

# INFORMATION ON NEW PUD POWER METERS

Due date: October 24, 2017

Account: Jefferson County Public Utility Dist.

<b>1. Some articles suggest that smart meters can be wildly inaccurate. What is the evidence supporting the statement that smart meters are more accurate than analog?</b>
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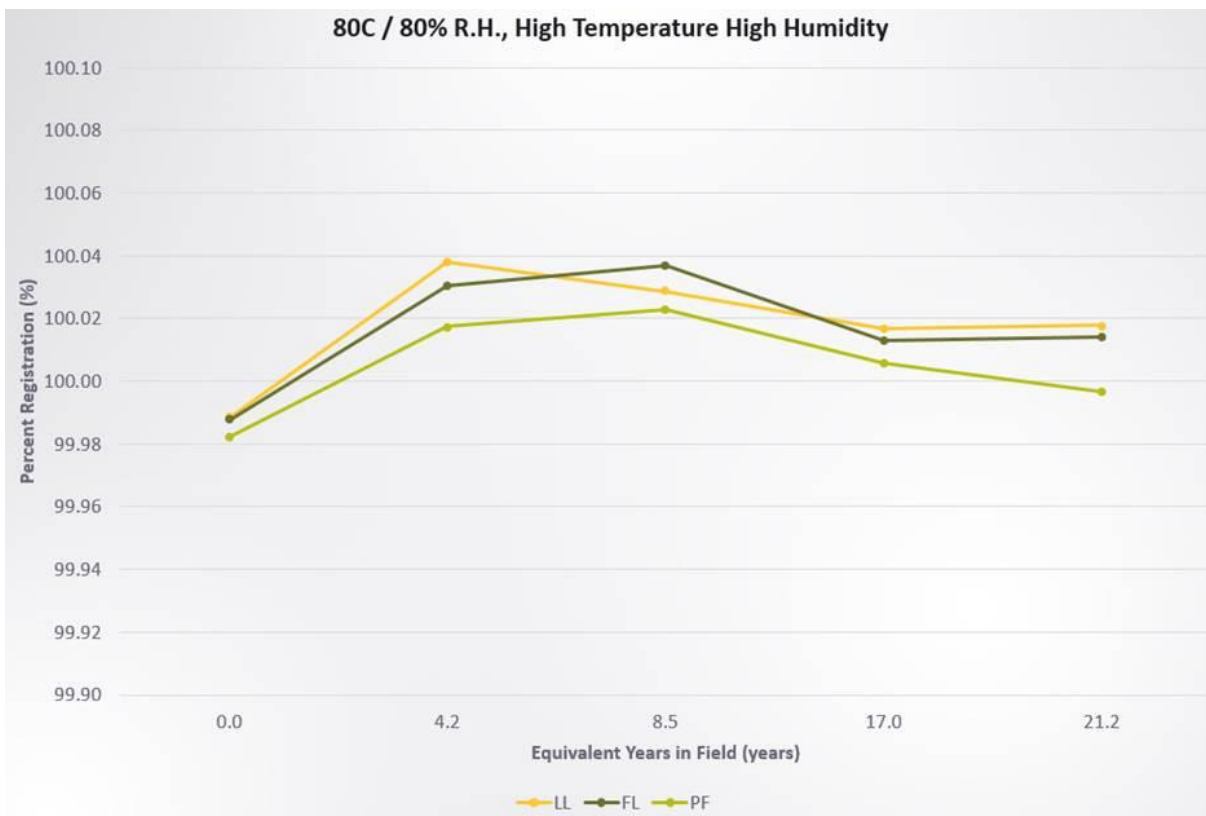
Response:

The evolution of solid state metering has increased meter stability and accuracy capabilities significantly over the conventional electromechanical watt-hour meter. Utility and industry data have shown that the electromechanical meter accuracy can decrease over the life of the product, whereas solid state meter load curve accuracy is more stable throughout the meter life cycle. Solid state metering technology is also more accurate when measuring low-load conditions. Solid state meter accuracy has been confirmed through multiple, independent, third-party studies.

The OpenWay Riva CENTRON meters are calibrated in the factory at the time they are manufactured. And by design, class accuracy of the meters is maintained throughout the life of the solid state meter. Itron validates accuracy for the life of the meter through Accelerated Life Testing (ALT). The goal of this Accelerated Life Test program is to assess whether the product meets the required 20 year lifetime. ALT testing consists of running the following tests:

- **High Temperature** – This test is a constant temperature of 90°C.
- The meters are powered with the appropriate voltage (120 or 240 VAC) and current (typically 10A).
- **Temperature Cycling** – This test condition involves varying the temperature from -40°C to +85°C at a rate of 5 cycles per day. The meters are powered with the appropriate voltage and current.
- **High Temperature High Humidity (“80/80”)** – For this test, the conditions are 80°C and 80% relative humidity for the duration of the test. The meters are powered with the appropriate voltage and current.
- **Meter Farm** – A large number of meters are operated outside, powered with the appropriate voltage, and exposed to the elements. This represents “real-world” field operation.
- **Highly Accelerated Life Test (“HALT”)** – The test employs temperature extremes up to -100°C and +200°C, rapid thermal cycles at 60°C/minute, vibration up to 50 Grms, and a combination of these conditions.

