



*Thinking outside the sphere*

# Report on Analysis of Proposed Cell Tower at Newton Road, Woodbridge Connecticut

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David Maxson, WCP

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## Introduction

This report reviews the evidence provided by the applicant Cellco Partnership d/b/a Verizon Wireless (Cellco) for approval to develop a cell tower at Newton Road, in Woodbridge. This report also relies on new material produced by the author, David P. Maxson, WCP, to refine the record. Mr. Maxson's curriculum vitae is Exhibit B.

## Coverage

### **Applicant's data for the 1900 and 850 MHz Bands Are Irrelevant**

Applicant's data for the 1900 and 850 MHz bands re irrelevant because they are not currently operational in Woodbridge. The coverage maps in Attachment 6 of the application reveal that 1900 MHz and 850 MHz service is not offered from cell sites in and around most of Woodbridge at present. Verizon sites labeled Woodbridge South, Woodbridge East, Westville West, Bethany, Ansonia East, and Hamden are not presently offering 850 and 1900 MHz services. Therefore, any showing of coverage in these bands from the proposed site is uninformative without first populating existing sites with these services.

### **Applicant's Asserted Coverage Need Is Driven by the Proposed Tower – WNNET's Alternative Meets the True Need**

The applicant's coverage objective has been circularly defined by using coverage from the selected location as the definition of the coverage need. Here are two excerpts from the application narrative:

*"The proposed Woodbridge North 2 facility would provide wireless service to a 1.2-mile portion of Rt 63; a 0.1-mile portion of Rt 67; a 1.9-mile portion of Rt 114;..." (p9 application)*

*"These wireless service deficiencies exist particularly along Route 63 (Amity Road), Route 67 (Seymour Road), and Route 114 (Center Road) and in the area surrounding the Property, including the Amity Regional High School and the Alice Newton Street Memorial Park." (p6 application).*

In contrast, the original search ring was in northern Woodbridge:



*“Coverage enhancement along Rt 63, Rt 67, and surrounding residences.” (Search Area Request Form (“SARF”))*

The proposed facility fails to address half of the original objective because it provides no material improvement to service to and along Rt 67 (it only “enhances” about 500 feet (0.1 mi) of Rt 67 according to the above testimony).

In summary, Cellco was planning to address a small service area in the vicinity of Routes 63 and 67, but got sidetracked to the proposed site, which fails the Rt 67 objective. Instead, because the proposed location is so far south, the description of need crept in the direction of the High School, a recreational property and (not mentioned) the town-center services at Meetinghouse Lane. Abandoning the original objective, these targets for improved service, along with 1.9 miles of Rt 114, were opportunistically added to support rationalizing the proposal. If these service areas had originally been the objective of the SARF, the applicant would undoubtedly have looked toward the town properties near Rt 114, which we propose herein.

### **Alternative Tower of Lesser Impact but Equivalent Coverage**

Assuming the coverage from the proposed facility is the metric for alternatives (which is discredited by the fact that the proposed facility is far south of the original objective), we identify two alternative locations as examples that could be considered. They are on Town properties.

First, Isotrope modeled coverage from the location of the existing public safety radio tower (monopole) at 4 Meetinghouse Lane. The existing radio tower is about 120 feet tall, so 120 feet was the starting height for coverage modeling. Note that the tower was built for relatively low-profile two-way radio antennas and may not have the necessary structural capacity to support cellular antennas without reinforcement or replacement. Still, the fact that this tower already exists makes it a sensible location for upgrading the tower structure to provide commercial services as well as public safety communications.



Second, we identified a location at 15 Meetinghouse Lane (town DPW parcel or the one adjacent to it – 149 Center Road) where the Town has indicated that a tower would be acceptable. It is set well back from the road and is well away from residences.

We performed detailed modeling of the coverage from the 4 Meetinghouse Lane tower site. We found the differences in coverage between this location and the proposed location were minimal (See attached Figures 2 and 3 in Exhibit A). Also, comparing two heights at 4 Meetinghouse Lane, differences in the coverage footprints between 120 and 150 feet were not substantial, which allows for limiting tower height to that which is needed to accommodate several wireless carriers. In this case, the coverage from 4 Meetinghouse Lane is competitive with that from the proposed location. The differences are shown in the table below.

