

STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

IN RE: :  
 :  
 :  
 A PETITION OF CELLCO PARTNERSHIP : PETITION NO. \_\_\_\_  
 D/B/A VERIZON WIRELESS FOR A :  
 :  
 DECLARATORY RULING ON THE NEED TO :  
 :  
 OBTAIN A SITING COUNCIL CERTIFICATE :  
 :  
 FOR THE INSTALLATION OF A SMALL :  
 :  
 CELL TELECOMMUNICATIONS FACILITY :  
 :  
 AT 109 FEDERAL ROAD, DANBURY, :  
 :  
 CONNECTICUT : MARCH 18, 2015

PETITION FOR A DECLARATORY RULING:  
INSTALLATION HAVING NO  
SUBSTANTIAL ADVERSE ENVIRONMENTAL EFFECT

I. Introduction

Pursuant to Sections 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), Cellco Partnership d/b/a Verizon Wireless (“Cellco”) hereby petitions the Connecticut Siting Council (the “Council”) for a declaratory ruling (“Petition”) that no Certificate of Environmental Compatibility and Public Need (“Certificate”) is required under Section 16-50k(a) of the Connecticut General Statutes (“C.G.S.”) to install a new “small cell” telecommunications facility on an existing commercial building at 109 Federal Road (Route 202) in Danbury, Connecticut (the “Property”). The Property is owned by 109 Federal Road, LLC (“Owner”). Cellco has designated this site as its “Danbury SC6 Facility”.

II. Factual Background

The Property is a 0.93 acre parcel in Danbury’s CG-20 Commercial zone and is surrounded by other commercial uses along Federal Road in Danbury. See Attachment 1 – Site Vicinity and Site Schematic Maps (Aerial Photograph).

Cellco is licensed to provide wireless telecommunications services in the 850 MHz, 1900 MHz, 700 MHz and 2100 MHz frequency ranges throughout the State of Connecticut. Initially, the proposed Danbury SC6 Facility described above will provide wireless service in Cellco's 1900 MHz and 2100 MHz frequency ranges only. Coverage plots showing Cellco's service in northeast Danbury, southwest Brookfield and northern Bethel today and the coverage footprint for the proposed Danbury SC6 Facility are included in Attachment 2.

As shown on the coverage plots, Cellco currently maintains four (4) cell sites within approximately 2.5 miles of the proposed Danbury SC6 Facility. Cellco's Brookfield West cell site consists of antennas on an existing tower off Stadley Rough Road in Danbury. Cellco's Danbury cell site consists of antennas on the roof of Danbury Hospital. Cellco's Germantown cell site consists of antennas on a tower at 48 Newtown Road in Danbury. Cellco's Bethel North cell site consists of antennas on an existing transmission line tower off Sky Edge Lane in Bethel. As depicted on coverage maps included in Attachment 2, Cellco currently maintains some gaps in reliable wireless service along Federal Road (Route 202) and Route 7 and in the surrounding commercial areas in its 1900 MHz and 2100 MHz frequencies. Cellco intends to provide service to these coverage gaps in the near future and has established a "Brookfield South" search area to address that need for service. The more significant benefit of the Danbury SC6 Facility is the capacity relief it will provide to Cellco's existing Germantown (Alpha sector) and Bethel North (Alpha sector) cell sites, both of which are currently operating beyond their respective capacity limits (a/k/a exhausting). Significant commercial development along Federal Road and daily traffic along Route 202 and Route 7 in the area have been identified as data traffic concentration areas that contribute to these existing capacity problems. In an effort to resolve these service problems and provide customers with enhanced wireless services in the area, Cellco proposes to

install a mast-mounted small cell facility on the roof of the building at the Property.

### III. Proposed Danbury SC6 Facility

The proposed Danbury SC6 Facility would consist of two antenna masts installed in the northerly portion of the roof of the building. The masts would support a total of four (4) small cell panel-type antennas and four (4) Remote Radio Heads (“RRHs”). The antennas and RRHs will be concealed by a faux chimney structure extending approximately 10.5 feet above the roof. Equipment associated with the small cell antennas will be located inside two (2) cabinets on a lower portion of the roof of the building to the south of the antenna installation. Power and telephone service to the Danbury SC6 Facility will extend from existing service inside the building. (See Cellco’s Project Plans included in Attachment 3). Specifications for the small cell antenna (Commscope Model HBX-6513DS-A2M) and RRH (Model 2X60-AWS) are included in Attachment 4.

### IV. Discussion

#### A. The Proposed Facility Modifications Will Not Have A Substantial Adverse Environmental Effect

The Public Utility Environmental Standards Act (the “Act”), C.G.S. § 16-50g et seq., provides for the orderly and environmentally compatible development of telecommunications towers in the state to avoid “a significant impact on the environment and ecology of the State of Connecticut.” C.G.S. § 16-50g. To achieve these goals, the Act established the Council, and requires a Certificate of Environmental Compatibility and Public Need for the construction of cellular telecommunication towers “that may, as determined by the council, have a substantial adverse environmental effect”. C.G.S. § 16-50k(a).

1. Physical Environmental Effects

Cellco respectfully submits that the installation of two (2) small masts, each supporting two (2) small cell panel-type antennas and two (2) RRHs and the installation of two (2) equipment cabinets on the lower portion of the roof of the existing building, will not involve a significant alteration in the physical and environmental characteristics of the Property. No new ground disturbance of any kind is necessary or proposed as a part of the Danbury SC6 Facility installation.

2. Visual Effects

The installation of two (2) small masts each supporting two (2) antennas and two (2) RRHs on the roof of the building at the Property would have minimal visual effects on the Property and the surrounding area. The masts, antennas and RRHs will be concealed in a faux chimney designed on the roof of the building. (See Limited Visual Assessment and Photo-Simulations (“Visual Report”) included in Attachment 5). As discussed in the Visual Report, the visibility of the concealed small cell installation would be limited to locations within approximately 500 feet of the building. Due to the concealment, Cellco has determined that the small cell facility components would not have a significant impact on aesthetics in the area.

3. FCC Compliance

Radio frequency (“RF”) emissions from the proposed installation will be below the standards adopted by the Federal Communications Commission (“FCC”). Included in Attachment 6 is a worst-case General Power Density table, including a calculation that demonstrates that the Danbury SC6 Facility will operate within the FCC safety standard.

4. FAA Summary Report

Included in Attachment 7 is a Federal Airways & Airspace Summary Report verifying that the two new masts, antennas and RRHs concealed inside a faux chimney on the roof of the building at the Property would not constitute an obstruction or hazard to air navigation and that notification to the FAA is not required.

B. Notice to the City, Property Owner and Abutting Landowners

On March 18, 2015, a copy of this Petition was sent to Mayor Mark Boughton of the City of Danbury and 109 Federal Road, LLC, the Owner. Because the Property is located within 2500 feet of the Danbury/Brookfield town boundary, a copy of this Petition was also sent to First Selectman William N. Tinsley of the Town of Brookfield. Included in Attachment 8 are copies of the letters sent to Mayor Boughton, First Selectman Tinsley and the Property owner 109 Federal Road, LLC.

Notice of Cellco's intent to file this Petition, along with a copy of the Project Plans and Site Schematic Map was also sent to the owners of land that abuts the Property. A sample abutter's notice letter, the list of those abutting landowners who were sent a copy of the Petition and a certification that notice was sent is included in Attachment 9.

V. Conclusion

Based on the information provided above, Cellco respectfully requests that the Council issue a determination in the form of a declaratory ruling that the installation of the Danbury SC6 Facility will not have a substantial adverse environmental effect and does not require the issuance of a Certificate of Environmental Compatibility and Public Need pursuant to § 16-50k of the General Statutes.

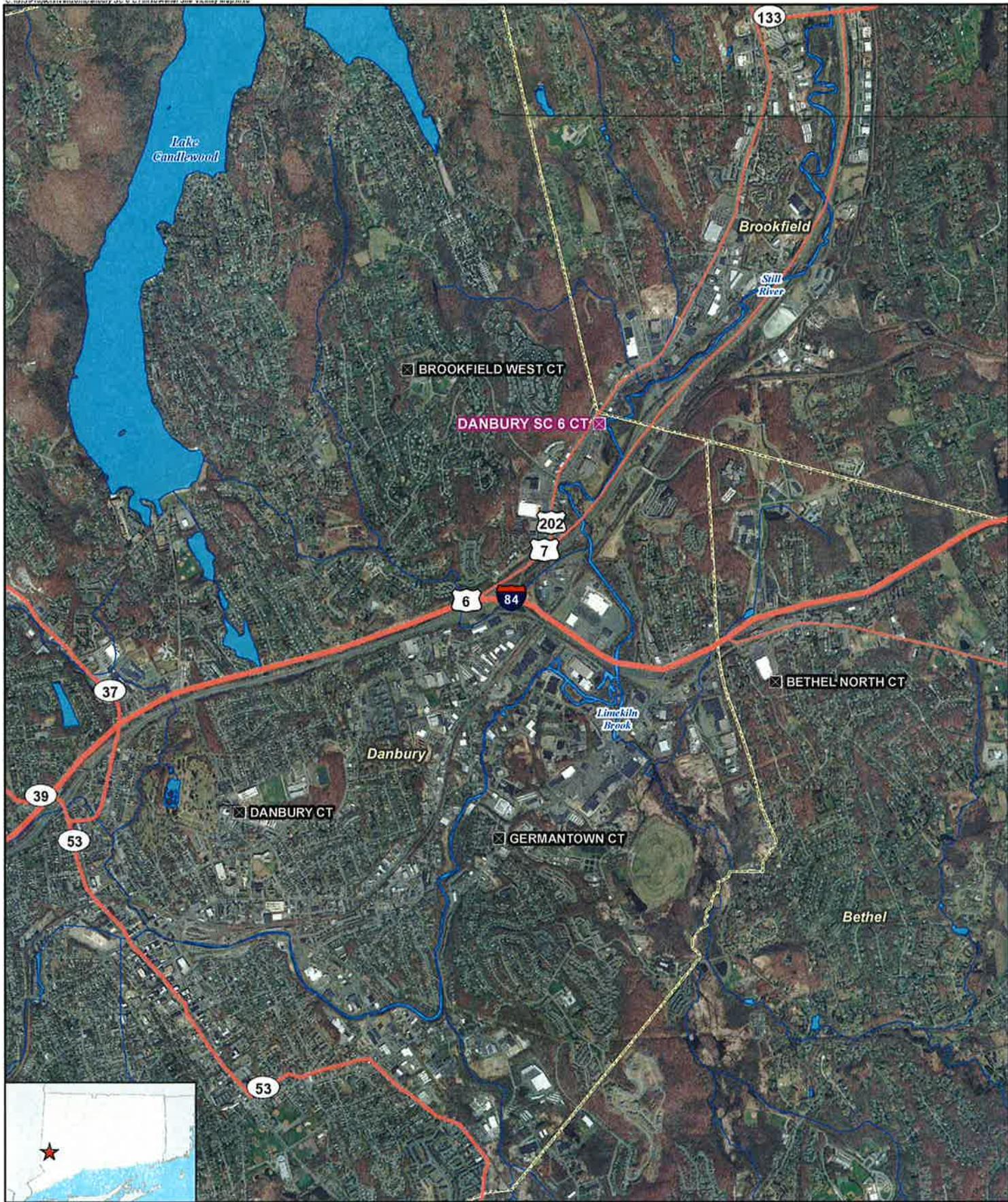
Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON  
WIRELESS