Accuracy is validated at each read point of the High Temperature, Temperature Cycling and High Temperature High Humidity tests. Meter accuracy must remain within specification at each read point.



### ALT Test Results

You may also refer to the document links below for more information about the results of our Accelerated Life Tests – for the single phase and polyphase meters. Simply double click on the link.



Accelerated Life  
Test Report - OpenV



Accelerated Life  
Test Report - OpenV

## 2. How secure is the PUD system from being hacked?

### Response:

First and most importantly, it's important to know that no personal identifiable information (PII) ever transits the network – just meter number, consumption information, and alerts such as outage notifications. All messages between the endpoints and PUD's OpenWay headend (OWOC) will be encrypted to protect confidentiality (text deleted). In addition, command and control messages are encrypted and digitally signed with a (text deleted) asymmetric ECC key to protect integrity of control, preventing the meter from being spoofed by a system posing as OWOC. The local Wi-Fi interface is protected with a WPA2-AES-128 key. The WPA2-AES-128 key is different for each meter. A hacker attempting to access the system through a meter using the Wi-Fi local radio would not be able to affect the network beyond that meter. Systems upstream of the meter utilize strong encryption and individual account credentials to prevent the transmission of unauthorized data. Web services are only exposed internally and thus are expected to be in an environment in which denial of service attacks will not occur.

The security framework authenticates an access request from a web services call through the use of tokens. If the system hosting the web services can send an authentication token compatible with Microsoft's WCF Web Services framework (i.e., WS-Security Policy, WS-Trust WS-Federation and token profiles (Kerberos, SAML)), the headend can authenticate that user.

With our Distributed apps that run on the meter, the apps are isolated in containers, and we tightly control what apps can do – through a limited set of Application protocol interfaces (APIs).

Additionally, we have partnered with a range of Cyber security experts including IOactive, RSA Security, Thales and others, to design, develop, and test our systems. Itron also leverages the security investments of key partners such as Cisco and Microsoft, who spend billions of dollar each year on security.

<b>3. The movie “Take Back Your Power” explicitly states that smart meters are a fire hazard? Is there any way that this could be possible</b>
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Response:

Meter failures can occur for a variety of reasons. Smart meters do not cause fires. In very rare instances, the improper installation of a meter or the condition of the meter socket, can impact the proper operation of a meter. There is also something called Hot Sockets. Hot Sockets are the result of poor connections that cause an increase in resistance at the connection point. An increase in resistance creates an elevated temperature that can result in damage. Several sources can cause hot socket conditions, but the most prevalent are:

- Environmental contaminants or corrosion of the socket jaws due to flooding or abnormal water intrusion
- Loose socket jaw tension in the meter box
- Loose or melted conductors in the meter box
- Faulty wiring of meter box sockets
- Vandalism
- Ground settling
- Storm damage

Detecting socket issues early is key. Visual and mechanical inspections can uncover things like, deterioration of insulation, melted conductors and proper torque of wire lugs to the socket's connection to the facility. In addition, utilities can make use of the temperature analytics capabilities provided by the meters- to more precisely identify sites that are a concern. Oftentimes, our utility customers will budget extra money for smart meter installation to do basic repair work on meter boxes and sockets as they're discovered during the deployment process, or at least alert customers to conditions on their home that are potentially dangerous and should be fixed.

Itron also employs sensing technologies in its metering products. Our OpenWay Riva CENTRON meters have a single temperature sensor built into the metrology board positioned adjacent to current coils. To monitor the temperature, the meter supports two temperature thresholds. The meter temperature is captured and stored in the meter on a daily basis and can be retrieved by the utility's upstream reading systems.

In addition to the basic temperature monitoring logic described above, OpenWay Riva CENTRON meters also have the ability to monitor high impedance conditions more accurately, using the Distributed Intelligence capabilities of the metering platform. This can be deployed to the meters in the form of a

stand-alone application and can be configured and updated through software updates- independent of the metering function or firmware.

OpenWay CENTRON meter base material is PET RYNITE FR 515 supporting a melting temperature of 489° Fahrenheit (254° Celsius). The meter base is designed to meet IEC 62052-11-Section 5.8 – Resistance to Heat and Fire requirement. Our base material is used to diminish the spread of fire and resists ignition by thermal overload of live parts in contact with the meter base. Itron uses IEC 60695-2-11 glow wire test to validate the behavior of our meter material base characteristics. During the Accelerated Life Tests, the meter base plate, switch cover, actuator, and core over mold are tested at 1760° Fahrenheit (960° Celsius) for a duration of 30 seconds- successfully meeting all criteria. The meter base and switch cover material are also UL 94 V-0 approved.



Itron\_Meters\_and\_  
ULCertification.pdf