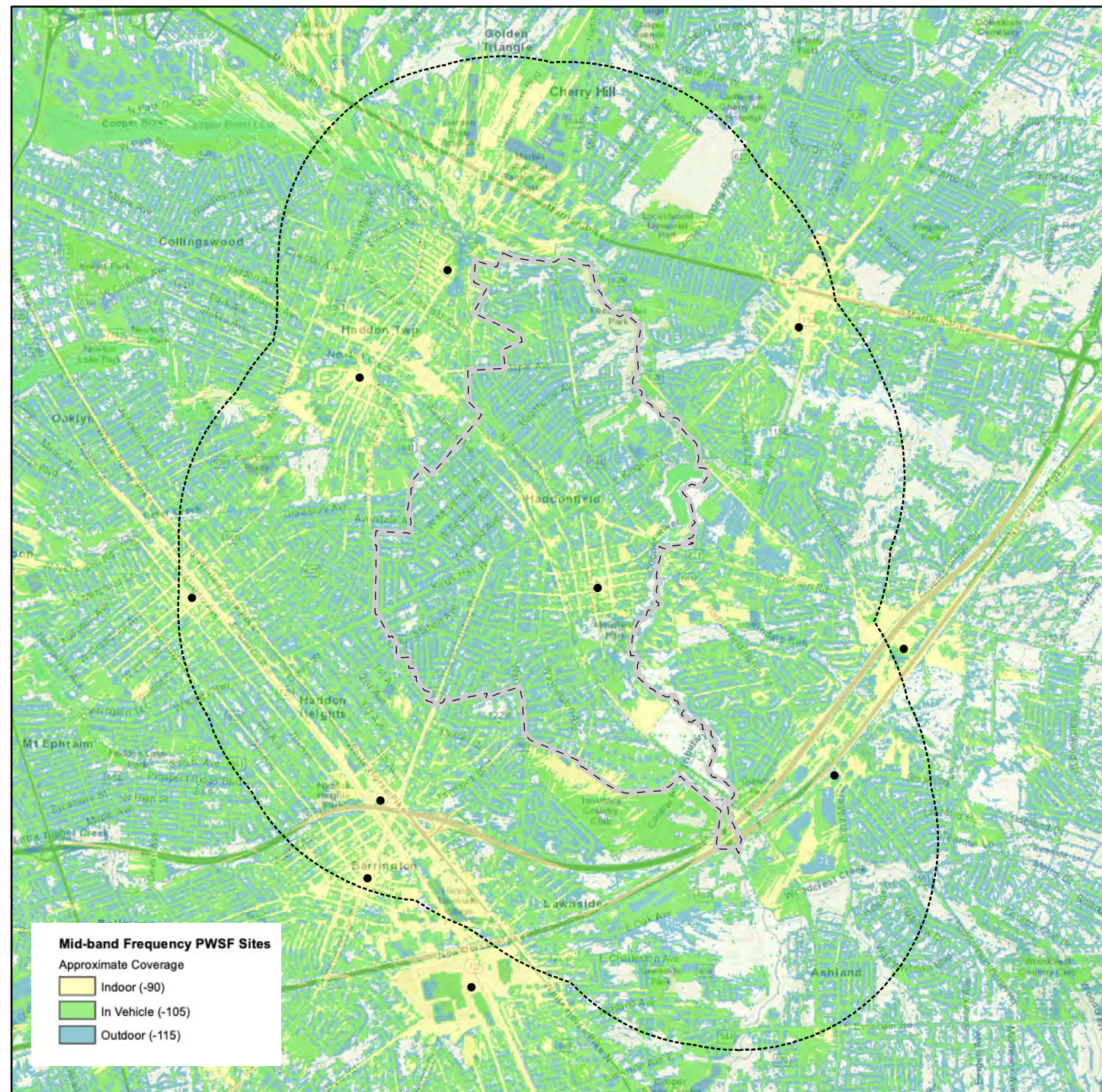
Simulation Provider A

- Mid-band frequency coverage map
 - Level of propagation signal strength is shown through the gradation of colors from yellow to blue or no color
- **Yellow** – superior; strong enough to operate within most buildings
 - **Green** – average; strong enough to operate in vehicle but not inside most buildings
 - **Blue** – acceptable; strong enough to operate outside but not in most vehicles or buildings
 - **No color** – poor; no service or dropped calls; gaps where new sites will be needed