By

  
Kenneth C. Baldwin, Esq.  
Robinson & Cole LLP  
280 Trumbull Street  
Hartford, CT 06103-3597  
(860) 275-8200  
Its Attorneys

# **ATTACHMENT 1**



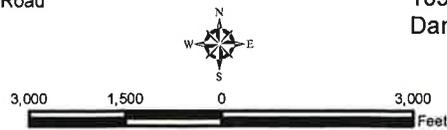
**Legend**

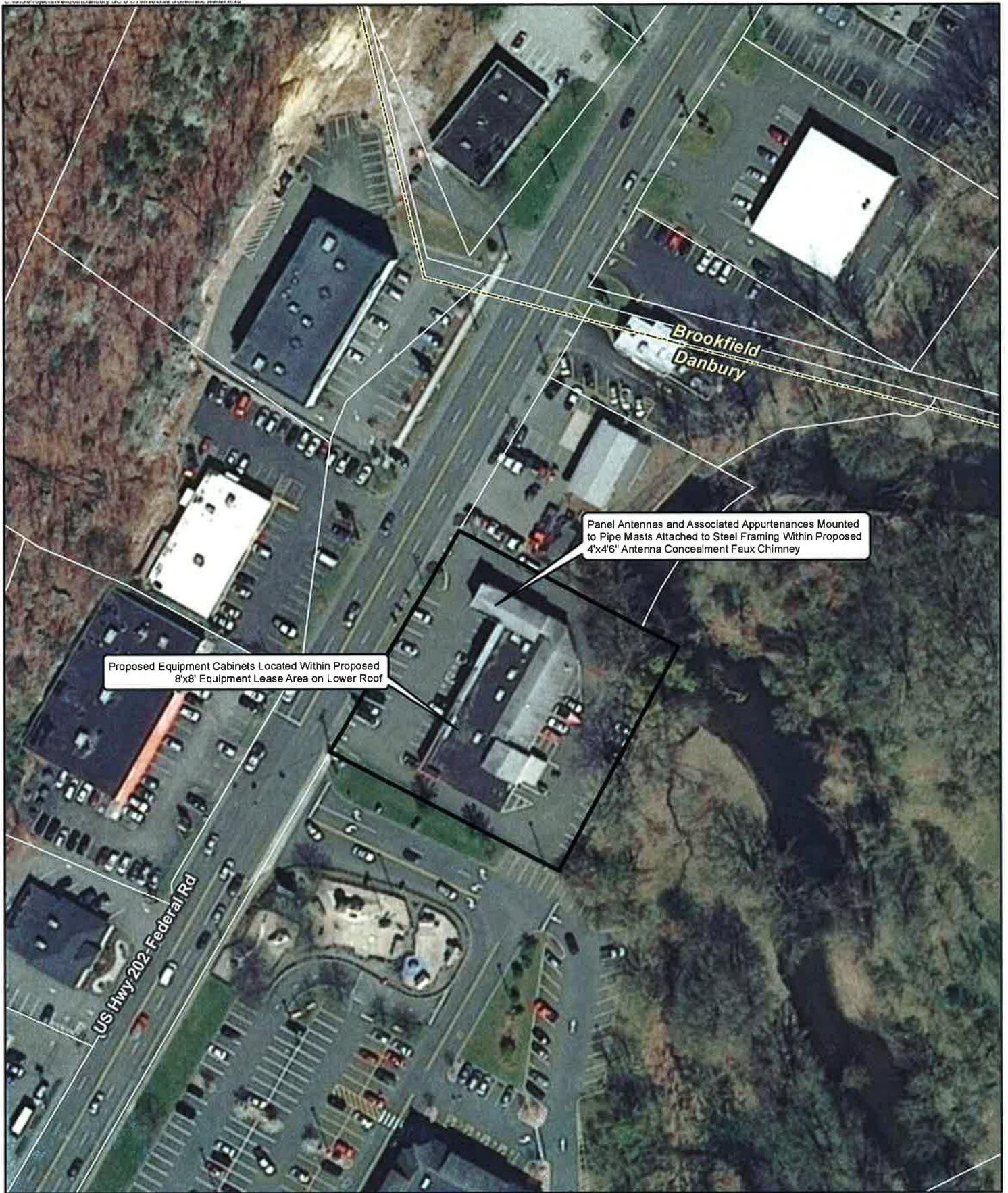
- Proposed Verizon Small Cell Facility
- Surrounding Verizon Wireless Facilities
- Municipal Boundary
- Watercourse
- Waterbody
- Major Road

**Site Vicinity Map**

Proposed Small Cell Installation  
 Danbury SC 6 CT  
 109 Federal Road  
 Danbury, Connecticut

Base Map Source: 2012 Aerial Photograph (CTECO)  
 Map Scale: 1 inch = 3,000 feet  
 Map Date: March 2015





Proposed Equipment Cabinets Located Within Proposed 8'x8' Equipment Lease Area on Lower Roof

Panel Antennas and Associated Appurtenances Mounted to Pipe Masts Attached to Steel Framing Within Proposed 4'x4' Antenna Concealment Faux Chimney

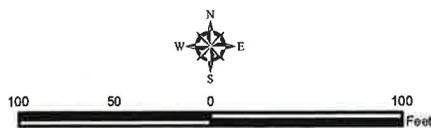
**Legend**

-  Subject Property
-  Approximate Parcel Boundary (CTDEEP GIS)

**Site Schematic**

Proposed Small Cell Installation  
 Danbury SC 6 CT  
 109 Federal Road  
 Danbury, Connecticut

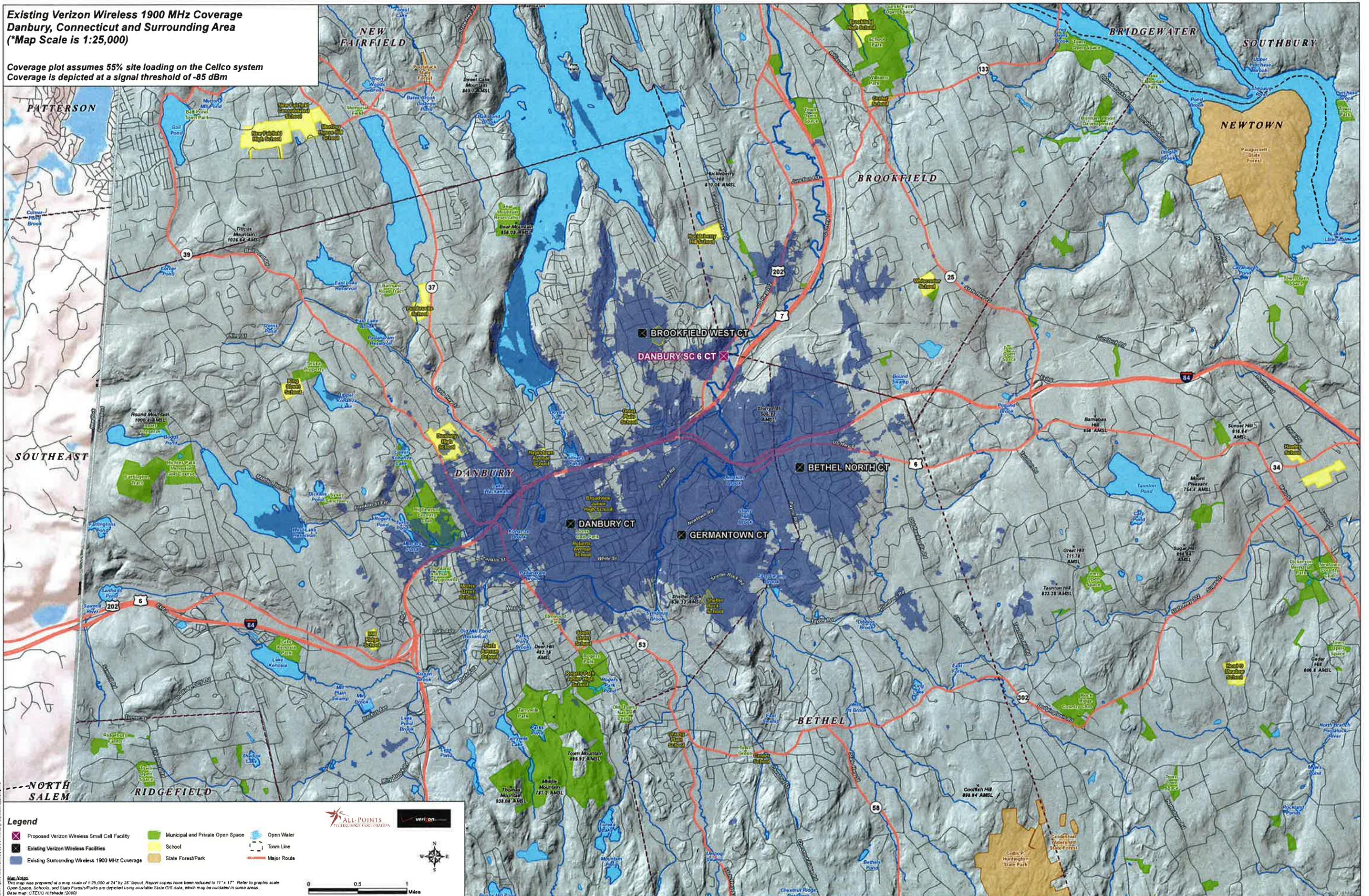
**Map Notes:**  
 Base Map Source: 2012 Aerial Photograph (CTECO)  
 Map Scale: 1 inch = 100 feet  
 Map Date: March 2015



# **ATTACHMENT 2**

**Existing Verizon Wireless 1900 MHz Coverage  
Danbury, Connecticut and Surrounding Area  
(\*Map Scale is 1:25,000)**

Coverage plot assumes 55% site loading on the Celco system  
Coverage is depicted at a signal threshold of -85 dBm



- Legend**
- X Proposed Verizon Wireless Small Cell Facility
  - █ Existing Verizon Wireless Facilities
  - █ Existing Surrounding Wireless 1900 MHz Coverage
  - █ Municipal and Private Open Space
  - █ School
  - █ Slate Forests/Park
  - █ Open Water
  - Town Line
  - Major Route

