PRINCE LOBEL

May 15, 2025

**Via Electronic Mail and Hand Delivery**

Melanie A. Bachman, Esq.
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

**RE: DOCKET NO. 533 – Tarpon Towers III, LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility and associated equipment located at 161 Conrad Street, Naugatuck, Connecticut.**

**Responses to Pre-Hearing Interrogatories**

Dear Executive Director Attorney Bachman:

T-Mobile Northeast LLC ("**T-Mobile**") previously submitted responses to the Connecticut Siting Council's (the "**Council**") Interrogatories on March 13, 2025, in connection with Docket No. 533. T-Mobile hereby rescinds those responses and provides new Responses to the Council's Interrogatories. Enclosed please find:

- One (1) Original and Fifteen (15) copies of T-Mobile's Amended Responses.

An electronic copy has also been transmitted to the Council.

Please contact me with any questions or if additional information is required for this matter.

Sincerely,

Daniel Glissman
617-456-8153
dglissman@princelobel.com

Enclosures
Cc; siting.council@ct.gov

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:

| | | |
|---|---|---|
| TARPON TOWERS III, LLC AND CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE CONSTRUCTION, MAINTENANCE, AND OPERATION OF A TELECOMMUNICATIONS FACILITY AND ASSOCIATED EQUIPMENT LOCATED AT 161 CONRAD STREET, NAUGATUCK, CONNECTICUT | : | DOCKET NO. 533<br><br>May 15, 2025 |

**<u>RESPONSES OF T-MOBILE NORTHEAST LLC ("T-MOBILE"), TO CONNECTICUT SITING COUNCIL PRE-HEARING INTERROGATORIES</u>**

On May 1, 2025, the Connecticut Siting Council ("Council") issued Pre-hearing Interrogatories to T-Mobile, relating to Docket No. 533 in connection with its proposed telecommunications facility (the "Facility" or "Site CTNH488A"). Below are T-Mobile's responses to the Pre-Hearing Interrogatories.

**<u>Existing Non-Tower Antenna Array</u>**

**<u>Question 1</u>**: When did T-Mobile first install equipment on the existing abandoned water tank on the host parcel?

**<u>Response</u>**: T-Mobile, a successor in interest to Omnipoint Communications, Inc., first installed its equipment on the existing water tank (the "WT") in 2005, pursuant to a lease agreement by and between T-Mobile and the borough of Naugatuck, dated February 15,

2005. T-Mobile's current facility on the WT is referred to as on-air site CT11484B ("CT11484B").

**Question 2**: According to the Council's database, T-Mobile antennas are located at a centerline height of 67 feet and Sprint antennas are located at a centerline height of 85 feet on the abandoned water tank. What is the current antenna configuration and centerline height of T-Mobile's existing antennas?

**Response**: T-Mobile currently has nine (9) panel antennas (three (3) sectors of three (3) panel antennas each) on a steel platform at the top of the existing WT at a centerline height of 67-feet. The Sprint installation was decommissioned on February 22, 2022.

**Question 3**: Is T-Mobile's existing non-tower antenna array designed to address coverage or capacity needs?

**Response**: T-Mobile's existing facility on the existing WT is designed to address both coverage and capacity needs in this area.

## Proposed Facility and Associated Equipment

**Question 4**: Did T-Mobile examine other alternatives besides the proposed site? If yes, identify the locations and the reasons for their rejection.

**Response**: Yes, T-Mobile examined other alternative locations in addition to this subject location. Please reference Attachment 1 attached herewith providing T-Mobile's alternative site search summary.

**<u>Question 5</u>**: Provide details of the antennas and associated equipment to be installed at the proposed facility.

**<u>Response</u>**: Please reference <u>Attachment 2</u> attached herewith providing a detailed description of T-Mobile's proposed antennas and associated equipment to be installed on the proposed Facility.

**<u>Question 6</u>**: Provide the number of remote radio heads that would be installed at the proposed facility.

**<u>Response</u>**: T-Mobile proposes to install six (6) Remote Radio Head ("RRH"), as part of its proposed installation on the proposed Facility.

**<u>Question 7</u>**: What type of antenna mount will be used for the proposed antennas? What is the structural design standard applicable to such antenna mount?

**<u>Response</u>**: The type of antenna mounts will be a platform style mount system. T-Mobile uses the following structural design standard for its antenna mounts: ANSI/TIA-222-H / 2022 Connecticut State Building Code.

**<u>Question 8</u>**: Would a temporary facility be required for continued wireless service during construction? Would there be any lapse in wireless service during construction?

**<u>Response</u>**: T-Mobile believes that while the new tower facility is being installed, T-Mobile's equipment will continue to be operational while on the WT. Therefore, T-Mobile does not expect the need for a temporary facility for continued wireless service during construction. Moreover, T-Mobile does not expect any lapses in wireless service during construction.

**<u>Question 9</u>:** Has T-Mobile had discussions with TT regarding when equipment would be relocated?

**<u>Response</u>**: Yes, T-Mobile has communicated with Tarpon Tower III LLC ("TT") and T-Mobile expects its equipment to be relocated to the new tower (the "Tower") once the new Tower is installed and before the WT is decommissioned.

**<u>Question 10</u>**: How would the cost of T-Mobile's installation/collocation at the proposed site be recovered?

**<u>Response</u>**: T-Mobile does not anticipate that it will recover the costs associated with relocating its facility from the WT to the new Tower.

**<u>Question 11</u>**: What is the estimated cost of dismantling T-Mobile's existing equipment and installing equipment on the proposed facility? Break down the total cost into categories that T-Mobile deems appropriate

**<u>Response</u>**: T-Mobile estimates the cost of dismantling its facility on the WT and installing its equipment on the new Tower to be approximately as follows:

- Decommissioning Costs: $50,000.00
- New Installation Costs: $150,000.00

## **Proposed Wireless Services**

**Question 12**: Does T-Mobile have any existing coverage gaps or capacity needs in the area?

**Response**:

T-Mobile is currently experiencing significant network congestion in the area, adversely affecting data throughput and overall service quality, particularly in residential zones and critical public facilities such as Naugatuck High School to the south. The existing structure is structurally compromised, preventing necessary upgrades to 5G technology and further exacerbating coverage gaps. To resolve this, T-Mobile proposes the development of its Facility on the Tower, located on the same property as the WT that will be decommissioned. The Tower will provide an antenna height for T-Mobile of 128-feet, a considerable increase from the previous structure.

This increase in height is strategically designed to enhance in-building coverage for residential areas along Rubber Avenue, Jones Road, and Webb Road, where the in-building signal will be greatly improved. Additionally, the increased height extends coverage further south towards Naugatuck High School, addressing existing coverage deficiencies and providing reliable 5G connectivity in key educational and residential zones.

Moreover, the upgraded site will support the deployment of advanced 5G Mid Band and 5G Low Band services, supplementing existing LTE operations. This enhancement will effectively alleviate current congestion issues, significantly improving both coverage and capacity for residents, students, and public safety communications, including 911 emergency services. The proposed Tower is essential to modernizing the network infrastructure, ensuring consistent, high-quality service delivery for densely populated residential neighborhoods and critical community facilities in the southern Naugatuck area.

**<u>Question 13</u>**: Provide coverage plots at select frequencies that include T-Mobile's existing and proposed coverage.

**<u>Response</u>**: Attached please find <u>Attachment 3</u>, the RF Coverage Plots showing the existing and proposed coverages from the existing sites and the new proposed Facility.

**<u>Question 14</u>**: What is the difference in T-Mobile's wireless service between the existing facility and the proposed facility?

<u>Response</u>: To ensure continuity of service and enhance network performance, T-Mobile proposes the deployment of the Facility on the Tower. The new Tower will be situated on the same property as T-Mobile's existing facility, which is being decommissioned due to structural limitations of the WT on which T-Mobile's facility is currently located. T-Mobile is currently located at a centerline height of 67-feet. On the new Tower, T-Mobile's antennas will be located at a centerline height of 128-feet. The increased antenna height will improve signal propagation, enable the deployment of advanced 5G Mid Band and Low Band technologies, and enhance LTE service. This upgraded infrastructure will provide improved in-building penetration, expanded coverage, and increased network capacity, particularly in adjacent residential areas, thereby supporting sustained, high-quality wireless service for the community.

**<u>Question 15</u>**: Would any existing equipment be reused?

**Response**: No. T-Mobile does not propose to reuse the equipment currently being used.

**Question 16**: What is the signal strength for which T-Mobile designs its system? For in-vehicle coverage? For in building coverage?

**Response**: T-Mobile is developing the new Facility to address both in-vehicle and in-building coverage requirements in Naugatuck. The targeted signal strength for in-vehicle coverage is -101 dBm, ensuring reliable connectivity for commuters and travelers throughout key roadways and transit routes.

For in-building coverage, T-Mobile is implementing distinct thresholds to optimize service quality based on the type of structure. Commercial buildings will target a stronger signal strength of -89 dBm to effectively mitigate signal loss caused by concrete, metal, and other structural barriers, ensuring consistent indoor coverage for businesses and public safety communications. Residential areas will be targeted at -94 dBm, providing robust signal strength to penetrate typical housing materials and maintain dependable service within homes and apartments.

This strategic differentiation in signal strength thresholds allows T-Mobile to effectively address diverse coverage needs while enhancing overall network reliability in the area.

**Question 17**: Describe the reliability of existing T-Mobile service in this area. What level of service constitutes a coverage gap?

**Response**: The existing T-Mobile site located on the water tank (CT11484B) currently provides essential coverage to key areas in Naugatuck, including residential zones along Rubber Avenue, Jones Road, and Webb Road, as well as the vicinity of Naugatuck High

School. However, despite the presence of existing coverage, the site is experiencing significant capacity constraints due to increased data demand and the inability to upgrade the structure to 5G capabilities. The structural limitations of the water tank prevent necessary 5G enhancements, which are critical to alleviating congestion and sustaining service quality.

The proposed Tower, with a centerline antenna height of 128-feet, is designed to address these capacity challenges by extending coverage westward and providing enhanced in-building penetration for both residential and educational areas. The increased height will not only maintain existing coverage levels but also improve service, while extending 5G capabilities towards Naugatuck High School, ensuring more robust in-building coverage and reliable 911 emergency services.

The targeted signal strength thresholds for the upgraded new Facility are as follows:

- In-Building Commercial Coverage: -89 dBm, ensuring stronger indoor service for businesses and multi-unit structures.
- In-Building Residential Coverage: -94 dBm, addressing residential capacity constraints and enhancing indoor coverage.
- In-Vehicle Coverage: -101 dBm, maintaining reliable service along primary roadways, including key commuter routes.

Once the Tower is operational, T-Mobile will relocate from the WT site, allowing the structure to be decommissioned. The proposed Facility's increased height and 5G capabilities are integral to mitigating the current capacity issues and sustaining network reliability, particularly in the western residential areas and critical infrastructure such as Naugatuck High School.

