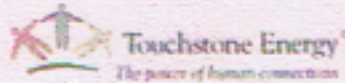


CHOCTAWHATCHEE ELECTRIC COOPERATIVE, INC. (CHELCO)



Smart Meter Investigation for Mr. [REDACTED]

Prepared by [REDACTED] E.E.
July 9, 2009

This document is provided per the request of Mr. [REDACTED] and represents the facts to the best of knowledge of the preparer. Any errors contained within are unintentional.



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Introduction

This report is provided to document the investigation into Mr. [REDACTED] concerns regarding the Smart Meter installed at his residence. Provided are the timeline, testing methodology, findings, and the conclusions of this investigation.

Timeline

July 1, 2009

[REDACTED], [REDACTED], [REDACTED], [REDACTED] and [REDACTED] visited Mr. [REDACTED]'s home after Mr. [REDACTED] called CHELCO member service's department complaining about the Smart Meter CHELCO plans to install on his home. Mr. [REDACTED] did not want the Smart Meter installed. After a lengthy discussion, Mr. [REDACTED] agreed to the installation of the Smart Meter.

July 2, 2009

CHELCO installed a Smart Meter at the home of [REDACTED]

July 5, 2009

[REDACTED] received the below emails from Mr. [REDACTED]:

On Jul 5, 2009, at 5:45 PM, Mr. [REDACTED] wrote:

[REDACTED],
It was nice to meet you the other day out at my ranch. I was a bit surprised to find out you went ahead and scheduled a smart meter to be installed on my house the day after you left. I have been monitoring the load usage on the smart meter and have already used over 900 kWh since WEDNESDAY! This is nearly DOUBLE my normal load usage. Sooooo.... I decided to do a little test to PROVE this. I waited for the meter to tick over to the next number then immediately shut off all power at the main breaker. I verified that the meter did indeed stop completely when all loads were removed. I then installed on a single isolated circuit outside at the box an 1875 watt hair dryer. I let the hair dryer run until the meter ticked over to another kWh.



That 1875 watt hair dryer should have taken 32 mins to use one kw hour.
The meter ticked over in 18 minutes!
For the 18 mins it was on it should have used no more than .5625 kWh
yet your meter registers 1 full kWh.
I have proof of this...
This is a serious issue not just for me but for everyone in the chelco electric cooperative.
I'm of the opinion that an audit needs to be done on all of these meters you've installed across 20,000 homes so far.
If you'd like to come out I'd be happy to prove this to you in person.
Best Regards,
[REDACTED]

From: [REDACTED] [mailto:[REDACTED]]
Sent: Sunday, July 05, 2009 6:34 PM
To: [REDACTED]
Subject: Re: [REDACTED] Smart Meter

[REDACTED],
Just to be sure I went and measure the actual load the hair dryer is pulling on my solar system. It was pulling 13 amps at 110v or 1430 watts. So it wasn't even pulling the full 1875 watts it's rated at...
Your new smart meter is without a doubt doubling my power usage readings.
I'm going to buy some stuff to do some further testing and recording of this data.
Give me a call Monday if you want to discuss.
Thanks,
[REDACTED]

July 6, 2009

[REDACTED] sent the below email to Mr [REDACTED]:

Hello [REDACTED].
We would like to come out and discuss your test on the meter. Would Wednesday at 10am be a good time?
Thanks,
[REDACTED]

Mr. [REDACTED] replied to the above email indicating Wednesday would be a good time to come visit him.

July 8, 2009

[REDACTED], [REDACTED] and [REDACTED] arrived at Mr. [REDACTED]'s home at 10am. We attempted to recreate the hair dryer test Mr. [REDACTED] had preformed, but the hair dryer stopped working. CHELCO used the Mega Beast to load one phase of the service. See Testing Methodology and Findings sections for more details.

At this point, [REDACTED] told Mr. [REDACTED] we need to send the meters for further testing by a third party meter testing center, and we would be back in touch. The mechanical meter was reinstalled and CHELCO personnel left the premises. [REDACTED] telephoned Mr. [REDACTED] approximately one hour later and validated the findings to Mr. [REDACTED] and his electrician.

July 9, 2009 (Summarized)

[REDACTED] and [REDACTED] accessed the Landis & Gyr focus configuration-net software program to verify all settings of the Smart Meter affixed to Mr. [REDACTED]' house at the time of testing. During this review of the meter settings, it was discovered that on one computer the CT Multiplier was programmed at "2," but should have been programmed at "1." Upon further investigation, it was determined there was a data entry error by a CHELCO employee. This programming is only required for meters to be used on a net metering installation. Only six (6) of these meters have been programmed for net metering on the entire CHELCO system. Of these six (6), only three (3) were programmed in error. All three (3) meters were immediately corrected upon this discovery.

[REDACTED] telephoned Mr. [REDACTED] at or around 11:00 a.m. CST to apologize for the error and to explain our findings on why his kWh usage was not accurate. [REDACTED] requested the opportunity to visit him again and relay this information in person and re-test. During this call [REDACTED] also explained to Mr. [REDACTED] that the meters were without a doubt functioning correctly, and that the problem was simply the CT Multiplier. Mr. [REDACTED] denied the request and followed up with emails requesting a written report of our findings and more information to include

data from internal tests and from manufacturer's validation testing. He also questioned the requirement for him to have a Smart Meter.