**ALL-POINTS**  
TELECOMMUNICATIONS CORPORATION

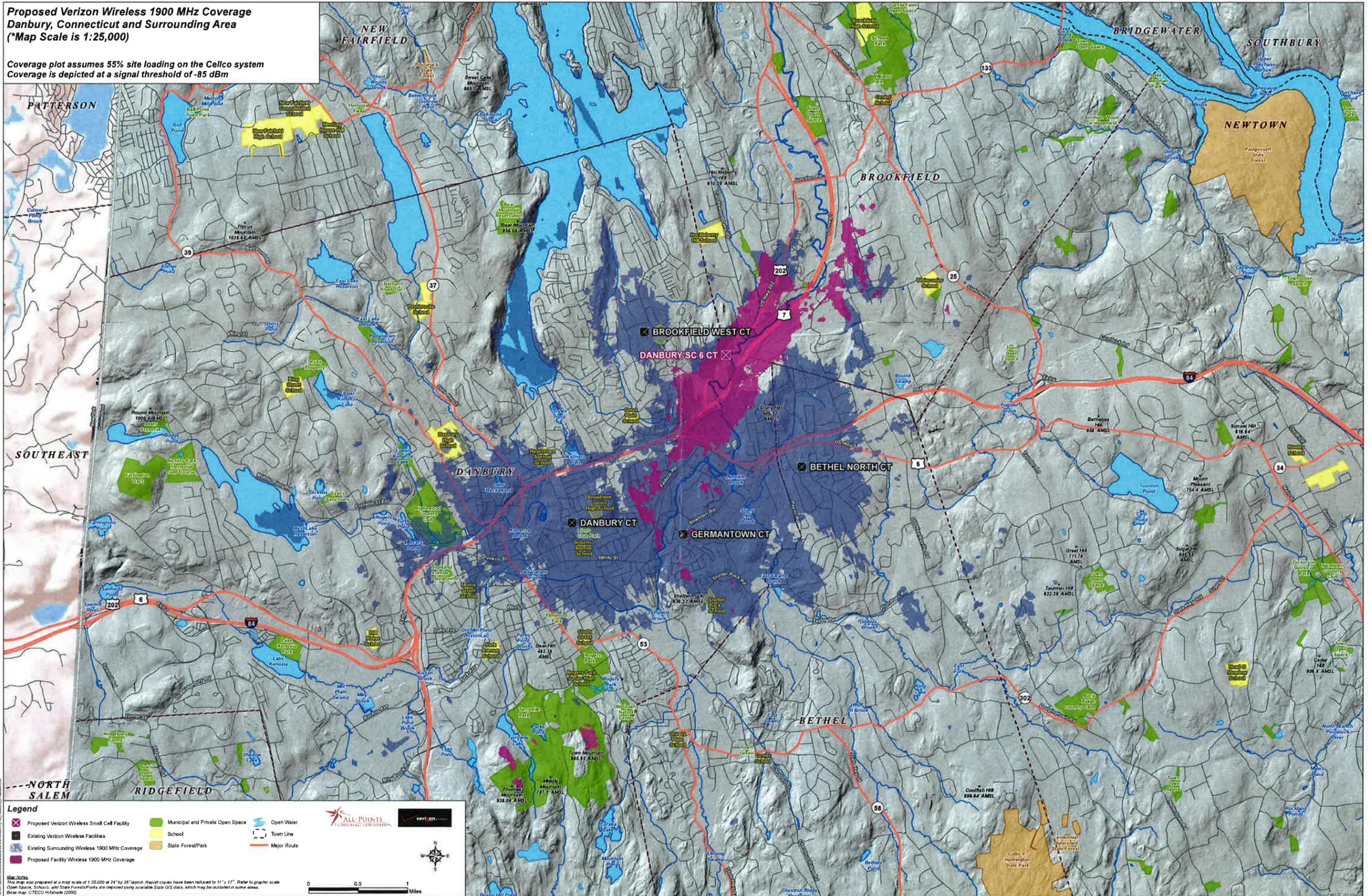
**verizon**

0 0.5 1 Miles

**Map Notes:**  
This map was prepared at a map scale of 1:25,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale. Open Space, Schools, and Slate Forests/Parks are depicted using available State GIS data, which may be outdated in some areas. Base map: CTECO Hottelade (2009)

**Proposed Verizon Wireless 1900 MHz Coverage  
Danbury, Connecticut and Surrounding Area  
(\*Map Scale is 1:25,000)**

Coverage plot assumes 55% site loading on the Celco system  
Coverage is depicted at a signal threshold of -85 dBm



**Legend**

- Proposed Verizon Wireless Small Cell Facility
- Existing Verizon Wireless Facilities
- Existing Surrounding Wireless 1900 MHz Coverage
- Proposed Facility Wireless 1900 MHz Coverage
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line
- Major Route

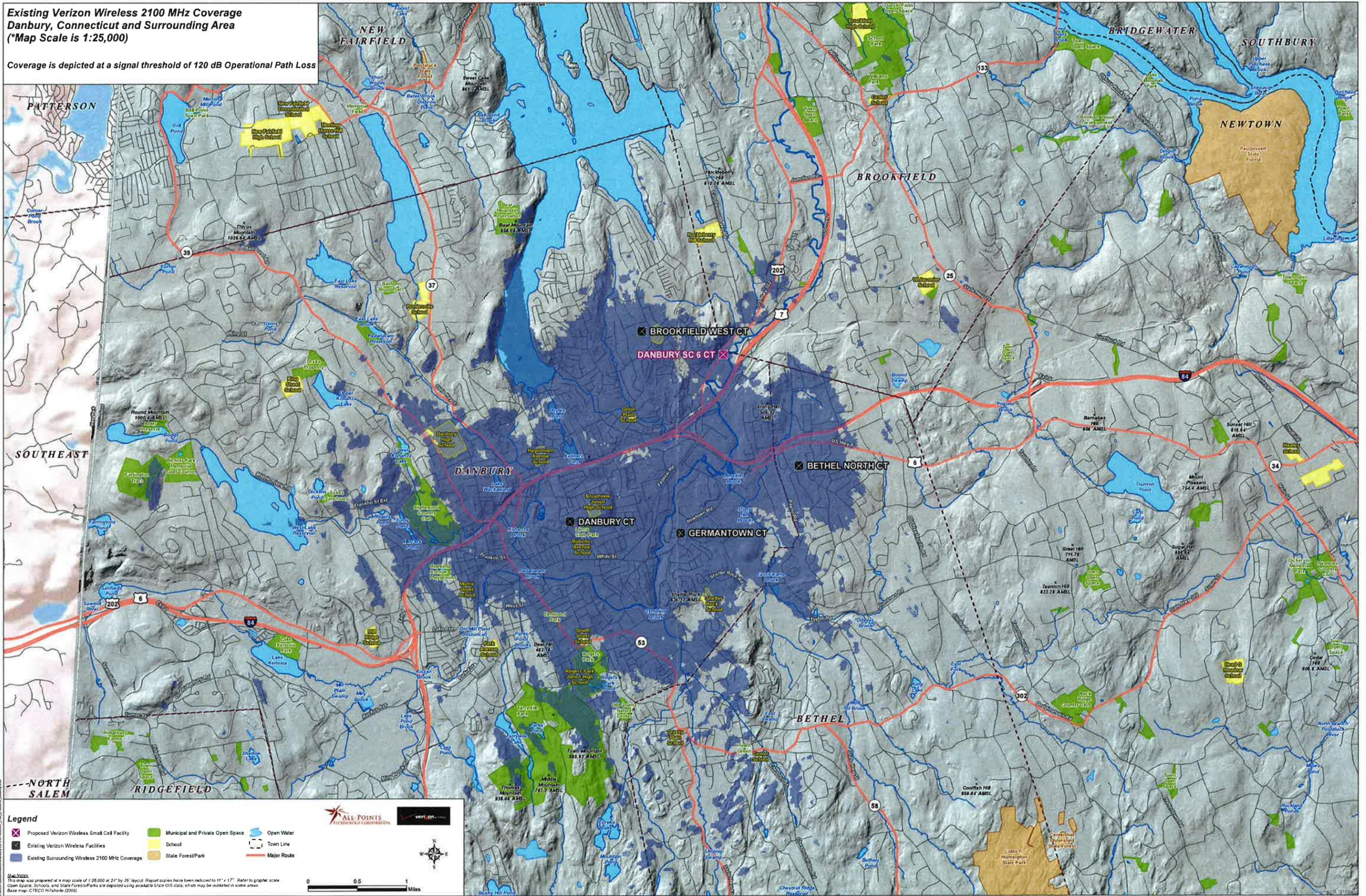
**Map Notes**  
This map was prepared at a map scale of 1:25,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale. Open Space, Schools, and State Forest/Parks are depicted using available State GIS data, which may be outdated in some areas. Base map: ©TECO Habitat (2006)

**ALL POINTS TECHNOLOGY CORPORATION**

www.allpoints.com

**Existing Verizon Wireless 2100 MHz Coverage  
Danbury, Connecticut and Surrounding Area  
(\*Map Scale is 1:25,000)**

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss



**Legend**

- ✕ Proposed Verizon Wireless Small Cell Facility
- Municipal and Private Open Space
- Open Water
- Existing Verizon Wireless Facilities
- School
- Town Line
- Existing Surrounding Wireless 2100 MHz Coverage
- State Forest/Park
- Major Route

**Map Notes**  
This map was prepared at a map scale of 1:25,000 at 24" by 35" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale. Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas. Base map: CTECO Hixhake (2006)