**Question 18**: Provide a power density analysis including, but not limited to, the following: number of channels per sector for each antenna system that would be installed on the proposed tower; ERP per channel for each antenna system; frequency at which each antenna system would operate.

**Response**: Please see Attachment 4, T-Mobile's Radio Frequent Emissions Analysis Report.

**Question 19**: Does T-Mobile have any statistics on dropped calls and/or ineffective attempts in the vicinity of the proposed facility? If so, what do they indicate? Does T-Mobile have any other indicators of substandard service in this area?

**Response**: A capacity review of T-Mobile's existing site on the WT (site CT11484B) has determined the 4G L700 Alpha and Beta sectors are capacity congested. This triggered the need to upgrade this site. However, structural concerns have rendered the existing WT on which T-Mobile's site is located, unsuitable for upgrading, and the WT is scheduled for decommissioning which has resulted in T-Mobile pursuing the proposed Tower for its new Facility, and obtaining upgraded coverage to 5G N2500, N1900 & N600 deployments to provide capacity relief within the surrounding coverage area. T-Mobile's current site is unable to provide for the capacity needs of the area, and it cannot be upgraded for 5G deployment in its current configuration.

**Question 20:** Would the site provide capacity relief at adjacent T-Mobile facilities? If yes, identify the facilities and the frequencies and sectors at or near exhaustion that would benefit from capacity relief. Please include a projected exhaustion date for each of these sectors. Would the deployment of the proposed facility be sufficient to address these capacity concerns, or would an additional facility be required in the near term to off-load traffic.

**Response**: T-Mobile's new Facility (CTNH488A) will provide 5G N2500, N1900 & N600 capacity relief as an upgrade to the existing 4G L2100, L1900 & L700 services within the surrounding CT11484B coverage area. As a result, no additional telecommunications facilities will be needed in the near term to offload traffic.

**Question 21**: Can T-Mobile's coverage objectives be met by installing antennas at a lower tower height? Identify the lowest possible antenna height and describe how this height would affect coverage needs and/or capacity relief within the proposed service area

**Response**: If a replacement site for the decommissioned water tank (CT11484B) is not established, T-Mobile will face significant coverage and capacity challenges in the area. The existing structure currently provides essential coverage to key residential zones in Naugatuck and the vicinity of Naugatuck High School. However, without a suitable replacement, these areas will experience substantial coverage degradation, exacerbating the current capacity issues and impacting both in-building and outdoor service for residential and commercial properties.

The proposed Tower, utilizing the available 128-foot height, is strategically positioned to not only maintain the existing coverage footprint but also to extend service westward, thereby enhancing in-building penetration and overall network reliability. The increased height is an added value, enabling T-Mobile to deploy advanced 5G Mid Band and Low Band services, effectively addressing capacity constraints that are already significant in the area.

Additionally, the elevated height will ensure more robust in-building coverage for residential structures and critical facilities like Naugatuck High School, while also supporting 911 emergency communications with more reliable signal strength. The 128-foot height will therefore help; (i) prevent coverage degradation caused by the WT's decommissioning, (ii) increase T-Mobile's coverage footprint, and (iii) further enhance T-Mobile's service quality by targeted 5G upgrades.

**Question 22**: How will the proposed site improve upon the existing wireless service in the area. Include data on additional road miles and additional coverage area footprint that would be served by the proposed facility

**Response**: T-Mobile's Radio Frequency team has provided a Radio Frequency Statement addressing this question, as Attachment 5.

**Question 23:** What frequencies would be installed at the site? Would all frequencies provide both voice and data? Please explain.

**Response**: T-Mobile will be using the following frequencies for its new Facility: 1900 MHz, 2100 MHz, 2500 MHz, 600 MHz and 700 MHz. Yes, all frequencies will provide voice and data.

**Question 24**: Provide existing coverage gaps in miles for the proposed frequencies for the nearby portion of the surrounding local roads, the overall existing coverage footprints in square miles and the proposed coverage mileage and square miles as represented in the example below

**Response**:

| Coverage Type | Existing 5G Coverage (sq miles) | Proposed 5G Coverage (sq miles) | Existing LTE Coverage (sq miles) | Proposed LTE Coverage (sq miles) | 5G Coverage Gap (sq miles) | LTE Coverage Gap (sq miles) |
|---|---|---|---|---|---|---|
| In-Building Commercial Coverage | N/A | 5.459868382 | 3.5409231 | 10.34328648 | 5.459868382 | 6.802363378 |
| In-Building Residential Coverage | N/A | 9.361815194 | 7.2528885 | 16.20431484 | 9.361815194 | 8.951426338 |
| In-Vehicle | N/A | 19.1695782 | 17.2598283 | 32.23720039 | 19.1695782 | 14.97737209 |

**Question 25**: What is T-Mobile's existing and predicted coverage footprint from the proposed site (in square miles), at each frequency that would be installed?

**Response**:

| | Existing 5G Coverage | Proposed 5G Coverage |
|---|---|---|
| In-Building Commercial Coverage | N/A | 5.459868382 square miles |
| In-Building Residential Coverage | N/A | 9.361815194 square miles |
| In-Vehicle | N/A | 19.169578198 square miles |

| | Existing LTE Coverage | Proposed LTE Coverage |
|---|---|---|
| In-Building Commercial Coverage | 3.5409231 square miles | 10.343286478 square miles |
| In-Building Residential Coverage | 7.2528885 square miles | 16.204314838 square miles |
| In-Vehicle | 17.2598283 square miles | 32.237200388 square miles |

**Question 26**: Please provide the distances and directions to the adjacent sites with which the proposed facility would hand off signals. Include antenna centerline heights for T-Mobile at these sites

**Response**:

| Source site | Target site | Distance (miles) | Centerline (Feet) | Direction |
|---|---|---|---|---|
| CT11484B | CTNH300B | 1.154 | 72 | East |
| CT11484B | CT11213B | 1.836 | 45 | Northeast |
| CT11484B | CT11052E | 3.015 | 125 | Northwest |
| CT11484B | CTNH312A | 1.444 | 120 | Southeast |
| CT11484B | CTNH241A | 4.573 | 147 | Southwest |
| CT11484B | CT11127A | 4.951 | 207 | West |
| CT11484B | CT11128E | 2.802 | 195 | Northwest |

**Question 27:** Are any of the frequencies planned for installation at this facility capable of providing 5G services for T-Mobile's network? If so, identify the frequencies

**Response**: Yes. The following frequencies are capable of providing 5G services: 600 MHz, 1900 MHz & 2500 MHz.

## Emergency Backup power

**Question 28**: Does T-Mobile currently have an emergency backup power source for its facility on the host parcel? What fuel type? Would it be reused for the proposed facility

**Response**: Yes.  T-Mobile installed a Diesel 48KW-Generac RD048 48KW- 60 Hz in 2021, and propose to continue to use this generator at the new Facility.

**Question 29**: Would T-Mobile install an emergency backup generator? If so;

a) What would be the fuel source?

b) What is the approximate run time of the emergency backup power generator before tank refilling is required?

c) What is the capacity (kW) of the proposed emergency backup generator?

**Responses**:

a) This traditionally is a diesel back up unless the area limits the use to a natural gas or propane model.

b) The model proposed Runs at 100% load for 52 hours.

c) This is typically a 48KW- Proposed Model - Generac RD048 48KW- 60 Hz.

**Question 30**: Would T-Mobile's backup generator run periodically for maintenance purposes? If so, at what frequency and duration? Would this be scheduled for daytime hours?

**Response**: Yes, the generator requires two (2) 12-minute run cycles bi-weekly which can be scheduled for daytime hours

**Question 31**: Would T-Mobile's backup generator be managed to comply with Regulations of Connecticut State Agencies Section 22a-174-3b?

**Response**: Yes. T-Mobile will ensure that the proposed backup generator is operated in full compliance with all applicable requirements of the Regulations of Connecticut State

Agencies (RCSA) Section 22a-174-3b. In particular, any proposed generator will be used only for emergency purposes (e.g., power outages) and limited maintenance/testing, with operation not exceeding 100 hours per year, as required by RCSA §22a-174-3b. It will meet EPA Tier emission standards, and T-Mobile will maintain records of run times and maintenance, which will be available to DEEP upon request. T-Mobile will register the generator with DEEP or obtain a permit-by-rule where necessary, ensuring compliance with all applicable air quality regulations.

**Question 32**: Would a battery backup (if applicable) be used by T-Mobile to provide uninterrupted power and prevent a reboot condition? How long could the battery backup alone supply power to the facility in the event that the generator fails to start?

**Response:** T-Mobile plans to install a B160 Battery cabinet which contains 3 shelves of batteries . The cabinet is expected to power the site at 100% power usage for 2-4 hours.

## Public Health and Safety

**Question 33**: Pursuant to CGS §16-50p(a)(3)(G), identify the safety standards and/or codes by which equipment, machinery or technology that would be used or operated at the proposed facility by T-Mobile

**Response**: YES. All equipment, machinery, and technology installed and operated by T-Mobile at the new Facility will conform to applicable industry, national, and state safety standards, including but not limited to the following:

- Occupational Safety and Health Administration (OSHA): Compliance with all applicable OSHA regulations, including those governing fall protection, RF safety, and worker safety during construction and maintenance activities.
- ANSI/TIA-222-H "Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures": Compliance with the structural integrity and safety of the mounting structures used for wireless antennas
- 2021 International Building Code (IBC), with the 2022 Connecticut State Building Code amendments.
- 2020 National Electric Code (NFPA 70), with the 2022 Connecticut State Building Code amendments.
- 2021 International Mechanical Code, with the 2022 Connecticut State Building Code amendments.
- 2021 International Plumbing Code, with the 2022 Connecticut State Building Code amendments.
- 2022 Connecticut State Fire Safety Code, with the 2022 Connecticut State Fire Safety Code amendments.

T-Mobile is committed to the safe design, installation, and operation of all telecommunications equipment in accordance with the highest standards of industry practice and regulatory compliance.

**Question 34**: Would T-Mobile's equipment support text-to-911 service? Is additional equipment required for this purpose?

**Response:** YES, T-Mobile's equipment does support text-to-911 service. No additional equipment other than T-Mobile's proposed equipment is required at its new Facility to enable this functionality. T-Mobile's network is already capable of supporting text-to-911 where the local Public Safety Answering Point (PSAP) has implemented the service.

**Question 35**: Would T-Mobile's antennas comply with federal E911 requirements?

**Response**: YES. T-Mobile's antennas, along with the associated network equipment, comply with all applicable federal Enhanced 911 (E911) requirements as established by the Federal Communications Commission (FCC). This includes the ability to provide location information and call routing to the appropriate Public Safety Answering Point (PSAP) in accordance with FCC accuracy and reliability standards.

**Question 36**: Would T-Mobile's installation comply with the intent of the Warning, Alert and Response Network Act of 2006?

