



Town Council Public Hearing

*Amendment to Lease between the Town of
Avon and SBA 2012 TC Assets,
LLC for the property located at
277 Huckleberry Hill Road*

Thursday October 7, 2021 at 7:00 p.m.
via GotoMeeting

Introduction

Tom Kline

- Assistant Chief, Avon Volunteer Fire Department
 - Joined 2004, last 8 years as Assistant Chief
- Senior Network Administrator, Avon Public Schools
 - 2019 - Present
- CT State Certified Firefighter, HazMat Operational, Fire Officer, Fire Service Instructor
- National Incident Management System Certifications 100, 200, 300, 400, 700, 800
- Began in Fire Service in 1993
- FCC Amateur Radio License since 1993
- 20+ years in audio/visual production engineering
- MS in Computer Information Systems Security

Public Safety Radio



Images copyright Motorola Solutions. *Town of Avon RFP 16/17-12 Technical Proposal*, August 2017



Public Safety Radio



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Public Safety Radio

ALWAYS AVAILABLE

Your mission critical operations depend on reliable voice PTT communications all the time, everywhere you operate. Why not demand the same reliability from your data service. You can depend on ASTRO 25 data the same as you already trust your ASTRO 25 PTT service for:

- Resiliency Against Service Disruptions
- Coverage Everywhere You Need It
- Security



SUPER STORM SANDY WHEN WILL IT OCCUR AGAIN?

DURING SUPERSTORM SANDY THERE WERE:

