

BEFORE THE ARIZONA CORPORATION COMMISSION

COMMISSIONERS

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Docket No. E-00000C-11-0328
(Smart Meters)

Comments on Smart Meters/Advanced Metering Infrastructure

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1. Introduction

Utilities in Arizona are making major investments in so-called “smart” electrical meters.

It is essential that the unintended consequences be considered for this major infrastructure investment. It must be ensured that it is done fairly and without causing harm.

The technology decisions of today will affect the entire service areas for at least the expected lifetime of the equipment, which is about twenty years.

It is imperative that good choices are made now. Mistakes can be very costly, both in terms of possible human effects and if the equipment has to be phased out

prematurely. Benign technologies are available and the utilities should avail themselves of them.

II. Involuntary exposure

A central issue is that the population is involuntarily exposed to the wireless radiation and dirty electricity (transients) from the smart meters.

Many people currently choose to use similar technologies, such as cell phones and wireless home networks, but there are also some people who do not use them — some because they are directly affected by them, others by simple prudent avoidance. As more information becomes available about the effects of these technologies, more people may choose to limit their exposures.

Since exposure to these meters at home, at work, while in school or at the grocery store is involuntary, the requirements for safety must be higher than for consumer products which people have the choice to use or not.

III. Health issues

There is a mounting body of evidence that there are health effects from long-term exposures to low-powered wireless devices and “dirty electricity” on household wiring.

The Federal Communications Commission has radiation limits, but they are only based on thermal effects, which is an outdated model. Several studies have shown that there are biological effects at much lower power densities (see Appendix A).

Research is ongoing, but the effects may include:

- general symptoms, such as headaches, restlessness and anxieties
- leakage of the blood-brain barrier in lab animals
- male infertility
- brain cancer
- electromagnetic hypersensitivity
- DNA damage
- leukemia

The World Health Organization this year announced that it now considers cell phones a “possible carcinogen”. Also this year, the Italian Supreme Court ruled that the Vatican radio station has caused leukemia in people living within seven miles of the transmitters.

We should learn from the past and avoid the mistakes of asbestos, leaded gasoline and cigarettes, which were once officially considered safe — even long after much research showed it to be otherwise.

IV. Vulnerable populations

Some segments of the Arizona population may be particularly vulnerable to the impact of smart meters:

- children
- the elderly
- people of low income
- people with electromagnetic hypersensitivity
- people with certain other disabilities

Children are particularly vulnerable to radiation, as their cells are rapidly dividing as part of their growth process. Their skulls are also thinner and thus less protective of the developing brain.

Childhood leukemia was virtually unheard of a few decades ago, but no longer. This may be caused by the ever-increasing levels of electrosmog.

If an infant's crib is placed on the other side of a wall with a smart meter, the infant could receive a significant dose of radiation. It may be problematic even if the infant is placed elsewhere in the room.

People of low income often live in apartments and may not have the ability to identify and mitigate the effects of smart meters, if they become a problem.

Some apartments are located very close to electrical meters, possibly even a large bank of them. Apartment dwellers may receive the highest doses due to close-by meters, and their neighbors' use of various wireless electronics. At the same time, people of low income will have few options to distance themselves, including affording a detached home.

The most directly impacted group of people are those with electromagnetic hypersensitivity ("EHS") (see Appendix A). Some of them have had to escape the electrosmog of the cities, sometimes building specially designed houses in the country. However, some remain trapped in the cities, unable to afford a better living situation.

The state of Arizona funded a housing project for low-income people with this type of disability. The facility was specially designed and placed in a rural area near Snowflake. It was opened in 2008.

V. Safer technologies

There are technologies available today that are safer than those commonly used by utility companies. Additional technologies can be developed, if the vendors see a demand for such products. See Appendix B for an overview.

A central point is how often APS needs to receive data from each meter, both now and in the future. Less frequent communication makes benign technologies more feasible. All the stated goals of the APS can be met with communication once a day or even less. However, APS may wish to obtain much more detailed information for other purposes, such as marketing.

There is also a need to make the public health a part of the technology decisions now, instead of later mitigation which may not be satisfactory.

VI. Opt-out policies

An opt-out policy is necessary. If APS chooses safer technologies, there will be less use of the opt-out, but it will still be needed.

A two-tier policy is suggested:

- Tier 1: for general objectors
- Tier 2: for people with health conditions, who can provide a doctor's letter

The specific policy will depend on the default technology selected.

The Tier 2 policy must be particularly flexible, as the situations can be complex. The solution can be difficult where there are close neighbors, for instance.

Using a non-communicating mechanical meter must be one of the options available. In Sweden, a country of 8 million people, about 800-900 people had to be accommodated by keeping their old meter. They self-read their meters and mail it on a postcard monthly, which rural ratepayers in the U.S. have done for many decades.

Other options may work as well. The experiences from Sweden show that when the utilities showed open-minded ingenuity, solutions were usually found.

A Tier 2 accommodation may need to include the neighbors, if close by. In areas where PLC communication is used, it may not be possible to accommodate, thus PLC technology should not be used.

Relocation of the person must be the last resort. So is removing the home from the grid, which is much more complex than it seems, as today's standard off-grid technologies are unlikely to be usable (contact author for details).

VII. Recommendations

- Disallow any form of powerline/power carrier communication (PLC) except where contained within a consenting household. The PLC signals must not be entering other homes, nor the distribution system.
- Direct APS to use the most benign technologies, as outlined in the attached document.
- Direct APS to develop a two-tiered opt-out program:
 - Tier 1 – for people who object
 - Tier 2 – for people with a documented health need
- The opt-out program should not extract any punitive cost from the rate payer. The cost must be minimal for qualifying low-income ratepayers.
- The opt-out program must include people who rent houses or apartments.
- The opt-out program must include when moving to a new location that already has a smart meter installed.
- The Tier 2 opt-out program must be flexible with a range of options, including using a non-communicating mechanical meter.

VIII. About the author

Steen Hviid holds two engineering degrees, including an MS in computer engineering. He lives in northern Arizona in a solar powered house of his own design.

Respectfully submitted,

Steen Hviid

Appendix A: References

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