

CPS unjustified monthly bill increases are yet another example of electric utility cost escalations that have occurred all across the USA after smart meters have been installed. The reason this occurs has a simple answer with underlying technical complexity.

The short answer is smart meters are capable of measuring very discrete components of alternating current usage in ways that a traditional analog meter never could. This immediately translates into new revenue streams for the utility. The technology that implements this new capability is the smart meter's microprocessor with its associated sensors and memory chips. In contrast, analog meters weren't much more than a small electric motor that turned recording dials through a mechanical gear train.

Higher electric bills pull back the veil of weak, warm, and fuzzy promotional reasons for smart meter installation promoted by CPS. It exposes the truth behind Nazi storm trooper techniques used to force these instruments of profit on homes and businesses. Money coupled with hidden agendas to reduce consumption of electricity are the primary objectives of the \$290 million dollar project facilitating the master profit plan CPS will use to achieve rapid Return On Investment. CPS should have the Public's best interest at heart as an operational tenant rather than profit. It is a grim testimonial that a so-called Public Utility is participating in such a deceitful program. Recall that approximately 14% of CPS profits go to the city representing 40% of the S.A. general fund.

What Is a Public Utility?

Public utilities provide essentials to the public such as running water, electricity, sewage and natural gas. Although, they can be publicly owned, often they are privately owned companies such as AT&T, which provides telephone and cable services.

Public utilities usually monopolize the service they provide, but they are also regulated by federal, state and local governments. There are also community based non-profits that exclusively monitor the companies to ensure they are operating fairly and properly.

What Are the Public Utilities' Duties?

Public Utilities corporations' main purpose is to provide a public service. Although, privately owned utility corporations have the same purpose, they are subject to fairly strict rules that apply to corporations or companies engaged in public service.

Additionally, they are subject to any liability caused by their negligence. An example would be an electric company failing to regularly inspect, maintain and insulate wires, as well as failing to quickly fix any exposed wires.

Other duties that both private and publically owned Public Utilities owe to the people they serve include:

- Duty to serve: Utilities are obliged to provide service on reasonable terms to anyone who lives within the service area.
- Safe and adequate service: Utilities have the duty to provide safe and adequate service to all their customers.
- Not to discriminate: Utilities are not allowed to discriminate between customers - every customer is entitled to service on equal terms.
- Charge "just and reasonable" prices: Utilities must charge just and reasonable prices to their customers.
- Good faith and fair dealing: When providing service to their customers, utilities must act in good faith, and deal with their customers in a fair manner.

With respect to "just and reasonable" or "good faith and fair dealing" above, how does CPS business practice rate with those duties to the public? Issuance of higher electric bills after smart meters are installed runs counter to both.

When higher bills are issued, determine if the account holder's CPS statement shows an increase in the per kilowatt hour rate. This will appear in the bill line item charge detail. The best guess is that per kilowatt hour rate with a smart meter will be the SAME as before when the analog meter was present on the building.

For example: \$0.011 KWh with analog, now - \$0.011 KWh with smart meter. So how can the bill be larger for an equivalent number of kilowatt hours at the same rate tariff?

The answer to higher bills is the smart meter internal microprocessor calculates electricity use at the same KWh rate but it is measuring electricity using much more detailed, fine granular components of alternating current and voltage with very accurate sensors. Most people don't understand the technology contained in a smart meter, or how electricity is measured, or the mathematical calculations occurring every second that result in higher bills.

This is how CPS is hiding behind smart meters while they vastly increase potential profits from each account holder. CPS does not have to fight the political and public battles that would ordinarily be necessary to authorize per KWh rate increases throughout its service area. Installation of smart meters has the same effect as a rate increase for CPS since customers are confronted with higher bills.

In order to get at the underlying facts, it is impossible to avoid a technical discussion because the change in metering strategy by CPS has its roots in computer technology. With both old analog and new meter types, voltage (V) and current (A) are used in a time-based formula ($V \times A = \text{Power in Watts} \times 1,000 \times \text{Hours}$) to derive KWh but there are several technical nuances to how the various sub-components of an alternating current waveform are measured and calculated by the microprocessor in new microprocessor based meter technology. Results of the formula are stored in the smart meter memory chip to be sent over the Silver Spring network to the CPS main office for further statement processing.