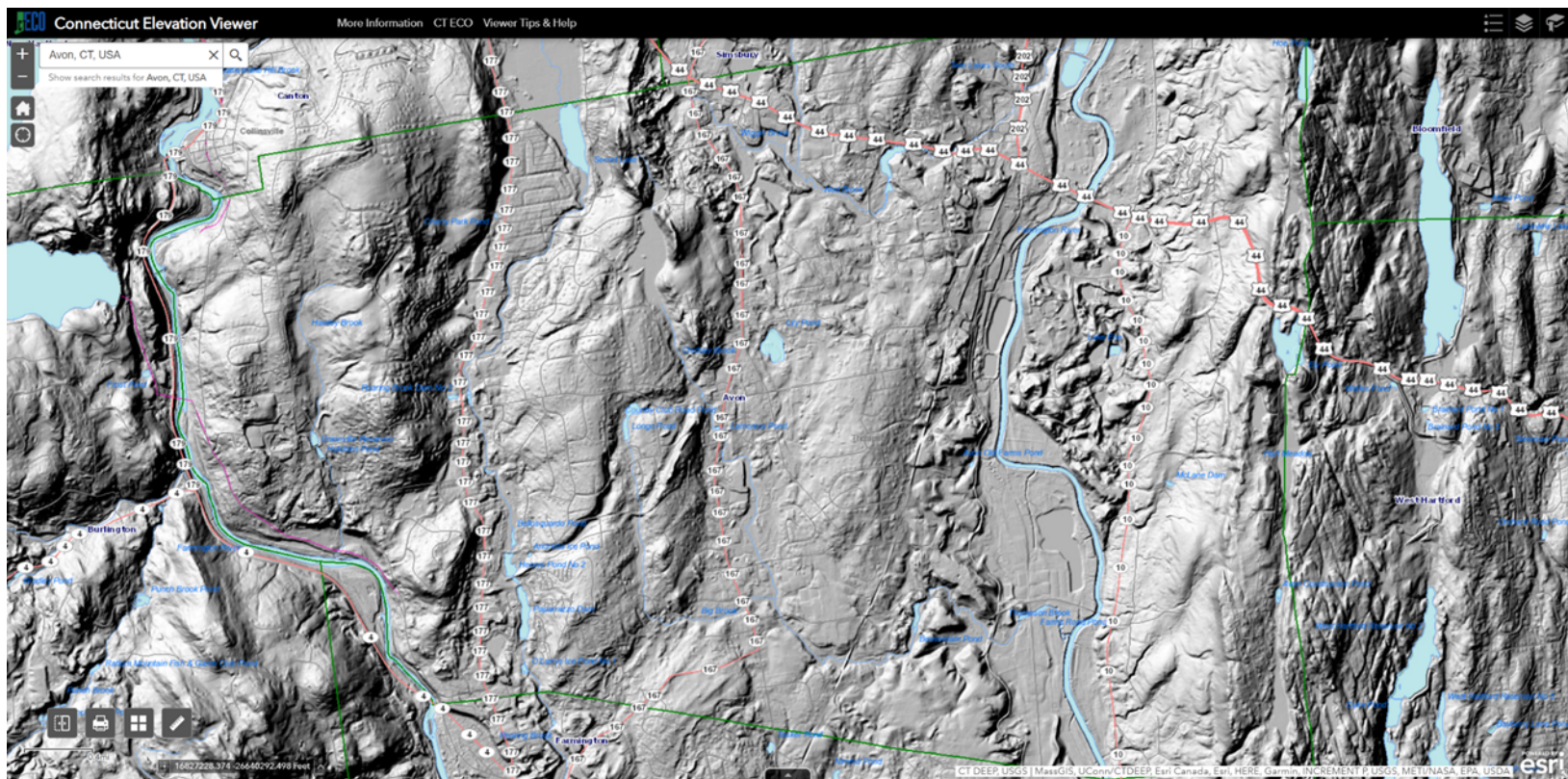
25 % OF CELL SITES IN
THE 10-STATE REGION
OUT OF SERVICE

18 DAYS BEFORE
CARRIERS RESTORED
FULL SERVICE

0 PUBLIC SAFETY SYSTEMS
ADVERSELY AFFECTED

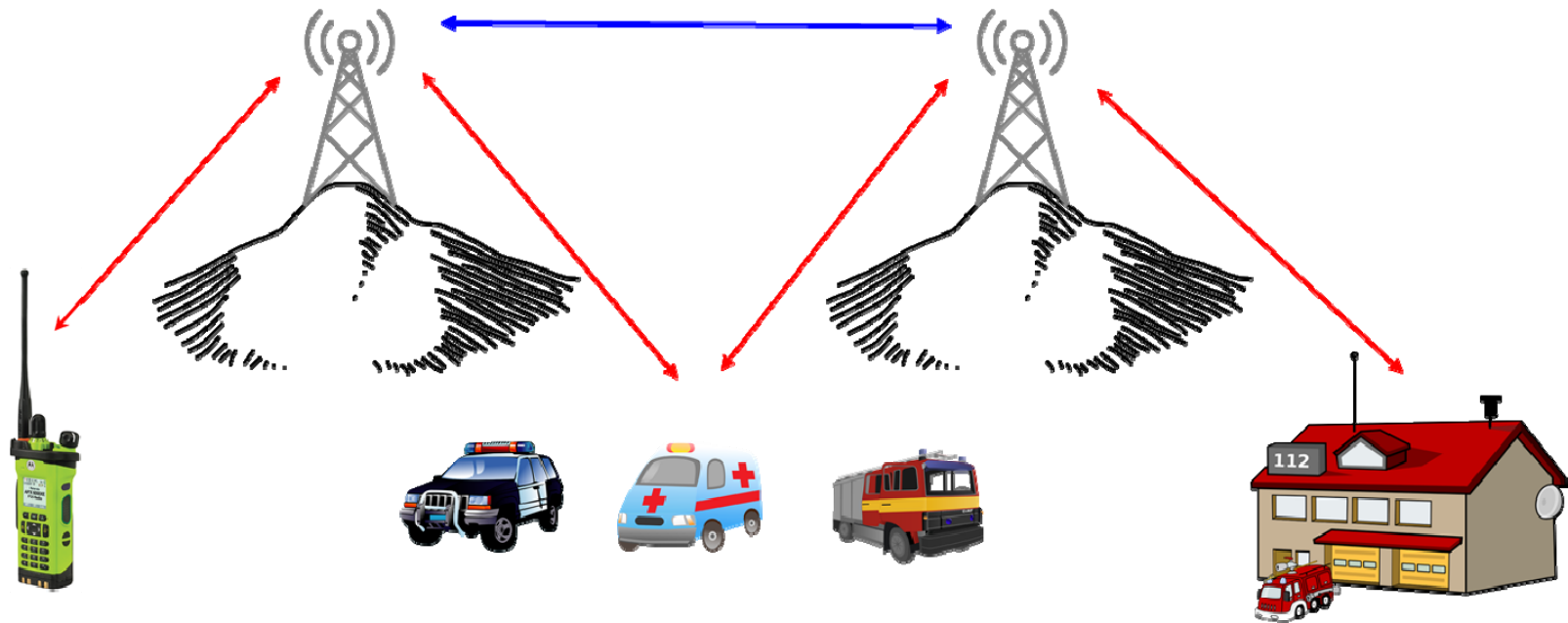
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Avon's Topography



[UConn Connecticut Elevation \(Lidar\) Data](#)

Radio Systems



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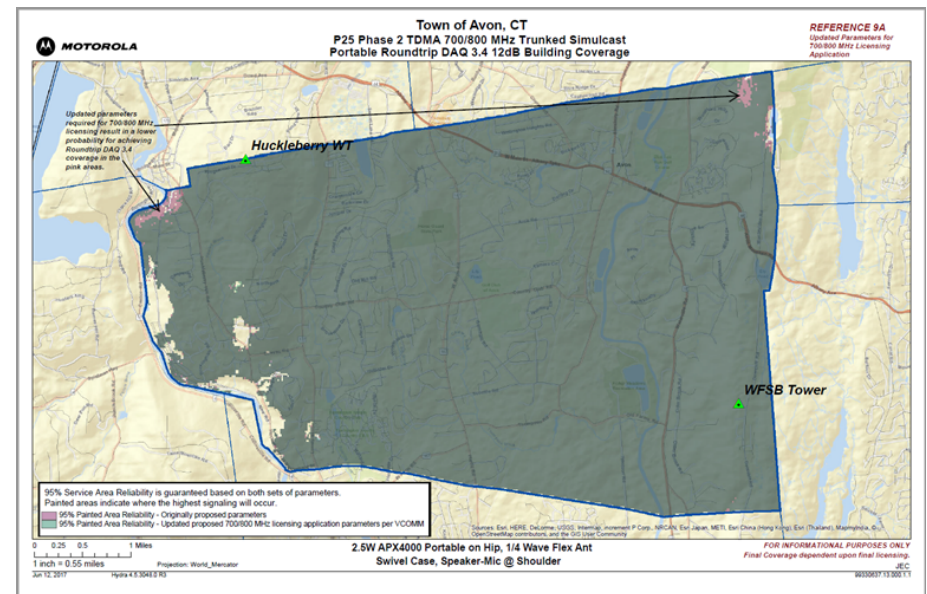
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Existing System – Talk-Out 12 dB In-Building Coverage



Original System Proposal (Design #1)

- August 2017
- 2 site solution using existing locations (WFSB tower on Deercliff, existing public safety tower on Kingswood)
 - WFSB – transmit @ 300 feet; receive @ 325 feet
 - Kingswood - transmit @ 135 feet; receive @ 150 feet
- Coverage Specification: 95% coverage of a portable radio in a building with 12db signal loss delivering an audio quality rating of 3.4.



What is Building Loss?

TYPE	DEFINITION	POSSIBLE LOSS (dB)
Large (Class I)	Large downtown building, large commercial building, or large enclosed shopping mall	20
Medium (Class II)	Small to medium size stores, small apartment buildings, or a small to medium size factory or office building	15
Light (Class III)	Residential buildings (1-2 story) and small commercial buildings	8 - 12

What is Delivered Audio Quality?

Channel Performance Criteria (CPC): Minimum design performance level in a faded channel. CPC is the Delivered Audio Quality (DAQ), as defined below:

DAQ 1	Unusable, speech present but unreadable.
DAQ 2	Understandable with considerable effort. Frequent repetition due to noise/distortion.
DAQ 3	Speech understandable with slight effort. Occasional repetition required due to noise/distortion.
DAQ 3.4	Speech understandable with repetition only rarely required. Some noise/distortion.
DAQ 4	Speech easily understood. Occasional noise/distortion.
DAQ 4.5	Speech easily understood. Infrequent noise/distortion.
DAQ 5	Speech easily understood.

Evaluation of Alternate Sites

Benefits of Using Existing Sites:

- Infrastructure such as power, communications, and roadways are already in place.
- State law favors co-locating services on existing structures vs building new (CGS 16-50aa).
- Already approved for such use
- Listing of existing cell towers from the CT Siting Council website (November 2019)
- Google Earth Map of Siting Council Sites
- UConn Connecticut Elevation (Lidar) Data

Evaluation of Alternate Sites

Drawbacks of Using Undeveloped “Green” Sites

- Infrastructure needs to be planned, approved, and constructed
- Land acquisition and/or land use issues
- Planning and zoning approval
- 2016 Plan of Conservation and Development
- Significantly higher cost to implement