**Response:** Yes. T-Mobile's installation will comply with the intent of the Warning, Alert and Response Network (WARN) Act of 2006. T-Mobile participates in the Wireless Emergency Alerts (WEA) system, which was established under the WARN Act to provide geographically targeted emergency alerts to mobile devices. The proposed new Facility will be fully integrated into T-Mobile's network, which supports WEA capabilities, allowing for the transmission of presidential, AMBER, and imminent threat alerts to compatible devices in the coverage area.

**ATTACHMENT LIST:**

- Attachment 1 – Alternative Sites Analysis
- Attachment 2 – Antenna and Equipment Specifications
- Attachment 3 – Radio Frequency Propagation Plots
- Attachment 4 – Emissions Analysis Report
- Attachment 5 – Radio Frequency Statement

# ATTACHMENT 1

# Alternate Site Analysis


**Summary**

Section 16-50j-74(i) of the Regulations of Connecticut State Agencies mandates the submission of a statement detailing "the narrowing process by which other possible sites were considered and eliminated." In compliance with this requirement, T-Mobile Northeast LLC ("**T-Mobile**") provides the following provides descriptions of the general site search process, the identification of the applicable search area, and the alternative locations considered for the development of T-Mobile's proposed telecommunications facility (the "**Facility**"), in connection with its intervening application for Docket No. 533 (the "**Application**").


**Site Search Process**

T-Mobile currently operates antennas on the existing water tank (the "**WT**") located at 161 Conrad Street, Naugatuck, CT (the "**Property**"). In 2021, T-Mobile initiated plans to upgrade its facility on the WT. However, a structural analysis determined that the WT could not support the proposed modifications. As a result, T-Mobile was unable to proceed with the upgrade and could not improve service coverage in the surrounding area.

In line with its standard site acquisition practices, which prioritize co-locating on existing structures to avoid unnecessary tower proliferation and minimize environmental impacts, T-Mobile evaluated alternative locations within the designated search area. The goal was to identify existing towers or sufficiently tall structures that could support its equipment at the required height and location. During this process, T-Mobile learned that Tarpon Tower III, LLC had entered into a lease with the Borough of Naugatuck to develop a new telecommunications tower on the Property, which is the same location where T-Mobile's existing facility is located. Given the technical suitability and continuity of location, this new tower became the optimal replacement candidate for T-Mobile's Facility.

**Sites Investigated**

T-Mobile conducted an alternative site analysis focusing on existing tall structures in the vicinity of the Property. This analysis included a review of existing towers, church steeples, building rooftops, and other potential support structures. Each of the alternatives identified during the initial search was evaluated for its ability to meet T-Mobile's technical and coverage objectives.

Ultimately, none of the options were viable, as they failed to satisfy the wireless service requirements in the target area. Here is a list of the sites that were evaluated:

1. **567 High Street, Naugatuck CT :**
   Grace Lutheran Church, currently houses a T-Mobile site.

2. **41 Tower Ln, Naugatuck, CT:**
   American Tower Monopole, currently under development as a supporting site and wouldn't replicate area coverage.

3. **480 Millville Ave, Naugatuck,** CT:
   3 story building was explored but ultimately the location was not selected by RF Engineering due to topographical concerns.

4. **100 Pine St, Naugatuck, CT:**
   A small smokestack on a building was explored but ultimately the location was not selected by RF Engineering due to topographical concerns.

5. **318 Church St, Naugatuck, CT**:
   Rejected due to topography and proximity to alternate site.

6. **9 Division St, Naugatuck, CT**:
   Rejected due to topography and proximity to alternate site.

# ATTACHMENT 2


# Antenna 4003 2L 2M 2.4m
840590966

Capacity | Compact | **Coverage**

65° | 2x 617–894 | 16.0 dBi
65° | 2x 1695–2690 | 18.0 dBi
FlexRET

ericsson.com/antenna-system

| Left side, lowband | | R1, connector 1–2 | | |
|---|---|---|---|---|
| Frequency Range | MHz | 617 – 698 | 698 – 806 | 824 – 894 |
| Gain at mid Tilt | dBi | 15.1 | 15.8 | 16.0 |
| Gain over all Tilts | dBi | 15.1 ± 0.6 | 15.8 ± 0.5 | 16.0 ± 0.4 |
| **Horizontal Pattern:** | | | | |
| Azimuth Beamwidth | ° | 69 ± 3.2 | 66 ± 2.8 | 67 ± 2.6 |
| Front-to-Back Ratio, Total Power, ± 30° | dB | > 17 | > 21 | > 23 |
| **Vertical Pattern:** | | | | |
| Elevation Beamwidth | ° | 11.1 ± 0.7 | 10.2 ± 0.7 | 9.2 ± 0.4 |
| Electrical Downtilt continuously adjustable | ° | 2.0 – 10.0 | | |
| Tilt Accuracy | ° | < 0.4 | < 0.4 | < 0.5 |
| First Upper Side Lobe Suppression | dB | > 17 | > 21 | > 18 |
| Cross Polar Isolation | dB | > 24, typically > 25 | | |
| Port to Port Isolation | dB | > 22, typically > 25 (R1 // R2)<br>> 25 (R1 // Y1, Y2) | | |
| Max. Effective Power per Port | W | 400 (at 50 °C ambient temperature) | | |

Values based on NGMN-P-BASTA (version 10.0) requirements.

| Right side, lowband | | R2, connector 3–4 | | |
|---|---|---|---|---|
| Frequency Range | MHz | 617 – 698 | 698 – 806 | 824 – 894 |
| Gain at mid Tilt | dBi | 15.1 | 15.8 | 16.0 |
| Gain over all Tilts | dBi | 15.1 ± 0.5 | 15.8 ± 0.6 | 16.0 ± 0.5 |
| **Horizontal Pattern:** | | | | |
| Azimuth Beamwidth | ° | 69 ± 3.8 | 66 ± 3.0 | 65 ± 3.1 |
| Front-to-Back Ratio, Total Power, ± 30° | dB | > 18 | > 21 | > 22 |
| **Vertical Pattern:** | | | | |
| Elevation Beamwidth | ° | 11.1 ± 0.6 | 10.0 ± 0.6 | 9.2 ± 0.4 |
| Electrical Downtilt continuously adjustable | ° | 2.0 – 10.0 | | |
| Tilt Accuracy | ° | < 0.4 | < 0.5 | < 0.4 |
| First Upper Side Lobe Suppression | dB | > 16 | > 21 | > 18 |
| Cross Polar Isolation | dB | > 24, typically > 25 | | |
| Port to Port Isolation | dB | > 22, typically > 25 (R2 // R1)<br>> 25 (R2 // Y1, Y2) | | |
| Max. Effective Power per Port | W | 400 (at 50 °C ambient temperature) | | |

Values based on NGMN-P-BASTA (version 10.0) requirements.

| Left side, midband | | Y1, connector 5–6 | | | | |
|---|---|---|---|---|---|---|
| Frequency Range | MHz | 1695 – 1880 | 1850 – 1990 | 1920 – 2200 | 2300 – 2400 | 2490 – 2690 |
| Gain at mid Tilt | dBi | 17.7 | 17.9 | 17.8 | 18.1 | 17.6 |
| Gain over all Tilts | dBi | 17.6 ± 0.6 | 17.7 ± 0.6 | 17.6 ± 0.9 | 17.9 ± 0.8 | 17.6 ± 0.8 |
| **Horizontal Pattern:** | | | | | | |
| Azimuth Beamwidth | ° | 66 ± 3.2 | 72 ± 4.0 | 72 ± 4.9 | 66 ± 4.2 | 57 ± 7.3 |
| Front-to-Back Ratio, Total Power, ± 30° | dB | > 29 | > 28 | > 27 | > 28 | > 26 |
| **Vertical Pattern:** | | | | | | |
| Elevation Beamwidth | ° | 5.8 ± 0.3 | 5.4 ± 0.3 | 5.1 ± 0.3 | 4.6 ± 0.2 | 4.2 ± 0.2 |
| Electrical Downtilt continuously adjustable | ° | 1.0 – 11.0 | | | | |
| Tilt Accuracy | ° | < 0.4 | < 0.4 | < 0.4 | < 0.4 | < 0.4 |
| First Upper Side Lobe Suppression | dB | > 18 | > 18 | > 16 | > 15 | > 16 |
| Cross Polar Isolation | dB | > 25 | | | | |
| Port to Port Isolation | dB | > 25 (Y1 // R1, R2, Y2) | | | | |
| Max. Effective Power per Port | W | 200 (at 50 °C ambient temperature) | | | | |

Values based on NGMN-P-BASTA (version 10.0) requirements.

| Right side, midband | | Y2, connector 7–8 | | | | |
|---|---|---|---|---|---|---|
| Frequency Range | MHz | 1695 – 1880 | 1850 – 1990 | 1920 – 2200 | 2300 – 2400 | 2490 – 2690 |
| Gain at mid Tilt | dBi | 17.6 | 17.8 | 17.8 | 18.1 | 17.7 |
| Gain over all Tilts | dBi | 17.5 ± 0.6 | 17.6 ± 0.5 | 17.6 ± 0.9 | 17.9 ± 0.8 | 17.6 ± 0.8 |
| **Horizontal Pattern:** | | | | | | |
| Azimuth Beamwidth | ° | 66 ± 5.5 | 73 ± 4.5 | 74 ± 4.5 | 67 ± 4.6 | 57 ± 8.3 |
| Front-to-Back Ratio, Total Power, ± 30° | dB | > 28 | > 28 | > 26 | > 27 | > 27 |
| **Vertical Pattern:** | | | | | | |
| Elevation Beamwidth | ° | 5.7 ± 0.3 | 5.3 ± 0.3 | 5.0 ± 0.4 | 4.5 ± 0.2 | 4.2 ± 0.2 |
| Electrical Downtilt continuously adjustable | ° | 1.0 – 11.0 | | | | |
| Tilt Accuracy | ° | < 0.4 | < 0.4 | < 0.4 | < 0.3 | < 0.4 |
| First Upper Side Lobe Suppression | dB | > 17 | > 17 | > 16 | > 15 | > 16 |
| Cross Polar Isolation | dB | > 25 | | | | |
| Port to Port Isolation | dB | >25 (Y2 // R1, R2, Y1) | | | | |
| Max. Effective Power per Port | W | 200 (at 50 °C ambient temperature) | | | | |

Values based on NGMN-P-BASTA (version 10.0) requirements.

## Electrical specifications, all ports

| | | |
|---|---|---|
| Impedance | Ω | 50 |
| VSWR | | < 1.5 |
| Return Loss | dB | > 14 |
| Interband Isolation | dB | typically > 25 |
| Passive Intermodulation | dBc | < −153 (2 x 43 dBm carrier) |
| Polarization | ° | +45, −45° |
| Max. Effective Power for the Antenna | W | 1000 (at 50 °C ambient temperature) |

Values based on NGMN-P-BASTA (version 10.0) requirements.