Coverage Map Simulation Provider B

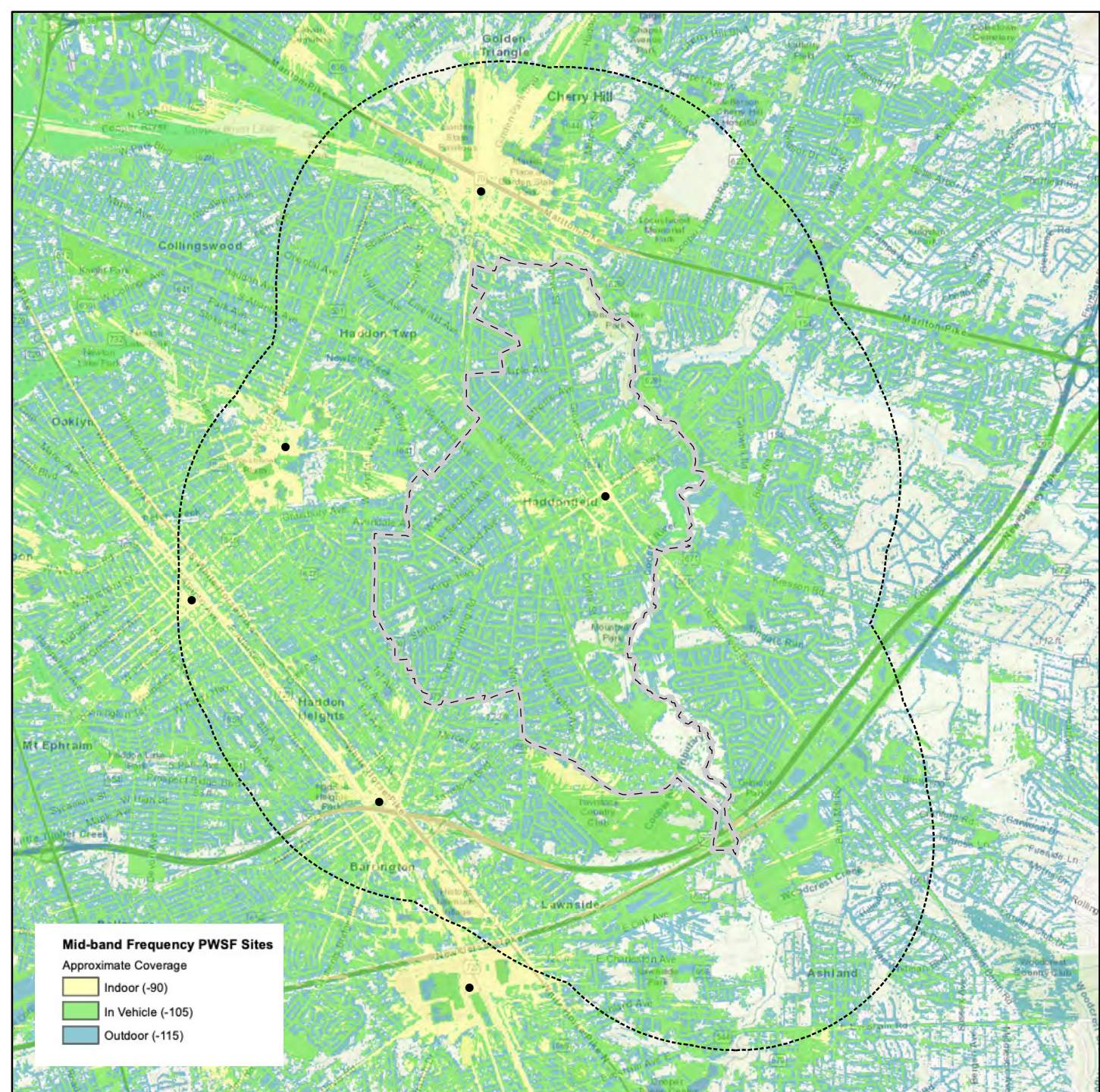
- Mid-band frequency coverage map
- Level of propagation signal strength is shown through the gradation of colors from yellow to blue or no color
 - **Yellow** – superior; strong enough to operate within most buildings
 - **Green** – average; strong enough to operate in vehicle but not inside most buildings
 - **Blue** – acceptable; strong enough to operate outside but not in most vehicles or buildings
 - **No color** – poor; no service or dropped calls; gaps where new sites will be needed



