Special Permit 2019-10: Verizon Small Cell – Fort Street

Project Summary:

- **Applicant:** Cellco Partnership d/b/a as Verizon Wireless c/o Duval, Klasnick & Thompson LLC
- **Owner**: Eversource Energy d/b/a NSTAR Electric
- **Agent:** Dan Klasnick of Duval, Klasnick & Thompson LLC
- **Project Location:** Existing 33’ tall utility pole (Utility pole #43216) located in the town right of way, adjacent to 6 Fort Street, Fairhaven, MA.
- **Proposal:** Installation of Small Cell Equipment on Utility Pole #43216.

  Installation of Small Cell Equipment on Utility Pole #43216 including (1) cylindrical antenna side mounted at a top height of 25.9’ above ground level, two (2) remote radio heads and associated wires, cable, meter and junction boxes to an existing 33’ tall utility pole.

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Project History:

- Nine (9) similar Small Cell Equipment installations have been approved in Fairhaven.
- A similar Small Cell Equipment installation was denied (5-2) on this pole in March 2019.
- The reasons given for denial in the written decision are visual impacts, failure to survey other nearby structures, ice and snow, maintenance schedule, decommissioning, moving of streetlight.
- The Applicant appealed the Decision.
- The Planning Board was given three choices: Defend the denial; not fight the appeal and let the clock run out allowing the project; or have the project remanded to be reheard.
- The Planning Board voted to have the project remanded to be reheard with the Applicant demonstrating a good faith effort to address the issues of alternative sites and co-location.

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Application Details:

- Power will be supplied by connecting to the existing electrical service on the pole. It will also tie into to the fiber already on the pole to make a backhaul connection to an equipment room in a building.
- There will be no ground equipment
- The small cell "installation is designed to improve 4G service in areas of high wireless usage…although each individual site will cover a relatively small area, as a group…
- Small Cell allows antenna placement and signal creation without the need for fiber optic cable or centralized processing stations and resembles a common electric transformer.
- The Applicant has provided an Affidavit of Radio Frequency Engineer, a Supplement to RF Affidavit, a Radio Frequency Compliance Study and a copy of FCC Licenses.

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- The Applicant believes the Plan meets the requirements of the Town Zoning Bylaw to the extent applicable. “To the extent the Board believes that the provided Plans and exhibits do not comply with the requirements, the Applicant believes that the additional detail will not tend to provide substantive assistance to the Board and therefore the Applicant requests a waiver from any such requirements or, in the alternative, a determination of non-applicability…”
- The Applicant believes that Small Cell installations are the least intrusive means available to address network requirements in areas of dense demand for voice and data services.
- As part of the Application the Applicant submitted their FCC License to Operate (Exhibit 4); Affidavit of Radio Frequency Engineer (Exhibit 5); Supplement to RF Affidavit (Exhibit 6); Radio Frequency Compliance Study (Exhibit 7); Addendum to Radio Frequency Compliance Study (Exhibit 8).
- The Radio Frequency Compliance Study was prepared by Donale L. Haes, JR., PH.D., CHP (Radiation Safety Specialist) who concludes that “This report provides written proof that the proposed facility would comply with the Federal Communications Commission (FCC) RF exposure guidelines (Footnote i,ii) including residential areas and in the surrounding neighborhood”.

PLANNING CONCERNS

- **Co-Location**
- **Alternative Sites**
- **Local Oversight**
- **Peer Review**

PLANNING CONCERNS

Co-Location:

The Applicant states that their interest is limited to the authority to install its small cell equipment on the utility pole pursuant to its licensing with the pole owner. To the extent other wireless service providers can locate small cell equipment on the utility pole would depend upon the ability to obtain a license from the pole owner.

PLANNING CONCERNS

Alternative Sites:

The Applicant feels they have demonstrated a good faith effort to co-locate with other carriers by undertaking “an extensive search of utility poles in the area. After an exhaustive search of available locations in the area, the Applicant is proposing to install small cell equipment on an existing utility and not a tower”. *Citing Exhibit 5, Affidavit of Radio Frequency Engineer; See Exhibit 6, Supplement to RF Affidavit.*

PLANNING CONCERNS

Local Oversight:

- The Applicant maintains that the FCC protects all cell service providers "where a state or local legal requirement materially inhibits a provider's ability to engage in any of a variety of activities related to its provision of a covered service". They feel that the FCC in its Declaration Ruling and Third Report and Order clarified that under Section 253(a) or 332(c)(7)(B)(i)(II), the FCC makes it clear that a state or local legal requirement effectively prohibits the provision of wireless services if it inhibits or limits a provider "not only when filling a **coverage gap** but also when **densifying** a wireless network, introducing **new services** or **otherwise improving** service capabilities."
- The Applicant narrative states that the "Telecommunications Act (TCA) of 1996 preserves state and municipal zoning authority to regulate personal wireless service facilities, subject to five substantive and procedural limitations designed to prevent state and municipal government from delaying the application process and/or discriminating against specific wireless service providers… Although the TCA does not preempt all local zoning laws, it expressly preempts rules and laws attempting to regulate the "placement, construction, and modification of personal wireless service facilities that effectively prohibit the provision of personal wireless services… Accordingly, the TCA significantly limits the ability of state and local authority to apply zoning regulations to wireless telecommunications."

PLANNING CONCERNS

Peer Review:

"The Applicant believes that the use of a consultant to review the proposal will not tend to provide substantive assistance to the Board and therefore the Applicant requests a waiver from any such requirement. If the Board determines that consultant review is necessary, the Applicant agrees, with all rights reserved, to escrow a mutually agreeable amount to cover the reasonable cost of review".

LEASE EXHIBIT:
THIS LEASE IS SCHEMATIC IN NATURE AND IS INTENDED TO PROVIDE GENERAL INFORMATION REGARDING THE LOCATION AND SIZE OF THE PROPOSED WIRELESS COMMUNICATION FACILITY. THE SITE LAYOUT WILL BE FINALIZED UPON COMPLETION OF THE SITE SURVEY AND FACILITY DESIGN.

STRUCTURAL NOTE:
A STRUCTURAL ANALYSIS SHALL BE PERFORMED ON EXISTING UTILITY POLE PRIOR TO CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF UTILITY CO.

INSTALLATION NOTE:
INSTALL ALL EQUIPMENT, MOUNTING BRACKETS AND HARDWARE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

ELECTRICAL NOTE:
GENERAL WIRING DIAGRAM AND NOTES TAKEN FROM E-MEMO BY JAMES F. GVAZDAUSKAS, P.E. DATED JANUARY 12, 2017

COORDINATES NOTE:
COORDINATES AND AMSL ELEVATION BASED FROM FAA-2C CERTIFICATION DATED 07/19/2017. A METES AND BOUNDS SURVEY WAS NOT CONDUCTED

LEGEND

(F) = FUTURE (BLACK)
(E) = EXISTING (YELLOW)
(P) = PROPOSED (BLACK)
(AGL) = ABOVE GROUND LEVEL
(AMSL) = ABOVE MEAN SEA LEVEL
N.T.S. = NOT TO SCALE
MASSDOT HIGHWAY LAYOUT PLAN (WHITE)

APPROX. LOCATION (E) UTILITY POLE
NAD 83 LATITUDE: 41° 37' 32.45"
NAD 83 LONGITUDE: -70° 54' 02.96"
GROUND ELEVATION: 24.4' AMSL

TRUE NORTH

1 / LE-1 SITE PLAN
SCALE: 1"=40'

NOTE:
SUBJECT POLE DOES NOT FALL WITHIN STATE HIGHWAY PERIMETER LAYOUT.

0 20' 40' 80'

ADVANCED ENGINEERING GROUP, P.C.
Civil Engineering - Site Development
Surveying - Telecommunications

