Power quality improvement and energy efficiency
At 791 Chambers



Nazan Wolfe
Facility Manager

Power quality improvement and energy efficiency

Energy Efficiency and CO2 Reduction is very important to AMHC

After the due-diligence and performance evaluation in 2012 the management Approved the deployment of MPTS units in facilities to decrease operating costs

MPTS, maximum power transfer solutions, are next generation power quality products that **decrease the Electrical Demand, Total Electrical Power requirement or Generation(KVA) and the Carbon foot print without** replacing/retrofitting inefficient electrical and mechanical equipment.

It makes the electrical networks more efficient

Features of MPTS

- Decrease the Max current in your network
- Decrease in KVA electrical Demand
- Decrease in peak KW and electrical consumption
- Decrease in KVAR- reactive power
- Decrease in harmonics
  - THD that is damaging your electrical, electronic, computer, lighting and mechanical equipment.
- Provide stable power to the connected loads
- Increase safety and reliability of the electrical network
  - Avoids overload conditions and hot spots in panels and equipment -a function of decrease in I^2R losses, KVAr, and harmonics

Benefits of MPTS

- **Decrease** Current and KVA significantly
- Maintains stability of voltage for connected equipment
- Protects investment in expensive electrical and mechanical equipment
- **Reduce** service, repair, replacement, and maintenance costs
- **Reduce** total cost of operating mechanical and electrical equipment
- **Save** money on utility bills based on tariffs and billing practices

Minimum Values Demand Reduction Kilowatts of Power reduced	Coal Burned in Coal Power Plants in Pounds	Gallons of gasoline consumed by America	Tree seedlings that have to be grown for 10 years
MPTS – 100/480V/3P 10 KVA	39,106 Pounds 	4097 Gallons 	933 Seedlings 
MPTS – 225/480V/3P 20 KVA	78,213 Pounds	8,194 Gallons	1,867 Seedlings
MPTS – 450/480V/3P 40 KVA	156,426 Pounds	16,388 Gallons	3,734 Seedlings
MPTS – 600/480V/3P 60 KVA	234,639 Pounds	24,582 Gallons	5,601 Seedlings

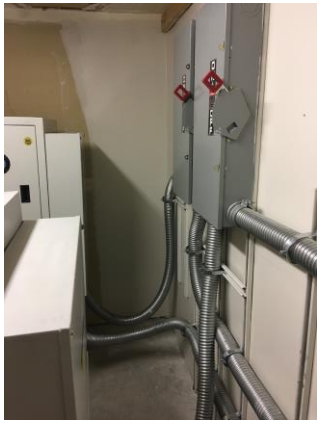
MPTS decreases demand for power generation resulting CO2 reduction

Minimum amounts of Power Generation and Carbon Emission Reduction with MPTS

Power quality improvement and energy efficiency

AMHC has installed MPTS Devices
On the HVAC systems







MPTS helps protect the building equipment
That consists of different equipment

Lighting	LED Drivers- Ballasts
Pumps	VFDs
Motors	Fans
Air Conditioners	RTUs
VAVs	Boilers
Office Equipment	Computers
Monitors	Other equipment

Energy Efficiency and CO2 Reduction is very important to our Organization

Return On Investment Calculator

Discount Rate - IRR	7.0%		Client	Healthcare Facility	
Annual Estd. cost avoidance / Savings	$29,929		Load Type	HVAC Chillers	
Electricity inflation	4.0%		Specific Panels	Mains/S.Main Panel	
Installed Cost	$50,000				