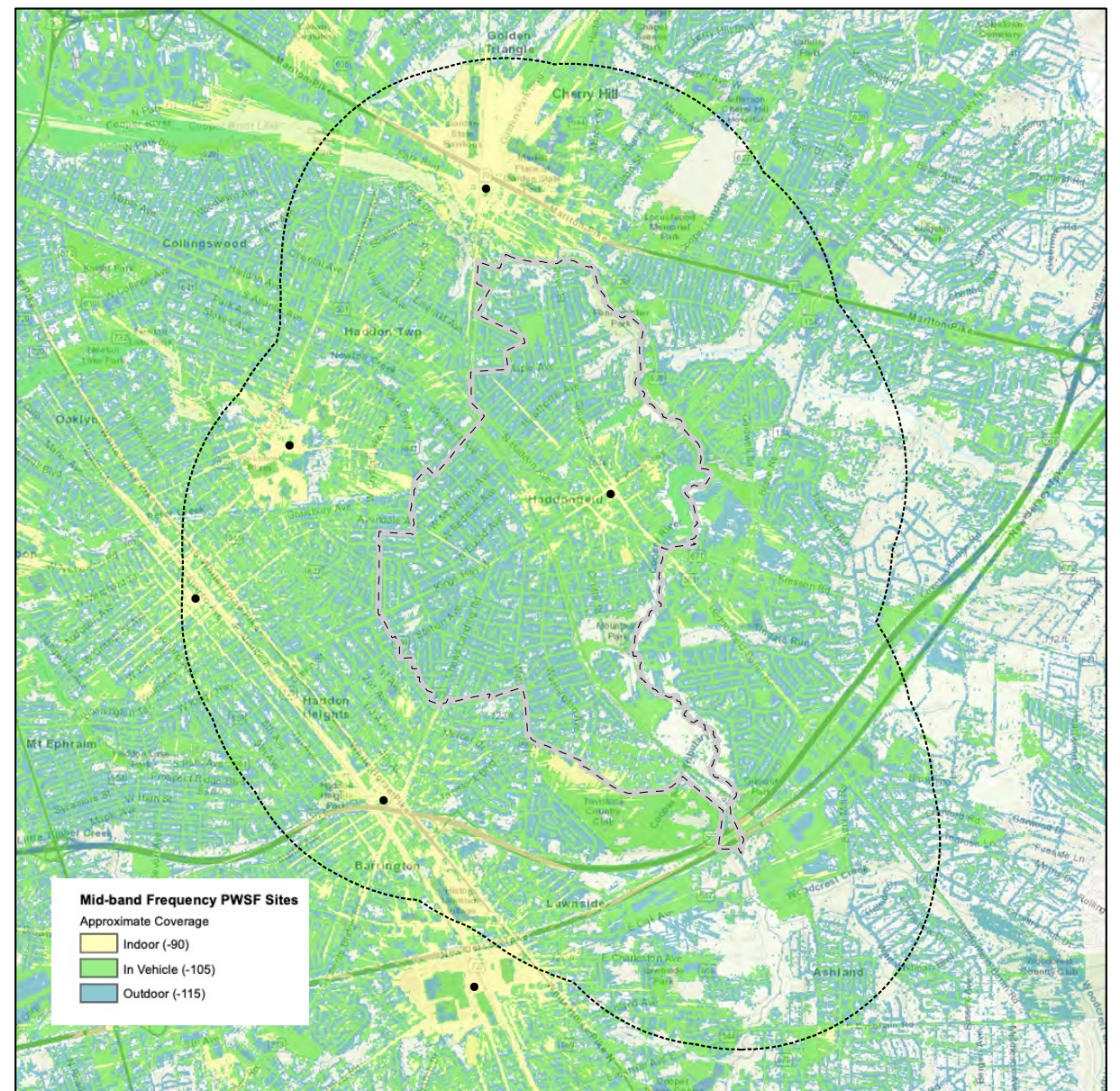
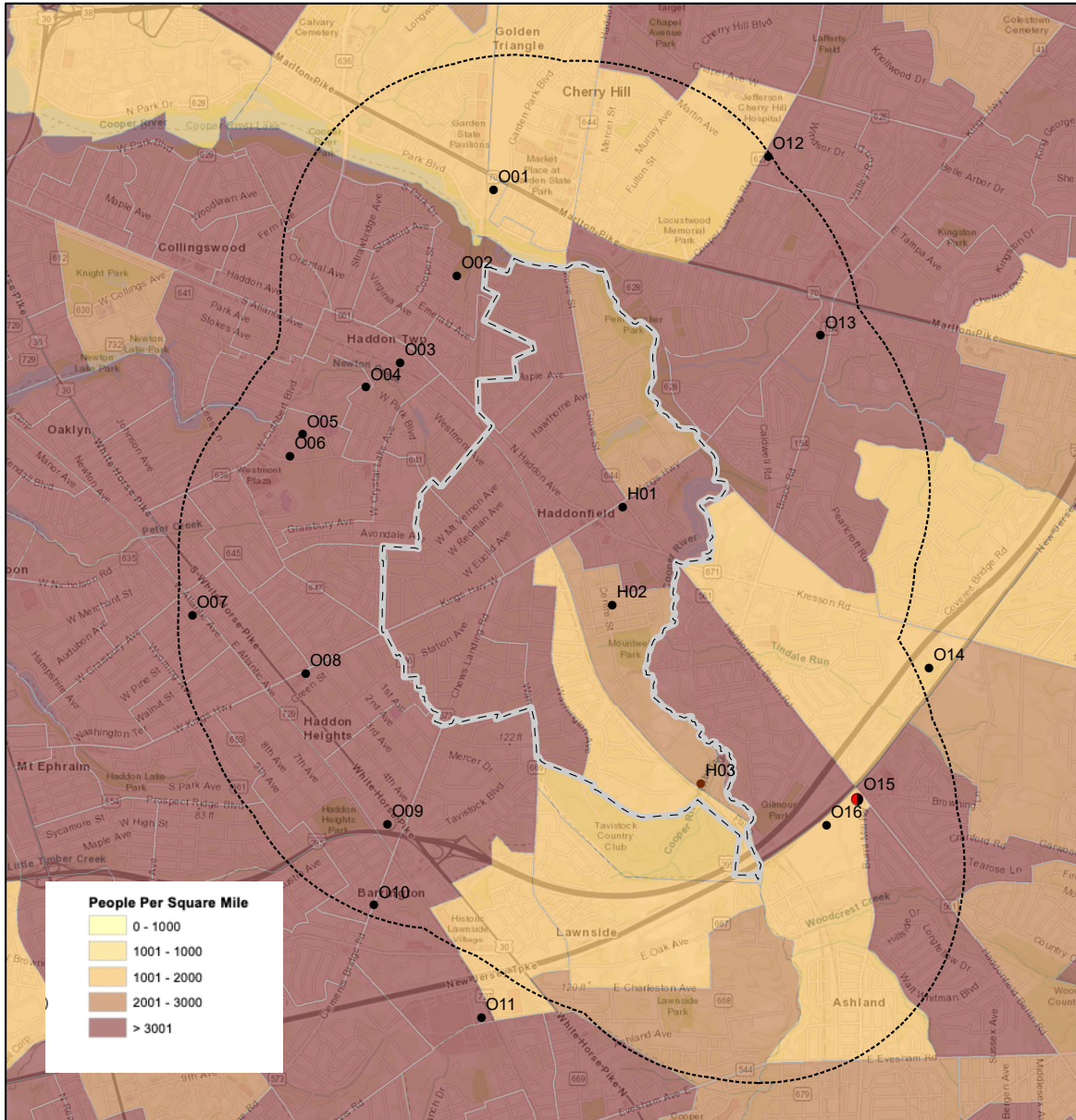
Coverage Map

Simulation Provider C

- Mid-band frequency coverage map
 - Level of propagation signal strength is shown through the gradation of colors from yellow to blue or no color
- **Yellow** – superior; strong enough to operate within most buildings
 - **Green** – average; strong enough to operate in vehicle but not inside most buildings