## Mechanical specifications

| | | |
|---|---|---|
| Input | | 8 x 4.3-10 female |
| Connector Position | | bottom |
| Adjustment Mechanism | | FlexRET, continuously adjustable |
| Wind load (at Rated Wind Speed: 150 km/h) | N \| lbf | Frontal: 1320 \| 297<br>Maximal: 1530 \| 344 |
| Max. Wind Velocity | km/h<br>mph | 241<br>150 |
| Height / Width / Depth | mm<br>inches | 2437 / 596 / 180<br>95.9 / 23.5 / 7.1 |
| Category of Mounting Hardware | | XH (X-Heavy) |
| Weight (approx.) | kg<br>lb | 46.0 / 51.0 (clamps incl.)<br>101.4 / 112.4 (clamps incl.) |
| Packing Size | mm<br>inches | 2585 / 665 / 300<br>101.8 / 26.2 / 11.8 |
| **Scope of Supply** | | Panel, FlexRET and clamps for 55–115 mm \| 2.2–4.5 inches diameter |

## **Accessories** (order separately if required)

| Type No. | Description | Remarks mm \| inches | Units per antenna |
|---|---|---|---|
| 85010097 | 2 clamps | Mast diameter: 110–220 \| 4.3–8.7 | 1 |
| 85010099 | 1 downtilt kit | Downtilt angle: 0°–10° | 1 |
| 86010154 | Site Sharing Adapter | 3-way (see figure below) | |
| 86010155 | Site Sharing Adapter | 6-way (see figure below) | |

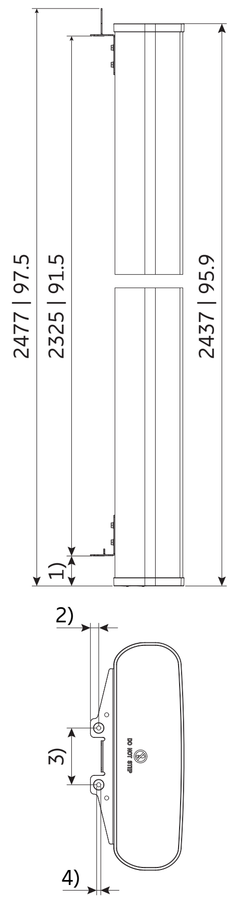
## **Accessories** (included in the scope of supply)

| Type No. | Description | Remarks mm \| inches | Units per antenna |
|---|---|---|---|
| 85010096 | 2 clamps | Mast diameter: 55–115 \| 2.2–4.5 | 1 |
| 86010165 | FlexRET | Compliant to 3GPP / AISG 2.0 – AISG 3 | 1 |

For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit.
Wall mounting: No additional mounting kit needed.

**Material:** **Reflector screen:** Aluminum.
**Fiberglass housing:** It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey.
**All nuts and bolts:** Stainless steel or hot-dip galvanized steel.

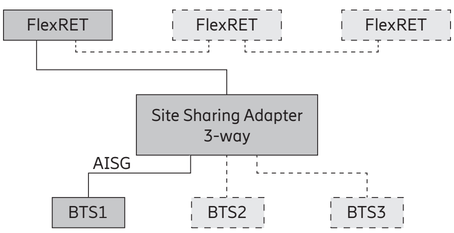
**Grounding:** The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



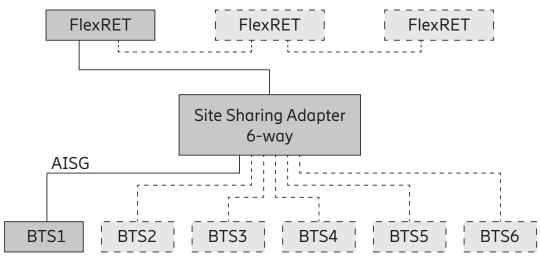

1) 79 | 3.1
2) 22 | 0.9
3) 150 | 5.9
4) ⌀ 11 | 0.4

All dimensions in mm | inches

**Configuration example with Site Sharing Adapter 86010154**

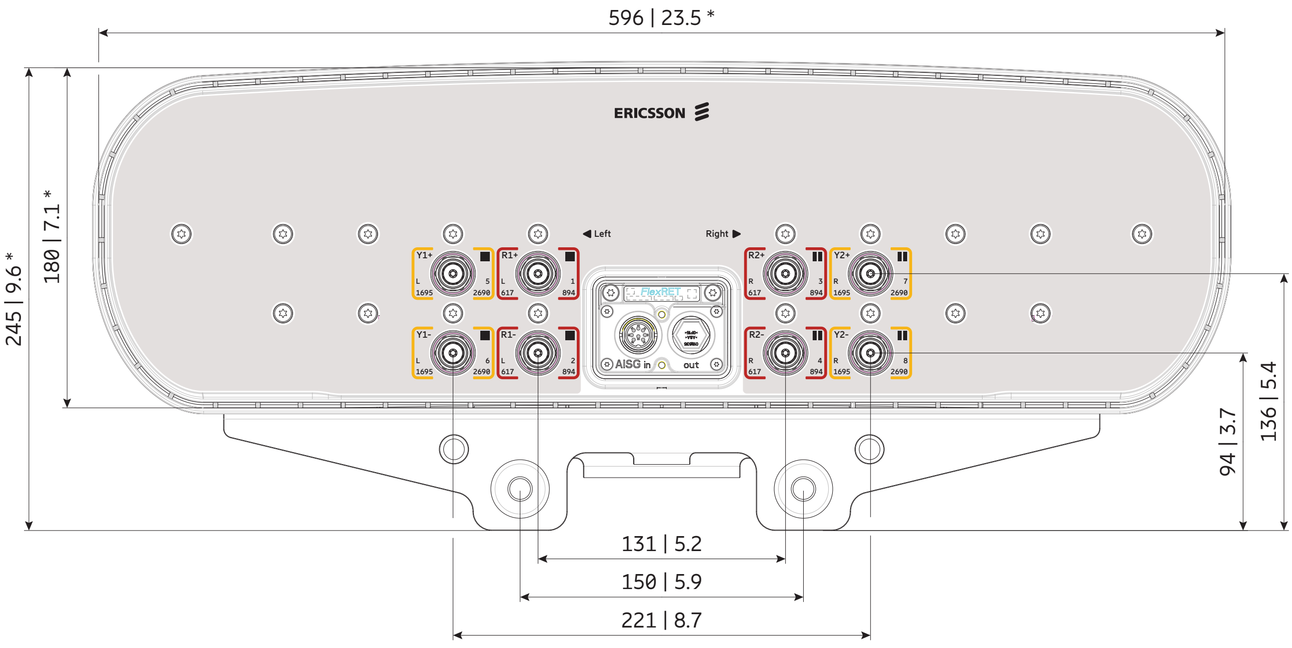



**Configuration example with Site Sharing Adapter 86010155**




For more information please refer to the respective data sheets.

## Layout of interface




Bottom view
* Dimensions refer to radome
All dimensions in mm | inches

## Correlation Table

| Frequency range | Array | Connector / Ports | RET |
|---|---|---|---|
| 617–894 MHz | R1 | 1–2 | R1 |
| 617–894 MHz | R2 | 3–4 | |
| 1695–2690 MHz | Y1 | 5–6 | Y1 |
| 1695–2690 MHz | Y2 | 7–8 | |

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New Product Introduction (10/27/2021)

# Massive MIMO Mid-Band TDD
# AIR6419 B41 (2.5GHz)
# New Product Introduction Notification

ERICSSON

## PURPOSE

Ericsson AIR6419 B41 is a next generation massive MIMO product as a successor to AIR6449 B41. In general, AIR6419 has the same technical capability (e.g., full IBW, 320W RF power), but, thanks to the new HW platform, it has several advantages over the previous AIR6449 model such as:

- Weight: -25% decrease
- Power consumption: -18% decrease

## USAGE GUIDELINES

AIR6419 B41 is planned to replace AIR6449 on a go forward basis once available.

- Use existing AIR6449 if construction start is expected to complete before August 1st, 2022.
- Use AIR6419 if construction start is forecasted after August 1st, 2022.

Each site/market has a different entitlement timeline, but please refer to Average EC Duration per market (MLA vs. non-MLA) for site modification project. This will help the markets reverse-calculate what month should be the timing they should start transitioning to the new radio. For example, an average 6-months entitlement market will start using the new product starting from Feb 2022.

## TIMELINES

- T-Mobile Lab Entry: Jan 2022
- T-Mobile FOA Entry: March 2022
- T-Mobile GA Forecast: May 15th, 2022
- T-Mobile First National Allocation Date: July 15th, 2022
- T-Mobile First Construction Date: Aug 1st, 2022

RFDS Update:

- New RFDS Templates for Anchor, Retain/NSD, Excalibur programs reflecting AIR6419 have been created already.
- Old AIR6449 RFDS Templates will be archived when its EOD is issued. Tentatively, Nov 15th but it may vary depending on the sites in the design pipe and build pace.

## AFFECTED CONFIGURATIONS

Site configurations that are designed with AIR6419 B41 will have a “5D” (5 for 2.5GHz + D for AIR6419) after the low-band indicator and/or before L19 indicator in the naming convention e.g., 67D92DB => 67D5D998E, 92DB => 5D998E, etc.

## PRODUCT DESCRIPTION

| | | |
|---|---|---|
| **Frequency Range** | LTE TDD B41: 2496 – 2690 MHz |  |
| **Instantaneous BW** | DL 194 MHz | |
| **Antenna Ports** | 64T64R | |
| **Technology** | NR, LTE and NR+LTE MSMM | |
| **Antenna Elements** | 192 Antenna Elements (8 col x 12 rows x 2 pol) | |
| **Output RF Power** | 320 W (=64 TRX x 5W) | |
| **Data Ports** | 2 x 25Gb/s eCPRI | |
| **5G NR Support** | YES | |
| **DC Feed** | -48V DC power connector | |
| **Cooling** | Passive cooling | |
| **Dimensions* (H x W x D)** | 36.3" x 20.9" x 9.0" (= 921x 531 x 229mm) | |
| **Weight*** | 83.3 lbs (=37.8 kg) | |
| **Power Consumption** | 1300 W | |
| **Electrical downtilt** | -3 to 11 degrees | |
| **Horizontal beamwidth** | +/- 65 degrees | |

*Note: Dimensions and weight are subject to change as the vendor finalizes the product. However, the numbers in the table are not going to exceed the ones of the final product.

**WARRANTY:** 1 Year

**SPARES:** 2% of install base. Additional units can be requested as per need.

## Baseband Requirements

For a typical 3-sector or 4-sector site, one dedicated Baseband (RP6651) per site will be required.