SITE/HEIGHT	Increase in coverage relative to existing >-95 dBm	
	Area (square miles)	Streets (miles)
Proposed 100 ft	2.05	11
4 Meetinghouse 120 ft	1.83	11
4 Meetinghouse 150 ft	2.23	11

Table 1 - Table of Comparative Metrics

Exhibit A contains five figures containing coverage maps produced on the software program EDX SignalPro, a standard computer modeling platform Isotrope utilizes in analyzing coverage for wireless communications facilities. Figure 1 shows our version of Verizon’s existing 700 MHz coverage based on available information. Figure 2 shows existing plus proposed. Figure 3 shows existing plus the alternative at 120 feet at 4 Meetinghouse Lane. Figure 4 shows existing plus the alternative at 150 feet at 4 Meetinghouse Lane. Coverage from 140 feet at the 15 Meetinghouse Lane site is shown in Figure 5. the height was chosen to complement the coverage obtained from the other configurations above.

### **Conclusion – WNET’s Alternative Locations on Meetinghouse Lane is a Viable Coverage Alternative with Lesser Impact**

Of particular note is the fact that both Verizon’s proposed facility and WNET’s alternative site at 4 Meetinghouse Lane do not reach Route 67 and the portion of Route 63 which lies north of Route 67.



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While both Verizon's proposed tower location and WNNET's alternative suffer the same conflict with the original SARF (the search ring), as discussed above, WNNET's alternative provides an apples-to-apple comparison with the Application. **More importantly, WNNET's proposed alternative location provides competitive coverage with significantly less impact to residential neighborhoods.**

David Maxson, WCP  
August 20, 2021



## Exhibit A – Isotrope Coverage Analysis

Figure 1 - Existing Verizon 700 MHz Coverage .....	8
Figure 2 - Existing plus Proposed.....	9
Figure 3 - Existing plus 4 Meetinghouse at 120 feet .....	10
Figure 4 - Existing plus 4 Meetinghouse at 150 feet .....	11
Figure 5 - Existing plus 15 Meetinghouse at 140 feet .....	12