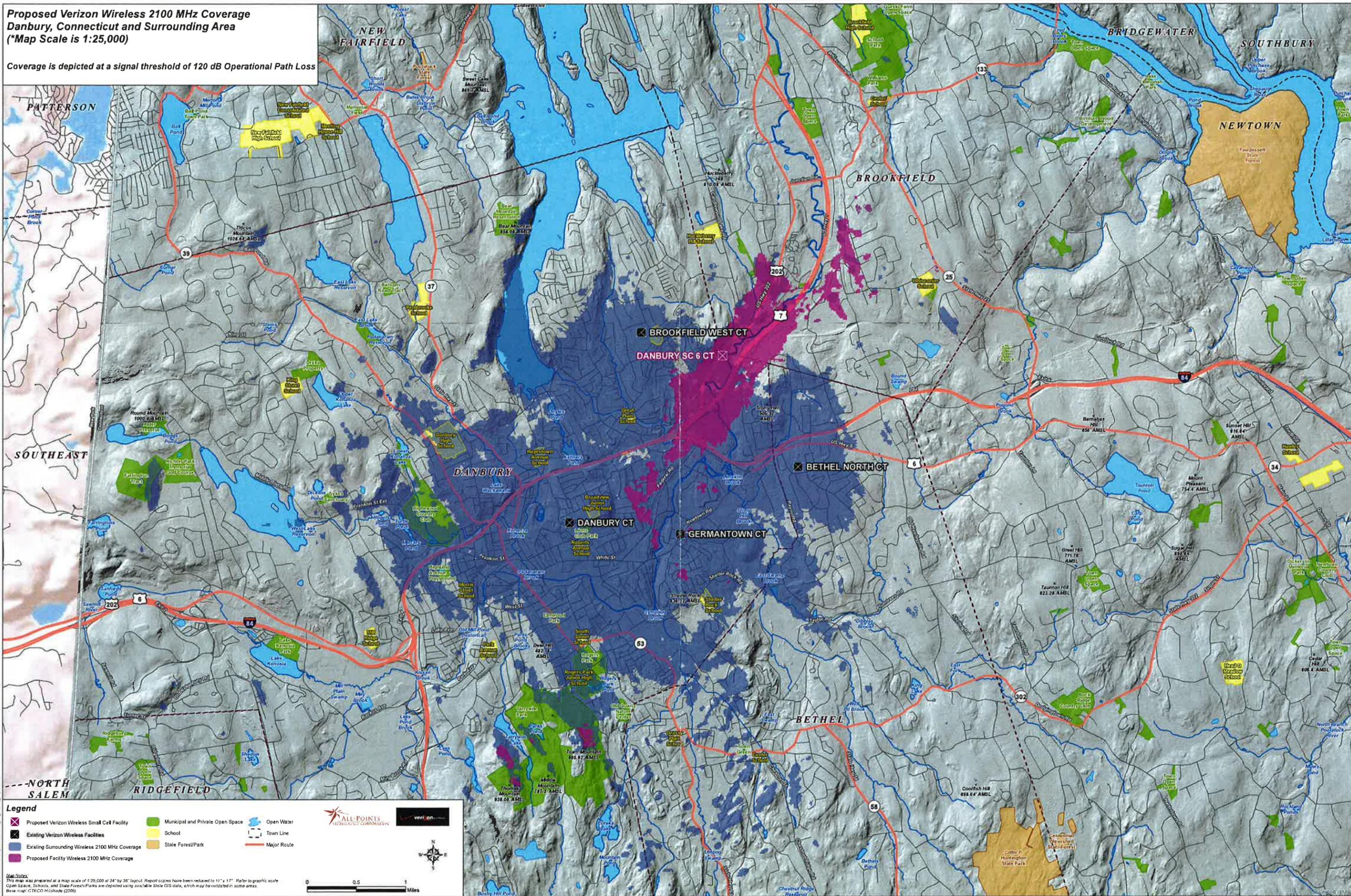
0 0.5 1 Miles

**ALL POINTS**  
RESIDENCE CORPORATION

**verizon**

**Proposed Verizon Wireless 2100 MHz Coverage  
Danbury, Connecticut and Surrounding Area  
(\*Map Scale is 1:25,000)**

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss



**Legend**

- Proposed Verizon Wireless Small Cell Facility
- Existing Surrounding Wireless 2100 MHz Coverage
- Proposed Facility Wireless 2100 MHz Coverage
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line
- Major Route

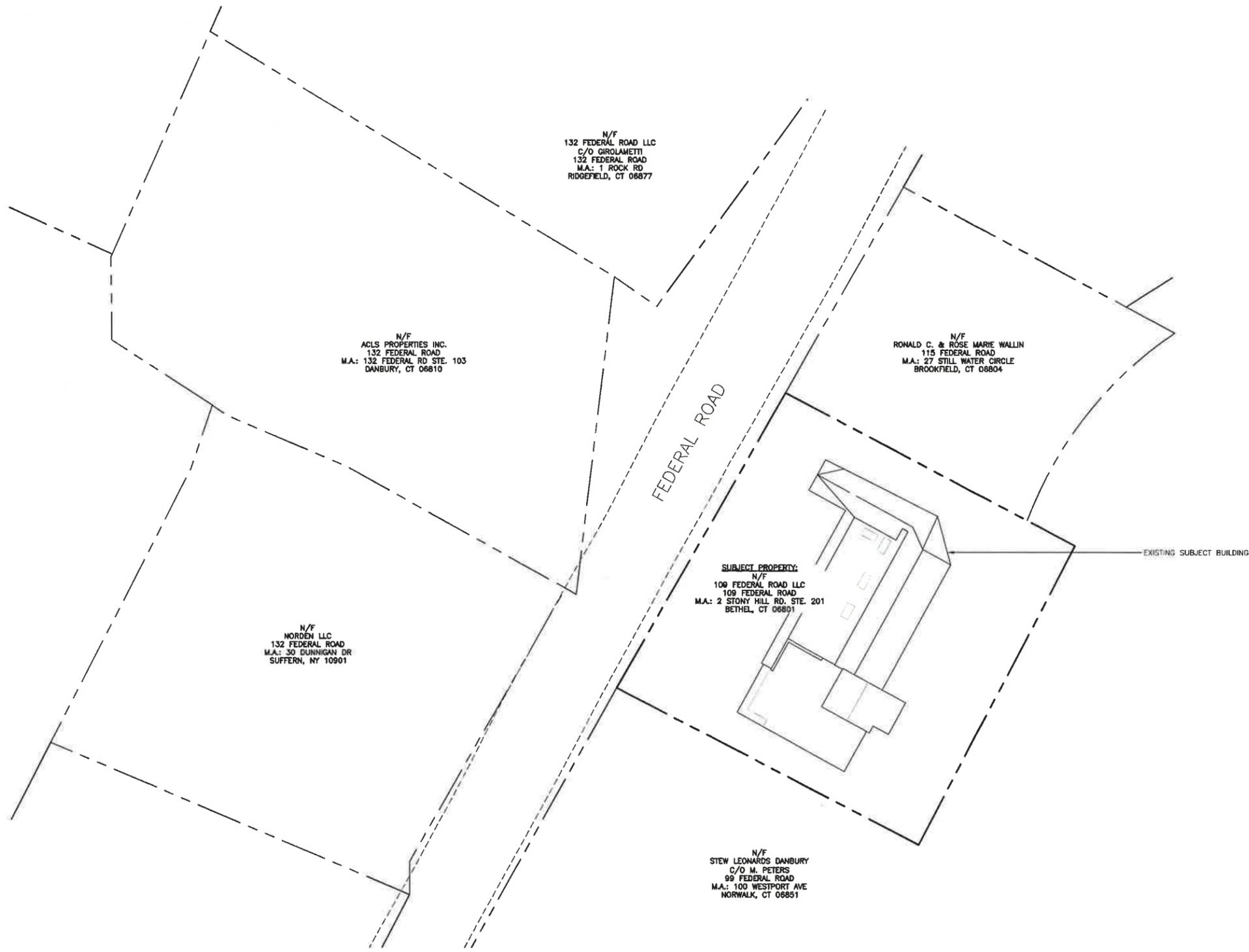
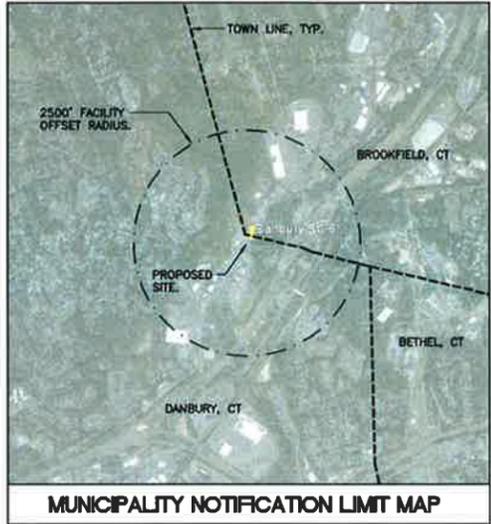
**Map Notes:**  
This map was prepared at a map scale of 1:25,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.  
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.  
Base map: CTREG H30000 (2009)

**Scale:** 0 0.5 1 Miles

**Logos:** ALL-POINTS TECHNOLOGICAL CORPORATION, verizon

# **ATTACHMENT 3**





REV.	DATE	DESCRIPTION
2	03/17/15	ISSUED FOR CSC - ABUTTERS MAP ADDED
1	03/12/15	ISSUED FOR CSC
0	03/03/15	ISSUED FOR CSC - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

Cellco Partnership  
d/b/a. Verizon Wireless

**CENTEK engineering**  
Came on Solution  
2031 485 000  
2031 484-997 Fax  
422 North Fairfield Road  
Meriden, CT 06450  
www.CentekEng.com

**Cellco Partnership d/b/a Verizon Wireless**  
WIRELESS COMMUNICATIONS FACILITY  
**DANBURY SC6**  
109 FEDERAL ROAD  
DANBURY, CT 06811

DATE: 03/03/15  
SCALE: AS NOTED  
JOB NO. 15024.000

ABUTTERS MAP

**C-1**  
Sheet No. 2 of 3



# **ATTACHMENT 4**

# Product Specifications

COMMSCOPE®

HBXX-6513DS-VTM

Andrew® Quad Port Antenna, 1710–2170 MHz, 65° horizontal beamwidth, RET compatible

POWERED BY



## Electrical Specifications

Frequency Band, MHz	1710–1880	1850–1990	1920–2170
Gain, dBi	14.5	14.6	14.9
Beamwidth, Horizontal, degrees	67	66	64
Beamwidth, Vertical, degrees	14.8	14.0	13.4
Beam Tilt, degrees	0–12	0–12	0–12
USLS, dB	15	15	15
Front-to-Back Ratio at 180°, dB	30	30	30
Front-to-Back Total Power at 180° ± 30°, dB	26	27	27
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	7	8	8
Isolation, dB	30	30	30
VSWR   Return Loss, dB	1.4   15.6	1.4   15.6	1.4   15.6
PIM, 3rd Order, 2 x 20 W, dBc	-150	-150	-150
Input Power per Port, maximum, watts	350	350	350
Polarization	±45°	±45°	±45°

## Electrical Specifications, BASTA\*

Frequency Band, MHz	1710–1880	1850–1990	1920–2170
Gain by all Beam Tilts, average, dBi	14.2	14.3	14.6
Gain by all Beam Tilts Tolerance, dB	±0.8	±0.7	±0.7
Gain by Beam Tilt, average, dBi	0 °   14.6	0 °   14.7	0 °   15.0
	6 °   14.4	6 °   14.5	6 °   14.7
	12 °   13.5	12 °   13.7	12 °   13.8
Beamwidth, Horizontal Tolerance, degrees	±3.7	±3.3	±3.5
Beamwidth, Vertical Tolerance, degrees	±1.4	±0.9	±1.1
USLS, dB	15	15	16
CPR at Boresight, dB	22	22	22
CPR at Sector, dB	7	8	8

\* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, [download the whitepaper Time to Raise the Bar on BSAs.](#)

## Mechanical Specifications

Color   Radome Material	Light gray   PVC, UV resistant
Connector Interface   Location   Quantity	7-16 DIN Female   Bottom   4
Wind Loading, maximum	223.0 N @ 150 km/h 50.1 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h   149.8 mph
Antenna Dimensions, L x W x D	695.0 mm x 305.0 mm x 166.0 mm   27.4 in x 12.0 in x 6.5 in
Net Weight	7.9 kg   17.4 lb
Model with factory installed AISG 2.0 RET HBXX-6513DS-A2M	