## BOM Items

| SKU | Description | Qty |
|---|---|---|
| 34552 | AIR 6419 B41 | 1 per sector |
| 33768 | AIR 6419/5121/5331 Wall/Pole IRMKIT TILT | 1 per AIR6419 |
| 34110 | 25G SFP | 4 per AIR6419 |

The AIR6419 requires a voltage booster (i.e., PSU 48 13) depending on the length and gauge of HCS cable. Please refer to Voltage Booster design doc for its exact usage guidance.

| SKU | Description | Qty |
|---|---|---|
| 34513 | PSU4813-R4A Voltage Booster Kit | 1 |
| 34133 | PSU installation kit for RBS61xx | Choose 1 per cabinet type |
| 34134 | PSU installation kit for PBC6200 | |
| 34135 | PSU installation kit for E6x60/P6230 | |

## LINKS

- Anchor 2022 Playbook
- Excalibur 2022 Playbook
- NSD 2022 Playbook
- Sprint Retain 2022 Playbook

## CONTACTS


| | | |
|---|---|---|
| Kyle Allen | Sr. Manager, HQ Cell Site Design | Kyle.X.Allen@sprint.com |
| Kyuho Son | Principal Engineer, HQ Cell Site Design | Kyuho.Son@T-Mobile.com |
| Priyanka Bhardwaj | Principal Engineer, HQ Cell Site Design | Priyanka.Bhardwaj3@T-Mobile.com |
| Roderick Pahati | Engineer, HQ Cell Site Design | Roderick.Pahati1@T-Mobile.com |

# Radio 4480

**Product features**

Radio 4480 is an outdoor 4T/4R FDD dual-band radio with 4 antenna ports. The output power is 4x100 W in total and up to 4x60 W per band.

It offers the best in class design when it comes to radio performance and power efficiency for wide area 3GPP radio products.

With Radio 4480 Ericsson evolves the macro radio part of the portfolio to become even more flexible and making it easier than ever to make small and efficient single and multi-band macro radio installations.

Radio 4480 provides support for AISG TMA and RET towards the antenna system.

It supports LTE, NR, and Narrowband Internet of Things (NB-IoT).

Radio 4480 also supports up to 2 CPRI ports (2.5, 5.0, 9.8, 10.1 Gbps) allowing mixed mode operation as well as cascade or star connection configuration of radio units. It also supports AISG TMA and RET through RS-485 or RF connectors.

# TECHNICAL SPECIFICATION

**PRODUCT NAME: Radio 4480** **PRODUCT NUMBER: KRC 161 922/1**

**FUNCTION DESCRIPTION**

FREQUENCY BANDS:

3GPP FDD Band 71 and Band 85A

HW CAPACITY:

IBW: Up to 35 MHz in B71, Up to 17 MHz in B85A
MIMO: Yes, 4T/4R
Output power: Up to 4 x 60 W in B71, Up to 4 x 60 W in B85A. Up to 100 W in total

INTERFACE SPECIFICATIONS:

Power supply: 1 x DC -48 VDC (3-wire or 2-wire)
Antenna Ports: 4 x 4.3-10(f)
External ALD: RET2.0, using DIN 8 or over the antenna port
AISG TMA & RET support
External Alarm: 1, using DIN 14
CPRI: 2 x 2.5/5/9.8/10.1 Gbps (exchangeable SFP modules)
MMI: Maintenance button
Grounding: Field Ground, dual lug

MECHANICAL SPECIFICATIONS:

Weight: approx. 37 kg (81 lbs)
Volume: approx. 41 l (11 gal)
Dimensions (H x W x D): 557mm × 398mm × 190mm (21.9" × 15.7" × 7.5") (incl. protrusions)
Mounting: Wall and Pole mount is supported

ENVIRONMENTAL SPECIFICATIONS:

Environment: Outdoor class with IP65
Normal operating temp.: -40 - +55 °C (cold start at -40 °C)



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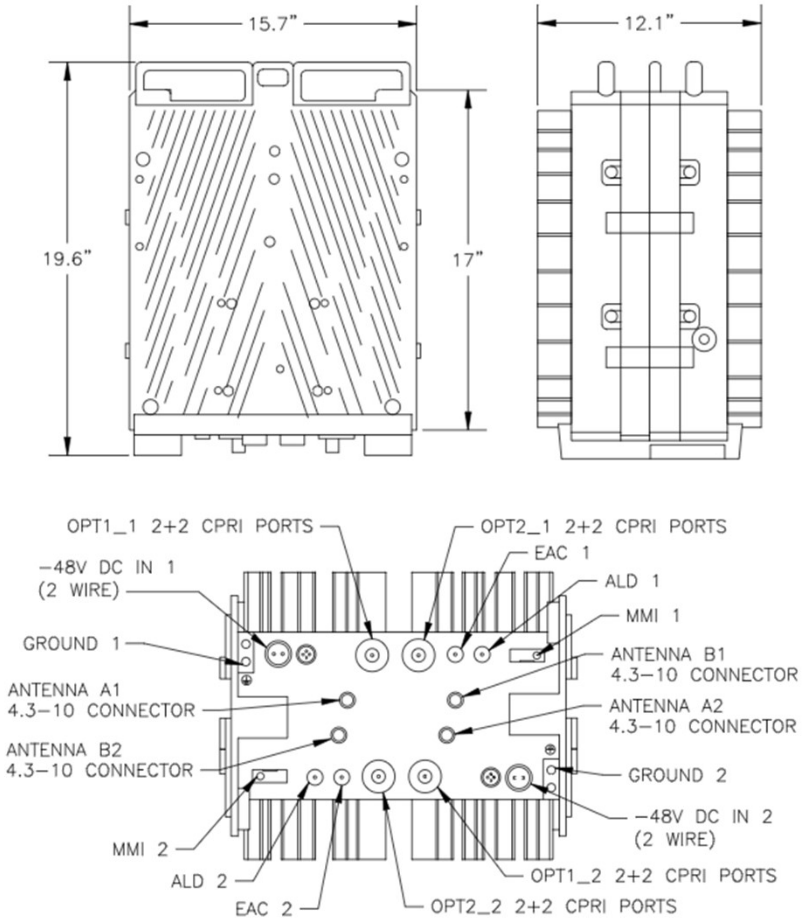
# ERICSSON 4460 BAND 2/25 RADIO DIMENSIONS AND WEIGHTS

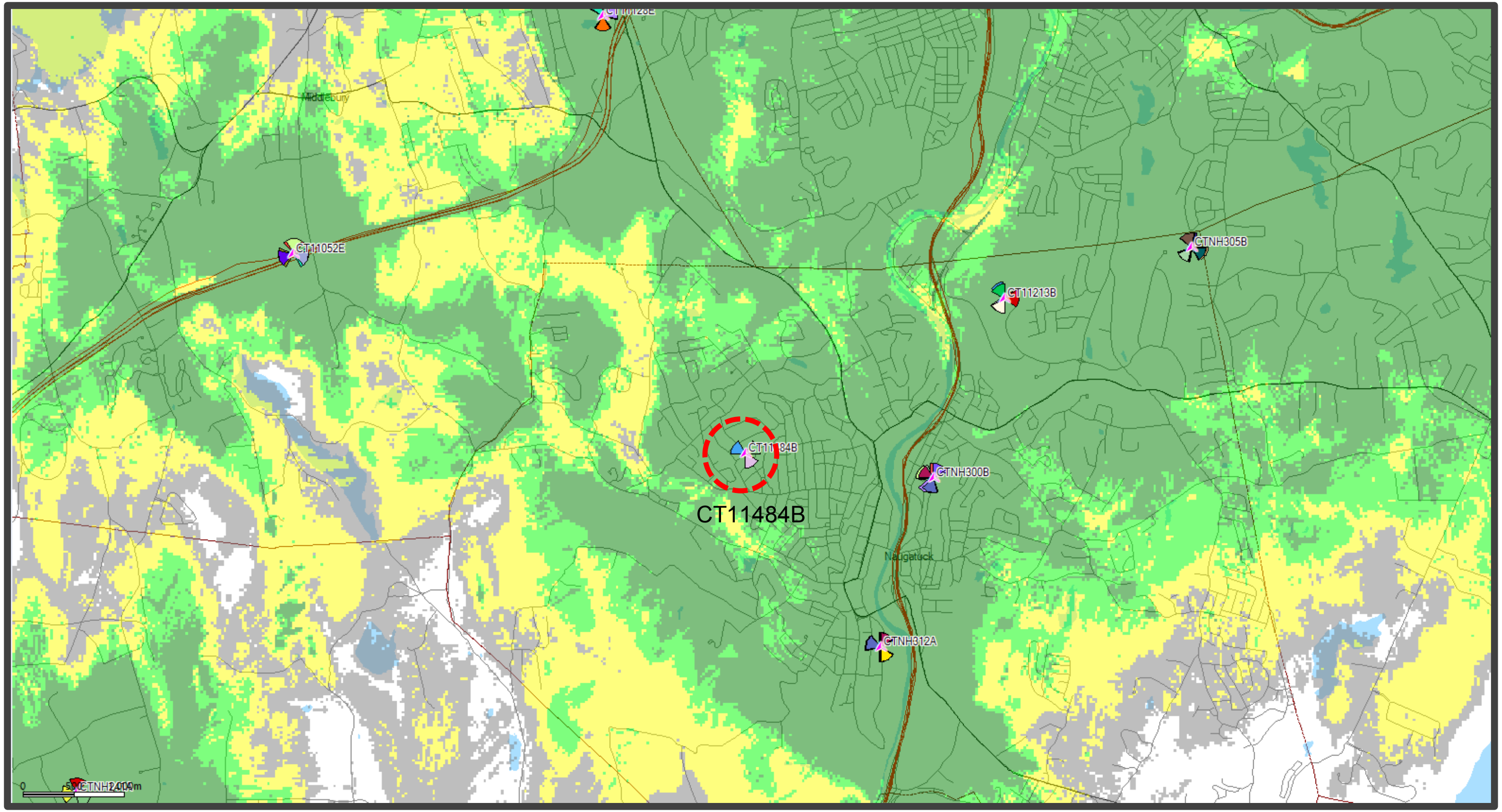



T-Mobile Confidential

| | 12/2020 | 6/2021 |
|---|---|---|
| • Weight (lbs) | 109.0 | 109.0 |
| • Height (in) | 19.6 | 19.6 |
| • Width (in) | 15.1 | 15.7 |
| • Thickness (in0 | 11.9 | 12.1 |