 - **Blue** – acceptable; strong enough to operate outside but not in most vehicles or buildings
 - **No color** – poor; no service or dropped calls; gaps where new sites will be needed



Coverage Gaps in Borough Compared to People Per Square Mile



More PWSF's In Higher Density Areas and Along Transportation Corridors

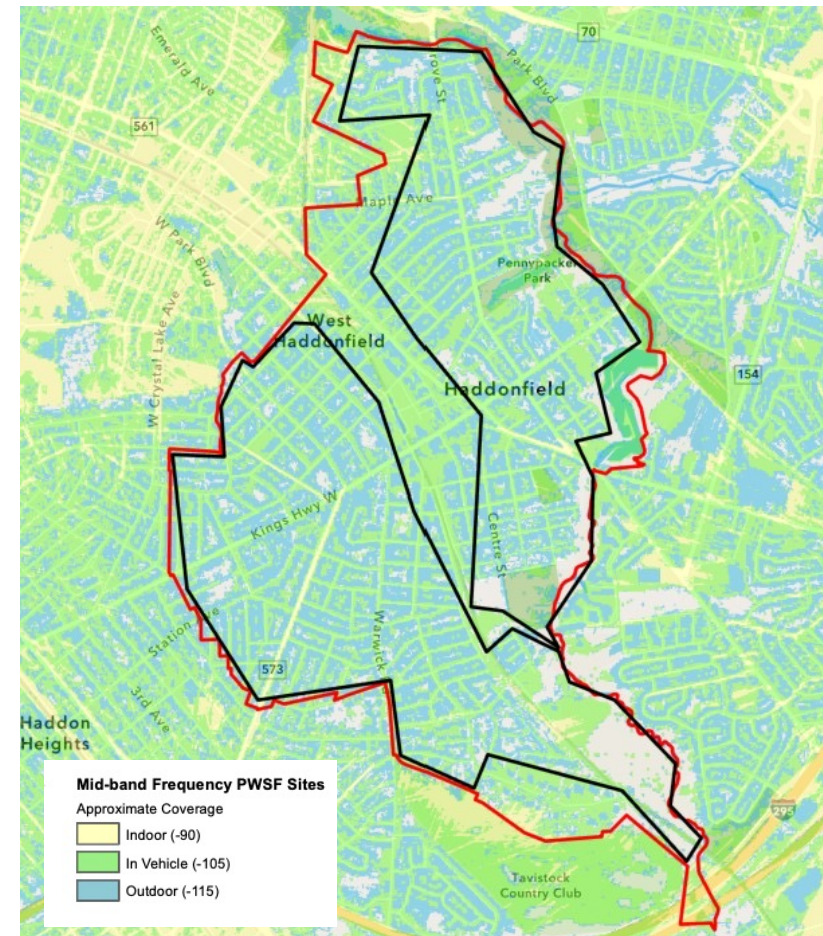
Simulated Predicted Gap Analysis For Providers Looking For Market Share