verizonwireless
VERIZON WIRELESS
400 FRIBERG PARKWAY
WESTBOROUGH, MA 01581

FAIRHAVEN SC07 MA

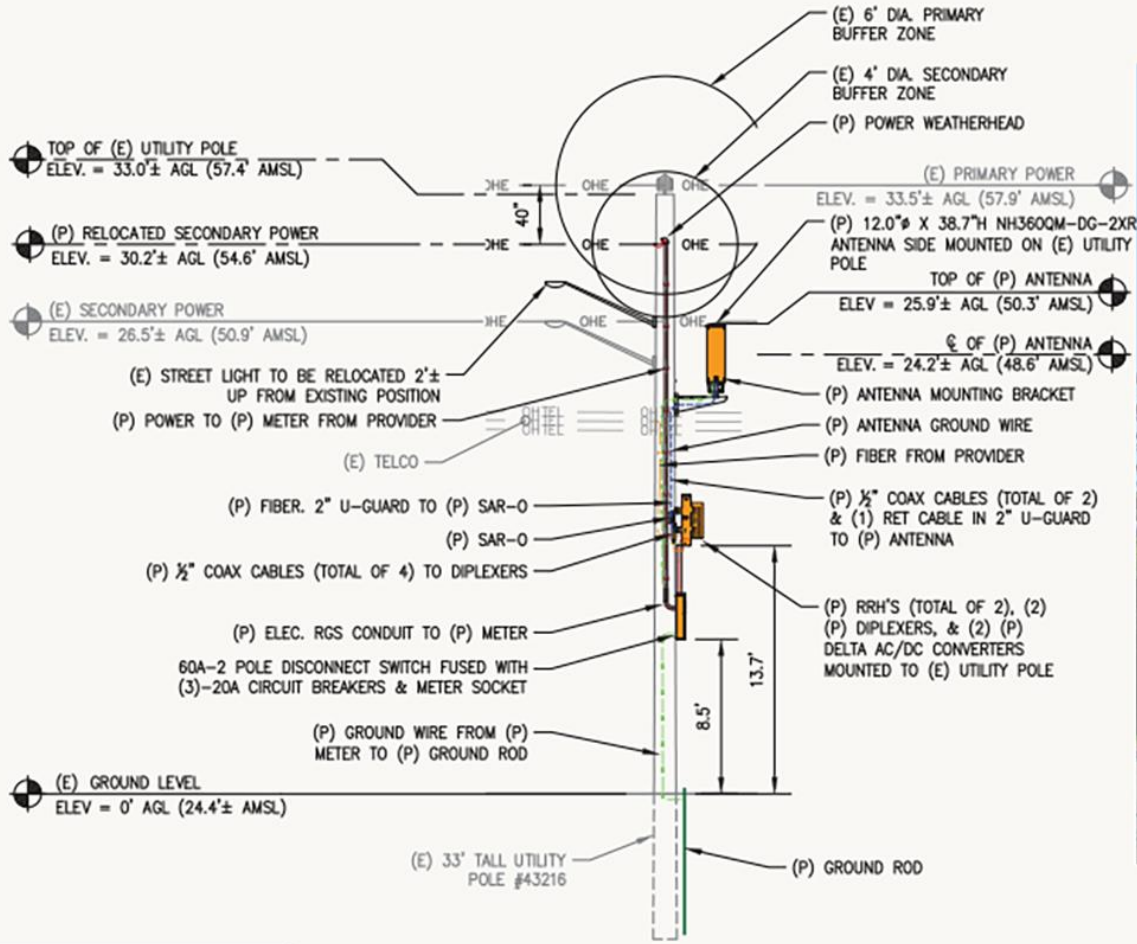
6 FORT STREET
FAIRHAVEN, MA 02719

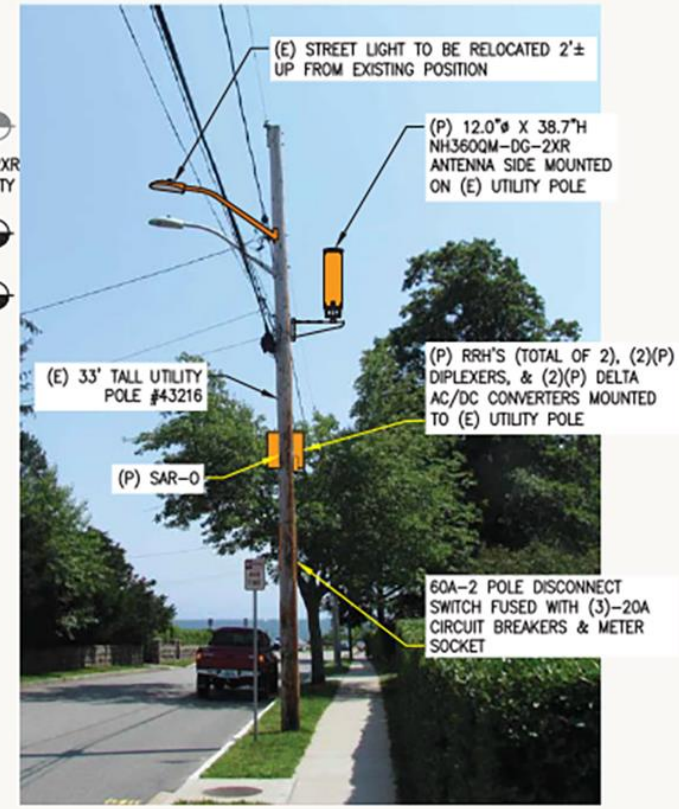
LEASE EXHIBIT

DRAWING NUMBER	REVISION
FAIRHAVEN SC07 MA	2

DATE: 08/09/2017
DRAWN BY: JWH
CHECKED BY: SNA
SCALE: 1"=40'
SHEET: 1 OF 5


(E) UTILITY POLE
1
LC-2
(E) 30' TALL UTILITY POLE #XXXX
(E) RESIDENCE
(E) RESIDENCE
(E) RESIDENCE
(E) RESIDENCE





2 / LE-2 PHOTO ELEVATION
SCALE: N.T.S.

LEGEND

(F)	=	FUTURE (BLACK)
(E)	=	EXISTING (GREY)
(P)	=	PROPOSED (BLACK)
(AGL)	=	ABOVE GROUND LEVEL
(AMSL)	=	ABOVE MEAN SEA LEVEL
(AIP)	=	ABANDONED IN PLACE
N.T.S.	=	NOT TO SCALE

1 / LE-2 ELEVATION
SCALE: 1"=10'

0 5' 10' 20'

INSTALLATION NOTE:
INSTALL ALL EQUIPMENT, MOUNTING BRACKETS AND HARDWARE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

STRUCTURAL NOTE:
A STRUCTURAL ANALYSIS SHALL BE PERFORMED ON EXISTING UTILITY POLE PRIOR TO CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF UTILITY CO.

