OKU SOLUTIONS

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1/7/2024

To: Suzanne Hartman, City Planner, City of Santa Rosa
Subject: FCC compliance of Verizon Wireless Communications Facility, FILE NO. PRJ23-005 ("Yolanda" - 244 Colgan Avenue

Dear Ms. Hartman:

In the matter of questions about the compliance of Verizon Wireless' application for a Wireless Communications Facility at 244 Colgan Avenue with Federal Communications Commission's NEIR electromagnetic safety guidelines, we respectfully submit a memo and third-party engineering analysis.

Oku Solutions provides telecommunication engineering consulting services to governments, non-profits, and industry clients. I am an electrical engineer with a B.Sc. from the University of California, with a career focus on wireless systems, communications theory and practice, and radio-frequency theory and practice. I have testified about electromagnetic safety at dozens, if not hundreds, of hearings on wireless communications facilities. I am a:

- Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), an organization dedicated to advancing innovation and technological excellence for the benefit of humanity, creating standards, and is the world's largest technical professional society.
- Chair of the Deployment Working Group of the IEEE's Future Networks Technical Community.
- Member of the IEEE's International Committee on Electromagnetic Safety, which hosts the TC95 working group that produces the C95 family of standards, from which regulatory agencies (including the Federal Communications Commission) derive their electromagnetic safety guidance.
- Member of the IEEE Committee on Man and Radiation.
- Life Member of the IEEE Microwave Theory and Techniques Society.

Based on my background and stated qualifications, I ask that you consider me an expert witness on the topic of electromagnetic field (EMF) safety standards, and on the compliance of the proposed WCF with the FCC's established safety guidelines.

The FCC derives most of their electromagnetic safety guidelines from the research and findings contained in the IEEE's C95.1 standard. The most recent update to the C95.1 occurred in 2019, and the FCC subsequently completed a multi-year proceeding finding that the existing safety guidelines continue to provide broad protection against injury from excessive electromagnetic energy. (FCC 19-126)

One of the ways the FCC's guidelines create protection is by mandating a 98% safety margin between the highest levels of RF exposure and the levels at which medical science can accurately measure an effect on the human body. Thus, even if an RF source is imparting energy at 100% of the FCC's safety guidance, that level is still below the effect level.

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I have reviewed the *Radio Frequency Exposure - FCC Compliance Assessment* prepared by Jassmine Aldrich of Waterford Consultants, LLC and dated May 24th 2023. (This is the RFE, sometimes called an EME, report linked from the staff report packet.)

Waterford recommended a 3 dB (50%) reduction in RF levels to ensure that anyone working on the roof (at the 30-foot level) of the building directly north of the proposed WCF would not encounter RF levels above the FCC's safety guidelines for public exposure. Waterford's report finds, with the recommended reduction in RF levels, that all publicly-accessible areas (elevated or ground-level) fall within the FCC's safety guidelines. I reviewed the RFE report and compared it against other data including the applicant's construction drawings, satellite and ground-level imagery of the area and surroundings, and I concur with Waterford's findings. Nothing in the RFE report predicts RF exposure above the FCC's safety guidelines for public or "uncontrolled" areas on nearby rooftops or at ground level. All predicted levels are at, or below, the FCC's maximum levels for public exposure.

It is important to point out that all RFE reports presume perfect operating conditions and ideal materials to produce a worst-case analysis. When measured using proper test instruments calibrated to NIST-traceable standards, RF levels from operating WCFs in the real world are always below RFE/EME predictions.

I will attend the Planning/Zoning hearing on Jan 11th 2024, and will be available to answer any questions from city staff and commissioners.

Sincerely,

David Witkowski
CEO & President
Oku Solutions LLC