Year	Annual Savings from MPTS	Present Value @ discount rate	Internal Rate of Return at Year (n)	Net Presnt Value at year (n)	Comments
0	($50,000)	($50,000)	NA	NA	
1	$29,929	$27,971	-40.1%		
2	$31,126	$27,187	14.3%		
3	$32,371	$26,425	38.5%		
4	$33,666	$25,684	50.0%		
5	$35,013	$24,964	56.0%	$82,230	End of year 5
6	$36,413	$24,264	59.2%		
7	$37,870	$23,583	61.1%		
8	$39,385	$22,922	62.1%		
9	$40,960	$22,279	62.8%		
10	$42,598	$21,655	63.2%	$196,933	End of year10
11	$44,302	$21,048	63.4%		
12	$46,074	$20,458	63.6%		
13	$47,917	$19,884	63.7%		
14	$49,834	$19,326	63.8%		
15	$51,827	$18,785	63.8%	$296,433	End of year 15
16	$53,900	$18,258	63.8%		
17	$56,056	$17,746	63.8%		
18	$58,299	$17,248	63.8%		
19	$60,631	$16,765	63.8%		
20	$63,056	$16,295	63.9%	$382,746	End of year 20
Total:	$841,228	$382,746		Simple Payback =	1.7

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Performance Verification of the MPTS Device

Average Values

Item	Voltage	Peak Current	KVA	KVAr	Power Factor
Existing values without MPTS	**487V/282V**	**240**	**200**	**152**	**0.514**
Values with MPTS	**487V/281V**	**163**	**136**	**33**	**0.970**

Improvement In Power Quality - Metrics

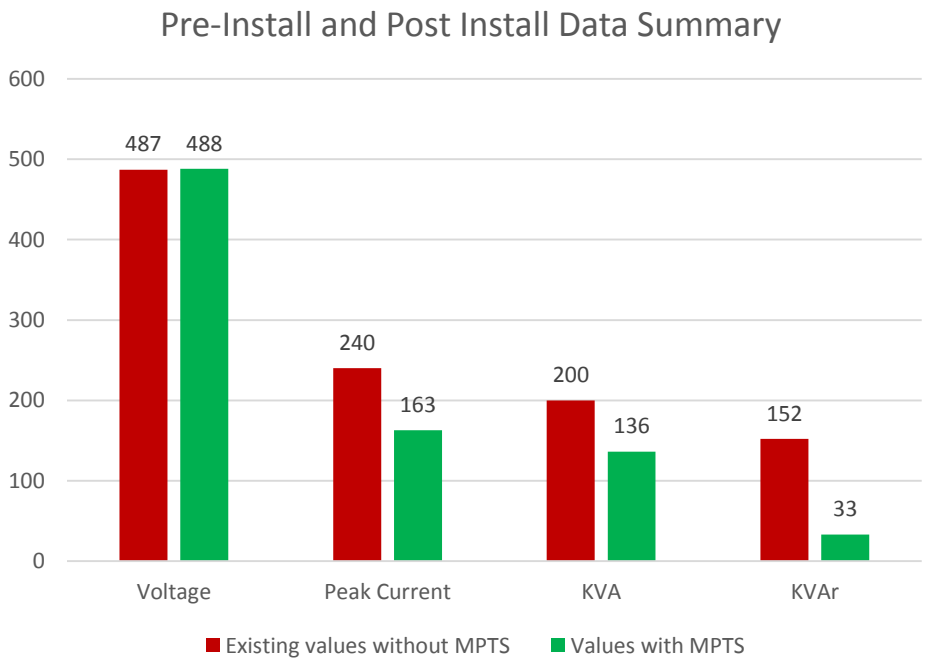
Item	Existing values without MPTS	Values with MPTS	Changes in Values with MPTS	
Volts	487	488	Change	-
Load Amps	240	163	Decrease in Line Amps	77
Load PF	0.65	0.97	PF improvement on load side	0.32
Load KVA	200	136	Decrease in Line KVA	64
Load KVAr	152	33	Decrease in KVAr	119
CO2 before MPTS in Lbs	373,114	253,718	Decrease in CO2	119,397
CO2 Percentage	100%	68%		32%