Figure 1 - Existing Verizon 700 MHz Coverage

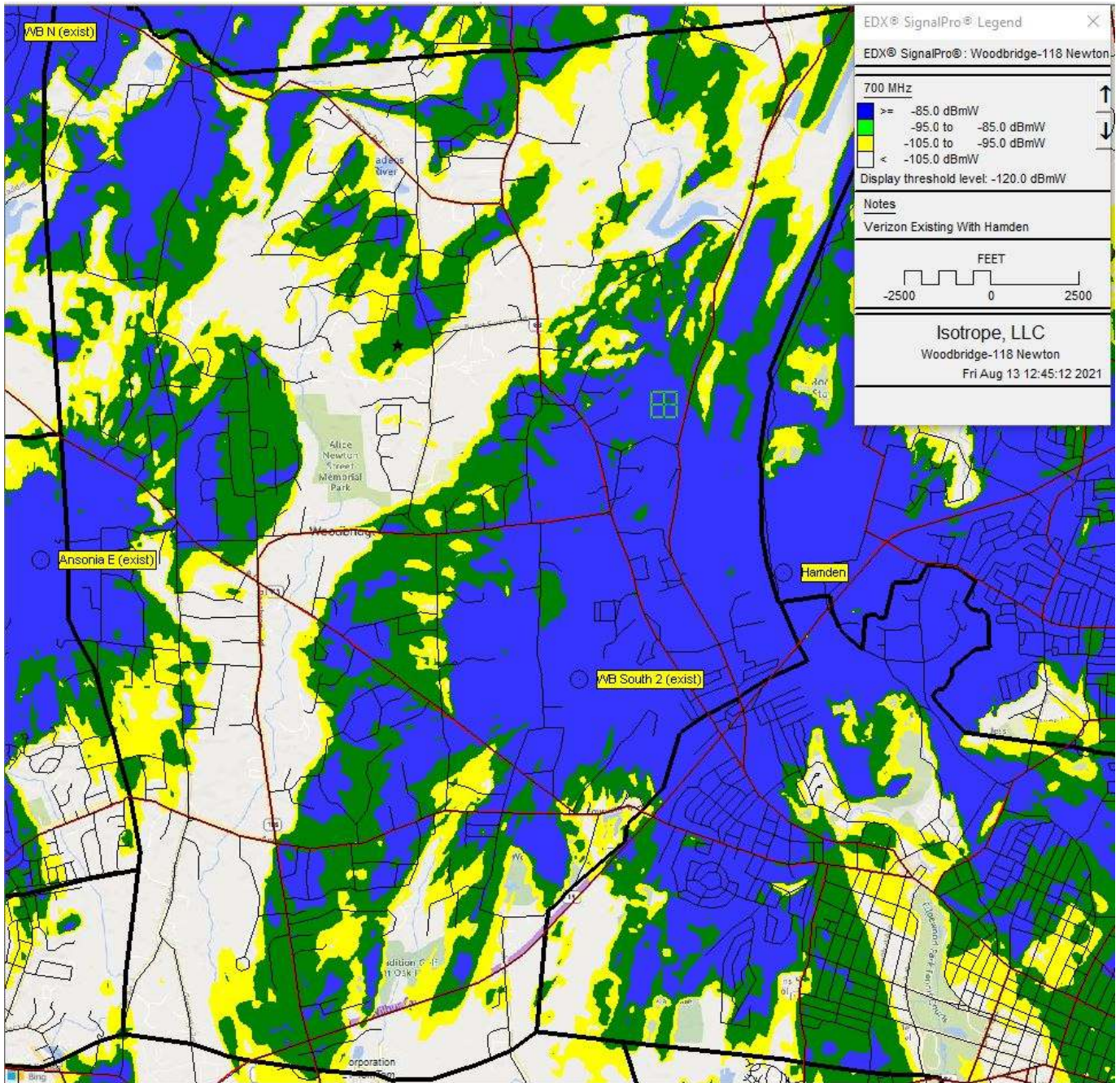