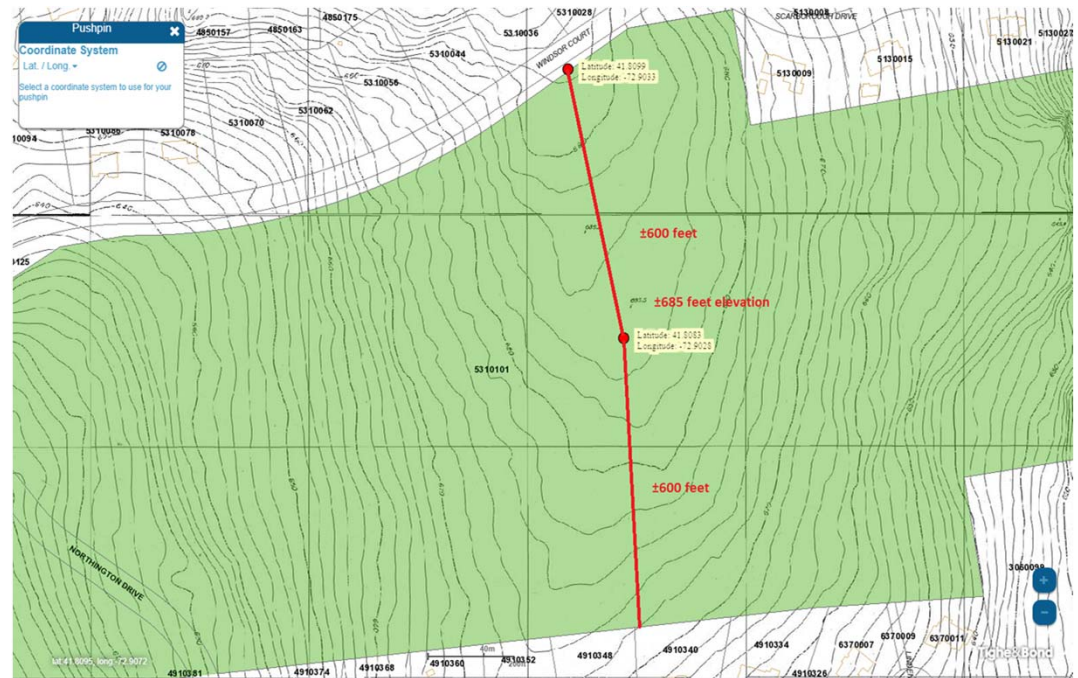


Evaluation of Alternate Sites

- Huckleberry Hill Recreation Area
- AVFD Fire Station, Company #4
- Farmington Woods Water Tank
- Found Land
- Avon Transfer Station

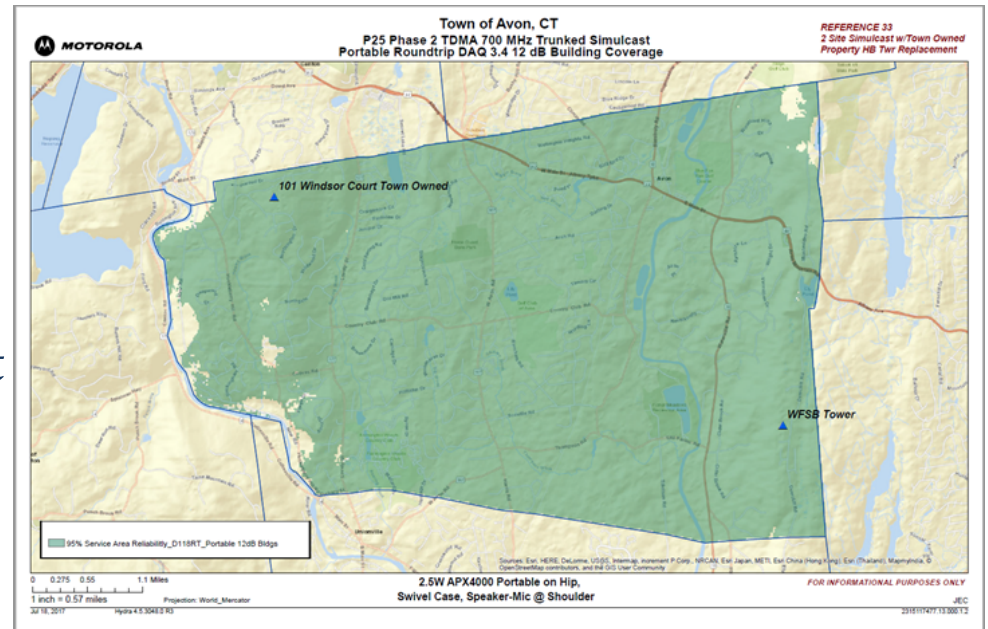
Alternate Site – Found Land

- Town-owned property located at 101 Windsor Court
- Location at the center of the property was selected for evaluation.
- Approximately 1300 feet south of Kingswood site.



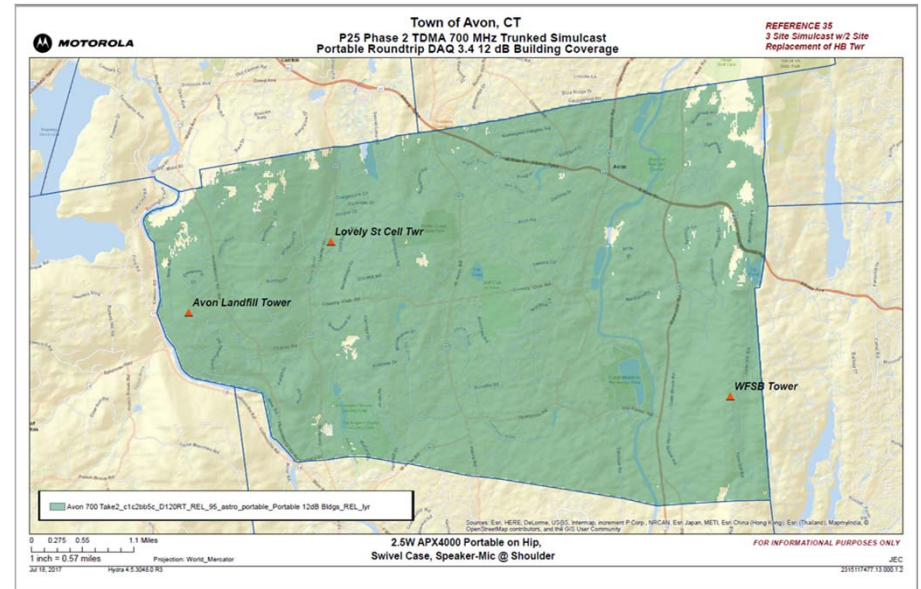
Alternate Site – Found Land (Design #2)

- Found Land (135' transmit, 150' receive).
- Requires 150' tower on a green site.
- Land use restricted by CGA Special Act (1963).
- 1/3/00, Council discussed cell tower at this location and determined that an act of legislature would be required to change permitted use.
- Approval by P&Z required.
- Approval process would extend project by years.



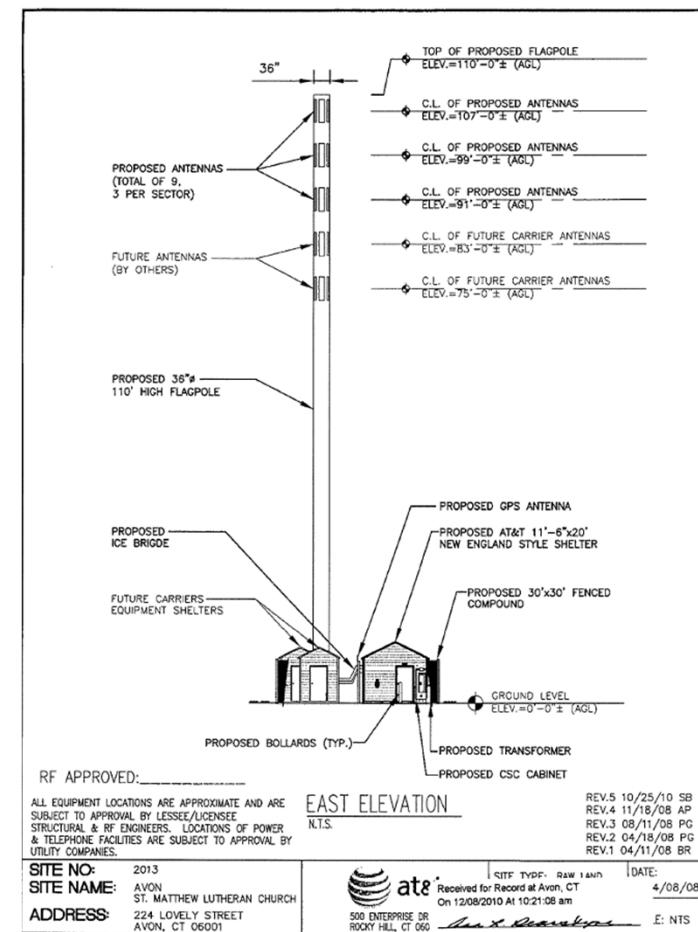
Alternate Site – 244 Lovely St. (Design #3)