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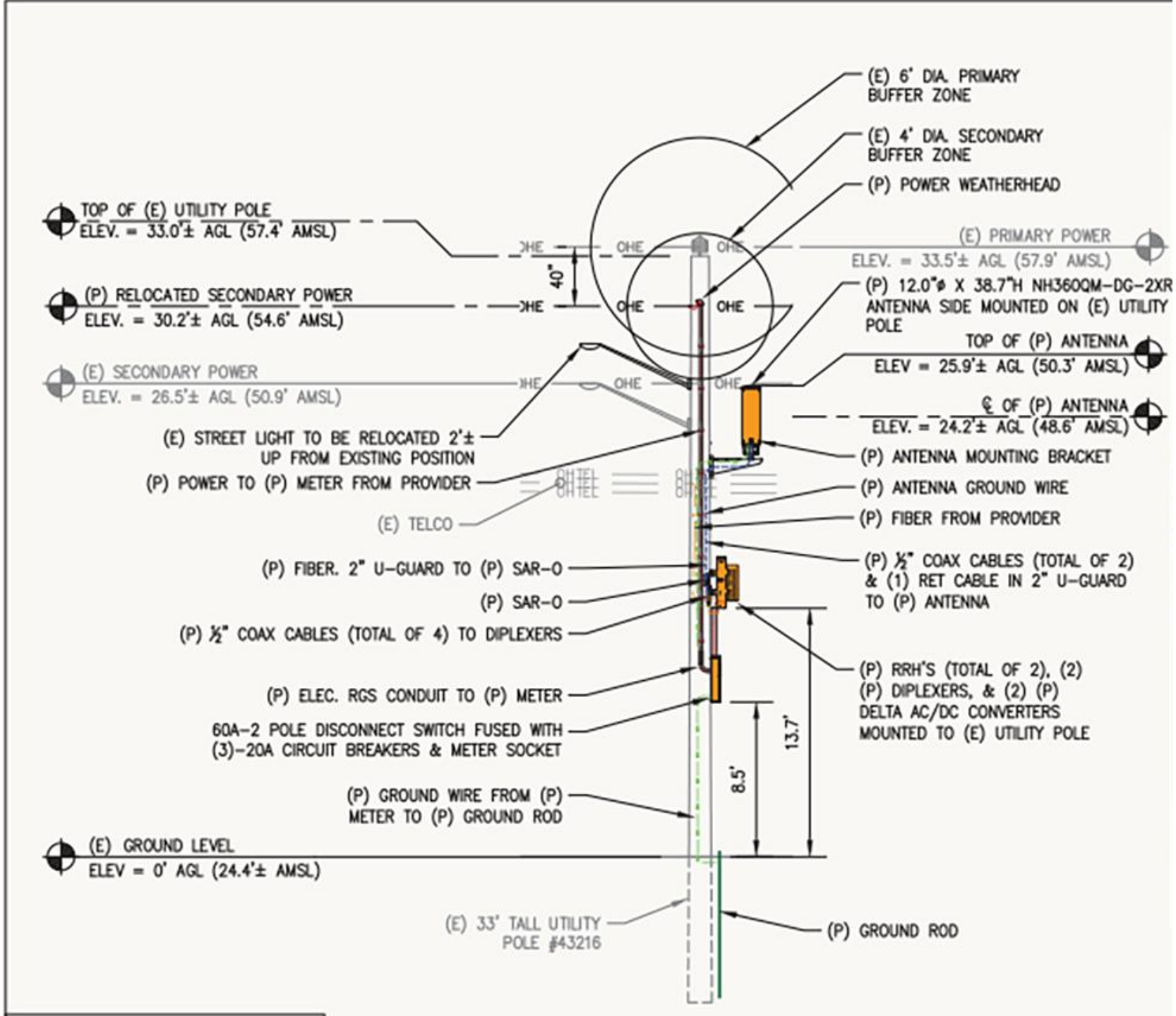
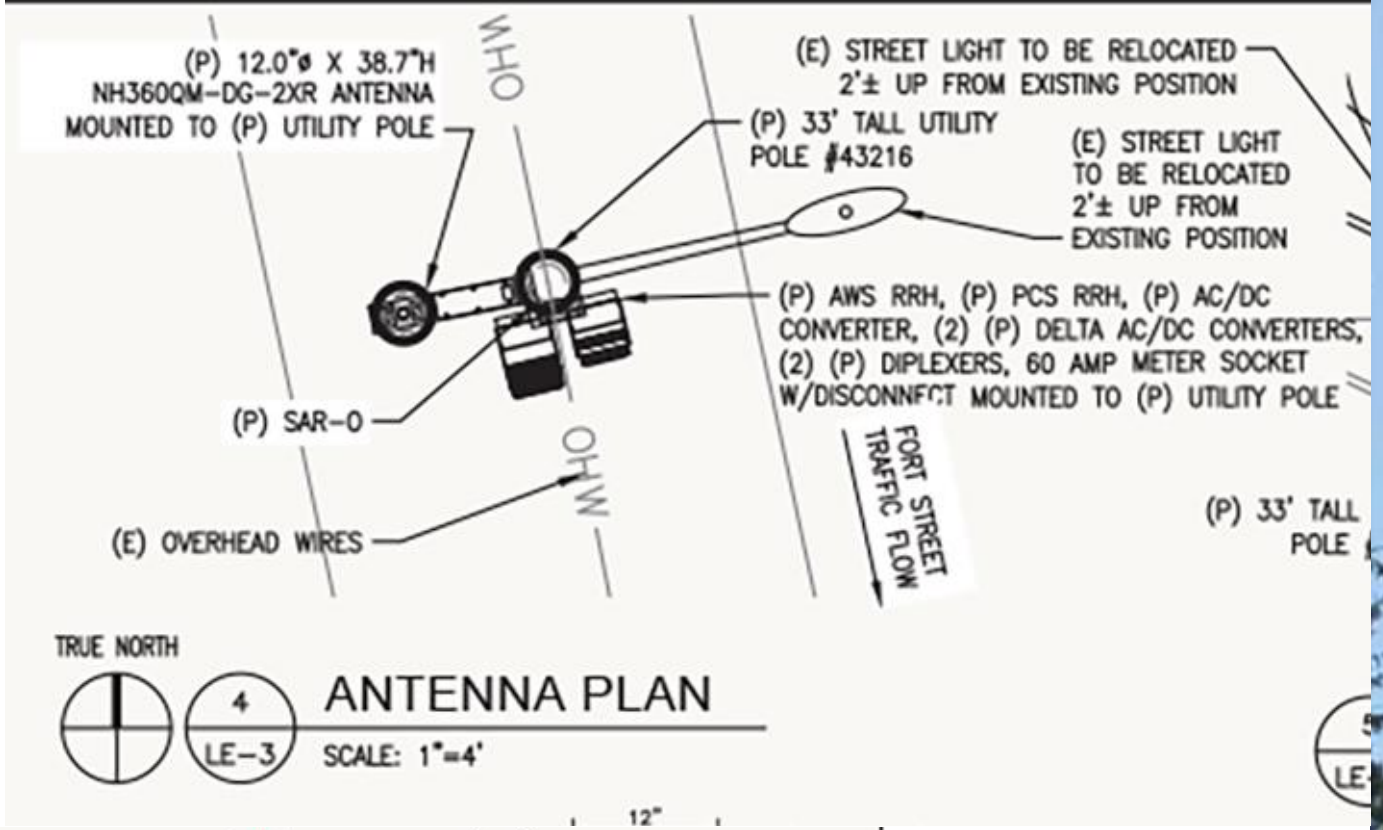
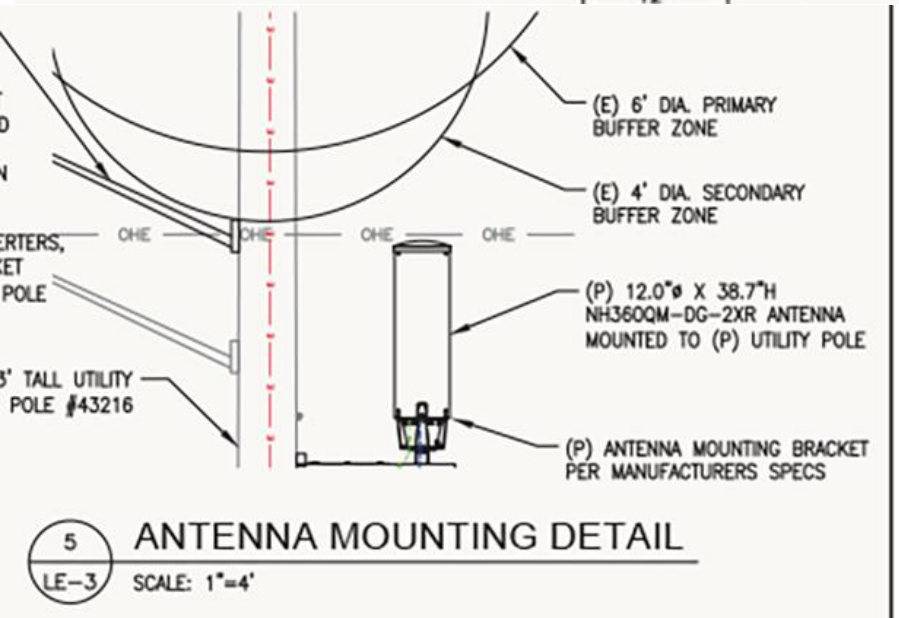
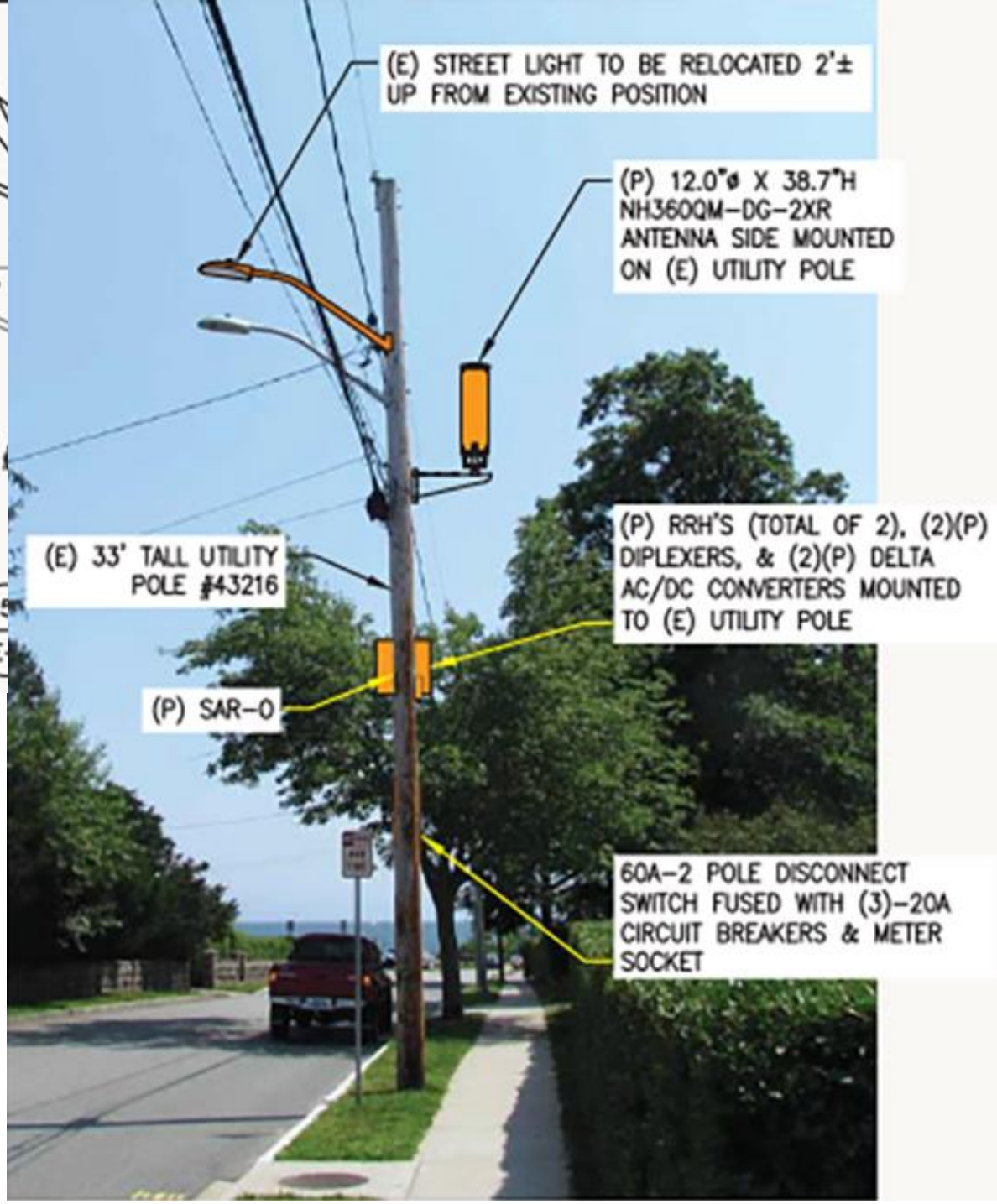
SCALE: AS NOTED
SHEET: 2 OF 5