Map illustrates outside Borough sites only assuming each provider on each facility

Site H01 not turned on because not likely to host all 4 service providers on rooftop

Two Areas Of Concern outlined in black

- Roadways have mostly In Vehicle Coverage Only
- Many buildings showing outdoor and very limited In Building coverage





Wireless Telecommunications Regulatory Parameters & Potential Options For Filling in Coverage Gaps

47 USC §332(c)(7)
(a/k/a Section 704 of
the
Telecommunications
Act of 1996)

Preservation of state and local zoning authority regarding placement, construction and modification of personal wireless service facilities, however the regulations shall **NOT**:

- Unreasonably discriminate among providers of functionally equivalent services
- Prohibit or have the effect of prohibiting the provision of personal wireless services
- Shall act on requests within a reasonable time period
- Provide denials in writing and supported in substantial evidence contained in a written record
- Cannot regulate environmental effects of radio frequency (RF) emission beyond the Commission's regulations concerning such emissions
 - Can require a statement that facility complies with the Commission's regulations concerning such RF emissions

Possible Solutions For Improvement to Cell Coverage

Location

- Private Properties, Public Properties, Rights of Way, Utility Easements

Structure Type

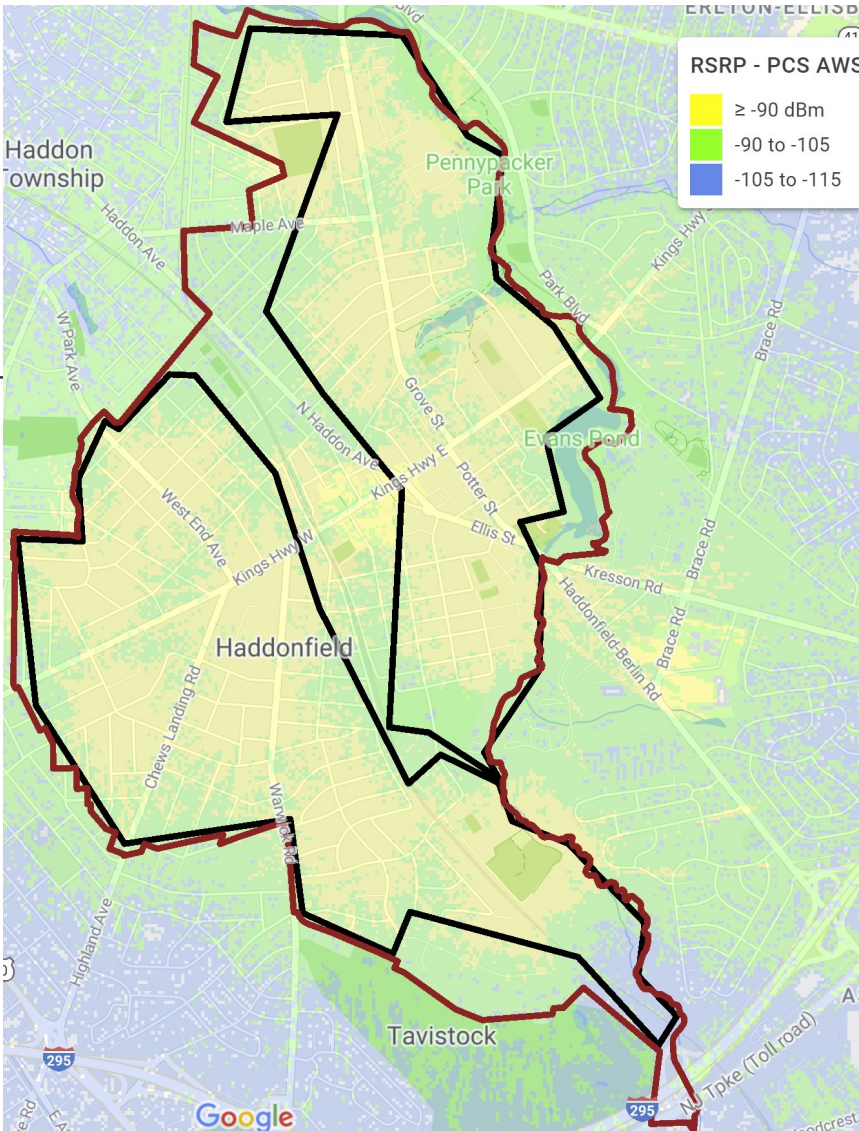
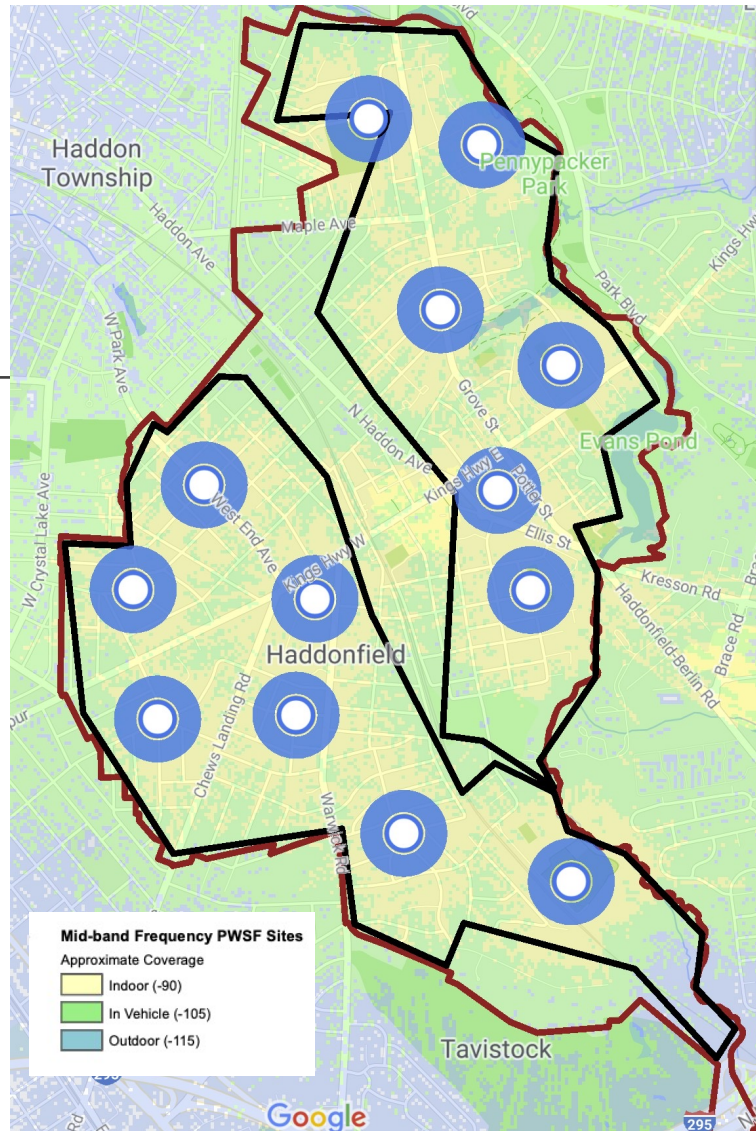
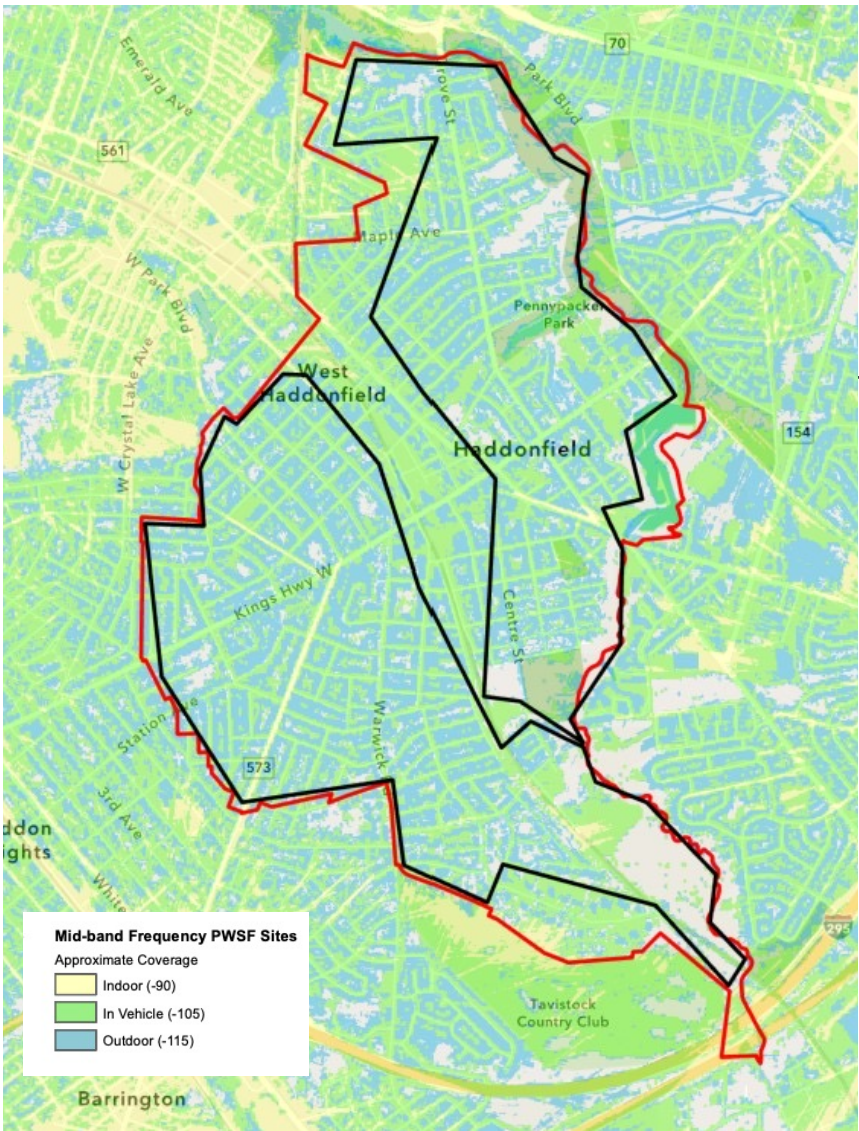
- Base Station, Tower

Design Type

- Concealed, Non-Concealed, Semi-Concealed

Antenna Type

- Hybrid (Macro & Small Cell), Macro Cell, Small Cell



Scenario: Macro Cell Only For Improving Cell Phone Coverage
13 Macro Cells (100' Structure Height Modeled at 80')