- Existing tower to rear of St. Matthew's Church.
- Would not provide coverage over Northington Ridge with WFSB site.
- First design that incorporates a tower at the Transfer Station to fill coverage to west.
- Lovely - transmit 70 feet; receive 80 feet
- Transfer Station – transmit 65 feet; receive 75 feet



Alternate Site – 244 Lovely St. (Design #3)

- Tower is a hollow pole with cell antennas encased inside.
- Tower design does not provide for external mounting of additional antennas.



Alternate Site – 277 Huckleberry Hill

- Town owned property used as an active Landfill until 1994.
- Neighboring properties on Westbury building in 1995 (Town of Avon Assessor)
- Neighboring properties on Buckingham Road built in 2003
- Buckingham playground built in 2006. (Hartford Courant Article)
- Sprint (now SBA) cell tower built in 2004.
- Neighboring properties on Berkshire Crossing built in 2005.
- Currently used as a recycling and waste Transfer Station.
- Future system designs focused on this site because:
 - Town owned property that can not be otherwise developed.
 - Not used for recreational purposes.
 - Existing tower, roadways, electric and fiber optic service.
- New public safety tower or colocation on existing tower was yet to be determined but location was identified as the best option for system redesign.

Alternate Site – 277 Huckleberry Hill (Transfer Station)

- Existing cell tower built in 2004.
- 100 foot wood laminate pole.
- 3 cellular carriers on pole.
- Current lease provides for use by public safety equipment but highest available location is 70', too low for adequate coverage.
- Application submitted to SBA in February 2020 to start discussion of colocation.



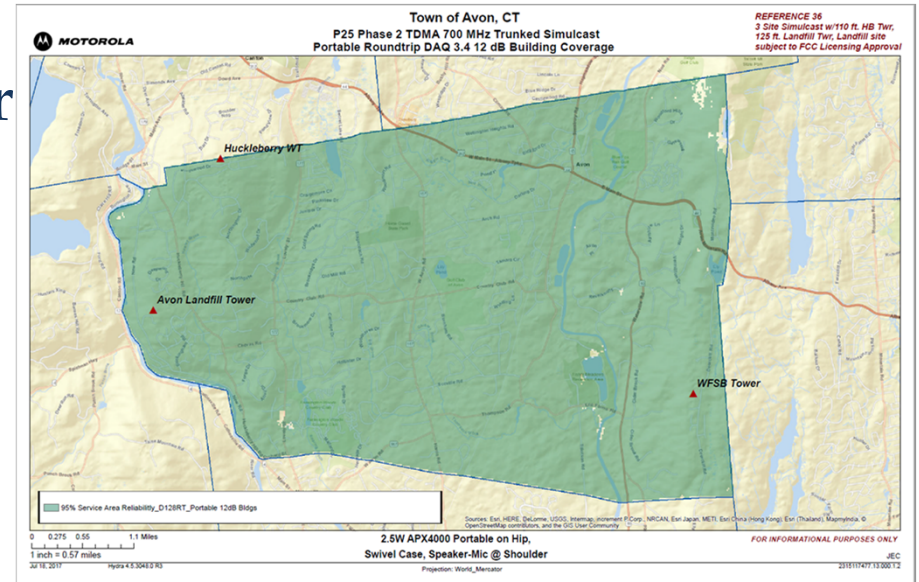
Alternate Site – 277 Huckleberry Hill (Transfer Station)

- SBA advised only available space would be below existing equipment and guy wire supports.
- Motorola advises that is too low to achieve coverage goal
- Town discussed building separate tower on property for public safety but could cause interference to existing services violating lease agreement.
- Building a new site is more expensive than collocating.



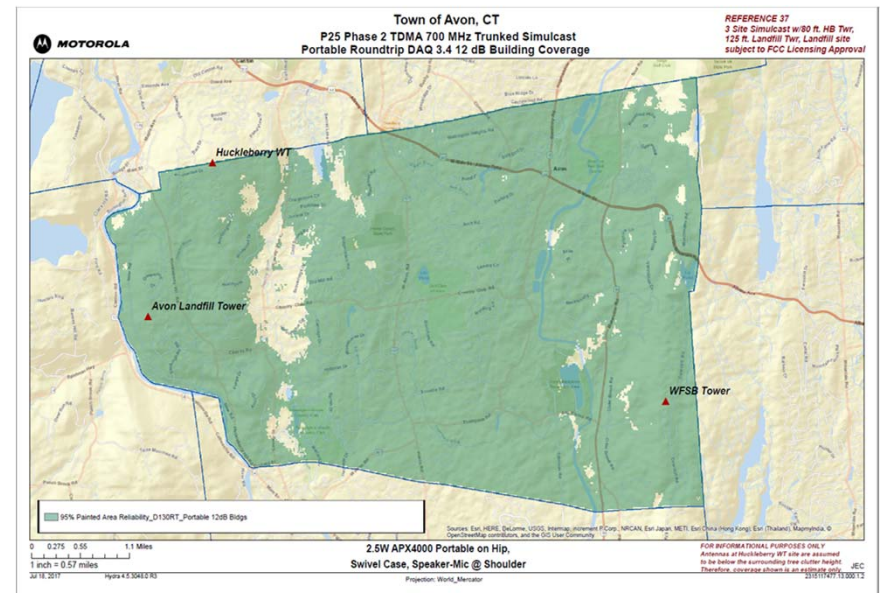
Design #4

- December 2019
- Alternate design of a shorter proposed tower on Kingswood Drive, WFSB, and Landfill sites
- Kingswood transmit 100' receive 110'
- Landfill transmit 115' receive 125'
- WFSB Transmit 300' Receive 325'



Design #5

- January 2020
- Alternate design using 80' tower on Kingswood Drive, WFSB, and Landfill
- Kingswood transmit 80' receive 70'
- Landfill transmit 115' receive 125'
- WFSB Transmit 300' Receive 325'
- Motorola notes that:



This coverage is an estimate only since predicting coverage through close in tree clutter is not an exact science. The calculated added attenuation for this site to account for this clutter significantly degrades the expected coverage from this site. As a result, even with the addition of the Landfill as a third site, 95% service area reliability for 12 dB building coverage is not expected, and cannot be guaranteed, based on an 80 ft. tower at the Huckleberry site.