(E) 6' DIA. PRIMARY BUFFER ZONE
(E) 4' DIA. SECONDARY BUFFER ZONE
(P) POWER WEATHERHEAD
TOP OF (E) UTILITY POLE
ELEV. = 33.0'± AGL (57.4' AMSL)
(E) PRIMARY POWER
ELEV. = 33.5'± AGL (57.9' AMSL)
40"
(P) RELOCATED SECONDARY POWER
ELEV. = 30.2'± AGL (54.6' AMSL)
(P) 12.0"ø X 38.7"H NH360QM-DG-2XR ANTENNA SIDE MOUNTED ON (E) UTILITY POLE
TOP OF (P) ANTENNA
ELEV = 25.9'± AGL (50.3' AMSL)
(E) SECONDARY POWER
ELEV. = 26.5'± AGL (50.9' AMSL)
℄ OF (P) ANTENNA
ELEV. = 24.2'± AGL (48.6' AMSL)
(E) STREET LIGHT TO BE RELOCATED 2'± UP FROM EXISTING POSITION
(P) ANTENNA MOUNTING BRACKET
(P) POWER TO (P) METER FROM PROVIDER
(P) ANTENNA GROUND WIRE
(E) TELCO
(P) FIBER FROM PROVIDER
(P) FIBER. 2" U-GUARD TO (P) SAR-O
(P) ½" COAX CABLES (TOTAL OF 2) & (1) RET CABLE IN 2" U-GUARD TO (P) ANTENNA
(P) SAR-O
(P) ½" COAX CABLES (TOTAL OF 4) TO DIPLEXERS
(P) RRH'S (TOTAL OF 2), (2) (P) DIPLEXERS, & (2) (P) DELTA AC/DC CONVERTERS MOUNTED TO (E) UTILITY POLE
(P) ELEC. RGS CONDUIT TO (P) METER
60A-2 POLE DISCONNECT SWITCH FUSED WITH (3)-20A CIRCUIT BREAKERS & METER SOCKET
13.7'
8.5'
(P) GROUND WIRE FROM (P) METER TO (P) GROUND ROD
(E) GROUND LEVEL
ELEV = 0' AGL (24.4'± AMSL)
(E) 33' TALL UTILITY POLE #43216
(P) GROUND ROD

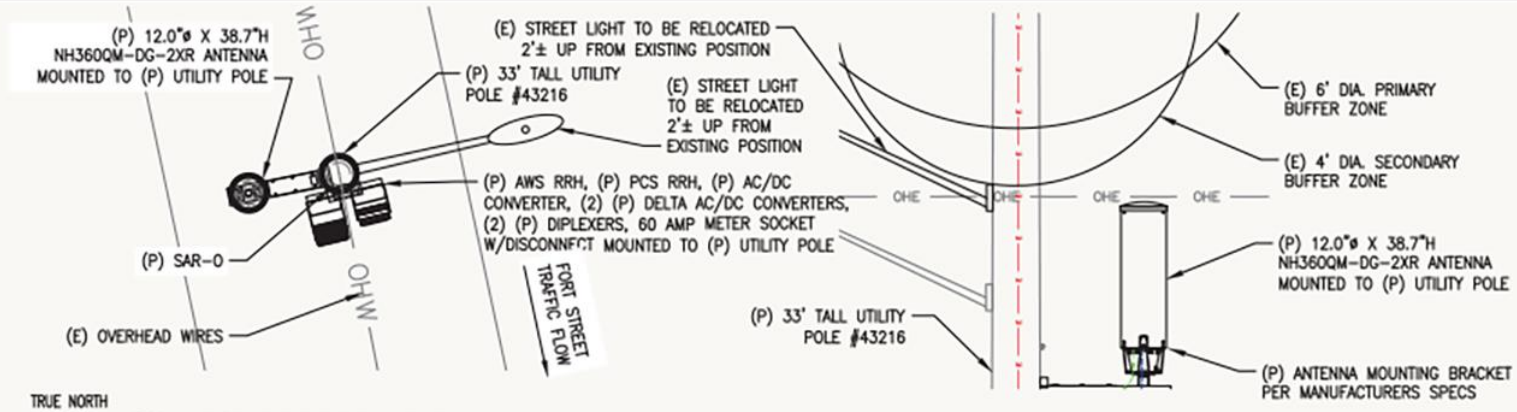

(P) 12.0"ø X 38.7"H
NH360QM-DG-2XR ANTENNA
MOUNTED TO (P) UTILITY POLE
(E) STREET LIGHT TO BE RELOCATED
2'± UP FROM EXISTING POSITION
(P) 33' TALL UTILITY
POLE #43216
(E) STREET LIGHT
TO BE RELOCATED
2'± UP FROM
EXISTING POSITION
(P) AWS RRH, (P) PCS RRH, (P) AC/DC
CONVERTER, (2) (P) DELTA AC/DC CONVERTERS,
(2) (P) DIPLEXERS, 60 AMP METER SOCKET
W/DISCONNECT MOUNTED TO (P) UTILITY POLE
(P) SAR-0
(E) OVERHEAD WIRES
OHW
OHW
FORT STREET
TRAFFIC FLOW
(P) 33' TALL
POLE
TRUE NORTH
4
LE-3
ANTENNA PLAN
SCALE: 1"=4'


(E) 6' DIA. PRIMARY
BUFFER ZONE
(E) 4' DIA. SECONDARY
BUFFER ZONE
OHE
OHE
OHE
OHE
(P) 12.0"ø X 38.7"H
NH360QM-DG-2XR ANTENNA
MOUNTED TO (P) UTILITY POLE
(P) ANTENNA MOUNTING BRACKET
PER MANUFACTURERS SPECS
5
LE-3
ANTENNA MOUNTING DETAIL
SCALE: 1"=4'


(E) STREET LIGHT TO BE RELOCATED 2'±
UP FROM EXISTING POSITION
(P) 12.0"ø X 38.7"H
NH360QM-DG-2XR
ANTENNA SIDE MOUNTED
ON (E) UTILITY POLE
(E) 33' TALL UTILITY
POLE #43216
(P) RRH'S (TOTAL OF 2), (2)(P)
DIPLEXERS, & (2)(P) DELTA
AC/DC CONVERTERS MOUNTED
TO (E) UTILITY POLE
(P) SAR-0
60A-2 POLE DISCONNECT
SWITCH FUSED WITH (3)-20A
CIRCUIT BREAKERS & METER
SOCKET

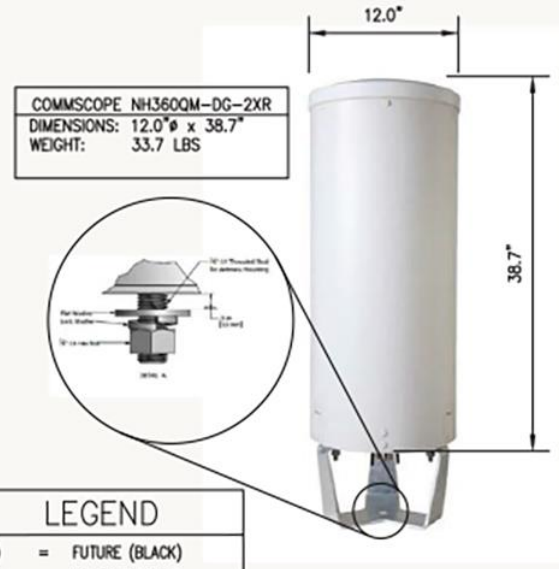
INSTALLATION NOTE:
INSTALL ALL EQUIPMENT, MOUNTING BRACKETS AND HARDWARE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

STRUCTURAL NOTE:
A STRUCTURAL ANALYSIS SHALL BE PERFORMED ON EXISTING UTILITY POLE PRIOR TO CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF UTILITY CO.

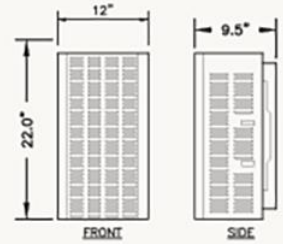


4 LE-3 ANTENNA PLAN
SCALE: 1"=4'

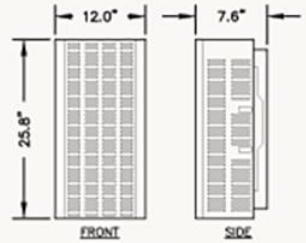
5 LE-3 ANTENNA MOUNTING DETAIL
SCALE: 1"=4'



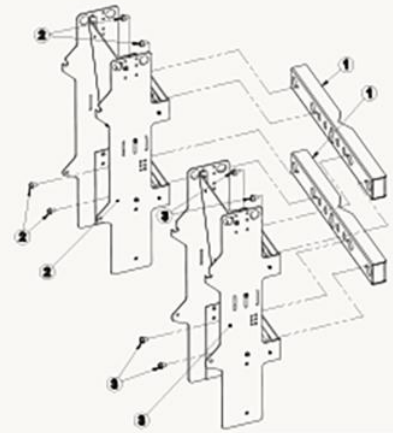
COMMSCOPE NH360QM-DG-2XR	
DIMENSIONS:	12.0"ø x 38.7"
WEIGHT:	33.7 LBS



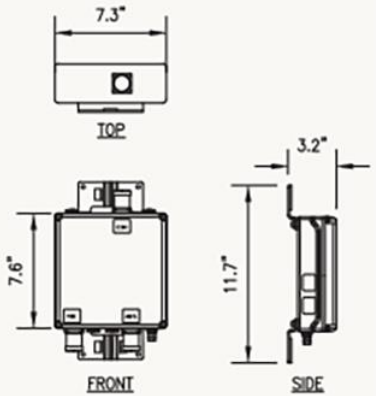
PCS RRH
WEIGHT: 55.0 LBS.