# PCS RF MODULES

## RRH1900 2X60 - HW CHARACTERISTICS

LA6.0.1/13.3

RRH2x60	
RF Output Power	2x60W
Instantaneous Bandwidth	20MHz
Transmitter	2 TX
Receiver	1900 HW version 1900A HW version
Features	2 Branch RX – LA6.0.1 4 Branch RX – LR13.3 AISG 2.0 for RET/TMA Internal Smart Bias-T
Power	-48VDC
CPRI Ports	2 CPRI Rate 3 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (top mounted)



\*\* Not a Verizon Wireless deployed product

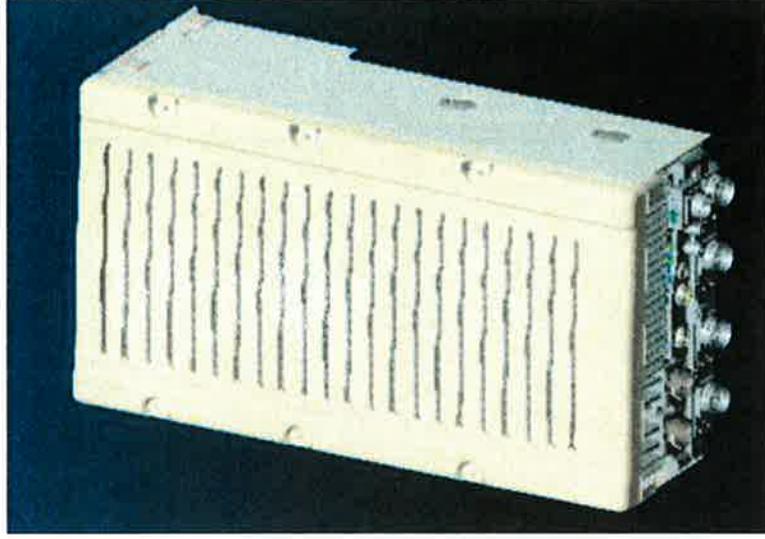
ALCATEL-LUCENT – CONFIDENTIAL – SOLELY FOR AUTHORIZED PERSONS HAVING A NEED TO KNOW – PROPRIETARY – USE PURSUANT TO COMPANY INSTRUCTION  
 COPYRIGHT © 2014 ALCATEL-LUCENT. ALL RIGHTS RESERVED.

# NEW PCS RF MODULES FOR VZW

## RRH2X60 - HW CHARACTERISTICS

LR14.3

	<b>RRH2x60</b>
RF Output Power	2x60W (4x30W HW Ready)
Instantaneous Bandwidth	60MHz
Target Reliability (Annual Return Rate)	<2%
Receiver	4 Branch Rx
Features	AISG 2.0 for RET/TMA
Power	-48VDC Internal Smart Bias-T
CPRI Ports	2 CPRI Rate 5 Ports
External Alarms	4 External User Alarms
Monitor Ports	TX, RX
Environmental	GR487 Compliance
RF Connectors	7/16 DIN (downward facing)
Dimensions	22"(h) x 12"(w) x 9.4" (d)**
Weight	55lb**



\*\* - Includes solar shield but not mounting brackets (8 lbs.)

# ALCATEL-LUCENT WIRELESS PRODUCT DATASHEET RRH2x60-AWS FOR BAND 4 APPLICATIONS

The Alcatel-Lucent RRH2x60-AWS is a high power, small form factor Remote Radio Head operating in the AWS frequency band (3GPP Band 4) for LTE technology. It is designed with an eco-efficient approach, providing operators with the means to achieve high quality and high capacity coverage with minimum site requirements and efficient operation.



A distributed Node B expands the deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of a Node B to be installed separately, within the same site or several kilometers apart. The Alcatel-Lucent RRH2x60-AWS is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals

along with operations, administration and maintenance (OA&M) information.

#### SUPERIOR RF PERFORMANCE

The Alcatel-Lucent RRH2x60-AWS integrates all the latest technologies. This allows to offer best-in-class characteristics.

It delivers an outstanding 120 watts of total RF power thanks to its two transmit RF paths of 60 W each.

It is ideally suited to support multiple-input multiple-output (MIMO) 2x2 operation.

It includes four RF receivers to natively support 4-way uplink reception diversity. This improves the radio uplink coverage and this can be used to extend the cell radius commensurate with 2x2MIMO 2x60 W for the downlink.

It supports multiple discontinuous LTE carriers within an instantaneous bandwidth of 45 MHz corresponding to the entire AWS B4 spectrum.

The latest generation power amplifiers (PA) used in this product achieve high efficiency (>40%), resulting in improved power consumption figures.

#### OPTIMIZED OPEX

The Alcatel-Lucent RRH2x60-AWS is designed to make available all the benefits of a distributed Node B, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX).

The Alcatel-Lucent RRH2x60-AWS is a very cost-effective solution to deploy LTE MIMO.

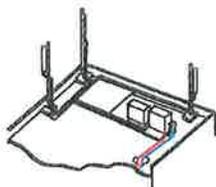
#### EASY INSTALLATION

The RRH2x60-AWS includes a reversible mounting bracket which allows for ease of installation behind an antenna, or on a rooftop knee wall while providing easy access to the mid body RF connectors.

The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment. However, many of these sites can host an Alcatel-Lucent RRH2x60-AWS installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

The Alcatel-Lucent RRH2x60-AWS is a zero-footprint solution and is convection cooled without fans for silent operation, simplifying negotiations with site property owners and minimizing environmental impacts.

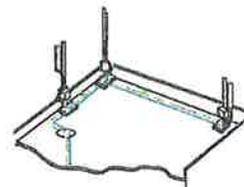
Installation can easily be done by a single person as the Alcatel-Lucent RRH2x60-AWS is compact and weighs about 20 kg, eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day.



Macro



RRH for space-constrained cell sites



Distributed

## FEATURES

- RRH2x60-AWS integrates two power amplifiers of 60W rating (at each antenna connector)
- Support multiple carriers over the entire 3GPP band 4
- RRH2x60-AWS is optimized for LTE operation
- RRH2x60-AWS is a very compact and lightweight product
- Advanced power management techniques are embedded to provide power savings, such as PA bias control

## BENEFITS

- MIMO LTE operation with only one single unit per sector
- Improved uplink coverage with built-in 4-way receive diversity capability
- RRH can be mounted close to the antenna, eliminating nearly all losses in RF cables and thus reducing power consumption by 50% compared to conventional solutions
- Distributed configurations provide easily deployable and cost-effective solutions, near zero footprint and

silent solutions, with minimum impact on the neighborhood, which ease the deployment

- RETA and TMA support without additional hardware thanks to the AISG v2.0 port and the integrated Bias-Tees. Bias-Tees support AISG DC supply and signaling.

## TECHNICAL SPECIFICATIONS

Specifications listed are hardware capabilities. Some capabilities depend on support in a specific software release or future release.

### Dimensions and weights

- HxWxD : 510x285x186mm (27 l with solar shield)
- Weight : 20 kg (44 lbs)

### Electrical Data

- Power Supply : -48V DC (-40.5 to -57V)
- Power Consumption (ETSI average traffic load reference) : 250W @2x60W

### RF Characteristics

- Frequency band: 1710-1755, UL / 2110-2155 MHz, DL (3GPP band 4)
- Output power: 2x60W at antenna connectors
- Technology supported: LTE
- Instantaneous bandwidth: 45 MHz
- Rx diversity: 2-way and 4-way uplink reception
- Typical sensitivity without Rx diversity: -105 dBm for LTE

### Connectivity

- Two CPRI optical ports for daisy chaining and up to six RRHs per fiber
- Type of optical fiber: Single-Mode (SM) and Multi-Mode (MM) SFPs
- Optical fiber length: up to 500m using MM fiber, up to 20km using SM fiber
- TMA/RETA : AISG 2.0 (RS485 connector and internal Bias-Tee)
- Six external alarms
- Surge protection for all external ports (DC and RF)

### Environmental specifications

- Operating temperature: -40°C to 55°C including solar load
- Operating relative humidity: 8% to 100%
- Environmental Conditions : ETS 300 019-1-4 class 4.1E
- Ingress Protection : IEC 60529 IP65
- Acoustic Noise : Noiseless (natural convection cooling)

### Safety and Regulatory Data

- EMC : 3GPP 25113, EN 301 489-1, EN 301 489-23, GR 1089, GR 3108, OET-65
- Safety : IEC60950-1, EN 60825-1, UL, ANSI/NFPA 70, CAN/CSA-C22.2
- Regulatory : FCC Part 15 Class B, CE Mark – European Directive : 2002/95/EC (ROHS); 2002/96/EC (WEEE); 1999/5/EC (R&TTE)
- Health : EN 50385

www.alcatel-lucent.com Alcatel, Lucent, Alcatel-Lucent and the Alcatel-Lucent logo are trademarks of Alcatel-Lucent. All other trademarks are the property of their respective owners. The information presented is subject to change without notice. Alcatel-Lucent assumes no responsibility for inaccuracies contained herein.

Copyright © 2012 Alcatel-Lucent. All rights reserved. M2012XXXXXX (March)

AT THE SPEED OF IDEAS™

Alcatel-Lucent 



**HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber**

**Product Description**

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

**Features/Benefits**

- Aluminum corrugated armor with outstanding bending characteristics - minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding - Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design - Decreases tower loading
- Robust cabling - Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH - Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable - Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket - Ensures long-lasting cable protection



Figure 1: HYBRIFLEX Series

**Technical Specifications**

<b>Mechanical Properties</b>			
Outer Conductor Armor	Corrugated Aluminum	(mm (in))	46.5 (1.83)
Jacket	Polyethylene, PE	(mm (in))	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
<b>Weight Properties</b>			
Weight, Approximate		(kg/m (lb/ft))	1.9 (1.30)
Minimum Bending Radius, Single Bending		(mm (in))	200 (8)
Minimum Bending Radius, Repeated Bending		(mm (in))	500 (20)
Recommended/Maximum Clamp Spacing		(m (ft))	1.0 / 1.2 (3.25 / 4.0)
<b>Electrical Properties</b>			
DC-Resistance Outer Conductor Armor		(Ω/km (Ω/1000ft))	068 (0.205)
DC-Resistance Power Cable 8.4mm <sup>2</sup> (8AWG)		(Ω/km (Ω/1000ft))	2.1 (0.307)
<b>Fiber Properties</b>			
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		(μm)	50/125
Primary Coating (Acrylate)		(μm)	245
Buffer Diameter, Nominal		(μm)	900
Secondary Protection, Jacket, Nominal		(mm (in))	2.0 (0.08)
Minimum Bending Radius		(mm (in))	102 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL34-V0 UL1666 RoHS Compliant
<b>DC Cable Cable Properties</b>			
Size (Power)		(mm (AWG))	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		(mm (AWG))	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		(mm (in))	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-95-658 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
<b>Operating Conditions</b>			
Installation Temperature		(°C (°F))	-40 to +65 (-40 to 149)
Operation Temperature		(°C (°F))	-40 to +65 (-40 to 149)