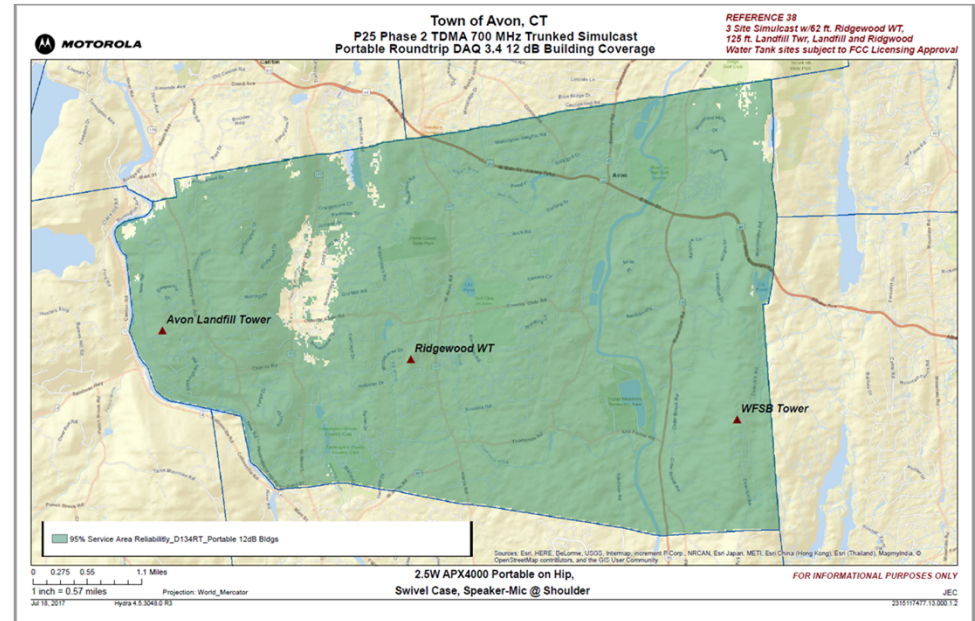
Alternate Site – Ridgewood Water Tank

- Existing site used for current public safety system as well as Verizon and AT&T
- Antennas are mounted on top of the 60' water tank on CT Water property
- Town has agreement dating back to early 1980s with Avon Water Company, now CT Water, and written permission to include this site in future plans
- [Google Map](#)



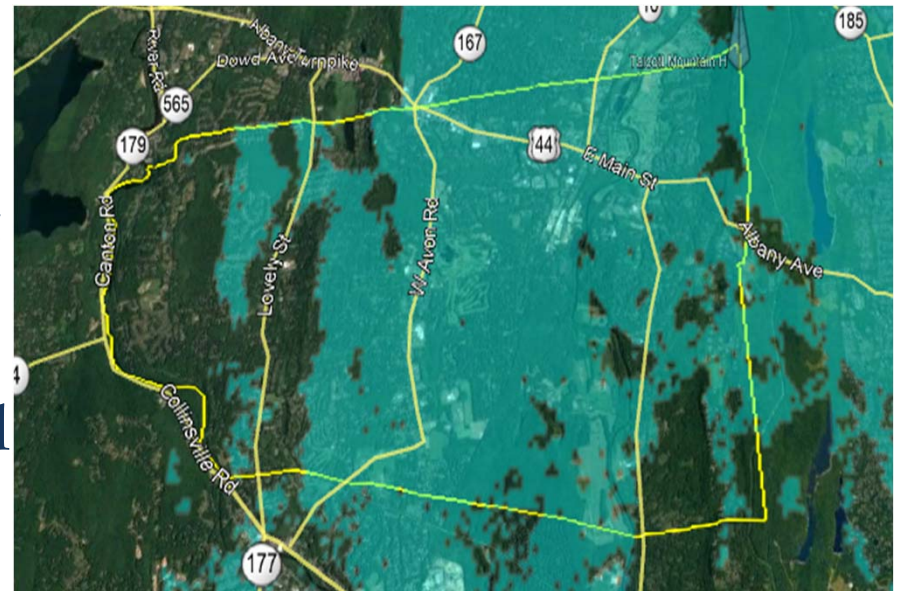
Design #6

- January 2020
- Alternate design using existing water tank site on Ridgewood Road, WFSB, and Landfill sites
- Ridgewood water tank transmit 62' receive 62'
- Landfill transmit 115' receive 125'
- WFSB transmit 300' receive 325'



State of CT Radio System

- January 2020
- Began discussions with State of CT representatives and Motorola to see what options might be available.
- Town staff performed radio testing throughout town and inside town buildings to get an idea of the coverage provided by the existing State system.
- Closest State tower is near Heublein Tower at the Avon/ Bloomfield/ Simsbury border.



Map provided by CT DESPP LMR Unit showing on-street coverage.

Spring/Summer 2020

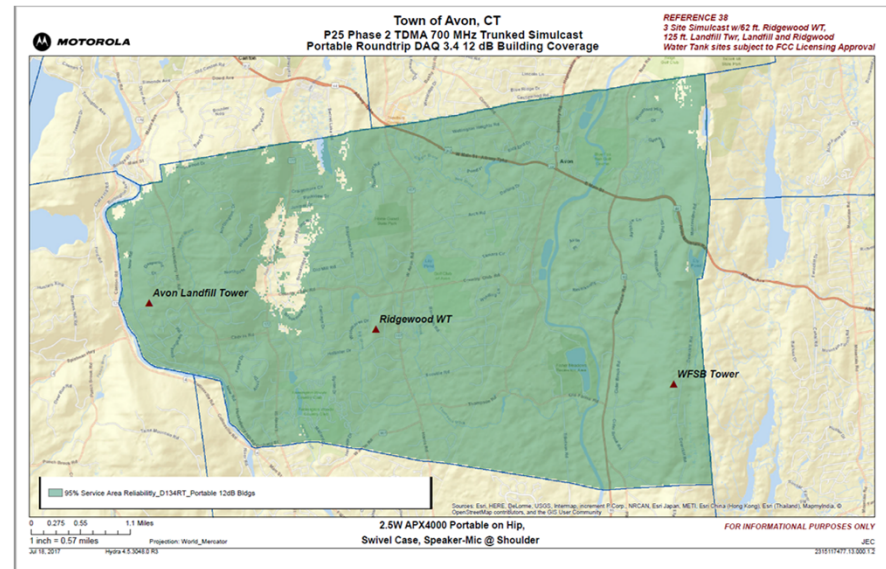
- Early days of COVID-19 pandemic
- April 2020
 - Town engaged Motorola to evaluate State System.
 - Coverage determined to be insufficient on existing single state tower alone.
 - Additional towers would be necessary to fill the coverage gap.
- May – December 2020
 - Motorola continues 3 site system design as an add-on to state system.
 - Project update provided to Council in September 2020
 - SBA colocation discussions move forward
 - Motorola pauses design work until Town can confirm Transfer Station site is a viable option.