# ATTACHMENT 3

# Existing LTE Coverage – Naugatuck, CT




Proposed T-Mobile Site

Map Legend

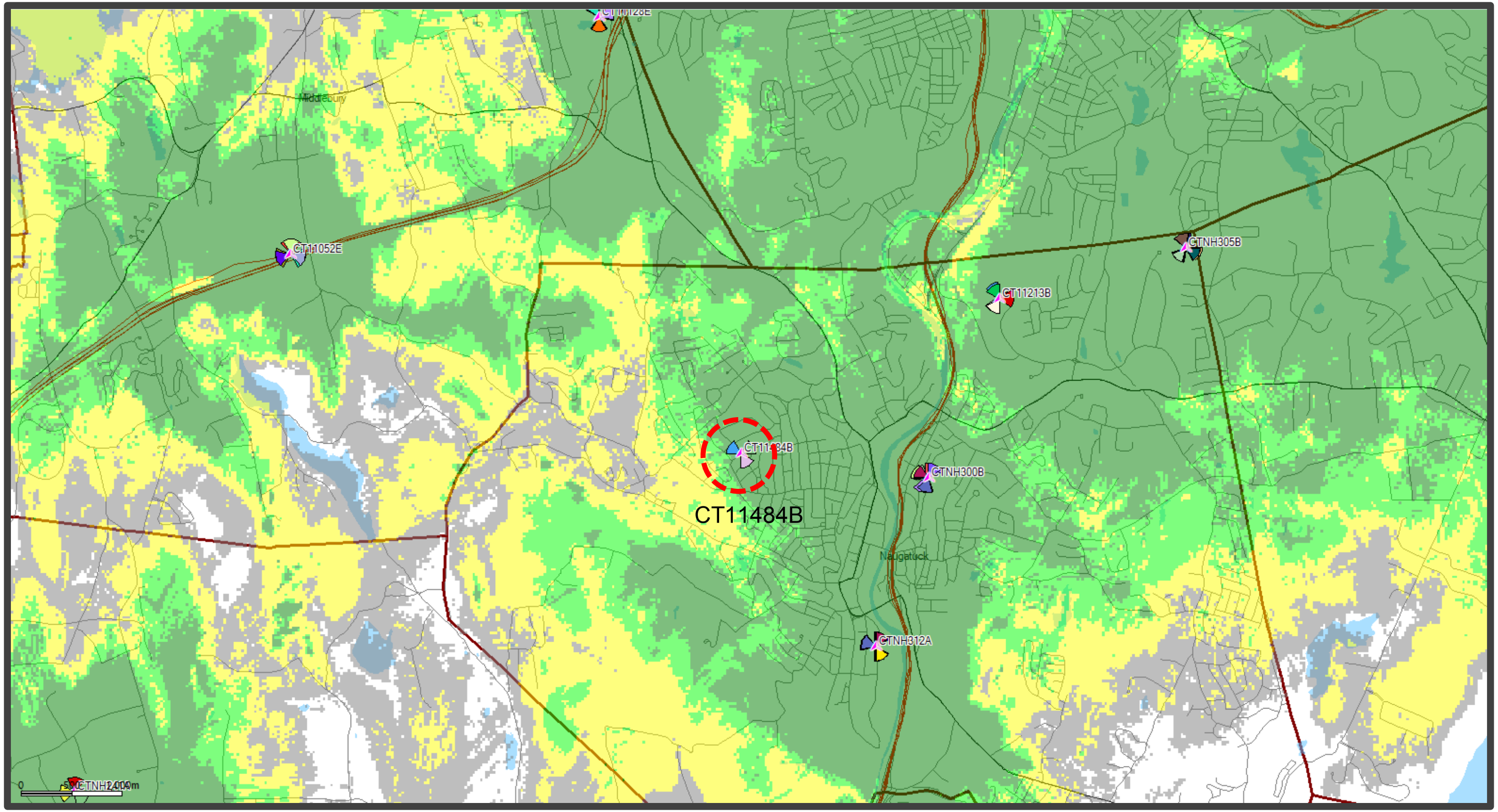
Other_Road
Line
Line 1
Primary_Road
Line
Line 1
Secondary_Road
Line
Line 1
Neighborhood_Road
Line
Line 1

Coverage Legend

**LTE: Downlink Coverage 1**

In-Building Commercial
In-Building Residential
In-Vehicle
Outdoor

# Existing LTE Coverage without CT11484B




**Proposed T-Mobile Site**

Map Legend

- Other_Road
  - Line
    - Line 1
- Primary_Road
  - Line
    - Line 1
- Secondary_Road
  - Line
    - Line 1
- Neighborhood_Road
  - Line
    - Line 1

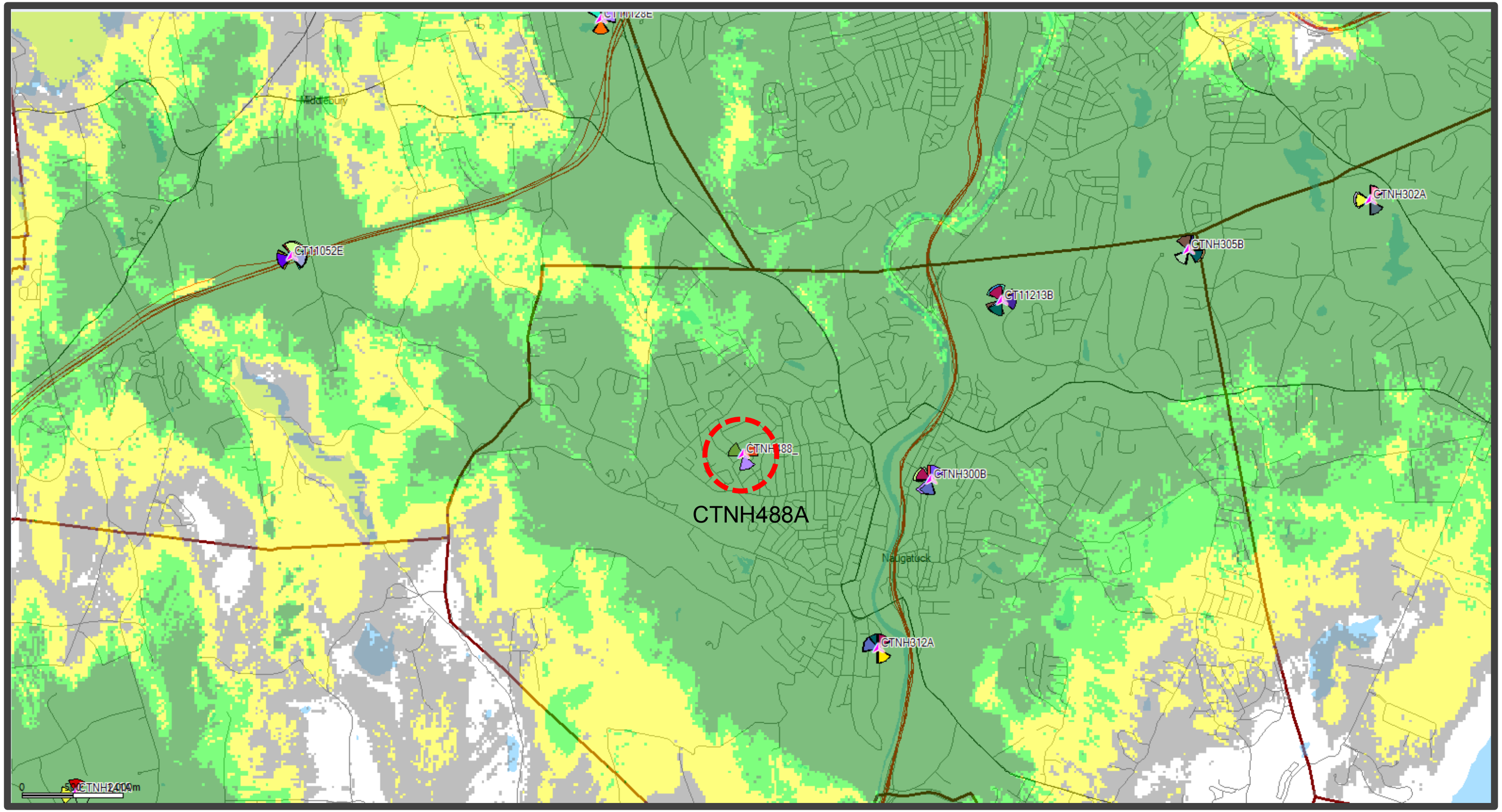
Coverage Legend

**LTE: Downlink Coverage 1**

- In-Building Commercial
- In-Building Residential
- In-Vehicle
- Outdoor

T · · Mobile ·

# Proposed LTE Coverage for CTNH488A at Proposed Antenna Height of 128 Feet




Proposed T-Mobile Site

Map Legend

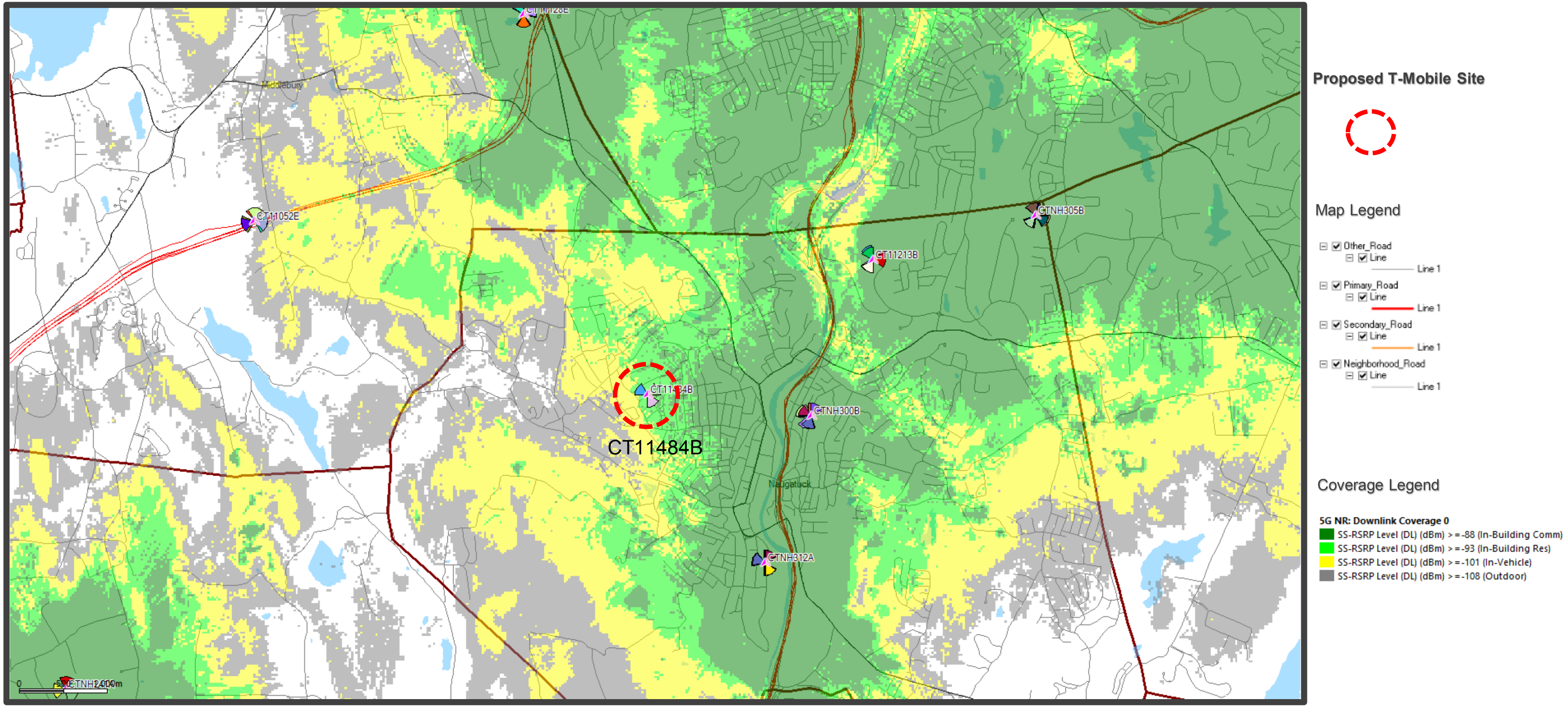
- Other_Road
  - Line
    - Line 1
- Primary_Road
  - Line
    - Line 1
- Secondary_Road
  - Line
    - Line 1
- Neighborhood_Road
  - Line
    - Line 1