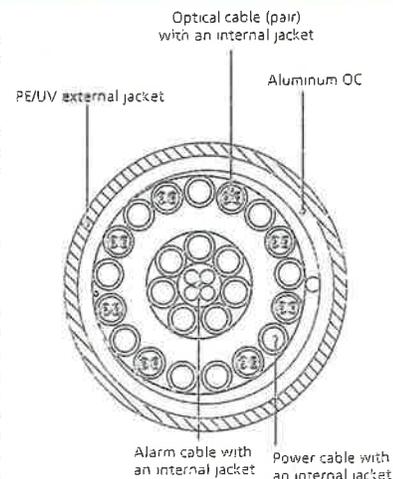


Figure 2: Construction Detail

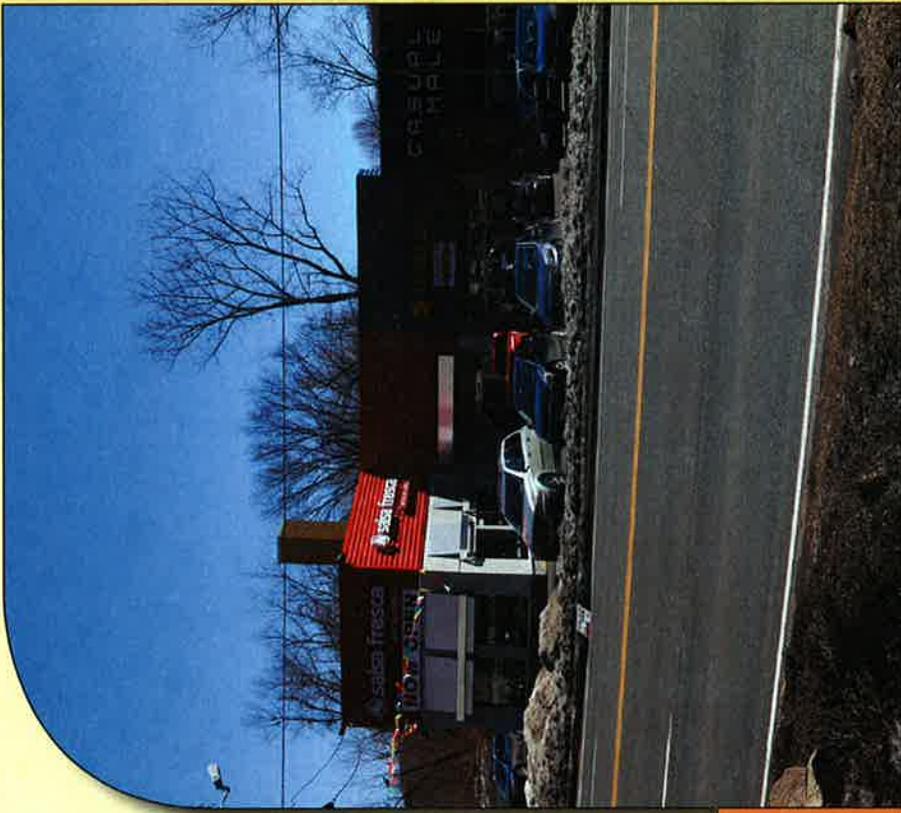
All information contained in the present datasheet is subject to confirmation at time of ordering

\* This data is provisional and subject to change

# **ATTACHMENT 5**

# Limited Visual Assessments and Photo-Simulations

DANBURY SC6  
109 FEDERAL ROAD  
DANBURY, CT 06811



Prepared in March 2015 by:  
All-Points Technology Corporation, P.C.  
3 Saddlebrook Drive  
Killingworth, CT 06141

Prepared for Verizon Wireless



ALL-POINTS  
TECHNOLOGY CORPORATION

# LIMITED VISUAL ASSESSMENT & PHOTO-SIMULATIONS

At the request of Cellco partnership LLC d/b/a Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") completed a limited visual assessment and prepared computer-generated photo-simulations depicting the proposed installation of a small cell wireless telecommunications Facility at 109 Federal Road in Danbury, Connecticut (the "Property").

## Project Setting

The Property is located in a commercial area on the west side of Federal Road. The Property is currently improved with a multi-tenant retail building. The proposed Facility would include the installation of four (4) panel antennas and remote radio heads enclosed within a radio-frequency ("RF") transparent faux brick chimney extending approximately 10 feet above the rooftop. Associated equipment cabinets would be located remotely on the building's roof.

## Methodology

On March 11, 2015, APT personnel conducted a field reconnaissance to photo-document existing conditions. Three (3) nearby locations were selected to represent where the existing building is visible and depict proposed conditions with the proposed Facility installation. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens, with lens set to 50 mm.

*"The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm."<sup>1</sup>*

Three-dimensional computer models were developed for the building and proposed small cell components from AutoCAD information. Photographic simulations were then generated to portray scaled renderings of the proposed installation. Using field data, site plan information and image editing software, the proposed Facility was scaled to the correct location and height, relative to the existing structure and surrounding area. For presentation purposes in this report, all of the photographs were produced in an approximate 7-inch by 10.5-inch format<sup>2</sup>. A photolog map and copies of the existing conditions and photo-simulations are attached.

---

<sup>1</sup> Warren, Bruce. Photography, West Publishing Company, Eagan, MN, c. 1993, (page 70).

<sup>2</sup> When viewing in this format size, we believe it is important to provide the largest representational image while maintaining an accurate relation of sizes between objects within the frame of the photograph and depicting the subject in a way similar to what an observer might see, to the greatest extent possible.

## **Conclusions**

The visibility of the proposed small cell installation would be limited to locations within approximately 500 feet of the building. The antennas would be enclosed within an RF-transparent, faux brick chimney, and appearing as an integral part of the building. The building currently has multiple roof heights, façade styles and signage with existing electrical/air handling equipment that is visible at ground level. There are also substantial utilities and transportation related infrastructure in the immediate area. Based on the results of this assessment, it is APT's opinion that the proposed facility would not be highly visible or recognizable as a telecommunications facility. Therefore, the installation of Verizon Wireless equipment at the Property will not have a significant impact on aesthetics in the area.

## **Limitations**

This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen. The photo-simulations provide a representation of the Facility under similar settings as those encountered during the field reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the reconnaissance included mostly sunny skies and the photo-simulations presented in this report provide an accurate portrayal of the Facility during comparable conditions.