AWS 90W RRH
UNIT WEIGHT 67.0 LBS



WIRELESS CONSTRUCTION, INC. POLE/WALL MOUNT FOR DUAL RADIO BRACKET		
ITEM	DESCRIPTION	QTY.
1	DOUBLE MOUNT	2
2	PCS RRH RACK W/ SUPPLIED HARDWARE	1
3	AWS RRH RACK W/ SUPPLIED HARDWARE	1



DIPLEXER	
DIMENSIONS:	7.6"H x 7.3"W x 3.2"D
WEIGHT:	6.6 LBS

NOTE: MOUNT DIPLEXERS TO BACKSIDE OF DBL-MNT BRKT

LEGEND		
(F)	=	FUTURE (BLACK)
(E)	=	EXISTING (GREY)
(P)	=	PROPOSED (BLACK)
(AGL)	=	ABOVE GROUND LEVEL
(AMSL)	=	ABOVE MEAN SEA LEVEL
N.T.S.	=	NOT TO SCALE

1 LE-3 ANTENNA DETAIL
SCALE: N.T.S.

2 LE-3 RRH DETAILS
SCALE: N.T.S.

3 LE-3 DIPLEXER DETAIL
SCALE: N.T.S.

ADVANCED ENGINEERING GROUP, P.C.
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FAIRHAVEN SC07 MA

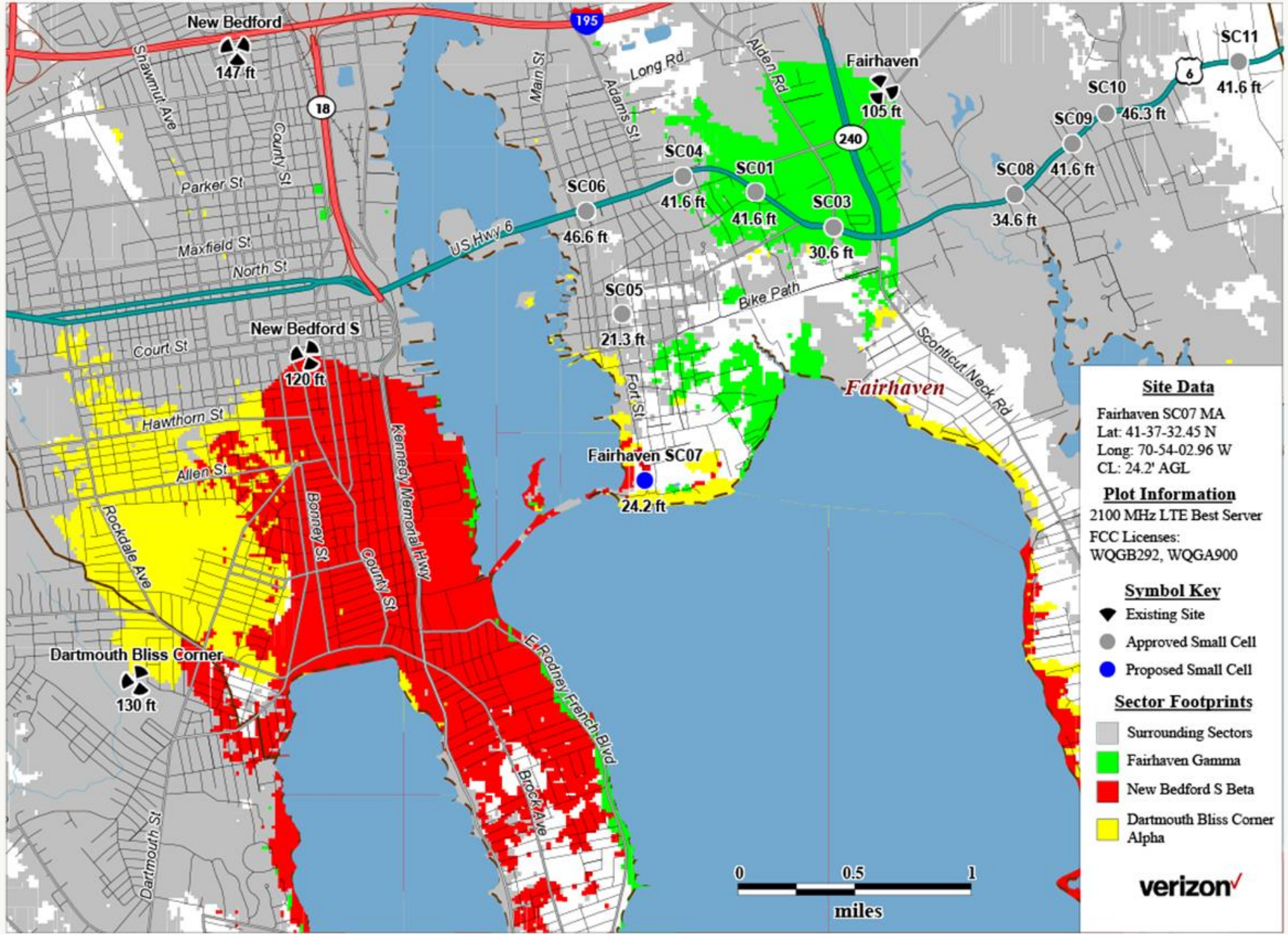
6 FORT STREET
FAIRHAVEN, MA 02719

LEASE EXHIBIT

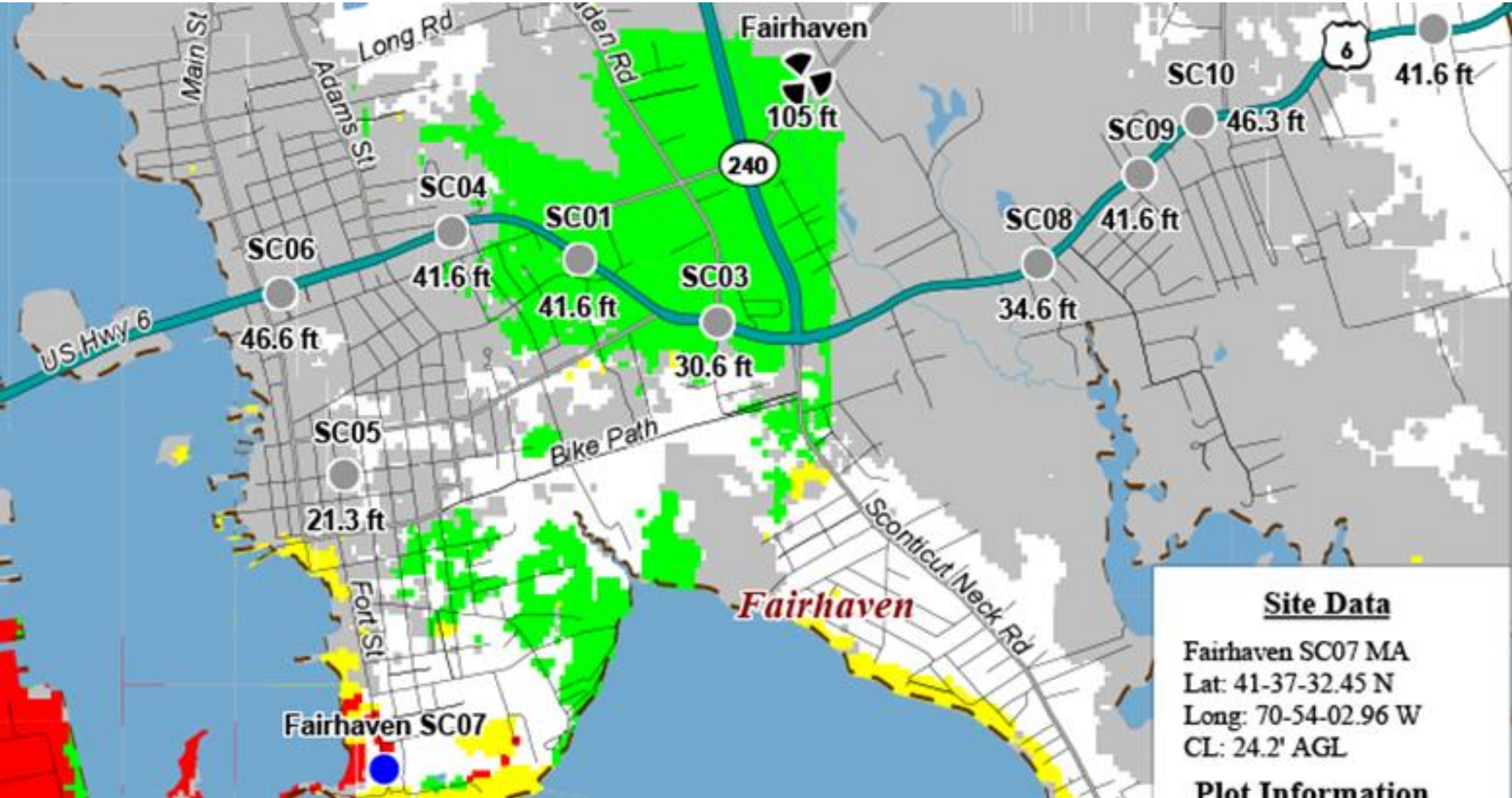
DRAWING NUMBER	REVISION
FAIRHAVEN SC07 MA	2