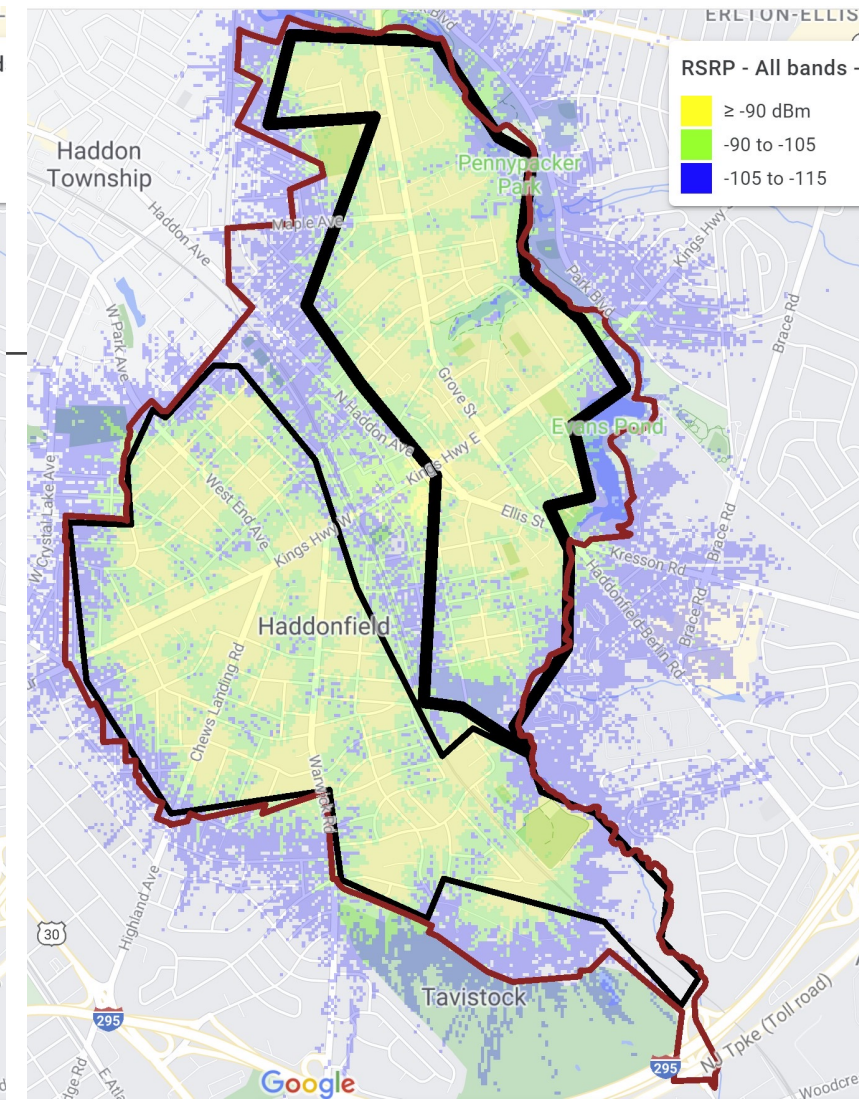
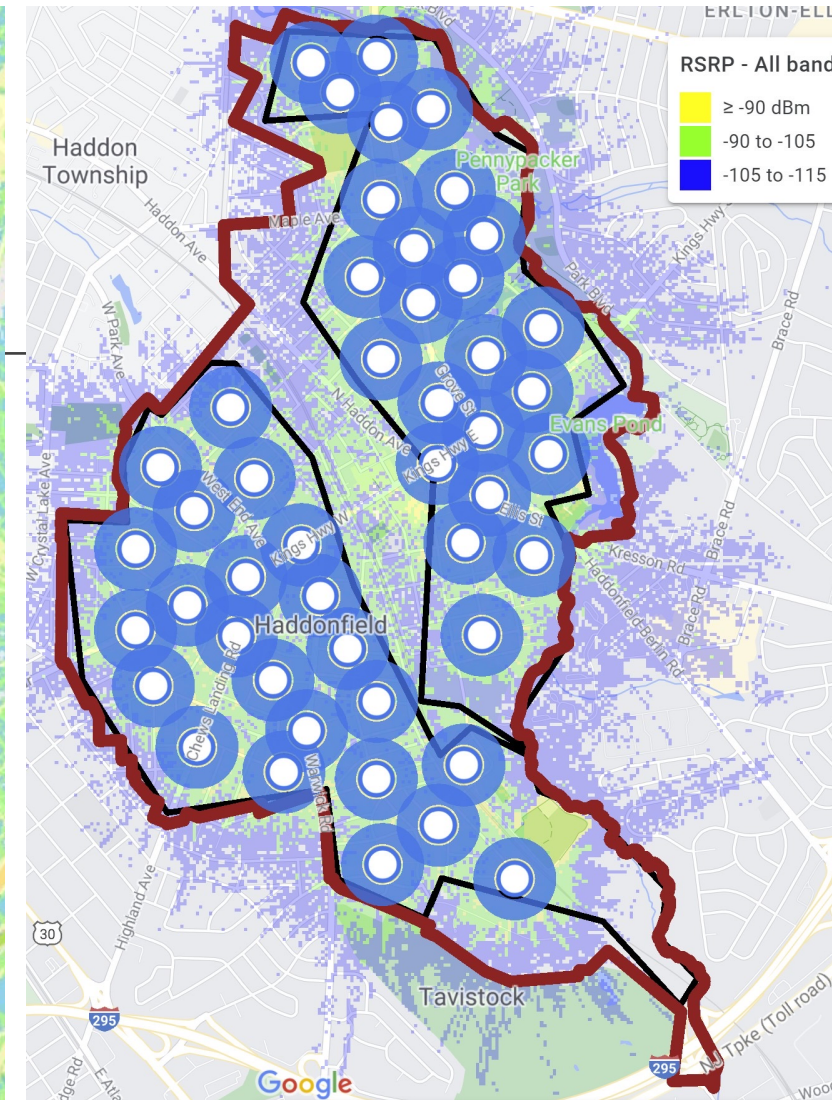
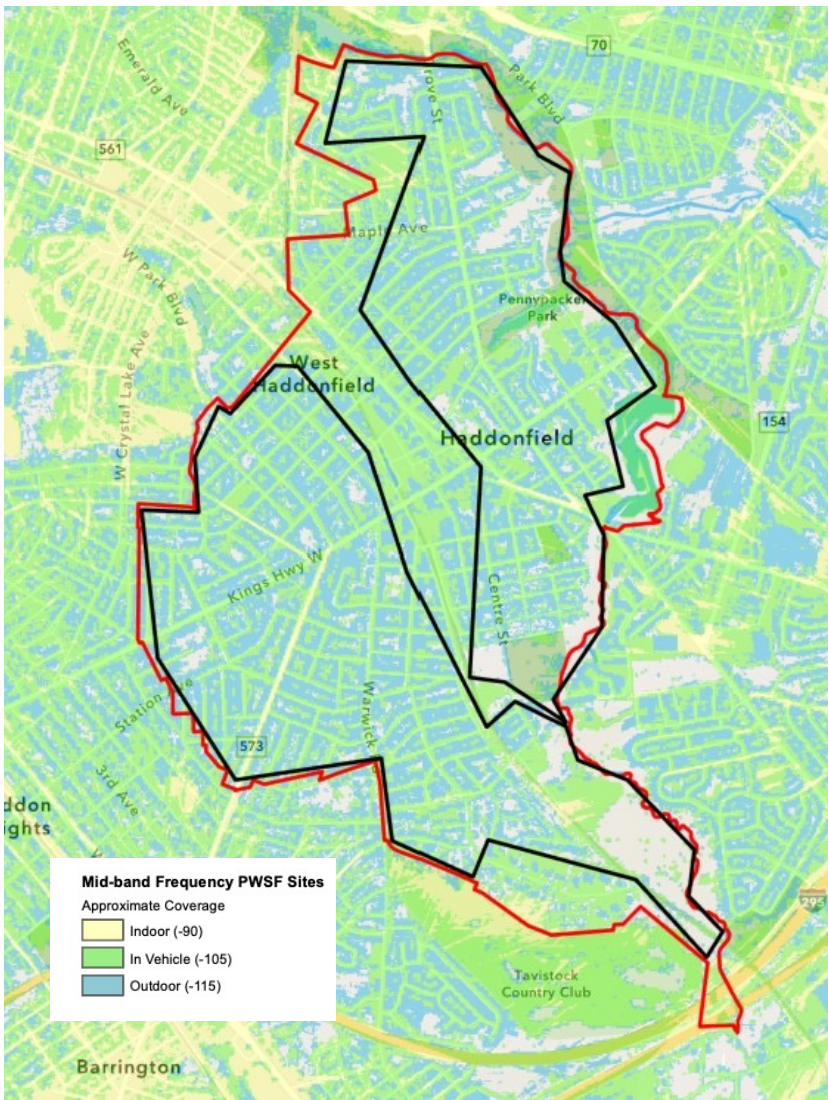
Sample 100' Multi-tenant Macro Cell Towers