Design #6

- January - May 2021
- New year brings staffing changes to Motorola project team.
- SBA lease agreement negotiated to replace the wood pole and provide space for public safety at the top.
- Detailed review of hardware options and quantities conducted to try to reduce overall system cost.
- Identified in-building solution for Roaring Brook School should acceptance testing not pass at that location (bi-directional amplifier).

Design #6

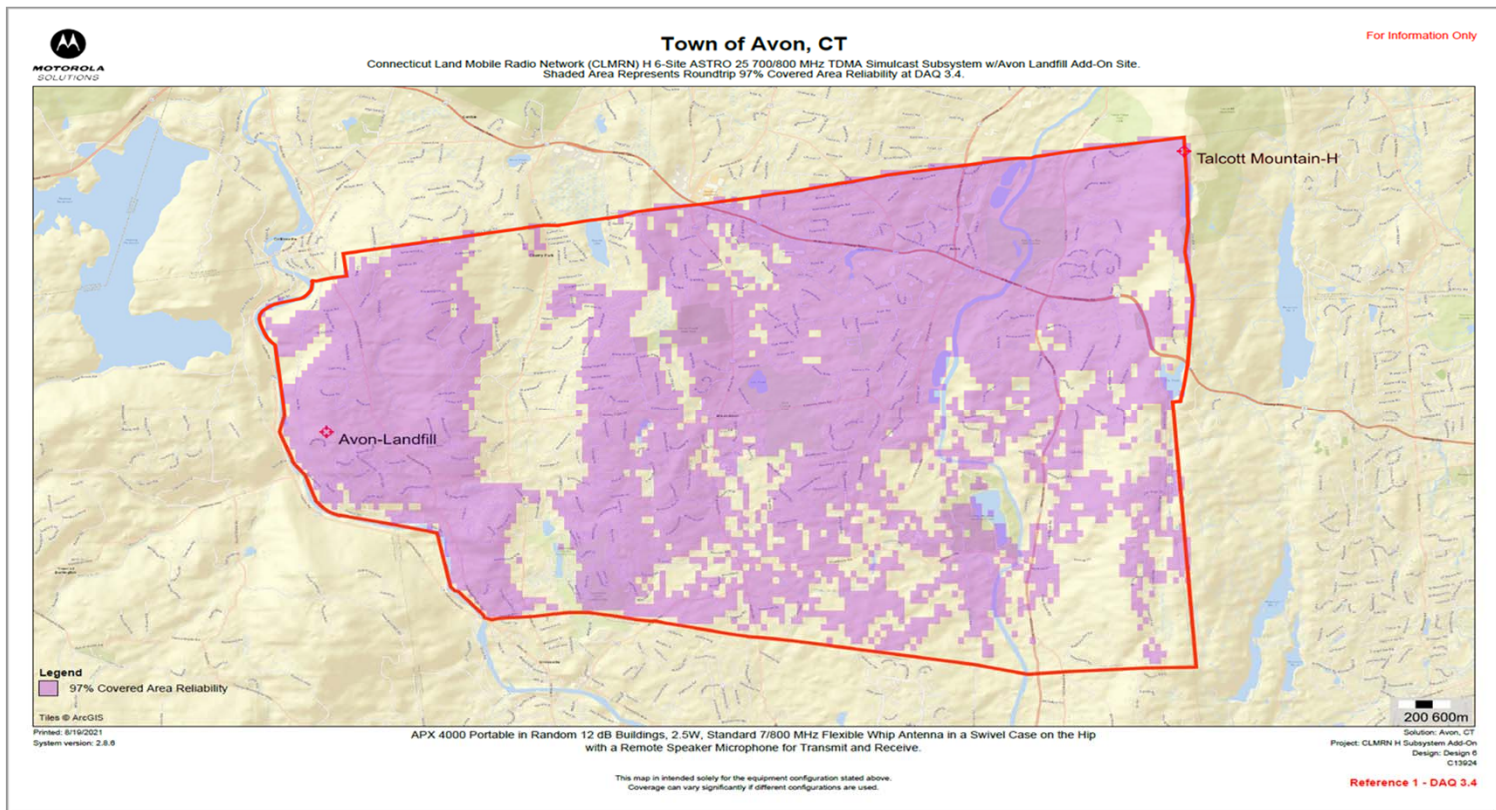
- July 2021
- Motorola delivers updated proposal for a 3-site system that is integrated with the State system
- Relies on the State system for "core" system components
- Project placed on hold pending SBA lease agreement and tower replacement



Design #7

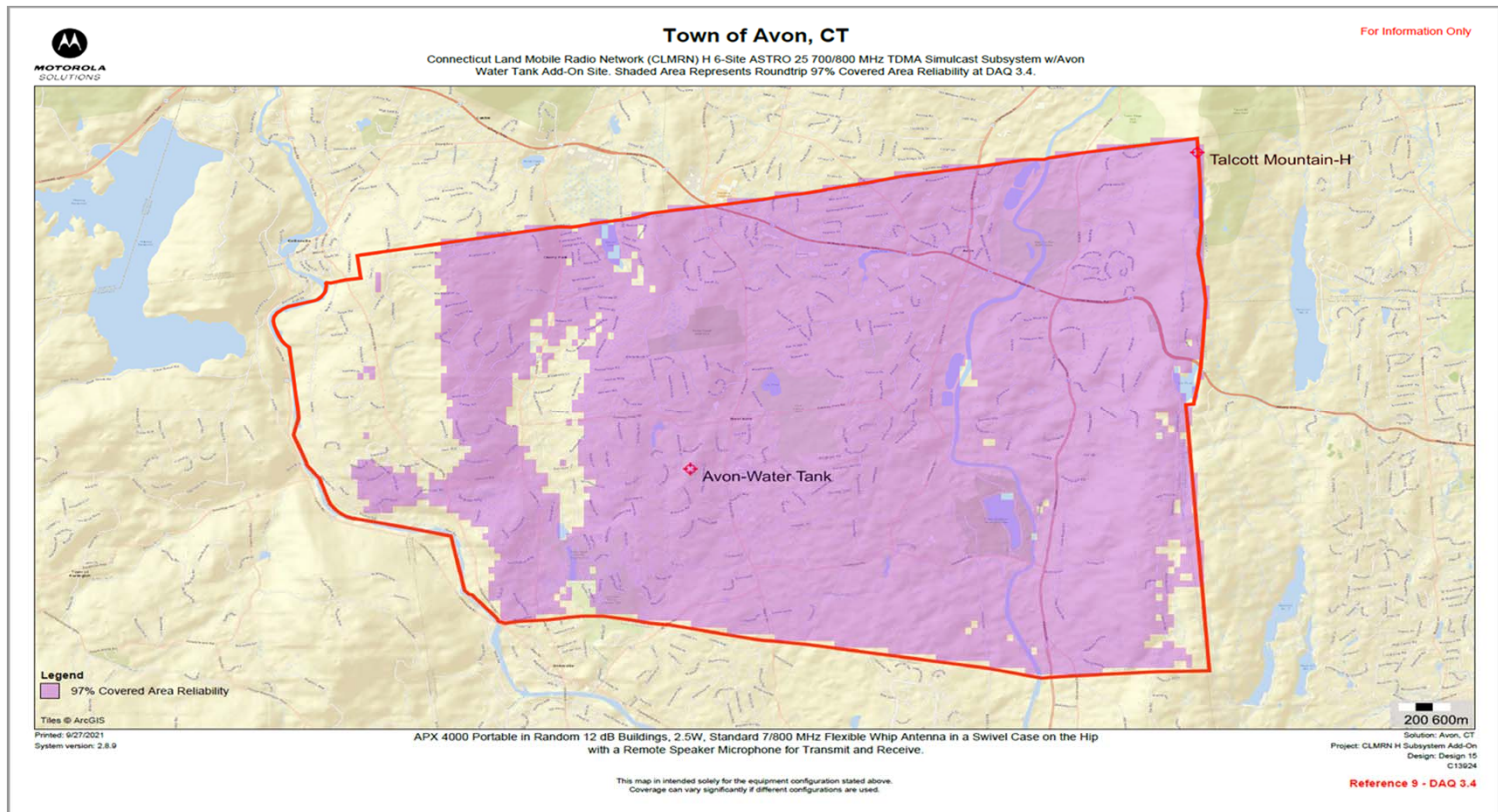
- August 2021
- Review of the proposed design revealed that the Avon WFSB and State Heublein Tower sites are approximately 3 miles apart and on the same ridgeline
- Both sites have similar equipment and functionality
- Town asked Motorola to examine coverage by changing the design from a 3-site sub-system of the State to adding 1 or 2-sites (Landfill and Ridgewood) directly to the State system
- This would drop WFSB from the design and hopefully reduce cost
- Other municipalities have completed similar projects (Bloomfield) to utilize the State system directly and boost the coverage in their town by funding and building additional sites
- Motorola has provided coverage maps but has not done detailed engineering revisions or cost estimates for this alternate design option pending confirmation of the SBA tower replacement

