STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

RE: APPLICATION BY T-MOBILE NORTHEAST LLC FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR A TELECOMMUNICATIONS FACILITY AT MOOSE HILL ROAD IN THE TOWN OF GUILFORD, CONNECTICUT

DOCKET NO. 417

Date: August 11, 2011

PRE-FILED TESTIMONY OF SCOTT HEFFERNAN

Q1. Please state your name and profession.

A1. Scott Heffernan, and I am the president and principal engineer for Transcom Engineering, Inc. ("Transcom"), which is located in Sterling, Massachusetts.

Q2. What kind of services does Transcom provide?

A2. Transcom provides wireless design services for both commercial and government projects including, but not limited to, evaluating possible sites for telecommunications facilities, system design, and determining radio frequency ("RF") coverage, capacity and interference for proposed telecommunications facilities.

Q3. Please summarize your professional background in telecommunications.

A3. I have a B.S. in Physics from Clark University and Certificates in Telecommunications Engineering and UNIX Programming from Northeastern University. I have over 14 years of experience in wireless engineering, which includes the design, integration, optimization and management of network build-outs for commercial wireless carriers such as Nextel, AT&T, Wireless, Cingular and Voicestream (T-Mobile's predecessor). I have also been involved in network design for government entities such

as the Department of Homeland Security, Department of the Army, Department of the Navy, and the United States Marine Corps. I have spent the last 6 years primarily as an independent contractor for T-Mobile, focusing on the design and integration of the T-Mobile wireless network.

Q4. What services did you provide T-Mobile regarding the proposed Facility?

A4. I evaluated T-Mobile's existing network in this area of the State and assessed the need for the proposed telecommunications facility on real property known as Map 66, Parcel 64 on the Guilford Assessor's Map and commonly known as Moose Hill Road, Guilford, Connecticut ("Facility"). In doing so, I considered the general design of T-Mobile's network, the technical constraints in selecting certain proposed facilities, and the specific need for the Facility. I also evaluated the potential designs for the proposed Facility.

Q5. Please describe T-Mobile's wireless network in Connecticut.

A5. T-Mobile's predecessor entities began constructing a wireless network to provide Personal Communication Services ("PCS") in Connecticut in the mid-1990s. T-Mobile is licensed by the Federal Communications Commission to provide PCS service using frequencies in the 1900 MHz range and AWS service using frequencies in the 2100 MHz range. Current efforts are directed to providing signals to areas without coverage and meeting demand for additional capacity within the areas already served. Each new site must be chosen to meet the need for coverage and/or capacity without creating RF interference among sites.

Q6. What requirements does the nature of wireless technology place on T-Mobile's selection of cellular tower locations?

A6. Like all personal communications service providers, T-Mobile's wireless network is based on the principle of frequency re-use. T-Mobile must select locations for telecommunications facilities so that the facilities provide sufficient signal strength overlap to allow a call to be "handed-off" between facility locations without creating unnecessary duplicative coverage and frequency interference. Terrain variations may also limit the siting of telecommunications facilities.

Technological advances in service, such as the availability of data and video services through customer handsets, are also significant factors in system development. Increased customer demand and expectations resulting from those advances drive the need for additional sites.

The quality of voice and data service depends on signal strength. Accordingly, signal strength and coverage still drive T-Mobile's need for new telecommunications facilities, even with the recent trend by users to rely more on data services.

T-Mobile has established design criteria so that its wireless network will provide reliable service to customers on the street, in a vehicle, or in a building. Providing reliable service to T-Mobile's customers, while they are travelling in vehicles or situated in buildings, is critical for T-Mobile to provide quality wireless service and compete successfully with other wireless providers.

T-Mobile's required lower limit threshold is -84 dBm, which is expected to provide reliable in-vehicle coverage. A higher threshold level of -76 dBm is the minimum required to provide reliable in-building coverage. These signal level requirements provide the basis for T-Mobile's design criteria. At levels below the -84 dBm threshold,

T-Mobile's service to customers for voice and data services would experience signal degradation. In addition, levels below -84 dBm would adversely affect T-Mobile's ability to provide reliable E-911 services as mandated by the federal government.

Q7. Please describe T-Mobile's need for the proposed Facility.

A7. The Facility would be an integral component of T-Mobile's wireless network in Guilford. There is a gap in coverage in this area, specifically along Route 146, Moose Hill Road, Old Quarry Road and Corncrib Hill Road, south of Interstate 95, as well as the surrounding area and the Amtrak rail line that passes through the area. *Please see* Application. The Facility, in conjunction with other existing and future facilities in Guilford and surrounding towns, is necessary for T-Mobile to provide wireless services to people living and working in and traveling through this area of the State.

Q8. How did you analyze the efficacy of the proposed Facility?

A8. I used propagation prediction tools to determine the potential effectiveness of the proposed Facility in meeting the identified coverage need. That analysis took into account T-Mobile's coverage objective, T-Mobile's existing on-air sites in this area of the State and the existing terrain and vegetation. I also considered the approval of certain pending sites, specifically the telecommunications facility proposed by Cellco Partnership d.b.a. Verizon Wireless at 723 Leetes Island Road, Branford ("Medlyn Farm Facility"). Verizon's application is pending before the Council as Docket 413.

Q9. Was T-Mobile's search for a facility based upon your analysis of need?

A9. Yes. T-Mobile's search for a facility in this area of Guilford was based upon my analysis of need. T-Mobile initiated the site search on or about July 10, 2008. The search area was centered approximately at the intersection of Moose Hill Road and Dromara Road, located approximately .20 miles north of Route 146. The search area radius was approximately .20 miles. These search parameters served as a starting point to locate potential sites for a telecommunications facility which would alleviate the coverage objective.

Q10. Has a test drive been conducted in this area regarding the proposed Facility?

A10. Yes. T-Mobile continually drives its on-air sites for network analysis and propagation model tuning purposes. A wireless network is dynamic environment, subject to equipment, frequency and environmental changes. T-Mobile strives to have the most current test drive data available for any given area in its network. This allows for greater accuracy in its current network design of new facilities to ensure that each new facility is a quality edition to the network.

Q11. Please summarize the basis for the height of the proposed Facility.

A11. The analysis of this area of Guilford confirmed that the minimum antenna height required to cover the intended coverage objective is approximately 107'9" above grade level ("AGL"). The Facility would provide effective service with antenna arrays located at this height. At lower heights, the coverage in this area of Guilford starts to deteriorate and fall below T-Mobile's minimum required threshold of -84 dBm.

This assessment of need is premised upon the approval of the Medlyn Farm Facility. If the Council approves Verizon's application, T-Mobile would situate its antennas at 80 feet AGL on the Medlyn Farm Facility. Without the Medlyn Farm Facility, T-Mobile would require a facility with a height of 140 feet AGL, with antennas situated at 137'9" AGL, to achieve the coverage objective for the Facility in this Docket.

Q12. Is adequate coverage in this area of Guilford necessary to provide consistent and reliable 911 service?

A12. Yes. If the coverage within a specific area is inadequate, then not only does routine call reliability suffer, but so does 911 / emergency call reliability.

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Scott Heffernan

Sworn and subscribed to before me this
___ day of August, 2011.

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Notary Public
My Commission expires