April 8, 2024

Snohomish PUD
PO Box 1107
Everett WA 98206-1107

Attn: John Haarlow, Snohomish PUD CEO/GM
Dan Hines, PUD Metering Superintendent

RE: Snohomish PUD's Connect Up Program

Dear Mr. Haarlow and Mr. Hines:

I received Mr. Hines' response to my concerns regarding the fire potential of the new RF meters Snohomish County Public Utility District (PUD) is proposing to install. I understood from the response that previous problems that caused fires have been addressed by the manufacturer and there is no greater fire risk associated with the proposed RF meter versus the existing analog meter, so that assures me that since I have not had a fire in 23 years with my analog meter I should expect the same from the RF meter which is good news.

An additional concern regards the radiofrequency radiation (RFR) emitted by these meters. The PUD has gone to great lengths in their "Connect-Up Advanced Metering Safety" sheet to assure the public that these RF meters are "safe" with fourteen (14) references to "safe", and the word radiation has been replaced by PUD with the term "energy", i.e., radiofrequency energy vs. radio frequency radiation. There are several statements in the "Connect-Up Advanced Metering Safety" sheet under the heading of "Facts on Advanced Metering Safety" that are either misleading or inaccurate as shown below.

I want to believe the PUD has the best intentions with these meters and is just following suit with other utility owners across the country by deploying these wireless devices and/or has received government funding to implement such a program and finds it difficult to turn such an investment down. **However, agencies deploying this technology as well as the courts are ignoring the mounting concerns and volumes of peer-reviewed studies and research from EMF experts, scientists and health/medical professionals around the world that contradict the "safe" narrative surrounding RFR. As important if not more important, these agencies and courts are ignoring the testimonies of harm suffered by individuals after installation of smart meters.** Electromagnetic Sensitivity (EMS) is a recognized condition whereby individuals suffer adverse health effects from electromagnetic field exposure.

Further complicating the matter and increasing the risk of harm is the saturation of this technology that is emitting radiation from all the "smart" devices in the home, on the person, in schools, in neighborhoods, and on buildings. Any agency forcing a product on the public in such

mass, **should employ the "precautionary principle**" and assume a product whose short-term and long-term effects on the environment and public health is either unknown or in dispute **should be considered harmful** until proven otherwise with long term studies conducted with placebo controls.

**PUD STATEMENT #1**

***"The World Health Organization (WHO) has concluded that no adverse health effects have been demonstrated to result from exposure to low-level radio frequency energy such as that produced by advanced meters."*** {Source: PUD Advance Metering Safety Fact Sheet}

The source for this statement appears to be from 2006 as noted in a footnote. PUD fails to point out that in 2011, the World Health Organization's International Agency for Research on Cancer (IARC), classified radiofrequency electromagnetic fields (RF EMFs) as possibly carcinogenic to humans (Group 2B) {Source: https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf}. Group 2B is the same category given to DDT, diesel fuel and lead prior to being categorized as Group 2A: probably carcinogenic to humans classification after years of use.

While the study focused on wireless phone use, PUD's own fact sheet points out how cellular technology and RF meters utilize the same technology:

***"What makes them different is that these meters transmit that data via radio frequency (RF), which is the same produced by other common household devices like cell phones, baby monitors and WiFi routers."*** {Source: PUD Advance Metering Safety Fact Sheet}

I do see how the 2006 reference could be mistaken as "absolute", but the Environmental Health Trust clarified how the statement is not accurate in a post entitled "Factcheck: The World Health Organization Has Not Made a Determination That Cell Towers Are Safe" published August 13, 2022. The article states the following:

> *"First, there are two distinct and separate entities under the WHO addressing the issue; 1. the WHO EMF Project who drafted several online web pages that seem to show safety and 2. the WHO International Agency for Research on Cancer which issues scientific determinations of the strength of cancer associations based on a review of the research.*
>
> *The WHO EMF Project (led by ONE person now which was started with industry funding and by a scientist now industry consultant), which drafted these WHO webpages, has not reviewed the science since 1993. For example, if you go to the WHO web pages that seem to say RF is safe, simply search for a proper report or review by the WHO. None exist. Why?*
>
> *Because the WHO EMF Project has not reviewed this issue for years. "*

{Source: https://ehtrust.org/factcheck-the-world-health-organization-has-not-made-a-determination-that-cell-towers-are-safe/ }.