Design #7(A)



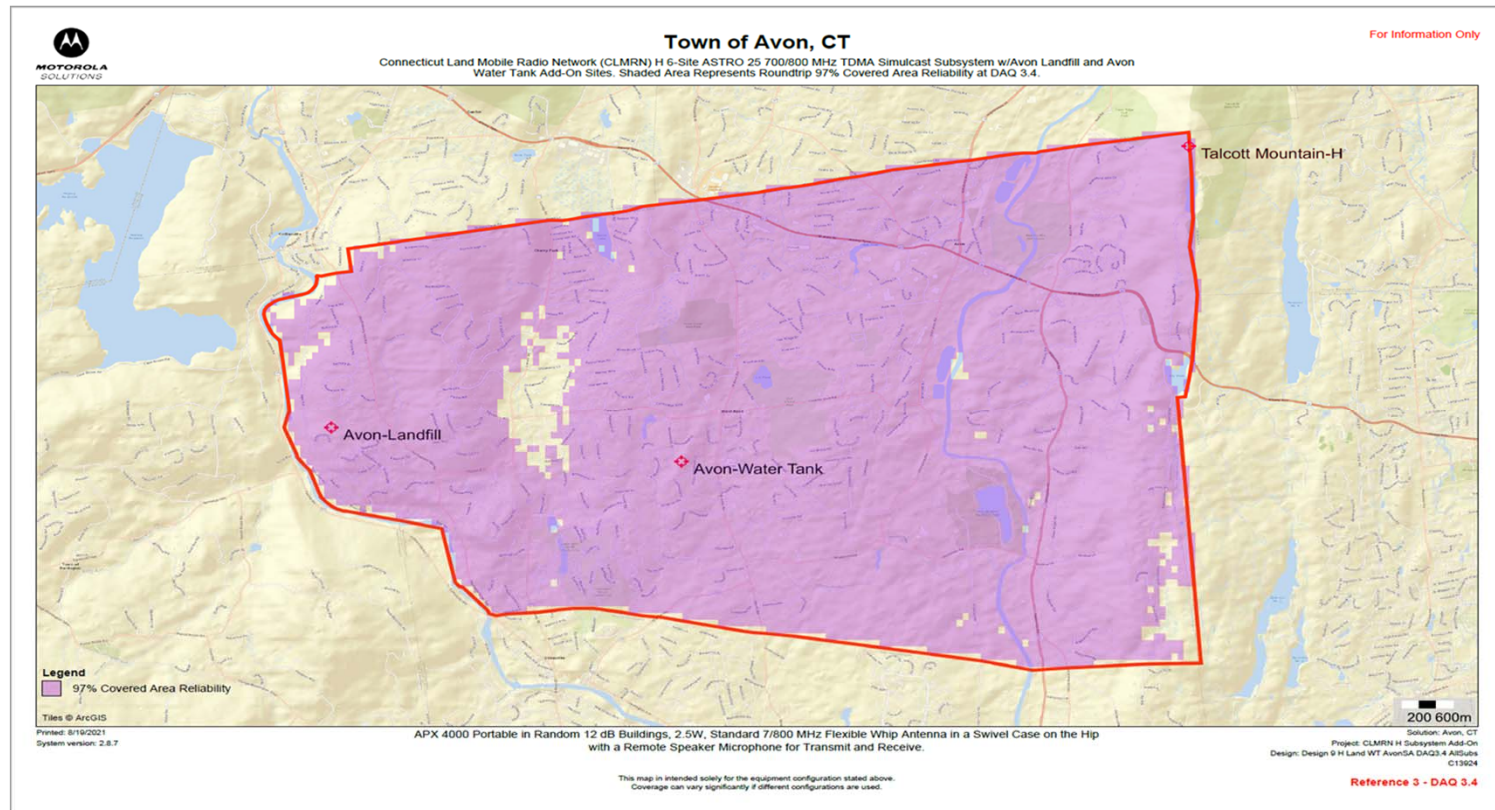
State Talcott Mountain & Transfer Station sites

Design #7(B)



State Talcott Mountain & Ridgewood Road sites

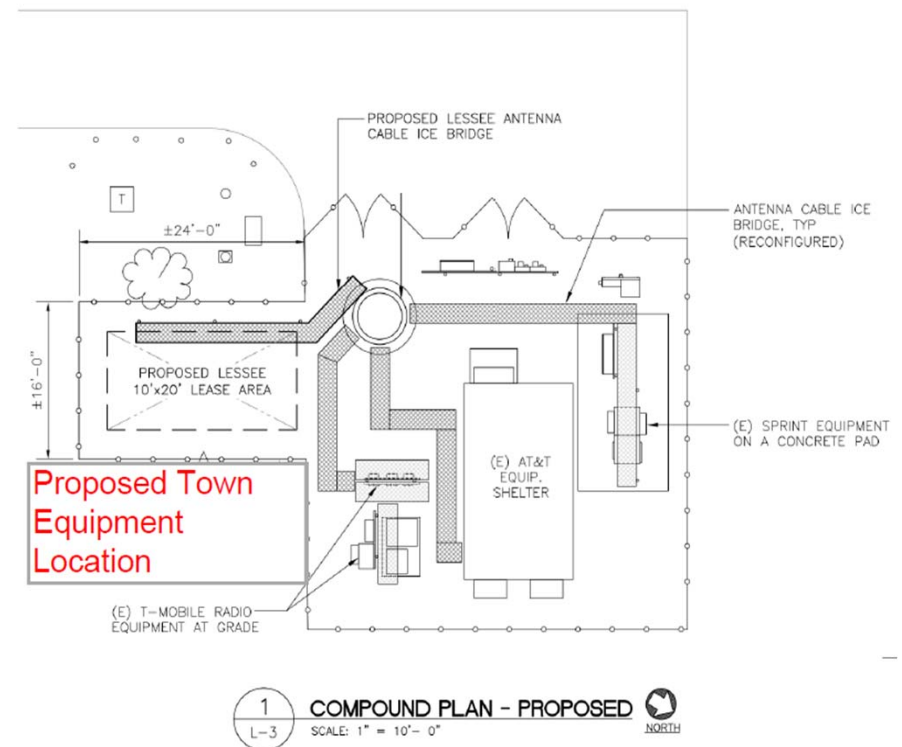
Design #7(C)



