Members of the Commission: March 6, 2012

My name is Charles Battig. I am a resident of Albemarle County, Virginia, and am a retired, post-graduate electrical engineer and licensed physician. Today, I am testifying before you in the matter of CASE NO. PUE-2011-00093.

My testimony is on behalf of myself and others who depend upon the Commission to exercise its discretionary powers in the protection of the consumers of electric power. No organization or other group is funding my appearance here. My verbal testimony today is in addition to the formal, written submission to your official website of February 27, 2012. I was able to be excused from my prior commitment to serve today as an official election board officer in Albemarle County.

In the quest to minimize the need to build additional electrical generating capacity, and to fulfill certain arbitrary legislative mandates to reduce electric energy consumption by consumers, the concept of "demand side management" has been promoted. I support voluntary efforts of consumers towards that end objective. However, the Commission and Dominion Virginia Power promote involuntary "demand side management." In practice, this inverts the traditional role of the power utility serving the needs of the customer with the customer being in the service of the utility. Selective power rationing, either by manipulating the kWh charge throughout the day, or by curtailing power at the convenience of the utility, is one such mechanism.

In order to implement control of its customers, Dominion Virginia Power has been granted the use of Advanced Metering Infrastructure (AMI) in three test areas in Virginia. I live in one of those areas. These AMI devices are more commonly known as "smart meters" by the lay public, and are often promoted as a means for consumers to save on their electric bills. If the end result is that customers are charged more for using less energy under "rate-decoupling" mechanisms, their saving on electric bills will be when they can no longer afford to use the electricity. "Enhanced-rates-of-return" for renewable energy schemes and a requested 12.5 per cent rate of return on equity by Dominion Virginia Power do not sound like cost saving measures benefiting the average electric power consumer.

Smart meters rely upon the transmission of radio frequency signals from the customer's meter to the utility. They are able to transmit not only the quantity of electric energy consumed, but also the private patterns of usage on a moment-to-moment basis, twenty four hours a day, every day of the week. In the three test areas selected by Dominion Virginia Power, no prior consumer consent for the mandatory installation of smart meters was requested, nor was it required by this Commission.

A Charlottesville couple in their 80s contacted me recently with their concerns. They have a bank of over a dozen of these meters next to their apartment wall. Theirs and other consumer complaints related to smart meters all have in common the issues of health concerns secondary to radio-frequency radiation exposure, and of unauthorized invasion of privacy.

In response to my written concerns to the State Corporation Commission regarding privacy and health issues, I received a reply dated December 19, 2011 from K. B. Gravely, SCC Senior Utilities Analyst. The reply included the statement that "the Commission did not require provisions…allowing customers to opt-out of the AMI pilot." The letter further noted that "in response to previous inquiries of this nature…the Company (Dominion) was not aware of any conclusive and convincing evidence that advanced metering is causally associated with an increased incidence of detrimental health effects in humans."

Was the Commission itself not aware of the report by SAGE Associates, Santa Barbara, CA? This commercial, environmental consulting firm issued the January 1, 2011 report, *"Assessment of RF Microwave Radiation Emissions for Smart Meters."* In 100 pages, it details the health and biological risks, and in particular, the concerns of cellular and genetic damage secondary to smart meter radiation.

Was the Commission not aware of the October 12, 2010 official report by Dr. Magda Havas? It was made to the California Council on Science and Technology in response to its request to assess whether Federal Communication Commission (FCC) standards for smart meters are

protective of public health? His technical report finds that the standards are not sufficient to do so. These older FCC standards are based on the simple "thermal" effects of r-f radiation; other counties now recognize a more sensitive "biological" definition instead, and focus on metabolic, hormonal, and genomic damage. Guidelines for such r-f radiation in other countries are one-hundred times lower than the U.S. standards, according to his report.

As a captive consumer relying upon the Commission to protect me, I find it astounding that the Commission relies upon the assurances of the utility being regulated for determinations of what technology might be safe or not for its customers. Is the Commission and/or Dominion Virginia Power warranting the health safety of these meters for all consumers, regardless of age, pre-existing medical conditions, radio-frequency exposure patterns, pregnancy, immune status, presence of medical implants…metal or electrical, the clustering of meters in multifamily dwellings, meter proximity to bedrooms or nursery, and long-term, cumulative effects of constant r-f exposure ?

Smart meter r-f radiation is of a pulsed nature, corresponding to appliance on-off cycling. These high energy spikes are thought to be much more biologically harmful than the lower, average-power levels quoted in the basic meter specification.

Does the Dominion Virginia smart meter system utilize certain customers' meters to serve as local data aggregation points for surrounding homes? Such a system exposes the unsuspecting occupants to the higher r-f radiation exposure resulting from bundling data from multiple smart meters. In the latter case, a half watt or so of r-f is multiplied by the dozen or more meters. This same higher risk occurs in multi-family apartment buildings with banks of r-f emitting meters on the wall next to tenants.

The term "electro-hypersensitivity" has been applied to the syndrome of complaints by susceptible individuals of headaches, mental impairment, skin rashes, fatigue, sleeplessness, and irritability. These are highly subjective complaints, but to the 1-2% of the population so afflicted, they

are quite real, and are related by such individuals to smart meter installation.

The American Academy of Environmental Medicine presented formal testimony to the California Public Utility Commission dated January 19, 2012 in which it documented detrimental health effects from smart meter r-f radiation. The Academy called for "an immediate moratorium on their use until further study can be performed." They stated that the "emissions given off by 'smart meters' have been classified by the World Health Organization for Research on Cancer as a *Possible Human Carcinogen*."

Invasion of privacy concerns relate to the ability of smart meters to record and transmit the unique signature of an individual customer's electrical usage, moment-to-moment. Once these data are radio signals, they are susceptible to third-party interception. Such patterns can be used to decide if occupants are at home, if there are guests, and how many, what types of electrical devices home occupants use, and how often. Provider reassurances of encryption of these data, and of protection from other unauthorized commercial exploitation are unsatisfactory. The real world of hacking today proves otherwise. Newspapers report the successful hacking of components of the U.S. power grid, of U.S. Federal Agencies, and of private business such as Nortel.

There is a strong argument to be made that a smart power grid will be even less secure than a less digital dependant one. The issue of cyber-security is now widely recognized at the Federal level. Hacking groups such as *Anonymous* have been frighteningly successful in their cyber attacks. The modern terrorist now needs only a computer, not explosives, to cause significant damage to the power grid. The smart meter becomes the weakest link in the digital control system of vital electric power.

A recent lawsuit filed in California against Pacific Gas and Electric (PG&E) over smart meters, has resulted in the California Public Utilities Commission being asked to allow an opt-out provision for customers who wish to return to traditional analog meters. PG&E had installed smart

meters in over 8 million homes, but now wishes to allow its customers to opt-out. If PG&E can operate its electrical power system with a mix of smart meters and traditional analog meters, Dominion Virginia Power can do the same.

I respectfully request that the Commission re-consider the negative impacts of the AMI and Demand-Side Management programs upon the ordinary consumer of electric power, and respect the health and privacy concerns of those citizens. The financial benefits appear to accrue primarily to the power company, and the risks, negative impacts, and additional costs to the average consumer. In addition, concerned customers deserve to be offered an opt-out provision from mandatory smart metering.

Thank you,

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