**PUD STATEMENT #2**

***"They emit low levels of RF energy that is both FCC-approved and lower than the level of RF energy emitted by many other devices used daily by millions of people."*** {Source: PUD Advance Metering Safety Fact Sheet}

The FCC-approved limit referenced here is from 1996 and solely based on thermal exposure. In 2021, the D.C. Circuit Court of Appeals ruled in a landmark case against the Federal Communication Commission (FCC). The ruling stated: "

> *".. the FCC's 2019 order (to not review its 1996 exposure guidelines) was arbitrary and capricious in its failure to respond to record evidence that exposure to RF radiation at levels below the Commission's current limits may cause negative health effects unrelated to cancer."*
>
> and;
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> *"....That failure undermines the Commission's conclusions regarding the adequacy of its testing procedures, particularly as they relate to children, and its conclusions regarding the implications of long-term exposure to RF radiation, exposure to RF pulsation or modulation, and the implications of technological developments that have occurred since 1996, all of which depend on the premise that exposure to RF radiation at levels below its current limits causes no negative health effects. Accordingly, we find those conclusions arbitrary and capricious as well. Finally, we find the Commission's order arbitrary and capricious in its complete failure to respond to comments concerning environmental harm caused by RF radiation."*

{Source: https://www.cadc.uscourts.gov/internet/opinions.nsf/fb976465bf00f8bd85258730004efdf7/$file/20-1025-1910111.pdf }

**The ruling calls into question the underlying basis for the FCC's exposure guidelines which were established in 1996. This alone should give PUD the basis for pause!**

I find it interesting that the PUD called into question/dismissed headlines I provided in my September 2023 letter regarding potential fire risks as decades old (citations from 2010 to 2015) but is content on relying upon **safety standards from 1996** that ONLY consider thermal effects, not biological, or other physiological effects that have now been called into question by a higher court. Given the explosion of wireless use since the 1990's, common sense should demand updates to standards where there could be potential harm to the environment and public health.

**There were 11,000 pages of evidence from leading environmental and health advocacy organizations in support of their claims in that case. The peer-reviewed studies show biological effects induced below the 1996 Federal Communications Commission's (FCC)'s exposure limits.**

**PUD STATEMENT #3**

***"For more than 50 years, researchers have studied the potential health impacts of RF. That research has concluded that advanced meters do not result in adverse health impacts."***
{Source: PUD Advance Metering Safety Fact Sheet}

Three references are cited under this headline. One previously mentioned (WHO 2006) and the other two (2011) appear to have conflicts of interest with some funding from private industry.

Meanwhile, below are just a few references to various documents which contradict the "safe" narrative. They are written by or on behalf of EMF experts, scientists, and health/medical professionals around the world. Additionally, Children's Health Defense has compiled a summary of over one hundred links to thousands of studies, expert testimonies, research etc. regarding the health impacts from electromagnetic radiation. {Source: https://childrenshealthdefense.org/emr/emf-wireless-health-impacts/}

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The pre-amble in an International Appeal, signed by 259 EMF scientists from 44 nations and 15 supporting scientists from 11 nations, as of July 14, 2023, entitled "Scientist call for Protection from Non-ionizing Electromagnetic Field Exposure" states the following:

> *"We are scientists engaged in the study of biological and health effects of non-ionizing electromagnetic fields (EMF). Based upon peer-reviewed, published research, we have serious concerns regarding the ubiquitous and increasing exposure to EMF generated by electric and wireless devices. These include–but are not limited to–radiofrequency radiation (RFR) emitting devices, such as cellular and cordless phones and their base stations, Wi-Fi, broadcast antennas,* ***smart meters****, and baby monitors as well as electric devices and infra-structures used in the delivery of electricity that generate extremely-low frequency electromagnetic field (ELF EMF)."*
>
> {Source: https://emfscientist.org/index.php/emf-scientist-appeal}

Additionally, the Advisors to the Appeal sent a letter to the U.N. Human Rights Advisory Committee commenting on its July 2019 Resolution, entitled "New and Emerging Digital Technologies and Human Rights" with the following statements:

> *"Wireless communication technologies are rapidly becoming an integral part of every economic sector. But there is a rapidly growing body of scientific evidence of*

*harm to people, plants, animals, and microbes caused by exposure to these technologies.*

*It is our opinion that adverse health consequences of chronic and involuntary exposure of people to non-ionizing electromagnetic field sources are being ignored by national and international health organizations despite our repeated inquiries as well as inquiries made by many other concerned scientists, medical doctors, and advocates.*

*This constitutes a clear violation of human rights, as defined by the United Nations..."* {Source: https://emfscientist.org}

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The American Academy of Environmental Medicine (AAEM) sent a letter to the Public Utilities Commission in California on January 19, 2012, opposing the installation of wireless "smart meters" in homes and schools based on scientific assessment of the current medical literature. The letter points out that the current FCC guidelines for safety are obsolete because they only consider thermal tissue damage when current studies demonstrate that there is metabolic and genomic damage from RF and ELF exposure below the level of intensity which heats tissues also noting these effects accumulate over time. {Source: https://electromagnetichealth.org/wp-content/uploads/2012/01/AAEM-Resolution.pdf }

In AAEM's position paper on Electromagnetic and Radiofrequency fields {Source: https://aaemonline.org/electromagnetic-and-radiofrequency-fields-effect-on-human-health/}, released April 12, 2012, with 31 reference documents, concluded that:

*"Significant harmful biological effects occur from non-thermal RF exposure."*

and called for the following:

- *"Immediate caution regarding "Smart Meter" installation due to potentially harmful RF exposure.*
- *Accommodation for health considerations regarding EMF and RF exposure, including exposure to wireless "Smart Meter" technology.*
- ***Use of safer technology, including for "Smart Meters", such as hard-wiring, fiber optics or other non-harmful methods of data transmission***
- *Independent studies to further understand the health effects from EMF and RF exposures.*
- *Recognition that electromagnetic hypersensitivity is a growing problem worldwide.*
- *Consideration and independent research regarding the quantum effects of EMF and RF on human health*
- *Understanding and control of this electrical environmental bombardment for the protection of society"*

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The 2012 BioInitiative Report updated in 2022 entitled "A Rationale for Biologically-based Public Exposure Standards for Electromagnetic Fields (ELF and RF)", prepared by 29 authors from ten countries, ten holding medical degrees (MDs), 21 PhDs, and three M.Sc., MA or MPHs concluded the following:

*"Bioeffects are clearly established and occur at very low levels of exposure to electromagnetic fields and radiofrequency radiation. Bioeffects can occur in the first few minutes at levels associated with cell and cordless phone use. Bioeffects can also occur from just minutes of exposure to mobile phone masts (cell towers), WI-FI, and wireless utility 'smart' meters that produce whole-body exposure. Chronic base station level exposures can result in illness."*

and;

*"The continued rollout of wireless technologies and devices puts global public health at risk from unrestricted wireless commerce unless new, and far lower exposure limits and strong precautionary warnings for their use are implemented."*

{Source: https://bioinitiative.org }

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The Building Biology Institute published "Smart Meters Factsheet" in 2019 which includes the following statements:

*"Smart" meters do not satisfy Building Biology Institute's standards for a healthy built environment. "*

and;

*"Extensive research by technical experts has shown no benefit to consumers from electricity smart meters. Digital smart meters are a high cost, environmentally unsustainable way to automate meter reading. We have yet to know conclusively the long-term impact on biology or ecology, but the evidence is increasingly indicative of cumulative harm. The high intensity, pulsed radiation and potentially unique*[electromagnetic interference] *EMI from digital meters is an incremental increase on top of an already saturated EMF environment from the proliferation of cell phone technology (phones and antennas), available anywhere Wi-Fi, and a proliferation of wireless devices in the home."*

{Source: https://buildingbiologyinstitute.org/free-fact-sheets/smart-meters/ }

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**PUD STATEMENT #4**

***"To further reduce concerns, advanced meters transmit RF energy*** **[radiation]** ***only for short periods each day." And "The meters emit RF only when they transmit data, which is typically less than ten seconds per day."*** {Source: PUD Advance Metering Safety Fact Sheet}

Remarks by Erik Anderson, PE, a forensic electrical engineer, in an Engineering Report titled "Smart Meters Operation & RF Emissions" contradict the above statement:

> *"Smart meters create intense exposure to pulsed radio frequencies (RF) in a few ways. RF antennas are embedded within the smart meter to transmit data usage to utility companies and/or to communicate with other smart meters or with other "smart" devices like home thermostats. These antennas emit pulsed RF radiation. The various radiofrequencies emitted by these antennas also conduct through the home electric wiring. RF "wire conducted" frequencies come also from the conversion process from alternating current (AC) to direct current (DC) handled by the Switch Mode Power Supply (SMPS). Non-transmitting digital meters also use SMPS, and therefore they too create RF, even though they do not contain a transmitting RF antenna for communications. These radio frequencies are transmitted on the residence's electrical distribution system and conduct over the internal wiring, thereby turning the home into a whole-house antenna."*
>
> and;
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> *"The RF antennas that wirelessly transmit the consumer's electrical power usage data to the utility company use frequencies in the 900 MHz & 2,400 MHz range. These emissions are intense and can occur often, up to 190,000 times a day. From my experience and testing done by others, these meters transmit more times than the electric companies report. This can easily be shown by measuring the emissions with a simple RF meter."*

{Source: https://ehtrust.org/wp-content/uploads/smartmeters-supreme-court-of-pennsylvania-middle-distric.pdf }

The PUD seems to be stating that a resident will only be exposed to RF radiation 10 seconds per day and not exposed at all if the customer chooses not to transmit data i.e. a measurement of RFR at the "smart" meter will be the same as the RFR emitted by the analog meter and RFR measured in the home should be the same pre-install vs post-install. Neither of these seem to be true based on the above and based on the knowledge that these meters are wireless devices that are constantly searching for signals. I have an RF meter and have readings in every room of my house recorded at various times of the day. I fully expect that if PUD forces me to have a RF controlled meter that the amount of radiation in this house is going to drastically increase. I have taken steps to keep wireless devices and appliances that emit such radiation out of my household except for a cellular phone which I try to use sparingly keeping on airplane mode

when possible. I replaced my wireless internet with fiber and moved my sleeping area away from the side of house that has higher EMF readings, likely due to the neighbor's use of wireless devices. After taking these steps I have not had to deal with sleep disturbances, heart palpitations and tinnitus like I previously experienced.

**PUD STATEMENT #5**

**EXHIBIT entitled "Comparing radio frequency levels of meters to other common devices"** {Source: PUD Advance Metering Safety Fact Sheet}

This exhibit shows exposure to the "smart" meter at ten (10) feet and based on transmitting 10 seconds a day at 4 microwatts/cm2. The ten (10) seconds per day seems to be controversial based on testimony above and common sense based on that the meter is a wireless device. What the exhibit does not show is the levels of RFR emitted from the meter as a wireless device that must communicate and search for signals 24/7.

Secondly, the source for this exhibit was a case study of one smart meter model presumably conducted by EPRI which has industry interests. The link provided is for authorized access only so context was not available. There is nothing in this fact sheet that explains the 10-foot rule which seems arbitrary and not realistic when it comes to homes like mine where it would be impossible to be ten feet away from the meter given my small footprint and proximity to neighbor's meter. PUD needs to provide/answer the following:

- Provide factual real-time data on how much radiation both a "non-communicating" opt-out meter as well as a "communicating" meter will emit 24/7 at a distance less than 10 feet.
- Is there more than one antenna in each meter (presumably one antennae will be turned off if "opt-out"?
- Do the meters put dirty electricity or 'excess voltage' on the wiring throughout the residence?
- Will radiation within the residence increase as a result of the meter installation?
- How will the non-communicating and communicating meters fit into the 5G Internet of Things (IoT)?