Coverage Legend

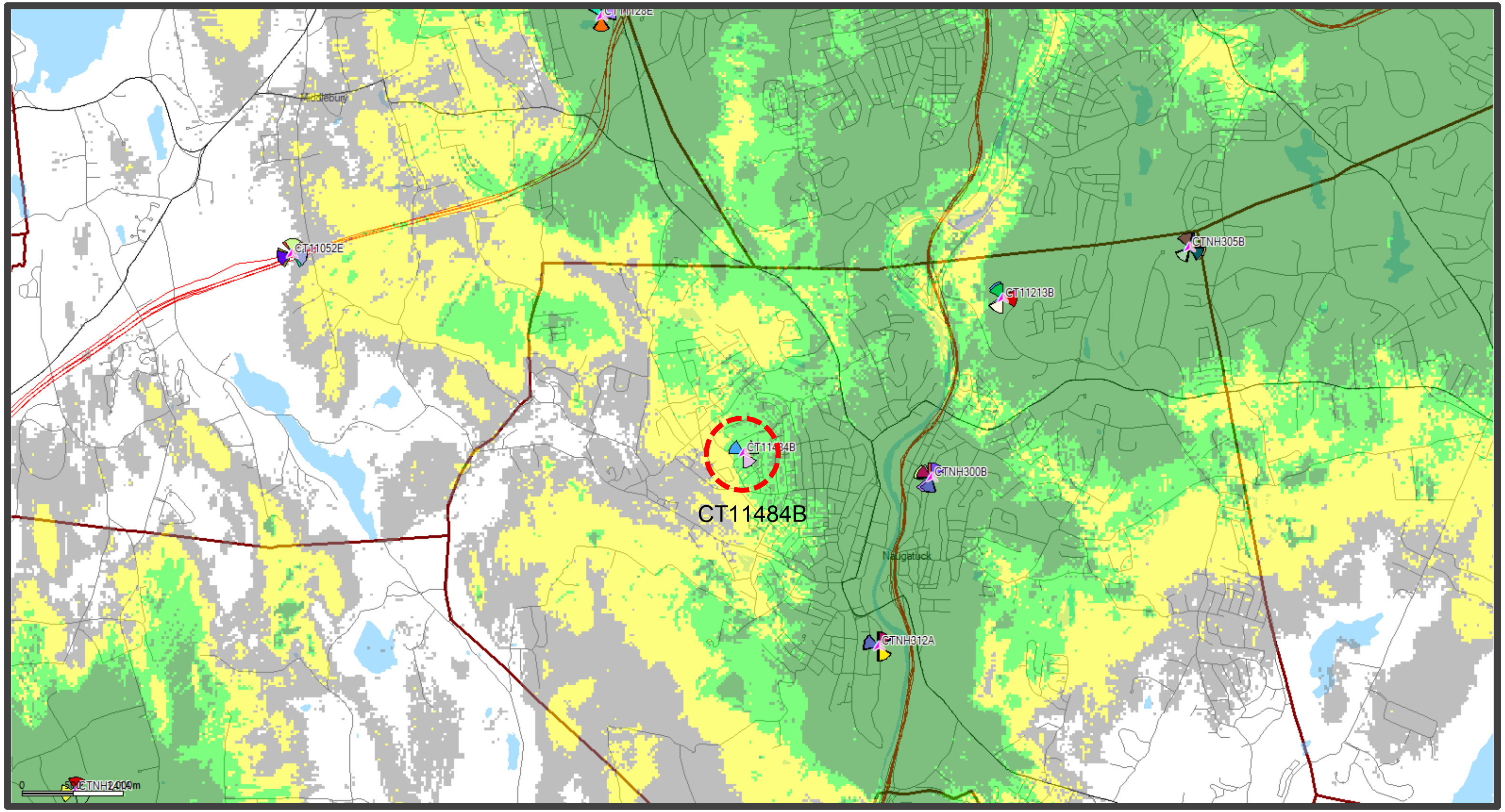
**LTE: Downlink Coverage 1**

- In-Building Commercial
- In-Building Residential
- In-Vehicle
- Outdoor

# Existing 5G Coverage – Naugatuck, CT



# Existing 5G Coverage without CT11484B




**Proposed T-Mobile Site**

Map Legend

- Other_Road
  - Line
    - Line 1
- Primary_Road
  - Line
    - Line 1
- Secondary_Road
  - Line
    - Line 1
- Neighborhood_Road
  - Line
    - Line 1

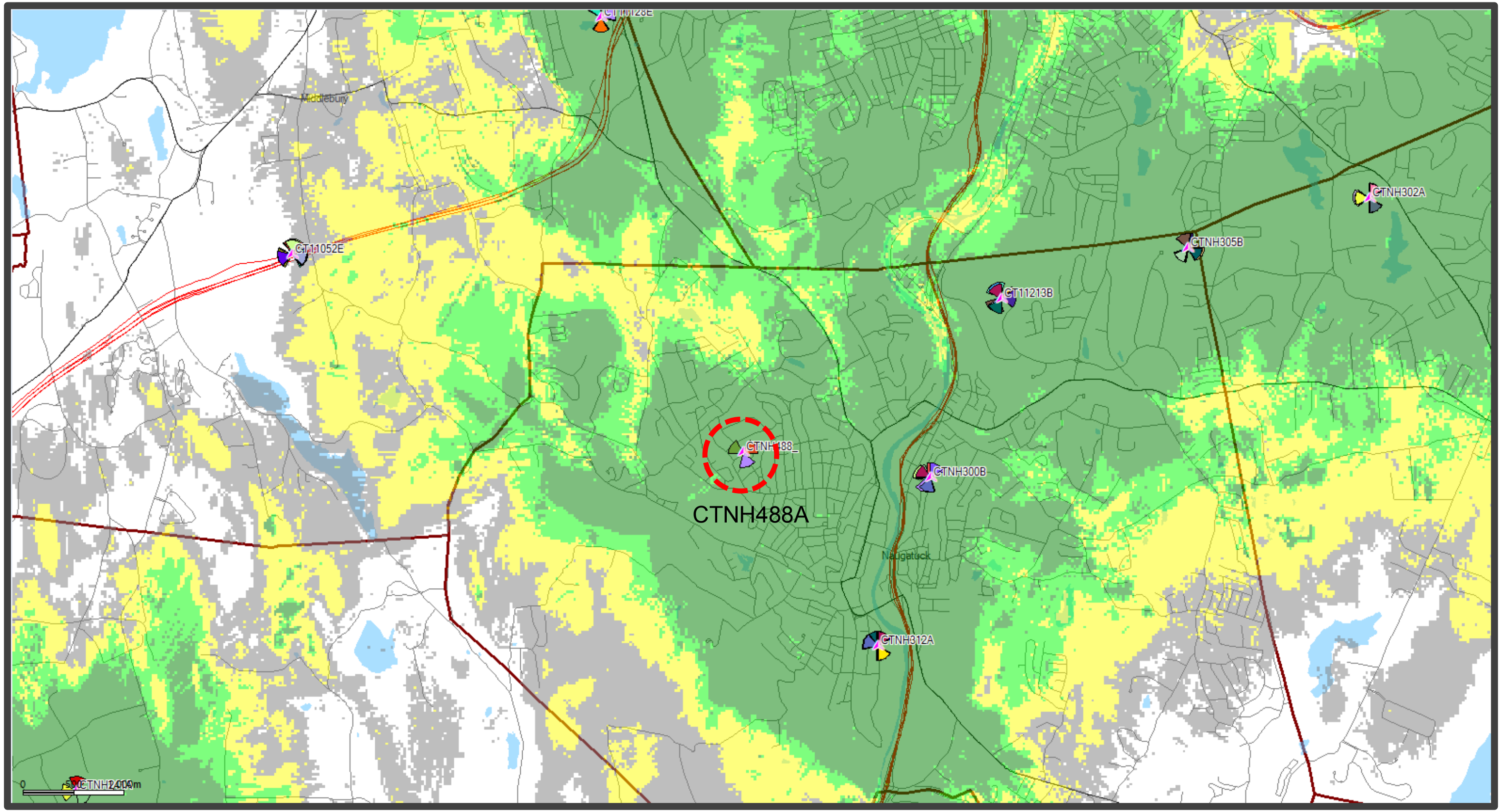
Coverage Legend

**5G NR: Downlink Coverage 0**

- SS-RSRP Level (DL) (dBm) >=-88 (In-Building Comm)
- SS-RSRP Level (DL) (dBm) >=-93 (In-Building Res)
- SS-RSRP Level (DL) (dBm) >=-101 (In-Vehicle)
- SS-RSRP Level (DL) (dBm) >=-108 (Outdoor)

T-Mobile

# Proposed 5G Coverage for CTNH488A at Proposed Antenna Height of 128 Feet




Proposed T-Mobile Site

Map Legend

- Other_Road
  - Line
    - Line 1
- Primary_Road
  - Line
    - Line 1
- Secondary_Road
  - Line
    - Line 1
- Neighborhood_Road
  - Line
    - Line 1

Coverage Legend

**5G NR: Downlink Coverage 0**

- SS-RSRP Level (DL) (dBm) >=-88 (In-Building Comm)
- SS-RSRP Level (DL) (dBm) >=-93 (In-Building Res)
- SS-RSRP Level (DL) (dBm) >=-101 (In-Vehicle)
- SS-RSRP Level (DL) (dBm) >=-108 (Outdoor)

T··Mobile·

# ATTACHMENT 4

FOX HILL TELECOM

# Radio Frequency Emissions Analysis Report

T Mobile

## Site ID: CTNH488A

CTNH488_Tarpon Towers CT1239_Conrad Street
161 Conrad Street
Naugatuck, CT 06770

May 12, 2025

Fox Hill Telecom Project Number: 250253

| Site Compliance Summary | |
|---|---|
| Compliance Status: | COMPLIANT |
| Site total MPE% of FCC general population allowable limit: | 9.95 % |

May 12, 2025

T-MOBILE
Attn: RF Manager
35 Griffin Road South
Bloomfield, CT 06009

Emissions Analysis for Site: **CTNH488A – CTNH488_Tarpon Towers CT1239_Conrad Street**

Fox Hill Telecom, Inc ("Fox Hill") was directed to analyze the proposed T-Mobile installation at the proposed monopole facility to be located at **161 Conrad Street, Naugatuck, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which people who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes people in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report the percentage of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which people are exposed as a consequence of their employment and in which those people who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

# CALCULATIONS

Calculations were performed for the proposed **T-MOBILE** radio equipment to be installed on the proposed monopole to be located at **161 Conrad Street, Naugatuck, CT**, using the equipment information listed below. All calculations were performed following the specifications under FCC OET 65 for far field modeling calculations.