Figure 2 - Existing plus Proposed

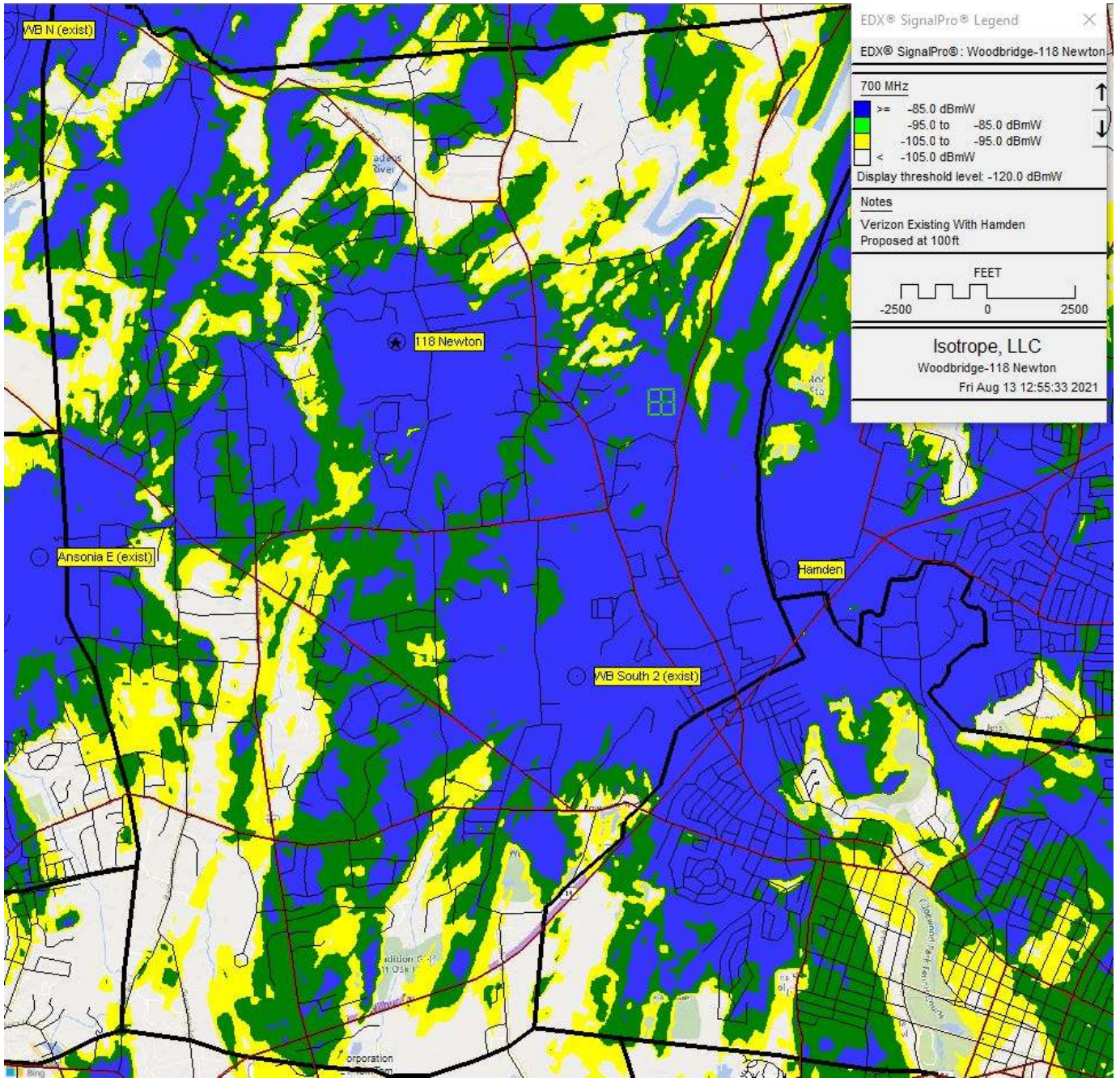




Figure 3 - Existing plus 4 