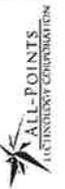
**ATTACHMENTS**



# PHOTO LOG

## Legend

- Site
- Photo Location





**EXISTING**

PHOTO

1

LOCATION

FEDERAL ROAD

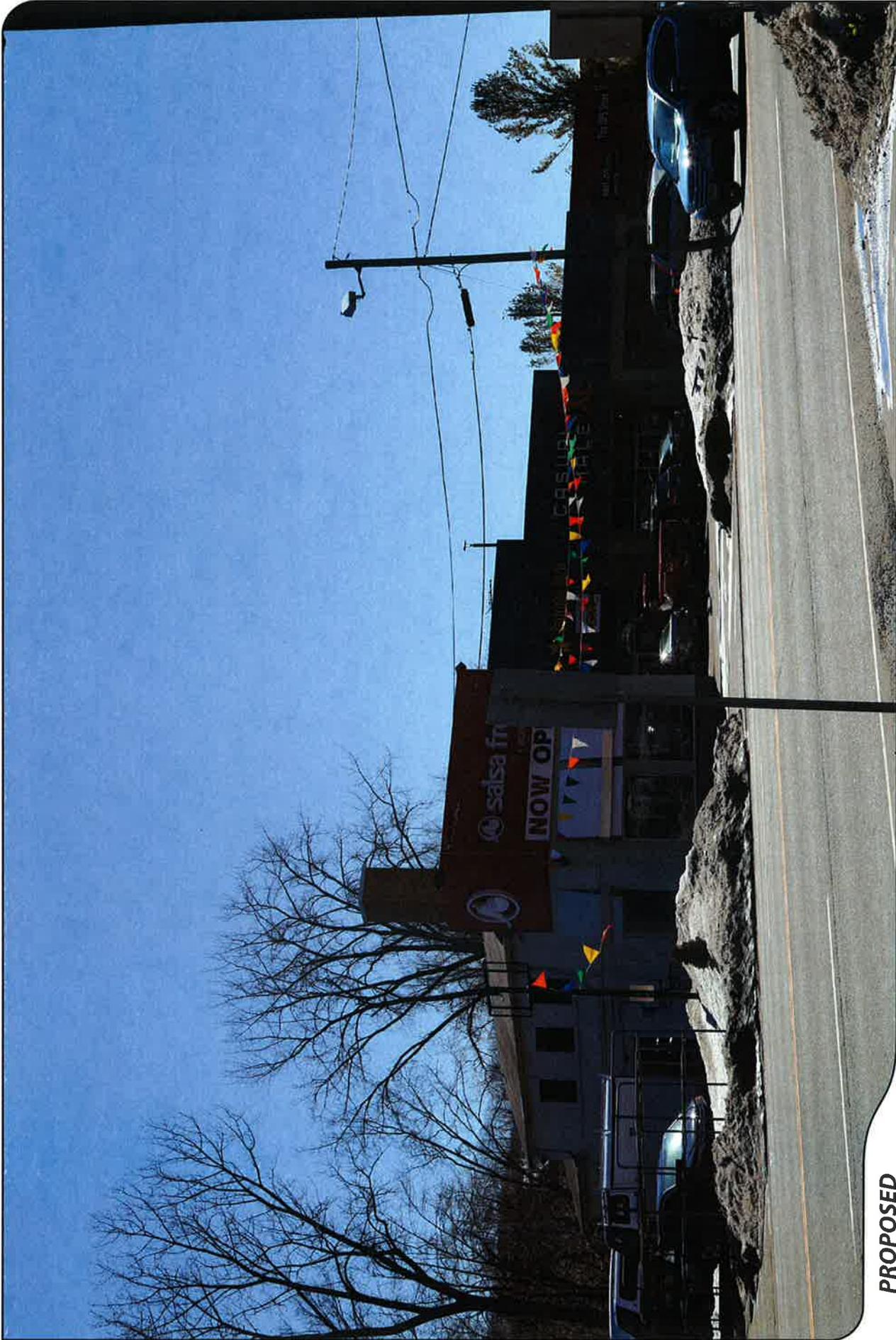
ORIENTATION

SOUTHEAST

DISTANCE TO SITE

+/- 189 FEET





**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
1	FEDERAL ROAD	SOUTHEAST	+/- 189 FEET



**PROPOSED**

PHOTO

1

LOCATION

**FEDERAL ROAD**

ORIENTATION

**SOUTHEAST**

DISTANCE TO SITE

**+/- 189 FEET**





**EXISTING**

PHOTO

2

LOCATION

**FEDERAL ROAD**

ORIENTATION

**EAST**

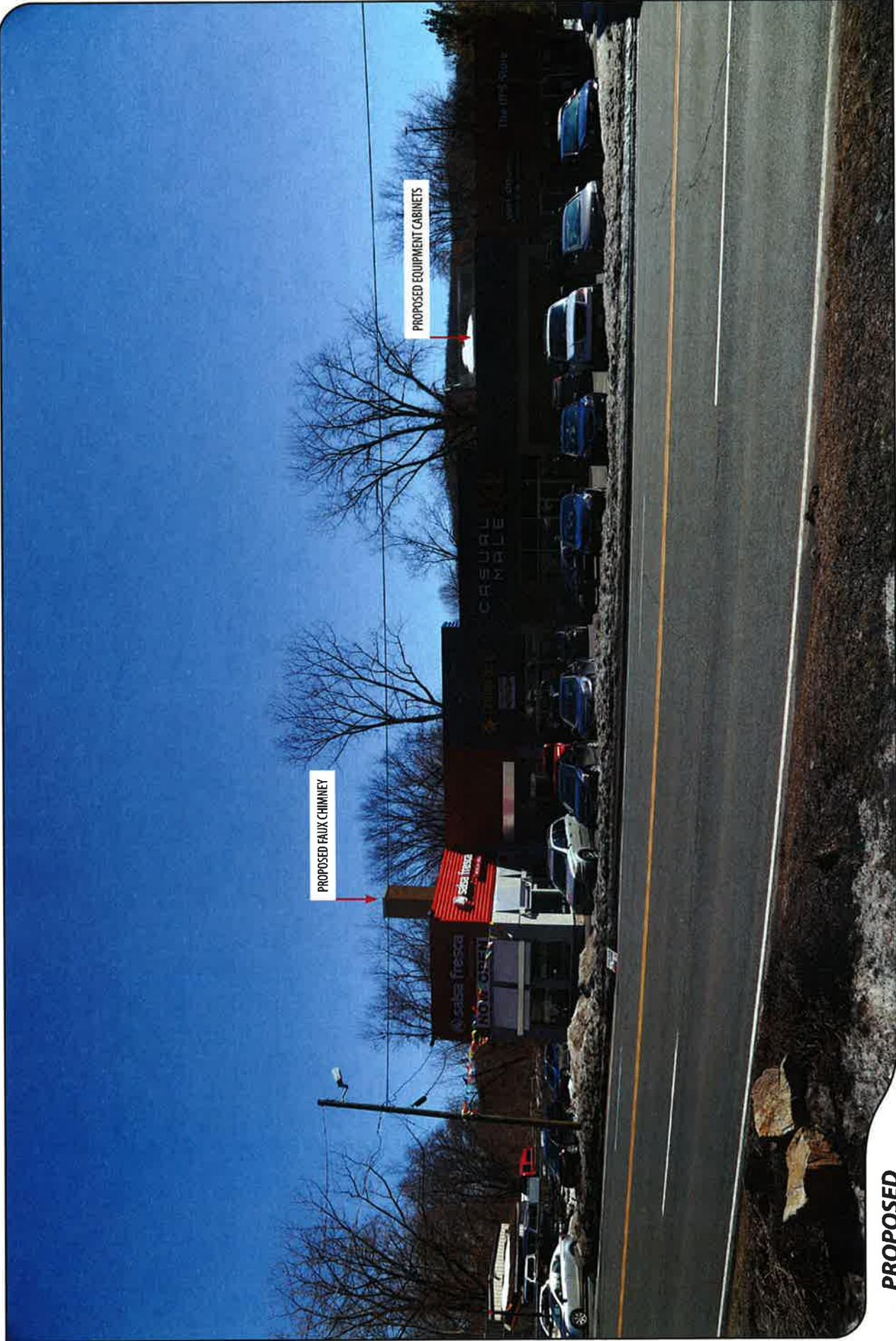
DISTANCE TO SITE

**+/- 177 FEET**



**PROPOSED**

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE
2	FEDERAL ROAD	EAST	+/- 177 FEET



**PROPOSED**

PHOTO

2

LOCATION

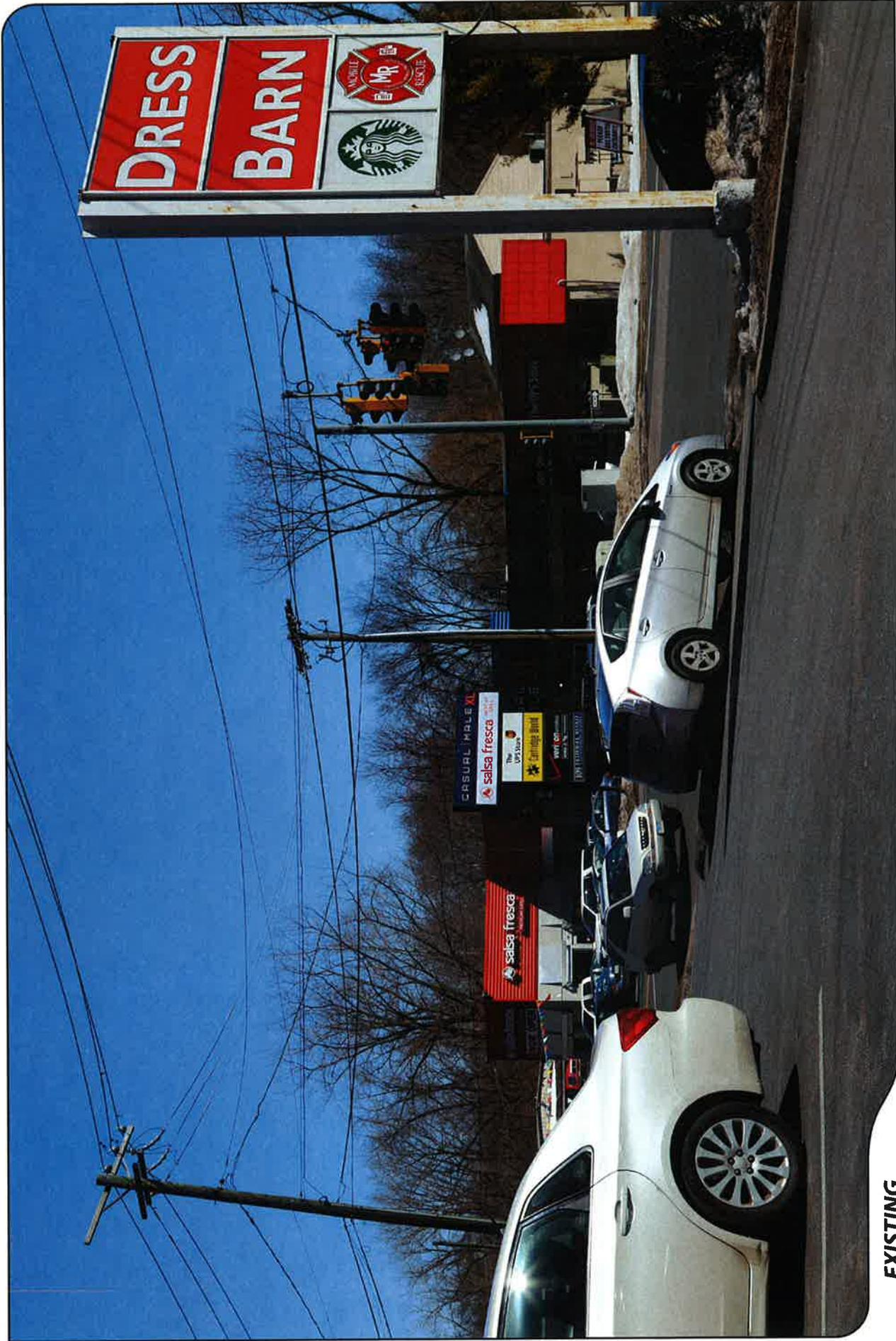
FEDERAL ROAD

ORIENTATION

EAST

DISTANCE TO SITE

+/- 177 FEET



**EXISTING**

PHOTO

3

LOCATION

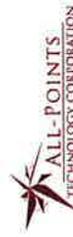
**DRESS BARN PLAZA**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 372 FEET**





**PROPOSED**

PHOTO

3

LOCATION

**DRESS BARN PLAZA**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 372 FEET**





**PROPOSED**

PHOTO

3

LOCATION

**DRESS BARN PLAZA**

ORIENTATION

**NORTHEAST**

DISTANCE TO SITE

**+/- 372 FEET**



# **ATTACHMENT 6**

General Power Density

Site Name: DANBURY CT SC6  
 Cumulative Power Density

Operator	Operating Frequency (MHz)	Number of Trans.	ERP Per Trans. (watts)	Total ERP (watts)	Distance to Target (feet)	Calculated Power Density (mW/cm <sup>2</sup> )	Maximum Permissible Exposure* (mW/cm <sup>2</sup> )	Fraction of MPE (%)
VZW PCS	1970	1	987	987	32.5	0.3360	1.0	33.60%
VZW AWS	2145	1	1057	1057	32.5	0.3599	1.0	35.99%
<b>Total Percentage of Maximum Permissible Exposure</b>								<b>69.59%</b>

\*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz  
 mW/cm<sup>2</sup> = milliwatts per square centimeter  
 ERP = Effective Radiated Power

Absolute worst case maximum values used.

# **ATTACHMENT 7**

DANBURY\_CT\_SC6\_FAA\_Analysis.txt  
\*\*\*\*\*  
\* Federal Airways & Airspace \*  
\* Summary Report: Existing Structure \*  
\* Non-Antenna Structure \*  
\*\*\*\*\*

Airspace User: Your Name

File: DANBURY\_CT\_SC6

Location: Danbury, CT

Latitude: 41°-25'-47.20"

Longitude: 73°-24'-57.04"

SITE ELEVATION AMSL.....290 ft.

STRUCTURE HEIGHT.....35 ft.

OVERALL HEIGHT AMSL.....325 ft.

NOTICE CRITERIA

- FAR 77.9(a): NNR (DNE 200 ft AGL)
- FAR 77.9(b): NNR (DNE Notice Slope)
- FAR 77.9(c): NNR (Not a Traverse Way)
- FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for DXR
- FAR 77.9: NNR FAR 77.9 IFR Straight-In Notice Criteria for 11N
- FAR 77.9(d): NNR (Off Airport Construction)

NR = Notice Required

NNR = Notice Not Required

PNR = Possible Notice Required (depends upon actual IFR procedure)  
For new construction review Air Navigation Facilities at bottom  
of this report.