State Talcott Mountain, Transfer Station & Ridgewood Road sites

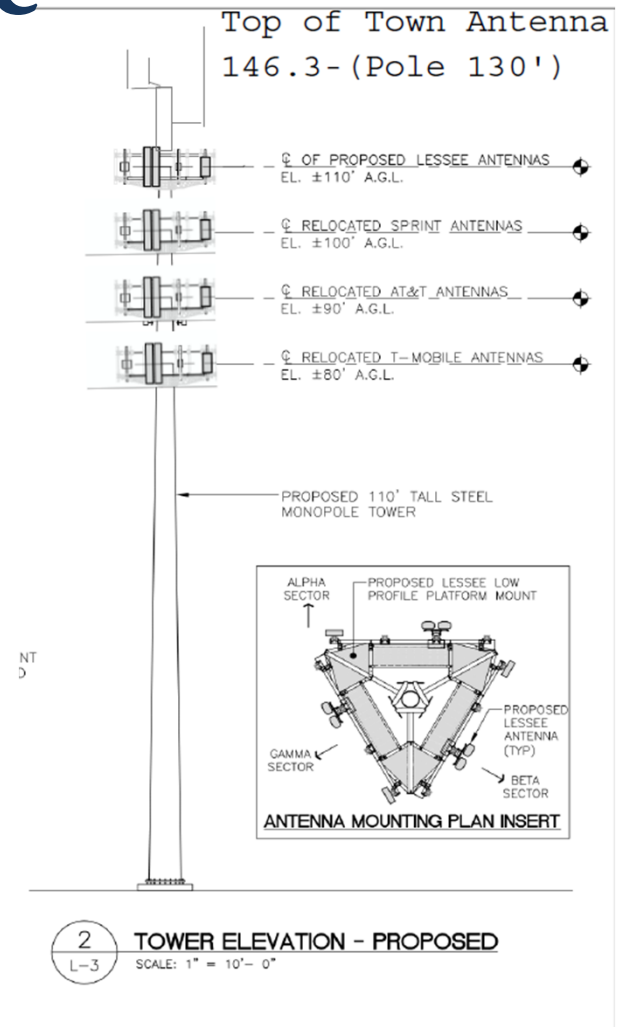
Proposed Changes to Transfer Station Site

- Lease amendment would allow SBA to construct a 130 foot self supporting monopole tower within the existing 60 foot by 60 foot fenced in area
- Existing wood pole and supporting guy wires would be removed



Proposed Changes to Transfer Station Site

- Three existing cellular tenants would return to their existing locations on the new tower at 80, 90, and 100 foot elevations
- Space for a fourth cellular tenant would be open at the 110 foot elevation
- Town of Avon equipment would be at the 120 and 130 foot elevations

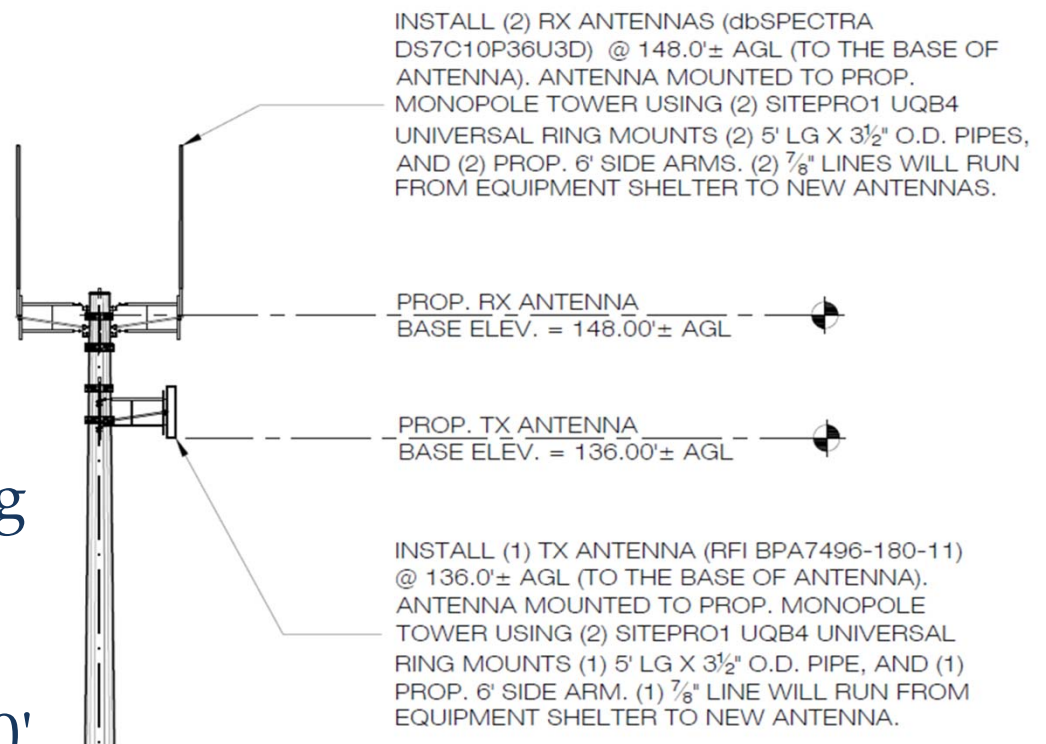


Proposed Antenna Detail (TOA)

This image is from the original 2017 Motorola proposal detailing antenna models and mounting. Proposed design for Landfill site utilizes the same antennas and mounting hardware with revised elevations:

Receive antennas at 130'

Transmit antenna at 120'



Proposed Antenna Detail (TOA)

- (2) Receive Antennas
- dbSpectra DS7C10P36U-Series
- 3 inch outside diameter
- 16.3 feet total length, including 35 inches of mounting mast length
- Fiberglass covering is "horizon blue" color
- dbSpectra product spec sheet



Proposed Antenna Detail (TOA)

- (1) transmit antenna
- RFI Technology
Solutions BPA7496-180-
11
- 60 x 10.4 x 6 inches
- Housing is light gray
- RFI Technology
Solutions spec sheet



Public Safety RF Power

Google Earth View

Public safety system power output is dependent on final system design but would not exceed the maximum effective radiated power as licensed by the FCC.