Testing Methodology

In order to evaluate the load at Mr. [REDACTED]' home, the determination was made to use the Mega Beast, which provides a known kW load. The industry standard formula below was used to determine the time in minutes to use 1 kWh:

$$t = \frac{1 \text{ kWh}}{\text{x kW (60)}}$$

The mega beast was connected in a manner that the meter would not register any load except the load applied by the mega beast. The mega beast applies a resistive load and we can safely assume a power factor of 1. Before the tests began, CHELCO tested for any other load on the service and found none.

Timing was conducted using a wrist watch with a second hand.

Findings

The following data was collected:

Test 1 on Smart Meter # 73817844 (Landis & Gyr type ALF)
Applying 92.5 amps at 120 volts results in a 11.1 KW load.
With this given load, it should take 5.5 minutes to use 1 kWh
Observed Time: 2 minutes to use 1 kWh

Test 2 on Smart Meter # 73817844 (Landis & Gyr type ALF)
Applying 91.6 amps at 119 volts results in a 10.9 KW load.
With this given load, it should take 5.5 minutes to use 1 kWh
Observed Time: 2 minutes to use 1 kWh

The mechanical meter was then tested.

Test 1 on mechanical meter # 80216618(Landis & Gyr MX cyclometer type mechanical)



Applying 91.4 amps at 120 volts results in a 10.9 KW load.
With this given load, it should take 5.5 minutes to use 1 kWh
Observed Time: it took 5 minutes to use 1 kWh

Test 2 on mechanical meter # 80216618(Landis & Gyr MX cyclometer type mechanical)

Applying 91.0 amps at 119 volts results in a 10.8 KW load.
With this given load, it should take 5.5 minutes to use 1 kWh
Observed Time: 5 minutes to use 1 kWh

A second Smart Meter was then tested.

Test 1 on second Smart Meter # 93394135 (Landis & Gyr type ALF)

Applying 91.0 amps at 119 volts results in a 10.8 KW load.
With this given load, it should take 5.5 minutes to use 1 kWh
Observed Time: it took 3 minutes to use 1 kWh

Test 2 on Smart Meter # 93394135 (Landis & Gyr type ALF)

Applying 90.3 amps at 119 volts results in a 10.7 KW load.
With this given load, it should take 5.6 minutes to use 1 kWh
Observed Time: it took 3 minutes to use 1 kWh

Conclusions

Based on the tests performed and a comprehensive audit of the meters programmed with the computer containing the incorrect meter multiplier, only three meters were found to contain a CT Multiplier of 2. Two of those meters were tested at Mr. [REDACTED]' home, and the third was installed elsewhere on the system. As of July 9, 2009, the CT multiplier has been corrected on all three meters. The data error has been corrected, the Smart Meters have been confirmed to record kWh correctly, the kWh usage will be correctly adjusted for this account and this negates any further action.

It is in the best interest of CHELCO's membership for every member to have a Smart Meter installed. As a result, CHELCO's standard meter is the Landis & Gyr Smart Meter, which CHELCO intends to install at each service location.

CHELCO sincerely regrets this error and the inconvenience it has caused our valued member.

Appendix : Scanned Notes

AmR Meter #	73 817 844	90
	10:22 AM	122
<u>Mega Beast Test #1</u>		
		$11.1 \text{ Kw} (x \text{ hr}) = 1 \text{ Kw} (1 \text{ hr})$
	10:25 AM start	
reg 1	92.5 A 120 V	$\rightarrow 11.1 \text{ Kw} \quad X = .09 \text{ hr}$
	10:27 AM stop	
	<u>5.5 mins should take</u>	$11.1 \text{ Kw} (x \text{ hr}) = 1 \text{ Kw} (1 \text{ hr})$
<u>Mega Beast Test #2</u>		
		$10.9 \text{ Kw} (x \text{ hr}) = 1 \text{ Kw} (1 \text{ hr})$
	10:30 AM start	
reg 2	91.6 Amp 119 V	$\rightarrow 10.9 \text{ Kw} \quad X = .09 \text{ hr}$
	10:32 AM stop	
	<u>5.5 mins should take</u>	



- Tested for load on service
- show 0 load

~~Test #1~~

Old Meter Test #1 #50 216 613

10:45 AM start
91.4 A > 10.9 KW
120 V

5.5 min should take

10:50 AM stop

Old Meter Test #2

10:47 AM start X = .09
91 AMP > 10.8 KW
119 V

5.5 min should take

10:52 AM stop

New AMR Meter # 93 394 135

11:06 AM start

91

119V

> 10.8 kW

$x/hr = .09$

5.5 min should take to use 1 kWh

11:09 AM stop

New AMR Meter # 93 394 135

leads attached directly below meter

11:25 AM start

90.3

119V

> 10.7 kW

$x/hr = .09$

5.6 min should take to use 1 kWh

11:28 AM stop

7/9/09

Frank and Scott discovered a 2 multiplier where
it should be a 1 in the FOCUS Configuration
- Met