In OET-65, power density values in the Far Field of an antenna are calculated by considering the transmit power in each band specified and multiplied by the antenna gain values per the antenna manufacturer specifications.

Since the radiation pattern of an antenna has developed in the **Far Field** region, the power gain in specific directions needs to be considered in exposure predictions to yield an Effective Radiated Power (ERP) in each specific direction from the antenna. Also, since the vertical radiation pattern of the antenna is considered, the exposure calculations would most likely be reduced at ground level, when compared to an isotropic model, resulting in a more realistic estimate of the actual exposure levels.

A worst-case **Far Field** prediction is described in OET-65 where field strength may double due to 100% reflection of the incoming radiation. Considering an EPA recommendation that a multiplier of 1.6 is a more realistically representation of this effect is rewritten as follows:

$$S_{FF} = \frac{33.4 \cdot P_{in} \cdot G_{dBd}}{R^2} \quad (\mu\mathrm{W/cm^2})$$

- $S_{FF}$ = Power Density (in $\mu$W/cm$^2$)
- $P_{in}$ is Watts
- R is meters to study point
- G is gain to study point as specified in manufacturer horizontal and vertical patterns

This model calculates the power density at a single point in space. In order to determine the spatial power density in comparison to the FCC limits, the average of several points calculated within the human profile (0 to 6 feet) must be conducted. Seven power density values, between 0 and 6 feet above the specified study plane at each point, were calculated and a linear spatial average of these values was used to create the spatially averaged result for that point on the plane.

For beam forming antennas, such as the Ericsson AIR 6419 B41 proposed by T-Mobile, calculations are run utilizing a 75% duty cycle for transmitter power per the manufacturer's specifications.

For each T-Mobile sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

| Technology | Frequency Band | Channel Count | Transmit Power per Channel (W) |
|---|---|---|---|
| 5G NR | 600 MHz | 4 | 60 |
| LTE | 700 MHz | 2 | 40 |
| LTE / 5G NR | 1900 MHz (PCS) | 8 | 40 |
| LTE | 2100 MHz (AWS) | 4 | 60 |
| 5G NR | 2500 MHz (BRS) | 8 | 40 |

*Table 1: Channel Data Table*

The following T-Mobile antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below.

| Sector | Antenna Number | Antenna Make / Model | Antenna Centerline (ft) |
|---|---|---|---|
| A | 1 | Ericsson 840590966 | 128 |
| A | 2 | Ericsson AIR6419 B41 | 128 |
| B | 1 | Ericsson 840590966 | 128 |
| B | 2 | Ericsson AIR6419 B41 | 128 |
| C | 1 | Ericsson 840590966 | 128 |
| C | 2 | Ericsson AIR6419 B41 | 128 |

*Table 2: Antenna Data*

All calculations were made with respect to uncontrolled / general population threshold limits.

## RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

| Antenna ID | Antenna Make / Model | Frequency Bands | Antenna Gain (dBd) | Channel Count | Total TX Power (W) | ERP (W) | MPE % |
|---|---|---|---|---|---|---|---|
| Antenna A1 | Ericsson 840590966 | 600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 12.95 / 13.65 / 15.5 / 15.45 | 18 | 880 | 26,359.80 | 1.28 |
| Antenna A2 | Ericsson AIR6419 B41** | 2500 MHz (BRS) | 21.5 | 8 | 320 | 45,201.20 | 4.29 |
| | | | | | | Sector A Composite MPE% | **5.57** |
| Antenna B1 | Ericsson 840590966 | 600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 12.95 / 13.65 / 15.5 / 15.45 | 18 | 880 | 26,359.80 | 1.28 |
| Antenna B2 | Ericsson AIR6419 B41** | 2500 MHz (BRS) | 21.5 | 8 | 320 | 45,201.20 | 4.29 |
| | | | | | | Sector B Composite MPE% | **5.57** |
| Antenna C1 | Ericsson 840590966 | 600 MHz / 700 MHz / 1900 MHz (PCS) / 2100 MHz (AWS) | 12.95 / 13.65 / 15.5 / 15.45 | 18 | 880 | 26,359.80 | 1.28 |
| Antenna C2 | Ericsson AIR6419 B41** | 2500 MHz (BRS) | 21.5 | 8 | 320 | 45,201.20 | 4.29 |
| | | | | | | Sector C Composite MPE% | **5.57** |

*Table 3: T-MOBILE Emissions Levels*

*** Ericsson AIR 6419 B41 emissions are modelled utilizing a 75% duty cycle*

The Following table (*table 4*) shows all additional identified carriers on site and their emissions contribution estimates, along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three T-Mobile sectors have the same configuration, yielding the same results for all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite estimated MPE value for the site.

| **Site Composite MPE%** | |
|---|---|
| **Carrier** | **MPE%** |
| T-MOBILE – Max Per Sector Value | **5.57 %** |
| Verizon Wireless | 2.30 % |
| AT&T | 2.08 % |
| **Site Total MPE %:** | **9.95 %** |

*Table 4: All Carrier MPE Contributions*

| | |
|---|---|
| T-MOBILE Sector A Total: | 5.57 % |
| T-MOBILE Sector B Total: | 5.57 % |
| T-MOBILE Sector C Total: | 5.57 % |
| | |
| Site Total: | 9.95 % |

*Table 5: Site MPE Summary*

*Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three T-Mobile sectors have the same configuration, yielding the same results for all three sectors.

| **T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)** | **# Channels** | **Watts ERP (Per Channel)** | **Height (feet)** | **Total Power Density (µW/cm²)** | **Frequency (MHz)** | **Allowable MPE (µW/cm²)** | **Calculated % MPE** |
|---|---|---|---|---|---|---|---|
| T-Mobile 600 MHz 5G NR | 4 | 1,183.45 | 128 | 2.08 | 600 MHz | 400 | 0.52% |
| T-Mobile 700 MHz LTE | 2 | 926.96 | 128 | 0.75 | 700 MHz | 467 | 0.16% |
| T-Mobile 1900 MHz (PCS) LTE / 5G NR | 8 | 1,419.25 | 128 | 3.40 | 1900 MHz (PCS) | 1000 | 0.34% |
| T-Mobile 2100 MHz (AWS) LTE | 4 | 2,104.51 | 128 | 2.60 | 2100 MHz (AWS) | 1000 | 0.26% |
| T-Mobile 2500 MHz (BRS) LTE / 5G NR | 8 | 5,650.15 | 128 | 42.90 | 2500 MHz (BRS) | 1000 | 4.29% |
| | | | | | | **Total:** | **5.57 %** |

*Table 6: T-MOBILE Maximum Sector MPE Power Values*

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-MOBILE facility as well as the site composite emissions estimates value with regard to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

| T-MOBILE Sector | Power Density Value (%) |
|---|---|
| Sector A: | 5.57 % |
| Sector B: | 5.57 % |
| Sector C: | 5.57 % |
| T-MOBILE Maximum Total (per sector): | 5.57 % |
| | |
| Site Total: | 9.95 % |
| | |
| Site Compliance Status: | **COMPLIANT** |

The estimated composite MPE value for this site assuming all carriers present is **9.95 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon the far field calculations performed for all carriers identified in this report.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite estimated values calculated were well within the allowable 100% threshold standard per the federal government.

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# ATTACHMENT 5

# Radio Frequency Engineering Statement

## Signal Strength Design Parameters

T-Mobile Northeast LLC ("**T-Mobile**") designs its wireless network to deliver reliable coverage for both in-vehicle and in-building use. The targeted signal strength for in-vehicle coverage is -94 dBm, ensuring consistent connectivity while in transit. For in-building coverage, a stronger signal strength of -85 dBm is targeted to account for signal loss due to structural penetration and to maintain dependable indoor service. T-Mobile's Radio Frequency ("**RF**") engineering team has provided detailed signal strength data and coverage plots for this site, illustrating existing coverage conditions, expected improvements, and service objectives.

## Assessment of Existing Service and Coverage Gaps

T-Mobile currently operates a facility ("**Existing Facility**" or "**CT11484B**") on an existing water tank structure ("**WT**") located at 161 Conrad Street, Naugatuck, Connecticut (the "**Property**"). The facility's antennas are mounted at a centerline height of 67 feet. This location has provided critical LTE coverage (L7/L19/L21 bands) to a densely populated residential area west of Route 8 in the Borough of Naugatuck.

However, structural concerns have rendered the WT unsuitable for upgrading the Existing Facility and for continued use, and the WT is scheduled for decommissioning and removal. As a result, the Existing Facility will be taken offline, which will create a significant coverage gap and risk of service degradation unless a suitable replacement is deployed.

## Service Enhancements from the Proposed Replacement Site

To maintain and enhance coverage, T-Mobile proposes a new facility ("**New Facility**" or "**CTNH488**") to be located on the proposed tower (the "**Tower**") development. The Tower will be developed by Tarpon Tower III, LLC **("TT")**, pursuant to a lease agreement with the Borough of Naugatuck, and the Tower will be located on the same Property as T-Mobile's Existing Facility. The TT Tower will provide T-Mobile with a centerline height of 128-feet for its New Facility. This increased antenna height will significantly improve signal propagation and coverage, enabling deployment of advanced 5G Mid Band and 5G Low Band services, in addition to continued LTE operations. The elevated height will also support better in-building penetration and increased network capacity, especially in surrounding residential areas.

The New Facility is essential not only to replace lost coverage from the decommissioned WT, but also to modernize the network with 5G capabilities. It will ensure sustained, high-quality wireless service for residents and businesses in the area, and meet growing demand for both capacity and performance.

<u>CERTIFICATE OF SERVICE</u>

I hereby certify that on the 15th day of May 2025, a copy of the foregoing was sent to the Connecticut Siting Council via electronic mail, and the fifteen (15) copies by hand delivery, and an electronic copy was sent to the following:

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