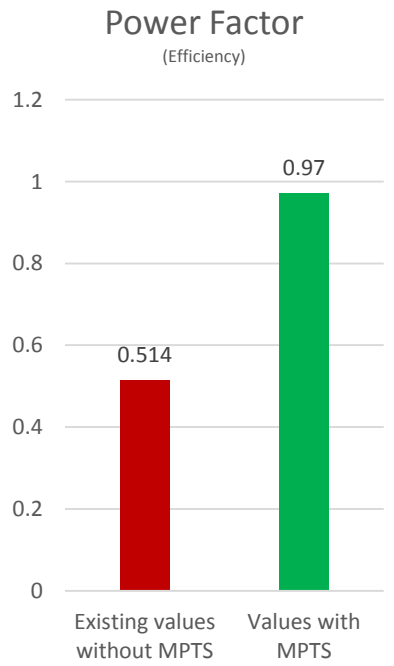
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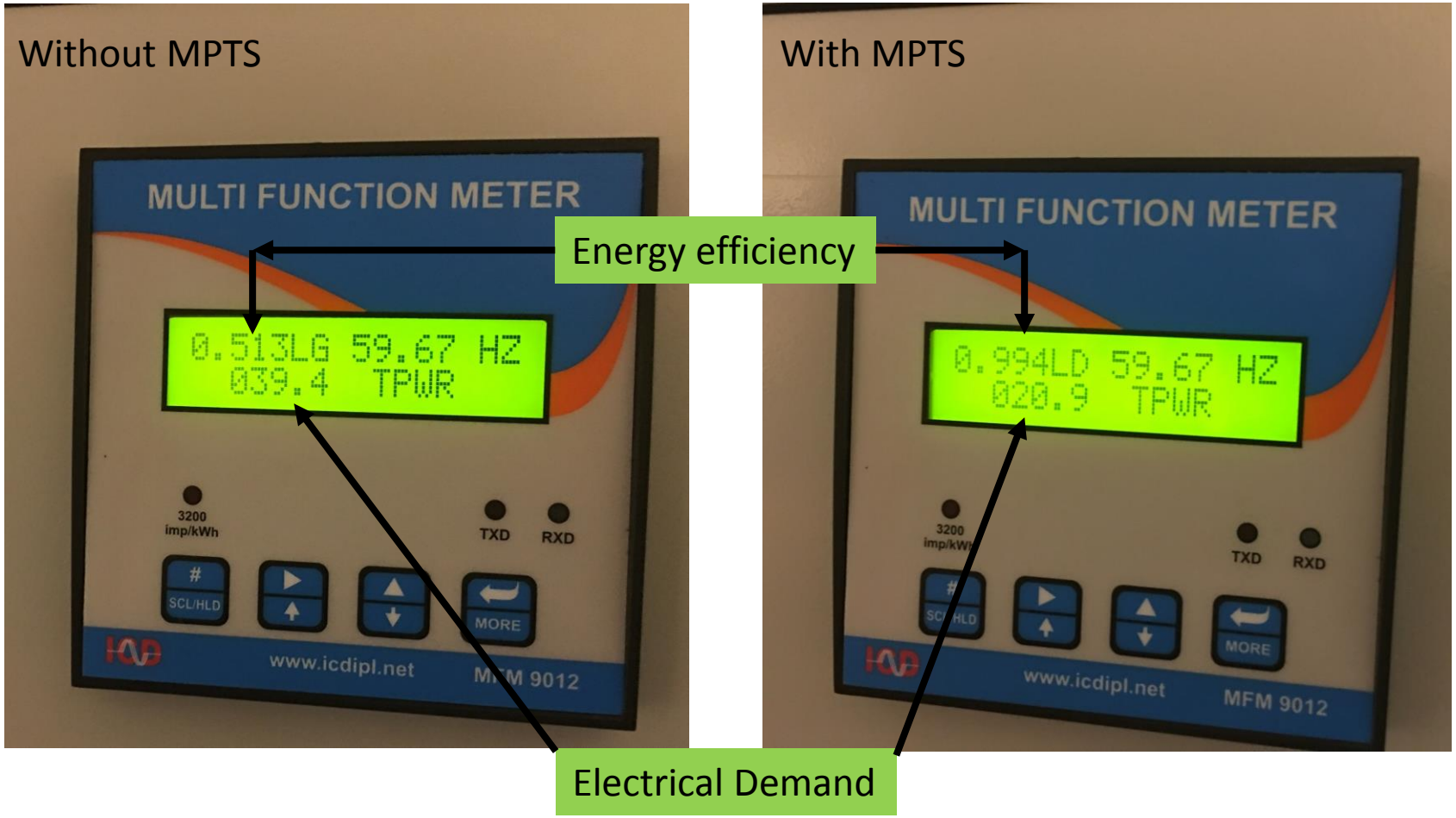