**PEOPLE'S TESTIMONIES AND SURVEYS**

The EMF Safety Network states:

*"All around the world people are reporting wireless is affecting their health. In nearly every community where wireless smart meters have been installed, a percentage of residents complain of health effects that started after installation."*

The EMF Safety Network collected and posted hundreds of people's testimonies of how their health has been impacted following installation of a smart meter. Symptoms include the following:

- Sleep problems (insomnia, difficulty falling asleep, night waking, nightmares)
- Stress, agitation, anxiety, irritability
- Headaches, sharp pain, or pressure in the head
- Ringing in the ears, ear pain, high pitched ringing
- Concentration, memory or learning problems
- Fatigue, muscle, or physical weakness
- Disorientation, dizziness, or balance problems
- Eye problems, including eye pain, pressure in the eyes,
- Cardiac symptoms, heart palpitations, heart arrhythmias, chest pain
- Leg cramps, or neuropathy
- Arthritis, body pain, sharp, stabbing pains
- Nausea, flu-like symptoms
- Sinus problems, nose bleeds
- Respiratory problems, cough, asthma
- Skin rashes, facial flushing
- Urinary problems
- Endocrine disorders, thyroid problems, diabetes
- High blood pressure
- Changes in menstrual cycle
- Hyperactivity or changes in children's behavior
- Seizures
- Recurrence of cancer

The testimonies can be found http://emfsafetynetwork.org/smart-meters/smart-meter-health-complaints/

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In 2012 a survey designed to discover if the health effects/symptoms that persons have been attributing to smart meter exposures were caused by those exposures or not was designed/ written by Richard Conrad, Ph.D and Ed Friedman. The number of completed surveys received and used for analysis was 210 with approximately 75 % of respondents from the US, and the rest from Canada and Australia.

The report states:

> *"…. Before smart meters, 23.3 % (calc. from Q2a) of the 210 respondents considered themselves to 1 have ES (Electrical Sensitivity). Now, after smart meters, 67.6 % (Q32) of the 210 respondents consider themselves to have ES. Note that the majority of these (62.7 %, calc. from Q32a) feel certain that their exposure to smart meters was*

*responsible for initiating their ES. Of the 49 persons who already considered themselves to have ES before SM, all 49 (100 %) felt that their exposure to SM made their ES not only worse, but "much worse" ..."*

Appendix 6 (pdf pg. 66) of the report provides brief testimonials about the impacts smart meters have had on lives of the people who responded to the survey.

The Smart Meter Health Effects Survey: Results, Analysis and Report can be found in its entirety at http://www.mainecoalitiontostopsmartmeters.org/wp-content/uploads/2013/01/Exhibit-10-Smart-Meter-Health-Effects-Report-Survey2.pdf

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A survey in 2011 was designed by the EMF Safety Network with the following objectives:

- To investigate reported public health and safety complaints about wireless utility meters.
- To evaluate the impacts on health and safety due to wireless utility meters.
- To determine whether further study is warranted.

A "Final Results Summary" was prepared by Ed Halteman, Ph.D., Consultant and can be found at https://emfsafetynetwork.org/wp-content/uploads/2011/09/wireless-utility-meter-safety-impacts-survey-results-final.pdf .

- Out of approximately 430 responses, 91% reported that they were very concerned about the health and environmental impacts (p.19 of 35).
- Out of approximately 430 responses, 48.7% indicated that they have electromagnetic frequency sensitivity (p.11 of 35).
- Out of 318 responses to the survey question *"Have you, or anyone in your household, experienced new or worsened health symptoms since the new wireless utility meters have been installed on your home, in your neighborhood, apartment building, area, town or city?"* 25% to 50% responded yes to symptoms including 1) Sleep problems (49.1%); 2) Stress, anxiety, irritability (43.1%); 3) Headaches (40.9%); 4) Ringing in the ears (38.1%) 5) Concentration, learning or memory problems (34.6%); 6) Fatigue, muscle or physical weakness (34.3%); 7) Disorientation, dizziness or balance problems (33%); 8) Eye problems including eye pain, pressure in the eyes (25.8%) 9) Cardiac symptoms, heart palpitations, heart arrythmias (25.8%); 10) Other (i.e. conditions not listed in the survey) (30.5%) with reports of eight other symptoms (p.22 of 35).