DATE: 08/09/2017
DRAWN BY: JWH
CHECKED BY: SNA
SCALE: AS NOTED
SHEET: 3 OF 5

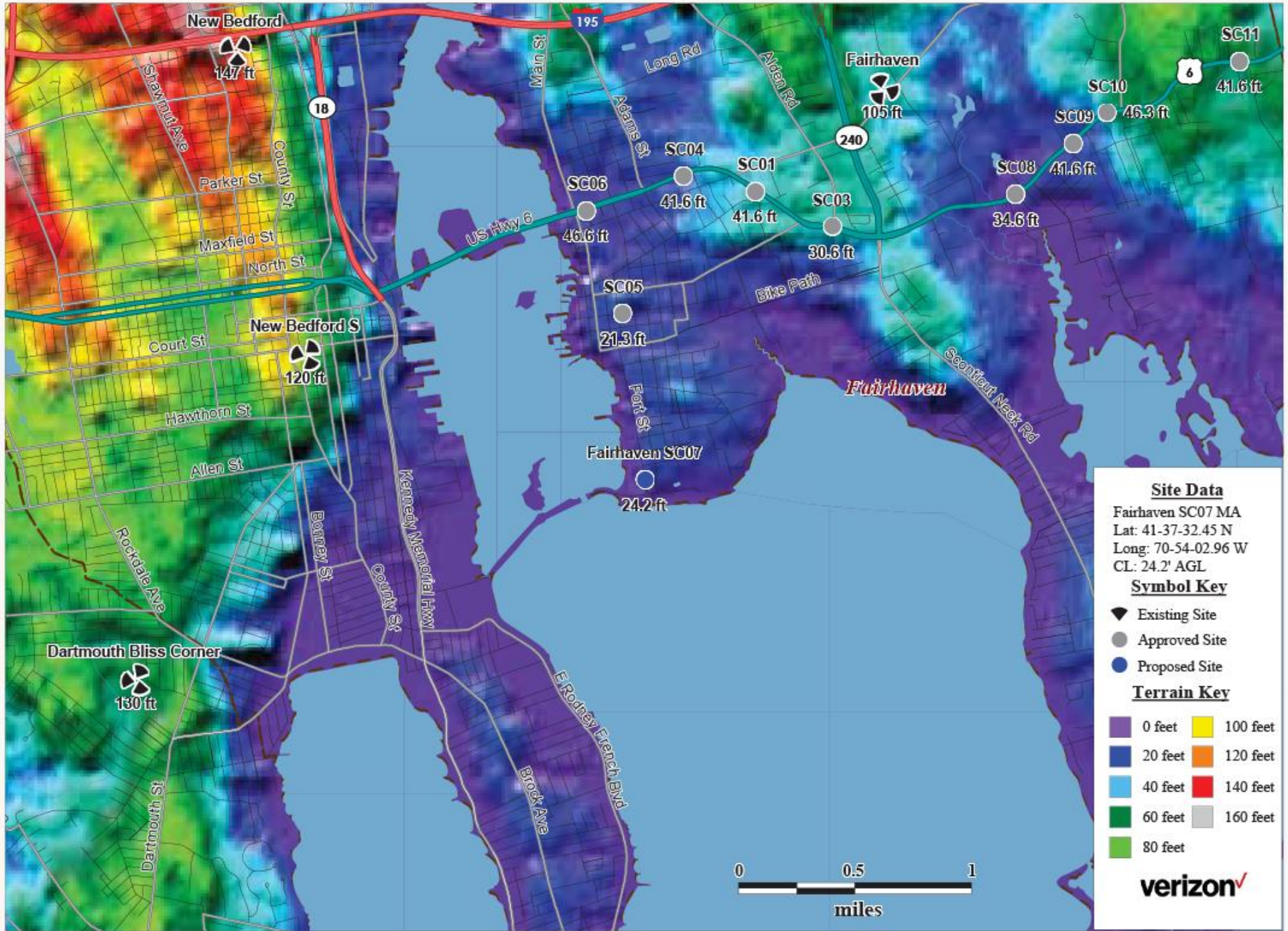
Fairhaven SC07 MA - Existing/Approved 2100 MHz LTE Sector Footprints (Macro Sites)



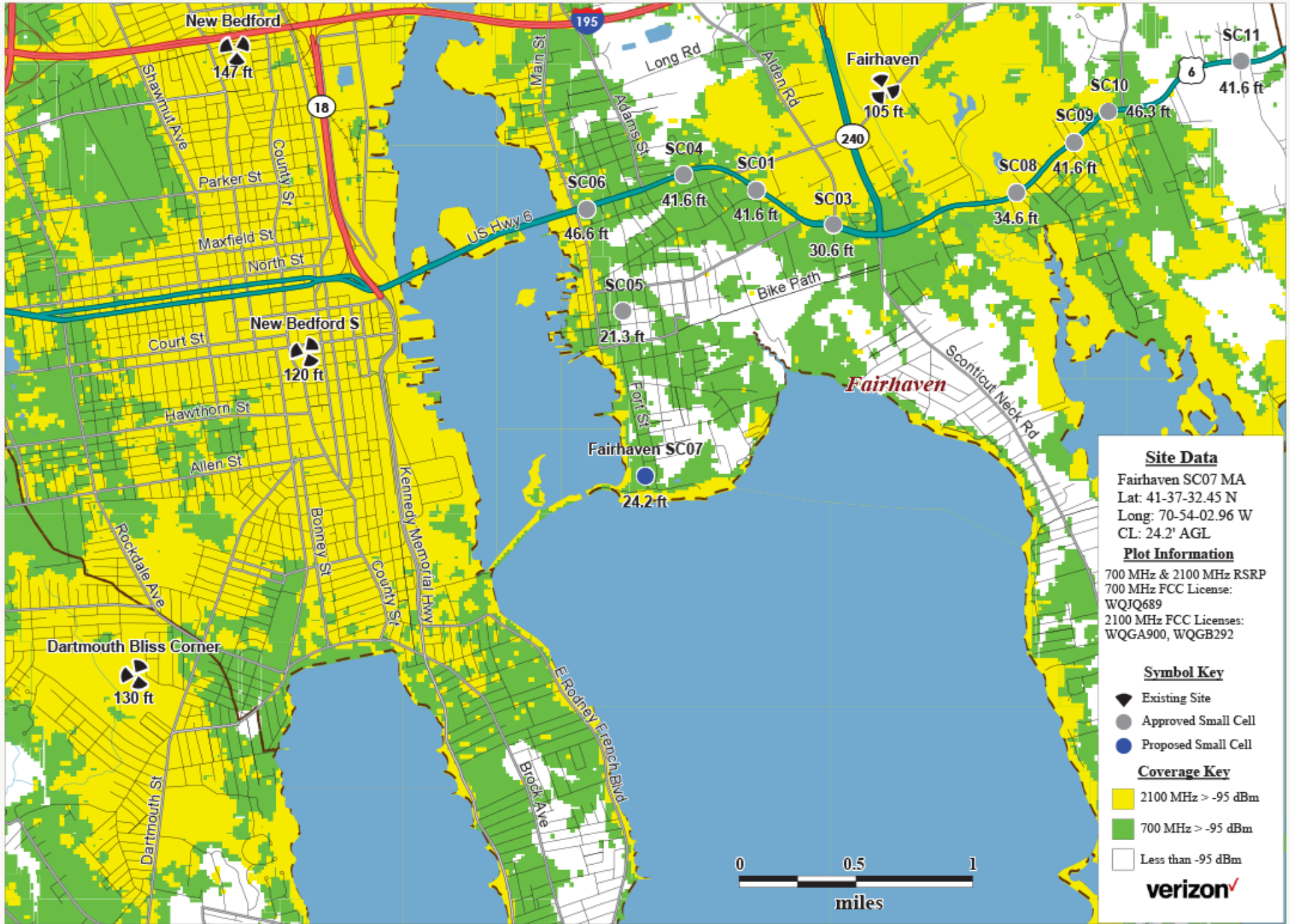
Nine (9) approved sites in Fairhaven for Small Cell (Grey) and one (1) currently proposed (Blue) for 4G