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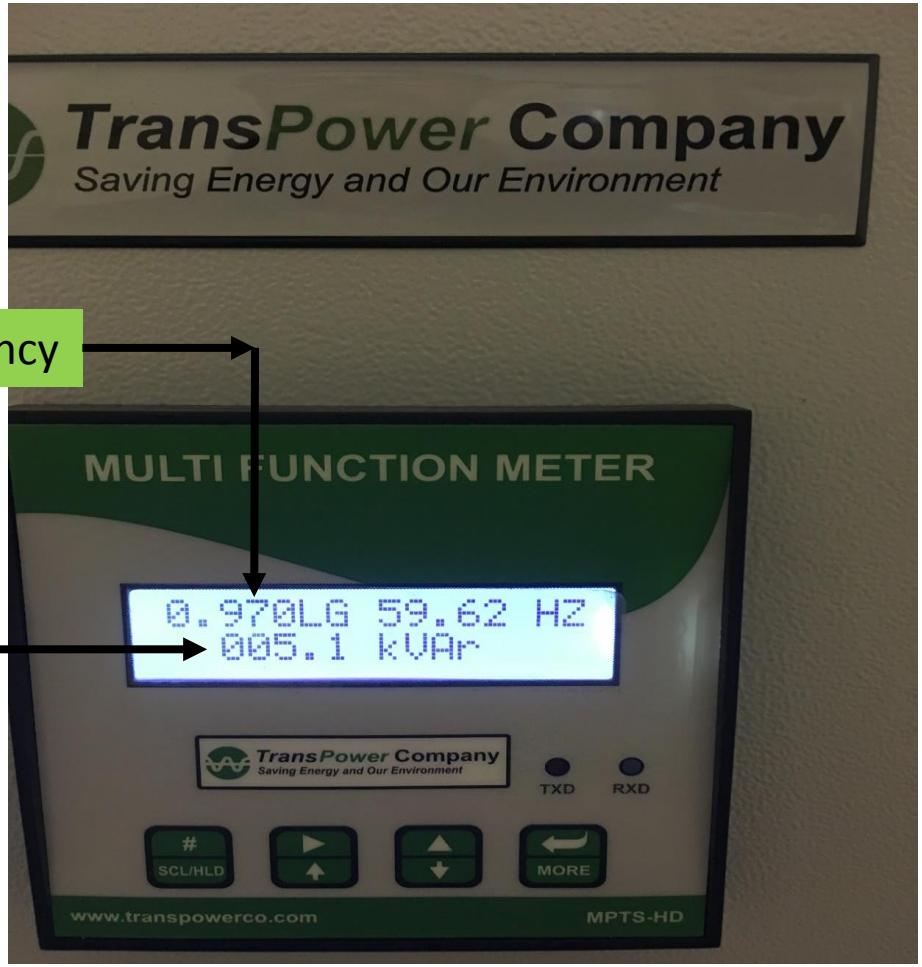
Real Time Monitoring



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Performance Verification of the MPTS Device