80' Single Tenant Flagpole & Light Stanchions At Parks/Fields

Light Stanchions:

- Painted and Not Painted
- Single Service Provider Per Light Pole
- Images From Same Baseball Field
- 80' Drop and Swap/Replacement Light Poles



Scenario: Small Cell Only For Improving Cell Phone Coverage
47 Small Cells (25' Structure Height Modeled at 25')



In ROW

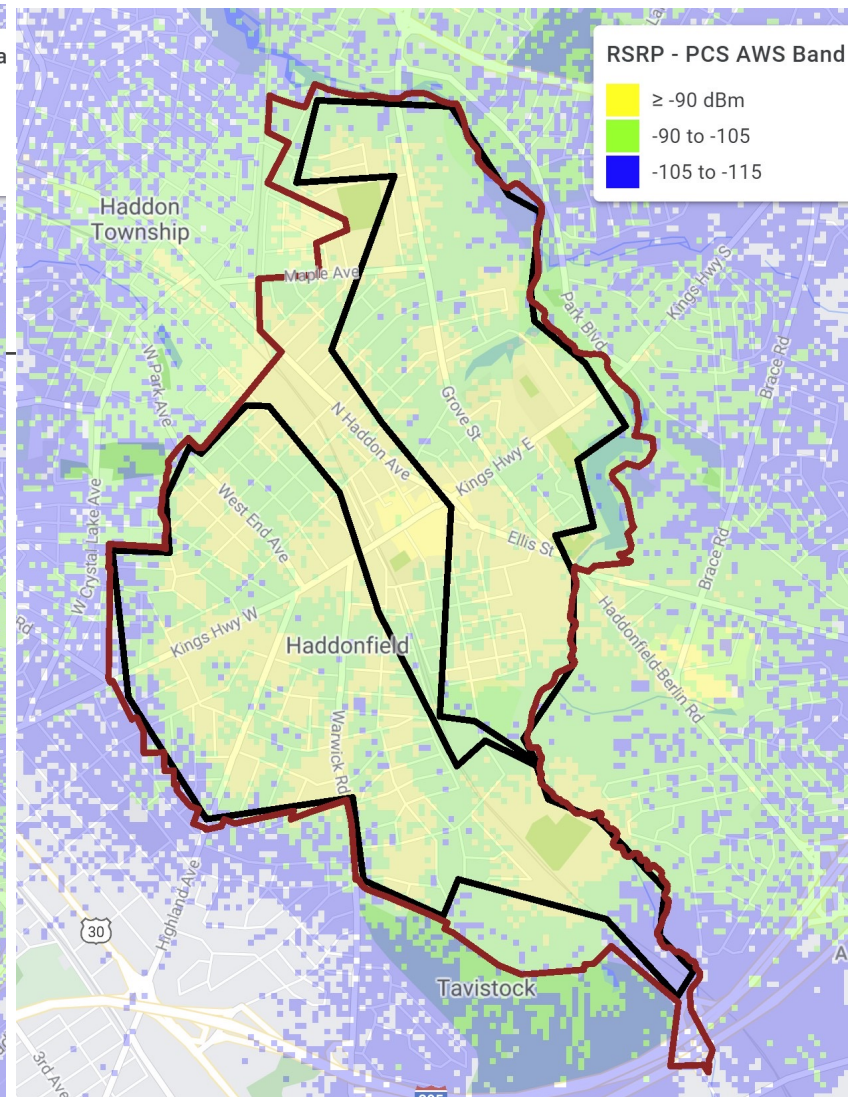
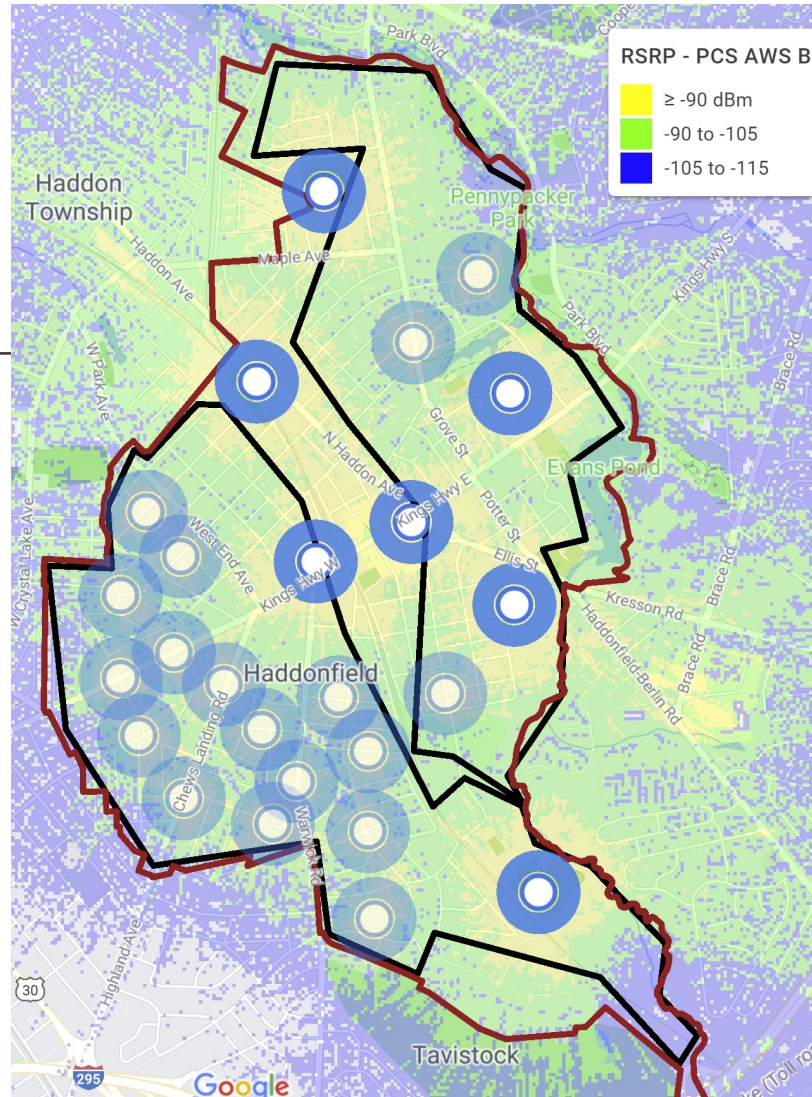
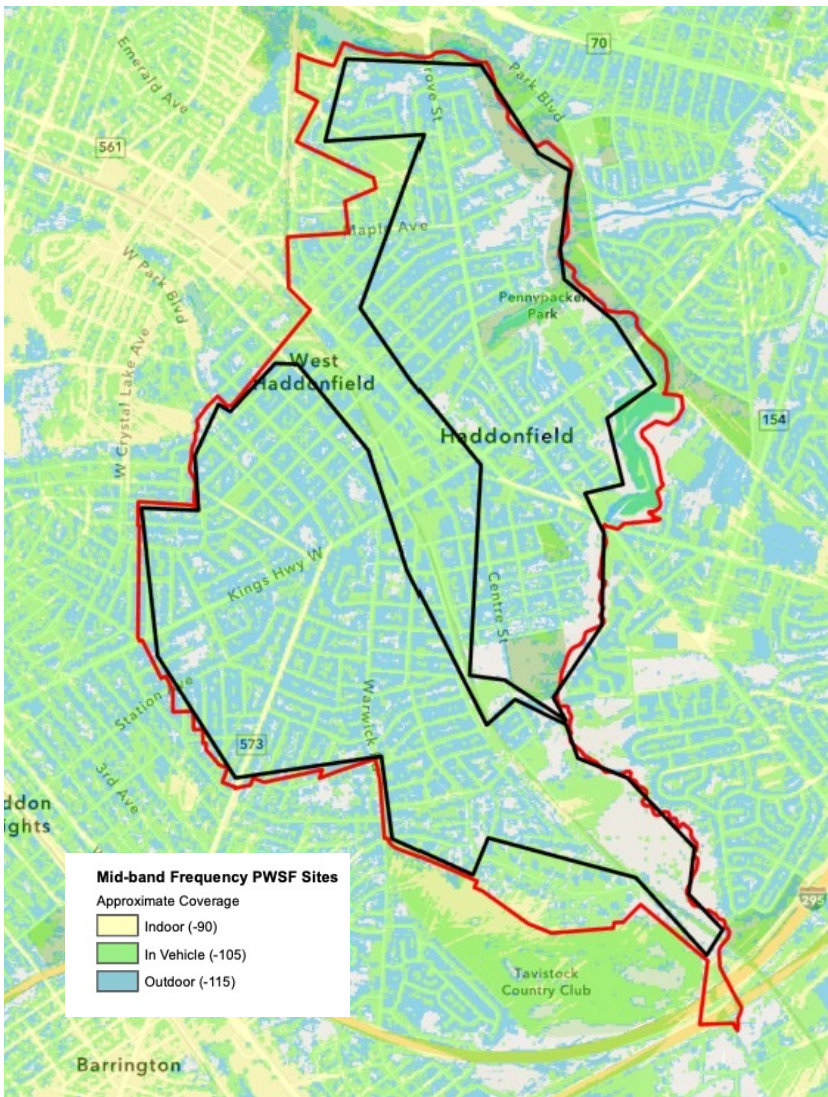


In ROW



In Parking Lot

Sample 25' - 32' Small Cell Facilities



Hybrid Scenario For Improving Cell Phone Coverage
7 Macro Cells (non-shaded icons) & 18 Small Cells (shaded icons)

Community Participation Possible Solutions For Improvement to Cell Coverage

Location

- Private Properties, Public Properties, Rights of Way, Utility Easements

Structure Type

- Base Station, Tower

Design Type

- Concealed, Non-Concealed, Semi-Concealed

Antenna Type

- Hybrid (Macro & Small Cell), Macro Cell, Small Cell

Community Poll

DRAFT Optional Haddonfield
Wireless Infrastructure Preference
Poll