Fairhaven SC07 MA - Area Terrain Map

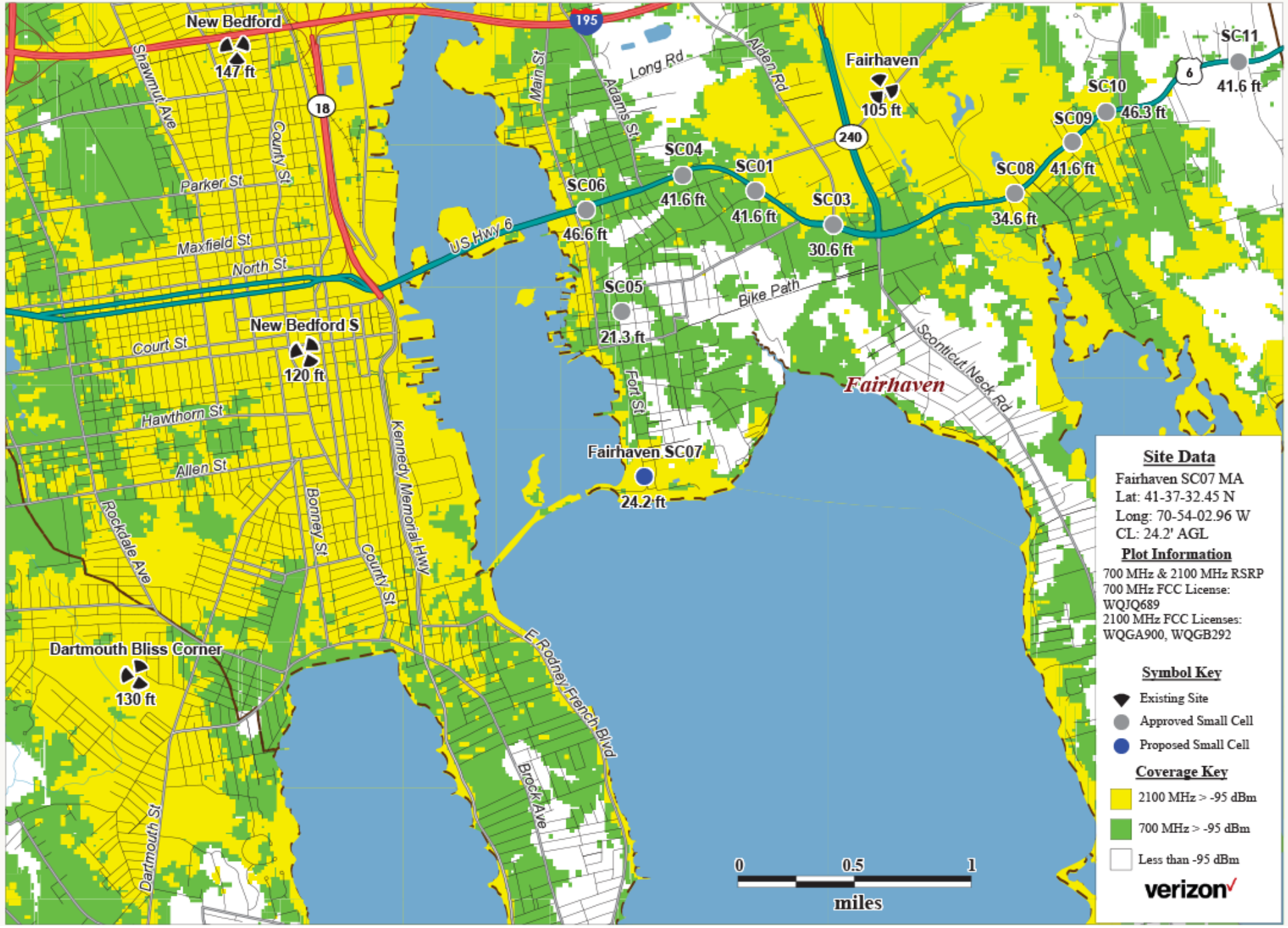


Fairhaven SC07 MA - Existing/Approved 700 MHz & 2100 MHz LTE Coverage (Macro-Sites)