Meetinghouse at 120 feet

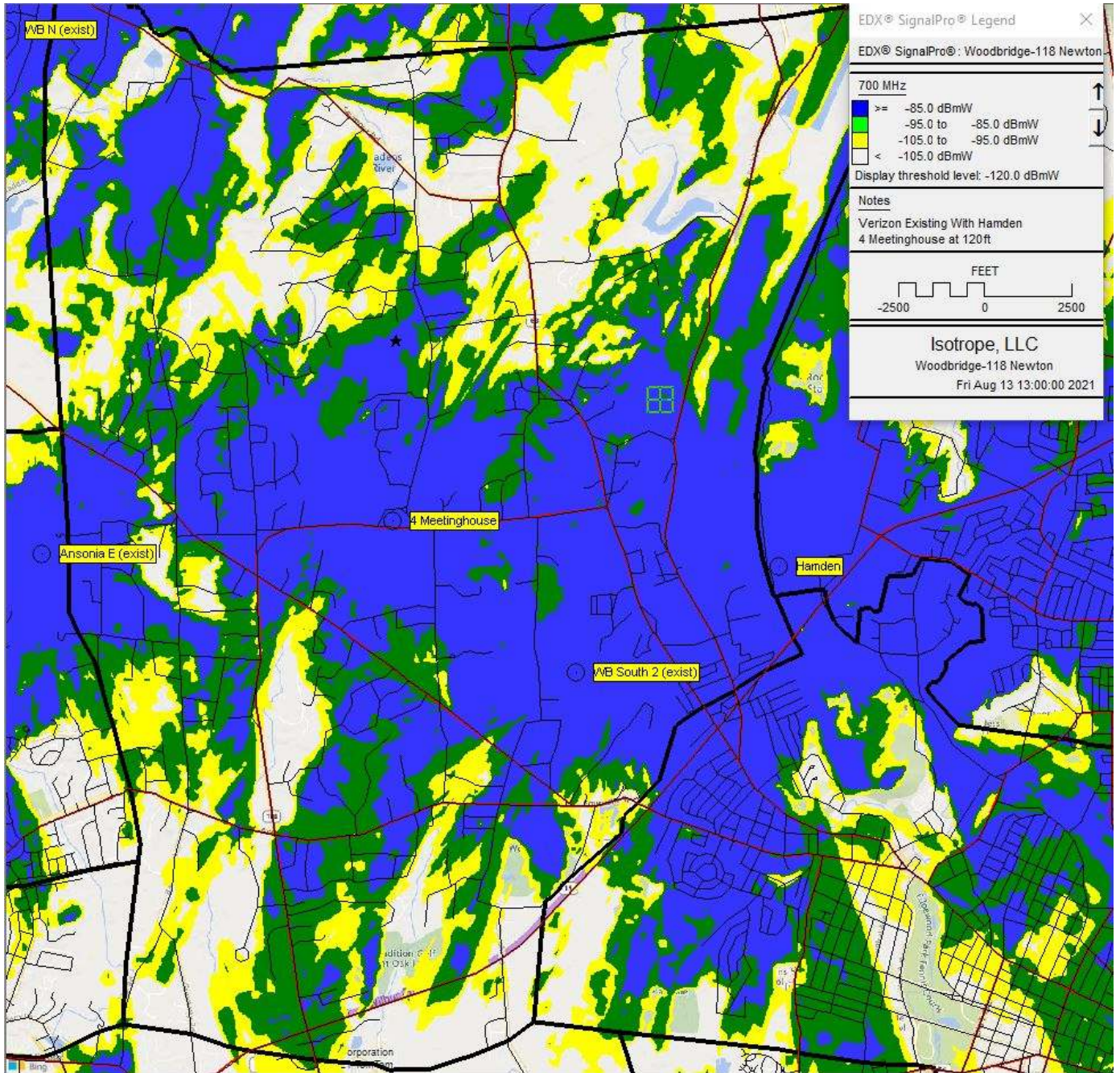




Figure 4 - Existing plus 4 Meetinghouse