The location and analysis were based upon an existing structure. However, no existing aeronautical study number was identified. If the 'existing' structure penetrates an obstruction surface defined by CFR 77.17, 77.19, 77.21 or 77.23 (see below) it is strongly recommended the FAA be notified of the 'existing' structure to determine obstruction marking or lighting requirements. It is not uncommon for the FAA to issue a Determination of No Hazard (DNH) for an existing structure and modify the airspace to accommodate the structure, should that be required. If the FAA issues a DNH enter the aeronautical study number (ASN) in the space provided on the Airspace Analysis window Form and re-run Airspace.

The below analysis reflects the aeronautical conditions that exist as of the date stamped on this analysis.

Notice to the FAA is not required at the analyzed location and height for slope, height or Straight-In procedures. Please review the 'Air Navigation' section for notice requirements for offset IFR procedures and EMI.

OBSTRUCTION STANDARDS

- FAR 77.17(a)(1): DNE 499 ft AGL
- FAR 77.17(a)(2): DNE - Airport surface
- FAR 77.19(a): DNE - Horizontal surface
- FAR 77.19(b): DNE - Conical surface
- FAR 77.19(c): DNE - Primary surface
- FAR 77.19(d): DNE - Approach surface
- FAR 77.19(e): DNE - Transitional surface

VFR TRAFFIC PATTERN AIRSPACE FOR: DXR: DANBURY MUNI  
Type: A RD: 26434.3 RE: 453.9

DANBURY\_CT\_SC6\_FAA\_Analysis.txt

FAR 77.17(a)(1): DNE  
 FAR 77.17(a)(2): DNE - Height No Greater Than 200 feet AGL.  
 VFR Horizontal Surface: DNE  
 VFR Conical Surface: DNE  
 VFR Approach Slope: DNE  
 VFR Transitional Slope: DNE

VFR TRAFFIC PATTERN AIRSPACE FOR: 11N: CANDLELIGHT FARMS

Type: A RD: 50857.95 RE: 654  
 FAR 77.17(a)(1): DNE  
 FAR 77.17(a)(2): Does Not Apply.  
 VFR Horizontal Surface: DNE  
 VFR Conical Surface: DNE  
 VFR Approach Slope: DNE  
 VFR Transitional Slope: DNE

TERPS DEPARTURE PROCEDURE (FAA Order 8260.3, Volume 4)

FAR 77.17(a)(3) Departure Surface Criteria (40:1)  
 DNE Departure Surface

MINIMUM OBSTACLE CLEARANCE ALTITUDE (MOCA)

FAR 77.17(a)(4) MOCA Altitude Enroute Criteria  
 The Maximum Height Permitted is 1500 ft AMSL

PRIVATE LANDING FACILITIES

FACIL IDENT TYP NAME	BEARING To FACIL	RANGE IN NM	DELTA ARP ELEVATION	FAA IFR
OCT8 HEL DANBURY HOSPITAL No Impact to Private Landing Facility Structure 0 ft below heliport.	221.9	1.95	-185	

AIR NAVIGATION ELECTRONIC FACILITIES

APCH BEAR	FAC IDNT	ST TYPE	AT	FREQ	VECTOR	DIST (ft)	DELTA ELEVA ST	LOCATION	GRND ANGLE
	DXR	ATCT	ON		221.96	27911	-133 CT	DANBURY MUNI	-.27
87	DXR	LOCALIZER	I	111.5	219.68	28126	-128 CT	RWY 08 DANBURY MU	-.26
	CMK	VOR/DME	I	116.6	219.74	70983	-369 NY	CARMEL	-.3
	JWE	NDB	I	36	101.83	85001	-246 CT	CLERA	-.17
	BDR	VOR/DME	R	108.8	140.86	126593	+316 CT	BRIDGEPORT	.14
	PWL	VOR/DME	I	114.3	337.88	133783	-925 NY	PAWLING	-.4
	IGN	VOR/DME	R	117.6	307.8	140531	-257 NY	KINGSTON	-.1
	HPN	RADAR	ON	2735.	212.24	153968	-185 NY	WESTCHESTER COUNT	-.07
	HVN	VOR/DME	R	109.8	112.9	157980	+319 CT	NEW HAVEN	.12
	SWF	RADAR	Y	2765.	276.91	190381	-396 NY	STEWART INTERNATI	-.12
	MAD	VOR/DME	R	110.4	102.25	203079	+105 CT	MADISON	.03

DANBURY\_CT\_SC6\_FAA\_Analysis.txt  
AM STUDY NOT REQUIRED: Structure is not near a FCC licensed AM station.  
Movement Method Proof as specified in §73.151(c) is not required.  
Please review 'AM Station Report' for details.

Nearest AM Station: WLAD @ 6666 meters.

Airspace® Summary Version 14.11.376

AIRSPACE® and TERPS® are registered ® trademarks of Federal Airways & Airspace®  
Copyright © 1989 - 2014

03-04-2015  
22:06:48

# **ATTACHMENT 8**

March 18, 2015

*Via Certified Mail, Return Receipt Requested*

Mark D. Boughton, Mayor  
City of Danbury  
155 Deer Hill Avenue  
Danbury, CT 06810-7726

**Re: Installation of a Small Cell Telecommunications Facility at 109 Federal Road,  
Danbury, Connecticut**

Dear Mr. Boughton:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a “small cell” telecommunications facility at 109 Federal Road in Danbury (the “Property”).

The proposed small cell facility would consist of two (2) antenna masts attached to the roof of the building. The masts would support four (4) panel-type antennas and four (4) remote radio heads (“RRHs”). The masts, antennas and RRHs will be concealed in a faux chimney. Equipment associated with the antennas will be located inside two (2) equipment cabinets located on a lower portion of the roof.

A copy of Cellco’s Petition is attached for your review. Landowners whose property abuts 109 Federal Road were also sent notice of this filing along with a copy of the Petition.

# Robinson+Cole

Mark D. Boughton  
March 18, 2015  
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kenneth C. Baldwin', written over a light blue horizontal line.

Kenneth C. Baldwin

KCB/kmd  
Attachment

March 18, 2015

*Via Certified Mail, Return Receipt Requested*

William N. Tinsley, First Selectman  
Town of Brookfield  
100 Pocono Road  
P.O. Box 5106  
Brookfield, CT 06804-5106

Re: **Installation of a Small Cell Telecommunications Facility at 109 Federal Road,  
Danbury, Connecticut**

Dear Mr. Tinsley:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a “small cell” telecommunications facility at 109 Federal Road in Danbury (the “Property”).

The proposed small cell facility would consist of two (2) antenna masts attached to the roof of the building. The masts would support four (4) panel-type antennas and four (4) remote radio heads (“RRHs”). The masts, antennas and RRHs will be concealed in a faux chimney. Equipment associated with the antennas will be located inside two (2) equipment cabinets located on a lower portion of the roof.

A copy of Cellco’s Petition is attached for your review. Landowners whose property abuts 109 Federal Road were also sent notice of this filing along with a copy of the Petition.

# Robinson+Cole

William N. Tinsley  
March 18, 2015  
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,



Kenneth C. Baldwin

KCB/kmd  
Attachment

March 18, 2015

*Via Certified Mail, Return Receipt Requested*

109 Federal Road, LLC  
2 Stony Hill Road, Suite 201  
Bethel, CT 06801

Re: **Installation of a Small Cell Telecommunications Facility at 109 Federal Road,  
Danbury, Connecticut**

Dear Sir or Madam:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a “small cell” telecommunications facility at 109 Federal Road in Danbury (the “Property”).

The proposed small cell facility would consist of two (2) antenna masts attached to the roof of the building. The masts would support four (4) panel-type antennas and four (4) remote radio heads (“RRHs”). The masts, antennas and RRHs will be concealed in a faux chimney. Equipment associated with the antennas will be located inside two (2) equipment cabinets located on a lower portion of the roof.

A copy of Cellco’s Petition is attached for your review. Landowners whose property abuts 109 Federal Road were also sent notice of this filing along with a copy of the Petition.

# Robinson+Cole

109 Federal Road, LLC  
March 18, 2015  
Page 2

Please contact me if you have any questions regarding this proposal.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Kenneth C. Baldwin', written in a cursive style.

Kenneth C. Baldwin

KCB/kmd  
Attachment

# **ATTACHMENT 9**

KENNETH C. BALDWIN

280 Trumbull Street  
Hartford, CT 06103-3597  
Main (860) 275-8200  
Fax (860) 275-8299  
kbaldwin@rc.com  
Direct (860) 275-8345

Also admitted in Massachusetts

March 18, 2015

***Via Certified Mail, Return Receipt Requested***

«Name\_and\_Address»

**Re: Notice of Intent to File a Petition for Declaratory Ruling with the Connecticut Siting Council for the Installation of a “Small Cell” Telecommunications Facility at 109 Federal Road, Danbury, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless (“Cellco”). Today, Cellco filed a Petition for Declaratory Ruling (“Petition”) with the Connecticut Siting Council (“Council”) seeking approval to install a new “small cell” telecommunications facility at 109 Federal Road in Danbury (the “Property”).

The proposed small cell facility would consist of two (2) antenna masts attached to the roof of the building. The masts would support four (4) panel-type antennas and four (4) remote radio heads (“RRHs”). The masts, antennas and RRHs will be concealed in a faux chimney. Equipment associated with the antennas will be located inside two (2) cabinets located on a lower portion of the roof of the building. A copy of the Petition is attached for your review.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Petition, the Council’s process for reviewing the Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

March 18, 2015  
Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth C. Baldwin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Kenneth C. Baldwin

Attachment  
Copy to:  
Timothy Parks

**CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS**

**ABUTTERS LIST  
MAP L08/LOT 031**

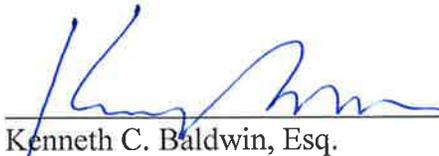
**109 FEDERAL ROAD  
DANBURY, CONNECTICUT**

	<u>Map/Lot</u>	<u>Property Address</u>	<u>Owner and Mailing Address</u>
1.	L08/031	99 Federal Road	Stew Leonards Danbury c/o M. Peters 100 Westport Avenue Norwalk, CT 06851
2.	L08/029	132 Federal Road	Norden LLC 30 Dunnigan Drive Suffern, NY 10901
3.	L07/041	132 Federal Road	ACLS Properties Inc. 132 Federal Road, Suite 103 Danbury, CT 06810
4.	L07/043	132 Federal Road	132 Federal Road LLC c/o Girolametti 1 Rock Road Ridgefield, CT 06877
5.	L07/095	115 Federal Road	Ronald C. and Rose Marie Wallin 27 Still Water Circle Brookfield, CT 06804

**CERTIFICATION OF SERVICE**

I hereby certify that a copy of the foregoing letter and Petition was sent by certified mail, return receipt requested, to each of the parties on the attached list of abutting landowners.

3-18-15  
Date

  
Kenneth C. Baldwin, Esq.  
Robinson & Cole LLP  
280 Trumbull Street  
Hartford, CT 06103

Attorneys for CELLCO PARTNERSHIP d/b/a  
VERIZON WIRELESS