Example detail sub-component terms are Meter Multiplier, Power Factor, Demand Ratchet, Inrush Current, and Harmonic Distortion. These examples are not exhaustive. CPS can program all these plus others factors into the meter's Flash Memory for routine measurement every second. The flash memory chip is the control device that provides program instructions to the microprocessor. Flash Memory with its program "firmware" is the software intelligence that operates a smart meter. CPS can change the firmware program without a field visit. Look at a smart meter specification sheet and you will find a term called "Over The Air Flashable Firmware." This translates into capability for CPS to alter the measurement program in each meter selectively without customer knowledge.

Using "Inrush Current" as an example, here's how the two meter types differ. Inrush current is defined as a real measured sub-component of electricity occurring when an appliance or light is turned on. An instantaneous surge of electricity flows into the appliance in an effort to start the device as it attains full power operation. This requires additional watts that exceed the normal running wattage of the device. It is somewhat analogous to pushing an object to start it moving as at rest momentum is overcome.

Voltage times Current (in Amperes) = Watts. Since the wall outlet voltage remains constant at around 120 volts, current in

the formula is the variable. Household fractional horsepower electric motors typically have relatively high inrush current when they are first started. Using a washing machine just starting its spin cycle as an illustration, the one half horsepower motor (373 Watts) can use one full horsepower (746 Watts) to get a heavy load of wet cloths up to spin speed. This easily creates one horsepower of starting inrush current (6.22 amperes) recorded at the meter as 746 Watts for a few seconds then it levels back down to the rated 373 watts for the remainder of the spin cycle.

An analog meter measures this inrush current but the meter's rotating disc is somewhat sluggish due to the magnetic field applied that causes rotation, so its response to the additional wattage is not instantaneous. Scientists and engineers term this as "Magnetic Hysteresis." Current flow along with wattage recording tend to average out over time as the washing machine continues to operate. There was no free electricity, however in this situation.

Microprocessor based meters such as Smart Meters, OMR, or Digital Meters instantaneously and repeatedly sense, measure, and record the inrush current every thousandth of a second. Multiple instantaneous readings are accumulated and calculated as high wattage use over the same spin cycle time period resulting in higher billing. It is the ability of the microprocessor, with its connected sensors, to measure and calculate instantaneous wattage that leads to this occurrence of higher bills. Using the illustration, the primary difference between the two meter types is the sampling interval (often termed Sampling Rate). E.g., relatively slow with analogs, very fast with microprocessor based meters.

Several other examples accounting for higher bills could be provided but the key take-away is that microprocessor based measurement facilitates revolutionary new opportunities for electric utilities to maximize profits as they pretend that per kilowatt hour rates have not increased when in reality, for practical purposes they have. The proof of this assertion is evidenced by higher monthly charges for comparable KWh when an analog meter was previously used on the same building.

As a public utility that should be operating under the spirit of transparency with full disclosure, CPS must be forced to openly publish the functional content of smart meter Flash Memory Programming as it relates to calculation of electricity costs to customers. Publication does not imply release of proprietary meter

manufacturer's source code. All microprocessor based meters now adhere to American National Standards Institute (ANSI) design criteria and communication protocols. At minimum, what customers should be able to discern are lists of individual data elements being measured by meter firmware along with the mathematical, time-based formula used to calculate electricity for billing purposes.

Transparent publication should include any and all meter firmware functional changes affecting various tariffs as the years go by. In essence smart meters, OMR meters or Digital Meters all contain generally similar microprocessors chips carrying out metering functions. Deployment of any of these microprocessor based meter types has the same result as a rate change that has circumvented normal rate approval review. Moreover, the process of political/public approval for microprocessor meter firmware changes should follow established rules identical to those pertaining to any rate increase proposal. (Note: Within the syntax of meter internal circuitry definitions, the term Microprocessor shall be synonymous with Digital Signal Processing (DSP) chips and Field Programmable Gate Array (FPGA) chips.

It is predicted that higher electricity bills under the CPS smart meter program will be unfavorable for citizens as CPS profits substantially increase San Antonio City general fund revenue. Strong political action is required to halt CPS tyranny implemented through microprocessor based electricity metering.