at 150 feet

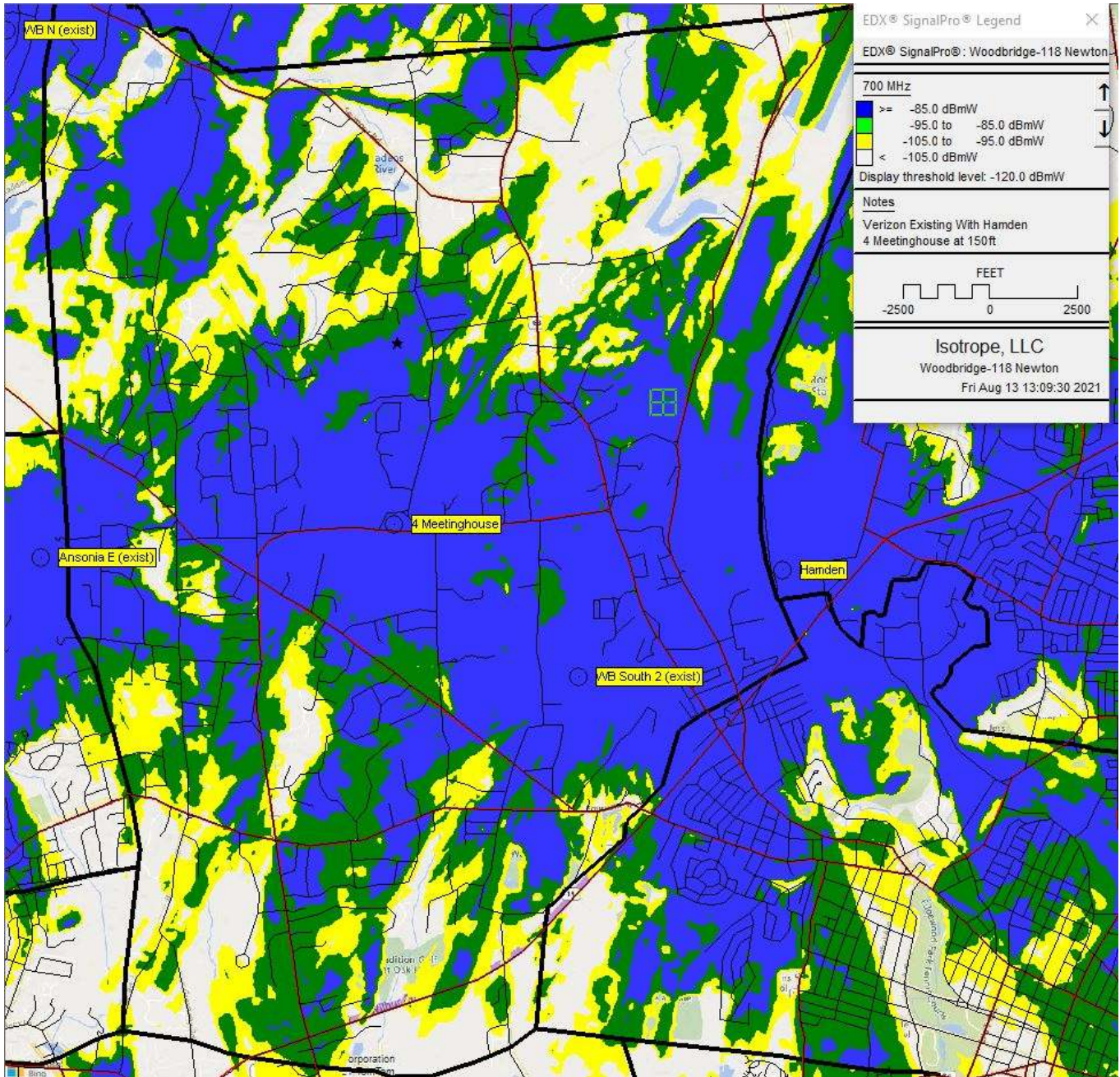
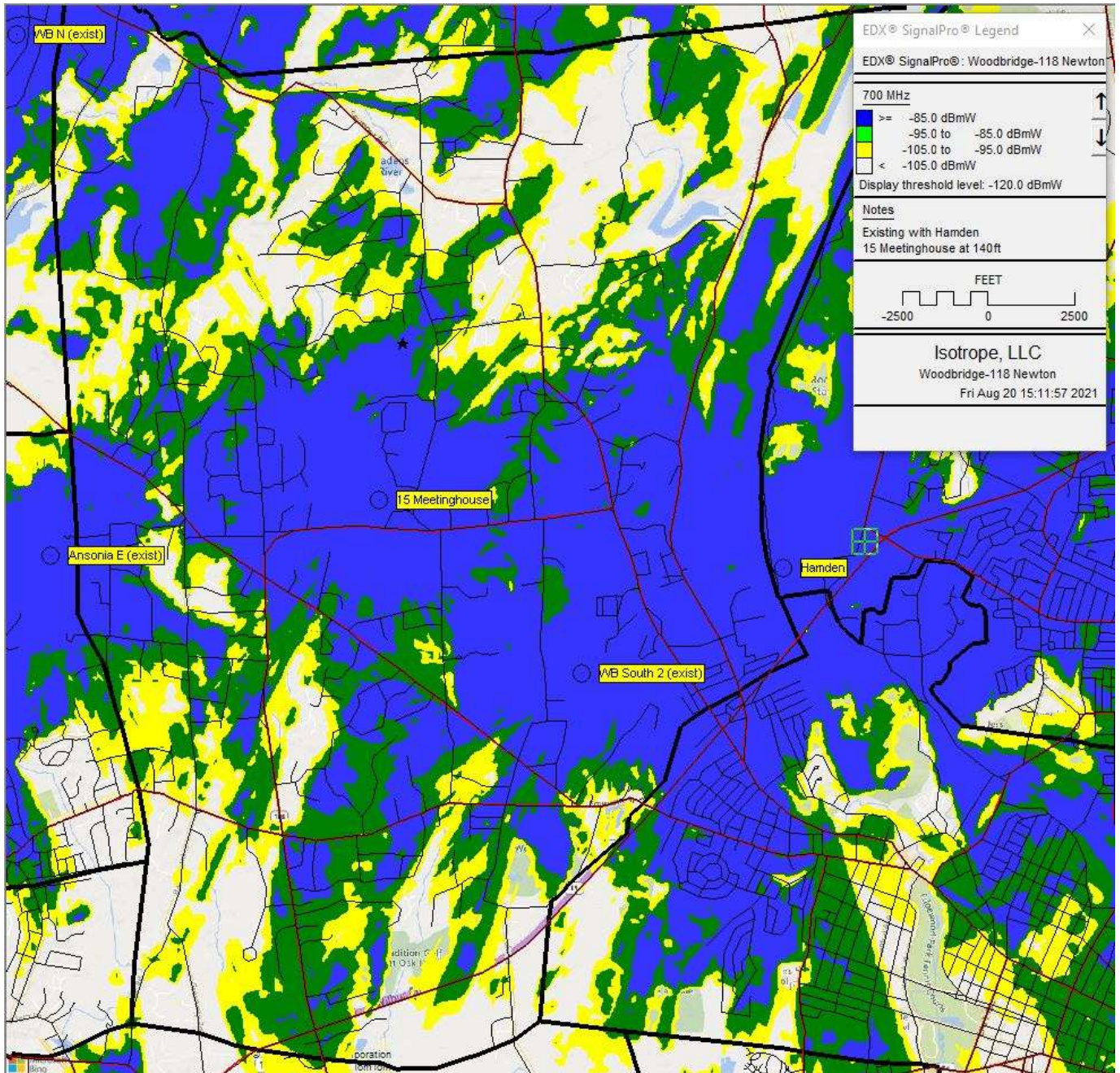




