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SUBJECT: Follow up from Neighborhood Meeting for the Cooks Butte Site

I have been asked to respond to the concerns regarding the "radiation" from the Cook's Butte radio tower project and any possible impact on nearby plants. I will respond in the paragraphs below.

As a third party independent expert I performed calculations regarding the proposed site that includes all of the proposed transmitters for the tower. The basis of my calculations are performed following guidance provided by the FCC and are a worst case analysis and that report will be submitted to the city and become part of the public record. It also means that if I go to a site to perform measurements it is always the case that the actual measurements that I take are less than those that I calculate because of the conservatism built into the calculations. For the Cook's Butte site I determined that the maximum outdoor exposure rate over 300 times less than the allowed FCC public limit.

In a broader sense the radiofrequency waves or "radiation" given off by the proposed antennas are the same as those used by numerous radio signals located in abundance in the Portland area. The RF energy is non ionizing and is fundamentally different than ionizing radiation associated with X-ray machines, CAT scans and nuclear power. In fact, the RF energy used in cellular communication is at least 1 million times too low to directly break chemical bonds or disrupt macromolecules such as DNA. With few exceptions, the only confirmed hazards of RF energy are associated with excessive heating of tissue. Heating from radio signal exposure occurs at levels over 100,000 times greater than the radio signals from the site.

Switching to the topic of the possibility of trees losing their leaves on the side of a tower. There is a reason you've never heard of this, it is simply not a true statement. There is a paper that was published a few years ago that makes such a claim but as an individual who is an editor of a scientific journal the paper the doctor mentioned is fraught with problems and should have never made it through the publication process. I've been conducting radiofrequency surveys for a number of decades and it is almost always the case that the TV and FM radio stations that are at a distance away are either greater or equivalent in signal strength to the radio signals given off from the antennas on a tower such as the one proposed. These antennas simply do not give off very strong radio signals, on the order of hundreds of watts. So the addition of these radio signals does not significantly change the radiofrequency background in the area. The energy given off from the antennas, even to trees nearby, is simply insufficient to cause any biological effect on the living plants.

Another concern commonly expressed regarding the radio signals from a proposed tower such as this in our neighborhood is how much is too much? And, what about the long term cumulative exposure and possible negative effects? Each background radio signal (cellular, FM, TV) in our environment is a small fraction of the allowable FCC public limit and, even when all sources in the environment are combined, the result remains just a few percent or a fraction of a percent of the allowable limit. The IEEE International Committee on Electromagnetic Safety has a list of 68 different statements and reviews from governments or expert panels regarding the safety of radiofrequency exposure made during the past 6+ years¹. These reviews are consistent regarding the safety of exposures less than the allowable exposure

¹ IEEE ICES. <http://www.ices-emfsafety.org/expert-reviews/>

guidelines. Another common concern is long term and continuous exposure of these low level radio signals. A direct quote from Health Canada² on this subject is as follows:

The Safety Code 6 limits for human exposure to RF fields are designed to provide protection for all age groups, including children, on a continuous (24 hours a day/seven days a week) basis.

This means that if someone, including a small child, were to be exposed to RF fields from multiple sources for 24 hours a day, 365 days a year, within the Safety Code 6 limits, there would be no adverse health effects. Safety Code 6 exposure limits are not device specific, but the limits do take into account the total exposure from all sources of RF fields. Health Canada scientists have concluded (and the Royal Society of Canada has agreed) on the basis of current scientific data, that no adverse health effects will occur from exposure to RF fields at the levels permitted by Safety Code 6.

Health Canada reminds all Canadians that their health is protected from RF fields by the human exposure limits recommended in Safety Code 6. The current Safety Code establishes and maintains a human exposure limit that is far below the threshold for potentially adverse health effects. The limits in Safety Code 6 provide protection against all known adverse health effects for all individuals.

The World Health Organization's (WHO) most recent summary³ of the evidence is as follows:

Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields.

While the WHO does go on to state that more research is desired it is important to know that the subject of radio signal exposure has been studied extensively for the past 65+ years and there are over 25,000 published articles. As a public health professional who has raised two children I evaluate all risks from both a public health as well as a personal standpoint. I would be completely comfortable having my family live next to the proposed tower because I know the power level emitted from the tower is quite small and there is no chance of any health effects from the exposure and the radio signal is generally lower than the radio signals from FM and TV stations that are often tens of miles away.

Other relevant quotes regarding risks from RF exposure:

U.S. FDA, 2018:

"Taken together, all of this research provides a more complete picture regarding radiofrequency energy exposure that has informed the FDA's assessment of this important public health issue, and given us the confidence that the current safety limits for cell phone radiation remain acceptable for protecting public health."⁴

²² Health Canada. http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct/safety_code_6-code_securite_6-eng.php .

³ <http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>

⁴ U.S. Food and Drug Administration. 2018. <https://www.fda.gov/news-events/press-announcements/statement-jeffrey-shuren-md-jd-director-fdas-center-devices-and-radiological-health-recent-national>

Swedish Radiation Safety Authority, 2015:

“In line with previous studies, new studies on adult and childhood cancer with improved exposure assessment do not indicate any health risks for the general public related to exposure from radiofrequency electromagnetic fields from far-field sources, such as base stations and radio and TV transmitters. There is no new evidence indicating a causal link to exposure from far-field sources such as mobile phone base stations or wireless local data networks in schools or at home.”⁵

I perform these evaluations throughout the country and cities such as Tacoma WA and others have hired me to talk to the city council or perform evaluations of the exposures so this is something that I do frequently. If you wish to discuss this further please call me at 253.617.1449 or email me at thatcher.drew@comcast.net.

Statement of Qualifications

I am an IEEE member, a board certified health physicist and public health professional with over 30 years experience in evaluating both ionizing and non ionizing radiation exposures. My masters degree is in health physics, I was a panel chairman for certification of health physicists nationally, was the radiofrequency expert for the State of Washington for an 18 year period, am an editor of the Health Physics Journal for non ionizing radiation topics, am a consultant of the ACGIH Threshold Limit Values for Physical Agents Committee and was an Adjunct Professor of Health Physics at Vanderbilt University from 2004 to 2014. My current certification expires in 2020.

Regards,



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⁵ Swedish Radiation Safety Authority. Tenth report from SSM's Scientific Council on Electromagnetic Fields. 2015. <http://www.stralsakerhetsmyndigheten.se/Global/Publikationer/Rapport/Stralskydd/2015/SSM-Rapport-2015-19.pdf>