

## STATEMENT OF RICHARD KARIUKI, RF ENGINEER

1. My name is Richard Kariuki. I reside in Auburn, Massachusetts.
2. I am a Radio Frequency (RF) RF Engineer with more than 17 years of experience in RF Design, Capacity planning, and optimization of personal wireless telecommunications Networks.
3. I hold a Bachelor of Science degree in Engineering. I graduated in 2002.
4. In my current position as an RF Engineer with TTS Wireless, an RF Consulting firm working on T-Mobile projects, I have specific training, experience and education on personal wireless communication network design, including the design and deployment of sites designed to address gaps in coverage caused by inadequate coverage and capacity. I have been working on T-Mobile projects for 10 years. I am directly involved with the RF optimization teams which are charged with improving service and customer experience across T-Mobile's network, including in the Town of Mashpee, MA ("Town").
5. T-Mobile constantly evaluates the need of upgrades and expansion in response to ever-growing customer demand and evolving expectations. We have an obligation to provide reliable service for our customers. This means ensuring they are able to access our network where they live, work and recreate, which means having access to our network both in building and outdoors. To address those needs T-Mobile must densify our network in the area and supplement coverage by deploying a 150' monopole at the Mashpee Fire State #2 located at 101 Red Brook Road, Mashpee, MA ("Proposed Site").
6. I was involved with the RF analysis that supported the application filed by Blue Sky Towers II, LLC on May 3, 2018 for the Proposed Site.
7. Based on a review of existing coverage in the area of the Proposed Site, we determined that an additional site was necessary to address a significant gap in coverage creating insufficient in-building coverage. This gap is illustrated on the RF maps submitted previously and exists for both our L700 MHz and L2100 MHz frequencies. The Proposed Site with T-Mobile's antennas at 136' feet addresses our in-building coverage issues and ensures we are able to provide reliable service in the area.<sup>1</sup>
8. In addition to hosting wireless equipment from Verizon and T-Mobile, the Proposed Site is also supported by the Mashpee Police and Mashpee Fire Department as they will be hosting their own equipment on the Proposed Site enabling them to augment their internal communication capabilities in the area. The more robust in-building coverage provided by the Proposed Site also support public safety in another way by augmenting

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<sup>1</sup> Verizon Wireless will also be a tenant on the Proposed Site. It will occupy the 146' RAD center.

the public's ability to access the E911 network, which is important given that a majority of households are currently wireless only.

9. With respect to the question of whether we can construct small cells or distributed antenna system ("DAS") in lieu of the Proposed Site, they are not a one-for-one replacement. Small cells and DAS generally utilize lower power equipment deployed at lower heights (30'-60'). They are designed to augment the network over a more defined geographic area and are intended to offload capacity rather than provide new coverage. In addition, the spectrum used on small cells does not easily go through building walls. Because of their limited range, they are not utilized to provide baseline coverage in an area.
10. Small cells and DAS systems are designed to work in conjunction with the broader macro network in a given area, not independently. Given their lower deployment heights a small cell or DAS network would not be able to project above the tree clutter and topography in and around the Proposed Site further limiting their ability to provide small cell coverage in the area. They are also less well suited to providing coverage for the transient traffic along Red Brook Road, Great Hay Road, Great Neck Road S, and Great Oak Road. And even if these technical limitations were set aside, given their more limited range and lower deployment heights, more small cells nodes would be required to address the same geographic area to provide a lesser quality coverage. Put another way, T-Mobile would be unable to address its in-building coverage issues.
11. This affidavit supplements the prior RF information.
12. As outlined above, the Proposed Site addresses T-Mobile's in-building coverage issues and will enable it to address the significant gap in coverage in the area ensuring that T-Mobile is able to provide reliable coverage in the area.

I hereby state that the information above is true, to the best of my knowledge. I also confirm that the information here is both accurate and complete, and relevant information has not been omitted.

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Richard Kariuki  
RF Engineer  
TTS Wireless for T-Mobile  
Northeast LLC

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Date