Figure 5 - Existing plus 15 Meetinghouse at 140 feet





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**Exhibit B – *Curriculum Vitae* of David P. Maxson, WCP**

# ***David P. Maxson, WCP***

## ***Curriculum Vitae***

Isotrope, LLC, Medfield, Massachusetts, 1982\*-present

Founder, CEO

- |  |  |
|--|--|
| a) Radio communications facility and network design and construction | b) Safety planning and evaluation of communications facilities, safety protocol development        |
| c) Research and development on digital media initiatives             | d) Evaluation of radio frequency facilities for compliance with technical and regulatory standards |
| e) Radio frequency interference remediation                          | f) Expert consultation in radio and digital communications litigation                              |
| g) Municipal guidance in wireless planning and regulation            |  |

\*Note – Isotrope, LLC continues a prior business operated by David Maxson since 1982. Isotrope was formed in 2009.

Charles River Broadcasting Company, Waltham, Massachusetts, 1978-1998.

Vice President, Director of Engineering and Technical Operations

### ***Affiliations***

- Certified IEEE Wireless Communications Professional®, demonstrating “a thorough understanding of different key technologies in the wireless arena.”
- Member of National Radio Systems Committee, 1998-present.
  - Digital Radio Broadcasting Subcommittee, IBOC Standards Development Working Group
    - Chairman: Location Based Services Working Group, 2012-2015
  - RBDS Subcommittee, AM/FM Analog Broadcasting Subcommittee
- Member of International Committee on Electromagnetic Safety (“ICES”) 2016 – present
  - Certificate of appreciation for service on the Editorial Working Group for C95.1-2019 *IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz*.
- Member of the Committee on Man and Radiation (“COMAR”) 2019 – present
  - Electromagnetic safety policy and information
- Charter Member of Wireless Infrastructure Association’s DAS Forum (the small-cell group) 2008
- Corresponding Member: IEEE-USA Committee on Communications Policy, 2012 to present
- Senior Member, IEEE; Certified Broadcast Radio Engineer, Society of Broadcast Engineers; FCC General Class Radiotelephone License with Radar Endorsement, Massachusetts Licensed Construction Supervisor #CS073481.