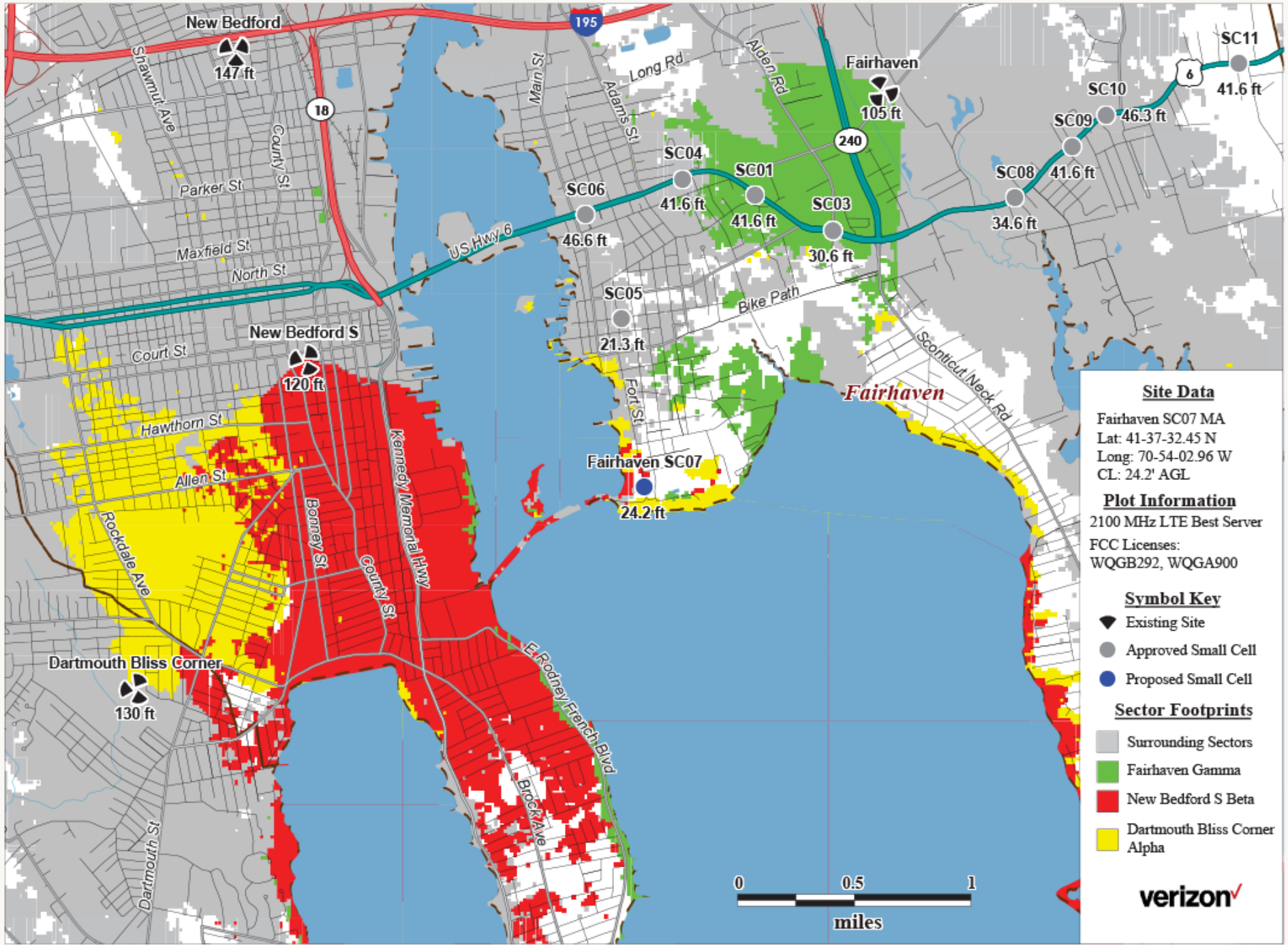


Fairhaven SC07 MA - 700 MHz & 2100 MHz LTE Coverage with Proposed SC07

**** Small Cell coverage areas should be considered rough approximations due to modeling limitations ****

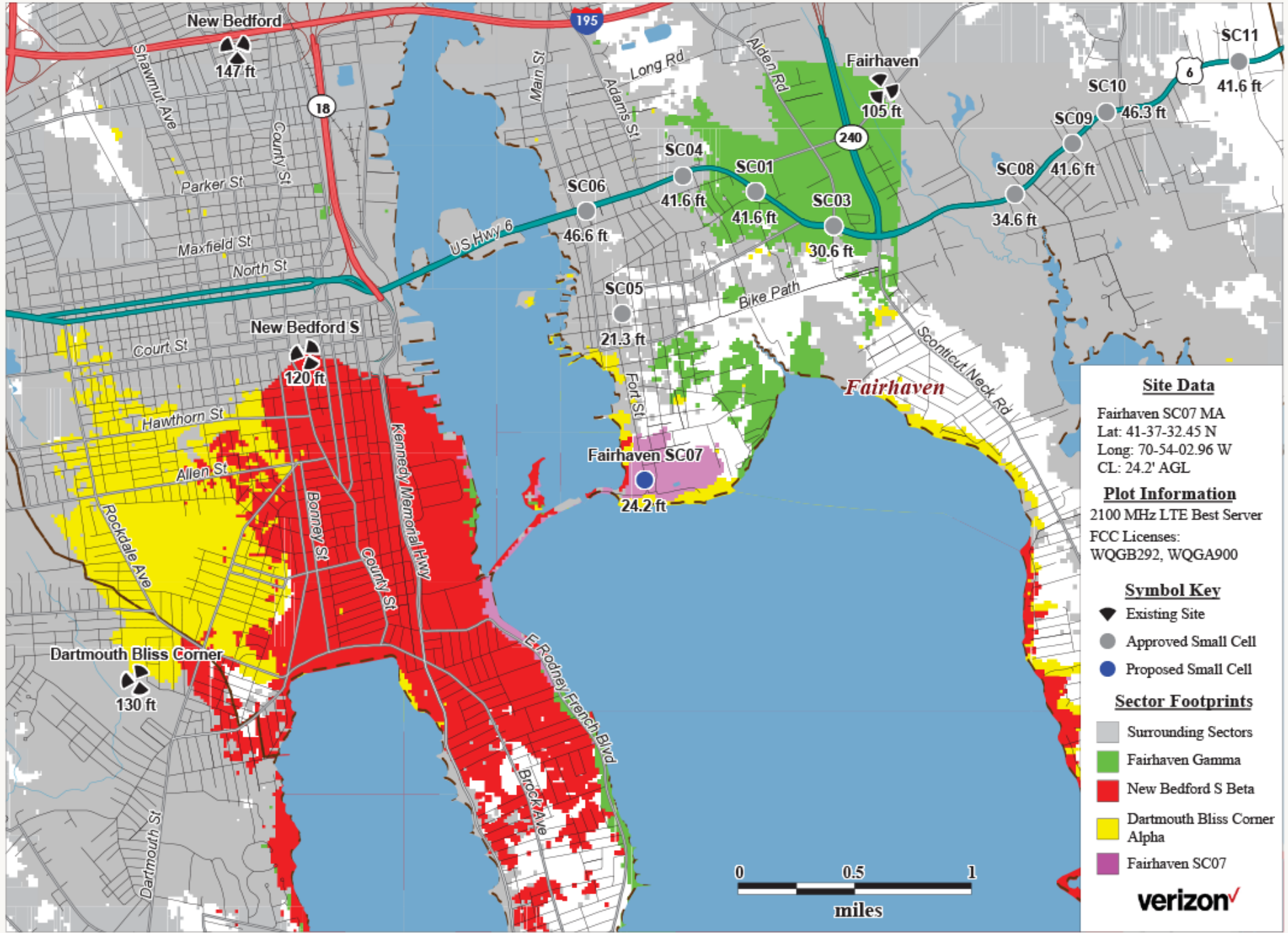


Fairhaven SC07 MA - Existing/Approved 2100 MHz LTE Sector Footprints (Macro Sites)

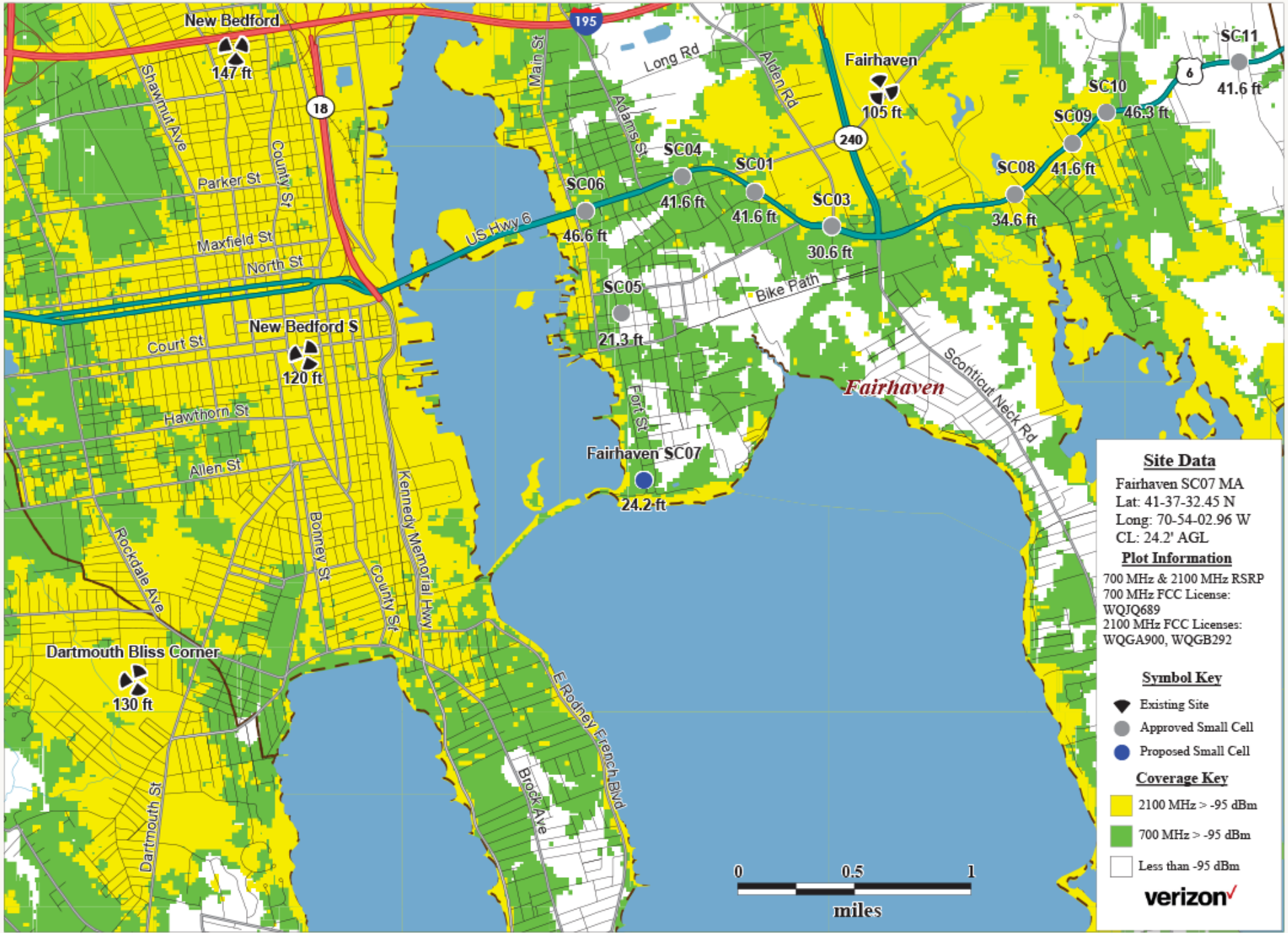


Fairhaven SC07 MA - 2100 MHz LTE Sector Footprints with Proposed SC07

**** Small Cell coverage areas should be considered rough approximations due to modeling limitations ****



Fairhaven SC07 MA - Existing/Approved 700 MHz & 2100 MHz LTE Coverage (Macro-Sites)



1. 3D GRAPHICS WHICH EXPLAIN THE DIRECTIONAL NATURE OF THE RESULTING LOW-INTENSITY ELECTROMAGNETIC ENERGY;

The energy transmitted by the Remote Radio Head (RRH) units is sent to the antenna and distributed outward with distinct patterns based on the design of the antenna. Antennas referenced as "omni-directional" are never truly "isotropic" (the physical property in which has the same value of intensity is observed when measured in different directions). The resultant intensities of energy in both the horizontal and vertical directions vary from a true isotropic source (see antenna patterns Figure 2).

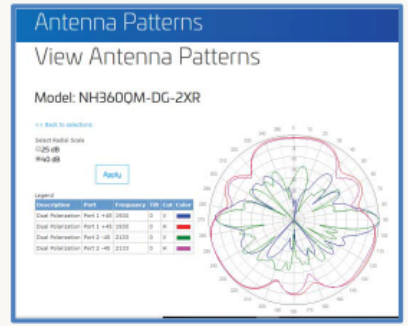


Figure 2: Horizontal and Vertical Patterns of Energy
CommScope Model NH360QM-2XR *(Courtesy CommScope©2019)*

The energy distribution can also be shown in 3 dimensions, as shown in in both the horizontal and vertical directions vary from a true isotropic source (see antenna patterns Figures 3a and 3b).

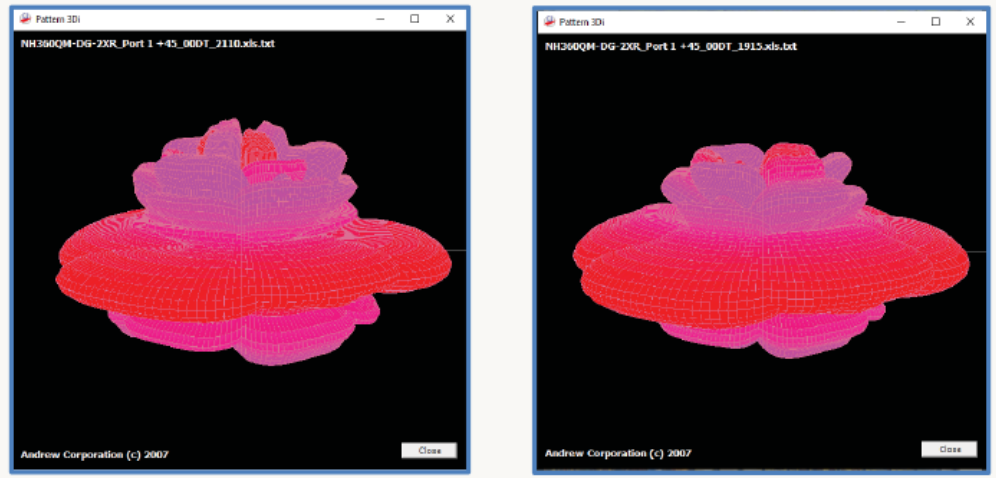


Figure 3a & 3b: 3D Patterns of Energy for AWS & PCS Frequencies, Respectively.
CommScope Model NH360QM-2XR *(Courtesy CommScope©2019)*