Scottsdale Christian Academy:

A Case Study in Successfully Addressing 5G Concerns

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Executive Summary

In the Fall of 2019, administrators from Scottsdale Christian Academy (SCA) in Phoenix, AZ contacted Waterford Consultants, a national FCC regulatory compliance and professional services firm specializing in radio frequency (RF) emissions and human exposure, to help them address parental concerns surrounding 5G emissions from a wireless carrier installation on their K-12 campus.

The installation has been in place since 2003, but the wireless carrier recently decided to add *dual-band* antennas which sparked questions about 5G emissions transmitting on campus and possible exposure concerns.

Administrators and board members met with families who threatened to withdraw their children from the school and transfer them elsewhere as a result of the plethora of online, 5G-related hysteria. Protests were organized outside a nearby wireless provider's store with local media outlets covering their concerns.

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RF Survey & Study

The wireless carrier is transmitting across several licensed frequency bands ranging from 600MHz to 2.1 GHz from the rooftop of the gymnasium, approximately 30 feet above ground level. The SCA campus is expansive, covering over 14 acres including playgrounds, a football field and baseball facilities.

Waterford was engaged by SCA to complete both an on-site electromagnetic emissions (EME) survey and a predictive study using data provided by the carrier. Waterford's engineers used a calibrated NARDA broad-band meter and probe for the on-site study. For the purpose of analyzing potential human exposure to RF emissions, over 135 measurements were taken on rooftops, open walkways, playgrounds and inside the gymnasium, weight room, media center and classrooms.

The Results

A few days after completing the analyses, Waterford delivered a professional engineer-certified report to SCA that included results from both the on-site survey and the predictive analysis. The actual field measurements showed no rooftop location exceeded 1.9% of the Maximum Permissible Exposure (MPE) limits for the General Population as set forth by the Federal Communications Commission (FCC) Rules (47 C.F.R. § 1.1310).

Ground measurements revealed similar results while in-building measurements did not exceed 3.4% of the MPE limits for the General Population. The highest in-building measurement was found in the media center where several wireless routers, servers, computers and fluorescent lights are located and likely contributed to the cumulative measurement results.

Using wireless industry standard methods for worst-case assessment of the proposed wireless carrier operations at this site, predictive modeling using *RoofMaster*™ software indicated RF power density levels below the FCC General Population limits in areas accessible to students, staff and visitors on the campus and thus, deemed compliant and safe.

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Communications

Throughout the process, the Waterford team assisted SCA by reviewing and editing talking points for school board members, drafting responses to concerned parent inquiries (some of whom purchased their own RF monitors) and authoring clear and accurate communications concerning the results of the studies. Waterford helped educate the administration on 5G and the basics of radio frequency exposure so they could effectively address concerned parents, staff and the media. This included providing access to Waterford's on-line RF safety training.

Next steps

SCA quickly recognized the fact that RF environments constantly change, so Waterford installed two Radio Frequency Infrastructure Sentry (RFIS) devices on adjacent roof-top locations with direct line of sight to the transmitting antennas. The RFIS devices monitor changes in the RF environment on a 24/7/365 basis and present the data on a web portal accessed by SCA administrators.

Notifications triggered in near real-time will be sent via email if cumulative RF measurements exceed a percentage change or FCC General Population exposure limits. These devices enable SCA to take a proactive approach to ensuring a safe RF environment on campus at all times and address parental concerns.

SCA expects to expand on-line RF safety training to those employees and vendors who might access the rooftops and encounter the transmitting antennas. Waterford will also review and provide updates to the SCA Employee Health & Safety Plan to ensure RF safety is adequately addressed, including the use of personal RF monitoring devices.

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About Waterford

Waterford Consultants was founded in 2004 and is a professional services organization specializing in FCC and FAA regulatory compliance, engineering, site development, and a host of software and technology-related offerings that service the wireless industry.

Waterford specializes in a diverse collection of technical and consulting services that continue to expand with significant focus given to utilizing the most innovative and tech-savvy solutions.

Waterford's clientele consists of the industry's leading carriers, tower and structure owners, engineering and site acquisition firms, as well as most local, state and federal government organizations.

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