### ***Project Highlights***

- Subject Matter Expert and trackside network design lead for Caltrain trackside broadband project, 2019 to present
- Subject Matter Expert and Design and Construction Manager for Trackside Facilities – Amtrak wireless data trackside network, 2014-2018
- Expert testimony, *Strayton v. Martha’s Vineyard Commission*, New Cingular Wireless, MVWiFi, *et al*, Massachusetts Superior Court, C.S. No. 1874 CV0008, 2020.
- Subject Matter Expert and Project Manager - Utah Broadband Project’s Wireless Broadband Surveys: developed test plan and conducted 7000-mile drive tests of wireless broadband service availability across Utah in 2011 and 2013.
- Project Reviewer - NTIA Broadband Technology Opportunities Program and USDA Rural Utilities Service Broadband Initiatives Program – American Recovery and Reinvestment Act, 2009.
- Project Director and Engineer, PAVE PAWS Radar Environmental Emissions Modeling and Survey, for PAVE PAWS Public Health Steering Group, 2004-2005 (results peer reviewed by Nat’l Academies of Science)
- Massachusetts Department of Public Health, follow-up survey of specific locations not evaluated in PAVE PAWS study; 2007-2008
- US House of Representatives Telecom Subcommittee, Testimony on RF interference study, February 2000.

# ***David P. Maxson, WCP***

## ***Curriculum Vitae***

- Wireless facility evaluation and planning consultant to the Cape Cod Commission as well as to over a hundred municipalities in New England and beyond, 1999 to present. Performed more than 500 wireless facility reviews
- Appointed member of Massachusetts Department of Public Health ad hoc committee on revisions to electromagnetic energy safety regulations 105 CMR §122, 1997.

### ***Selected Publications***

- Peer-reviewed paper: *FM 8th Harmonic Interference to Wireless Facility Not Radiated by the FM Station: A Case Study*, Proceedings of the National Association of Broadcasters Broadcast Engineering Conference (“NAB-BEC”), 2020.
- Peer-reviewed paper, co-author: *IEEE Committee on Man and Radiation—COMAR Technical Information Statement: Health and Safety Issues Concerning Exposure of the General Public to Electromagnetic Energy from 5G Wireless Communications Networks*, Health Physics: [August 2020 - Volume 119 - Issue 2 - p 236-246](#)
- Author, *Your Mileage May Be Different – Reflections on Megabits per Second and Miles per Day [on a statewide drive test of broadband data connectivity in Utah]*, Above Ground Level Magazine, December 2011.
- Principal Author, *A Tractable Approach to Defining and Measuring IBOC Signals against the RF Masks*, Annex 1, NRSC Guideline -G201: NRSC-5 RF Mask Compliance: Measurement Methods and Practice, 2010, reaffirmed 2016
- Peer-reviewed paper: *New Kinds of Interference in the FM Band: 2 Case Studies of Stuff You Didn’t Know*, NAB-BEC, 2016
- Author, *The IBOC Handbook— Understanding HD Radio Technology*, 2007, Focal Press, ISBN 13:978-0-2408084-4-4.
- Article, *Evaluating Emissions of Your New IBOC Transmitter*, Radio World Engineering Extra, June 2005.
- Article, *Posting Hazard Communications Signs at Your Radio Transmission Plant*, Radio Guide, April 2005.
- Peer-reviewed paper: *Interference Potential of Hybrid Digital Transmission: An IBOC Occupied Bandwidth Case Study*, NAB-BEC, 2004.
- Peer-reviewed paper: *Integrating ANSI-Compliant RF Signs into Corporate RF Safety Programs*, NAB-BEC 2004.
- Peer-reviewed paper, co-author: *Applying the Principles of Data Communications to the Development of an Open and Universal IBOC Data Protocol*, NAB-BEC 2003.