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In 2014, Dr. Federica Lamech, an accomplished medical practitioner in Melbourne, Victoria, Australia published a case series study entitled "Self-Reporting of Symptom Development from Exposure to Wireless Smart Meters in Victoria, Australia: A Case Series". The study included 92

residents of Victoria, Australia where in 2006, the government in the state of Victoria, Australia, mandated the rollout of smart meters in Victoria. The results of the study are as follows:

Symptoms reported after exposure to smart meters were (1) Insomnia, sleep disturbance, or sleep disruption (48%), (2) Headaches, head pain, or dull head (45%), (3) Tinnitus, ringing or buzzing/noises in ears (33%), (4) Lethargy, tiredness, fatigue, exhaustion, or weakness (32%), (5) Cognitive disturbance, inability to concentrate or think, disorientation, or memory loss (30%), (6) Abnormal sensations, including nerve pain, neuropathy, burning sensations, tremors,... (22%), (7) Dizziness/loss of balance (21%), and 8) Heart palpitations (17%).

**The study concluded that "the effects of these symptoms on people's lives were significant."**

{Sources: http://www.ncbi.nlm.nih.gov/pubmed/25478801
https://emfsafetynetwork.org/wp-content/uploads/2010/08/symptoms-after-exposure-to-smart-meter-radiation.pdf}

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The last testimony provided herein is in the form of a letter written by Olga Sheean a former employee of the World Health Organization in Geneva. At the time of her letter, Ms. Sheean was a resident of Vancouver, British Columbia and was suffering from electromagnetic sensitivity. Ms. Sheean wrote the letter to Mayor Gregor Robertson, about electromagnetic hypersensitivity (EHS) and the dangers of WiFi proliferation and provides several myths vs. fact comparisons. Ms. Sheean states the following regarding those living with EMS:

> *"Those with EHS are the unwelcome biological indicators of just how unhealthy and unsustainable our radiation-riddled lives have become. T here's a reason that those with EHS go largely unheard, beyond the fact that most are too incapacitated or depleted to fight the status quo. We're the 'canaries in the coal mine'—the harbingers of what's to come—and nobody wants to be bothered by facts that would burst their electronic bubble."*

She quotes Dr Robert O. Becker, MD and scientist, twice nominated for the Nobel Prize:

> *"...the greatest polluting element in the Earth's environment is the proliferation of electromagnetic fields...." [EMFs]*

{Source: https://olgasheean.com/no-safe-place/ }

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**CONCLUSION**

It is not lost on me that writing this letter is likely a labor of futility as courts are rushing to do Big Tech's bidding supporting this technology as lobbyists and pocketbooks are not in short supply. It is beyond me how any intelligent caring human can dismiss this concern given the abundance of worldwide expert and personal testimonies. The only answer is greed and corruption without an inkling of caring about fellow human suffering or planet demise. When

one has been informed, one must do the right thing. PUD cannot claim ignorance regarding harms from radio frequency radiation. The evidence is overwhelming!

I am asking that PUD be a beacon of reason on this issue and to not just follow the errors of the industry and influenced courts and run with the "safe" narrative when clearly that is NOT the case. Big Tech is not concerned about the welfare of the public or environment, only profits. I would hope PUD and those making decisions on the public's behalf would be different. The unknowing or unwilling public should not be subjects of a long-term experiment, nor should those with EMS suffer in the short term. Please recall the history of the tobacco industry where even doctors would say "no problem here, smoke a pack its good for you". We also have not learned from Rachel Carson's Book "Silent Spring" regarding toxic chemicals as we continue to swim in a toxic soup with a delusion of better living through chemicals. We must do better. This country has the highest chronic disease burden on earth while spending more than any other nation per capita on healthcare. Please do not add to the burden of assaults on our health or on the surrounding environment and all who live there with unwanted radiation.

I am asking the following:

- Where there is risk there must be choice; PUD should recognize electromagnetic sensitivity and harmful health effects and allow customer's the right to keep the analog meter.

- If the intent of PUD's factsheet was to properly inform the public, then it should be corrected to include all the facts not just cherry-picked information that supports the PUD's agenda.

- PUD should make a statement as to why they should be able to follow FCC standards from 1996 given the recent ruling against the FCC; and given the explosive deployment of devices emitting RFR and why PUD can ignore the cumulative effect.

Thank you for your time and attention to this matter.

Sincerely,

Logan Daniels

Logan Daniels, Professional Civil Engineer
Snohomish PUD Customer since 2001
425-521-0963

Email copy:
Rebecca Wolfe, President, Commissioner District 2
Sidney Logan, Vice President, Commissioner District 1
Tanya Olsen, Secretary, Commissioner District 3