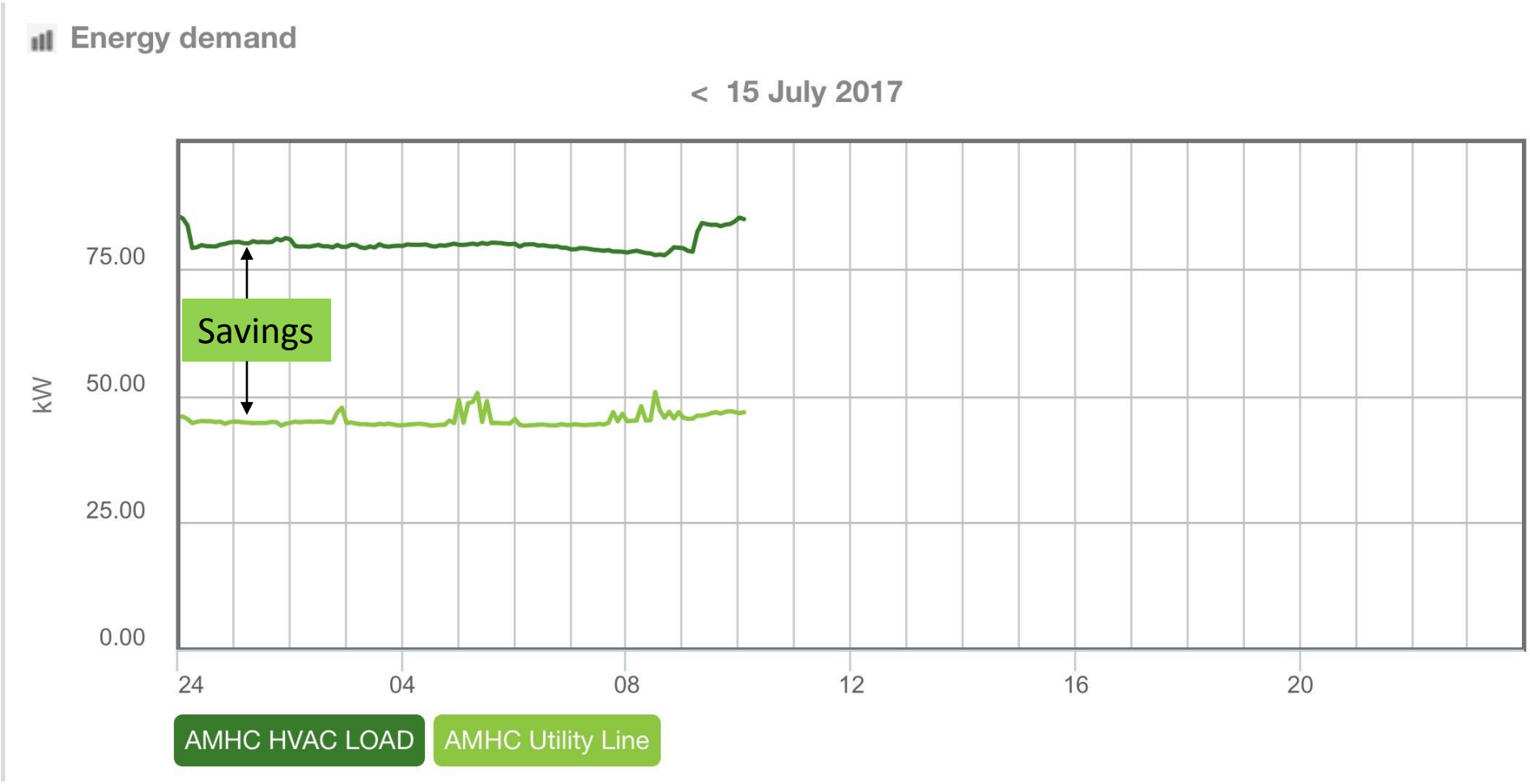
Real Time Monitoring
With MPTS



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Performance Verification of the MPTS Device

Real Time Monitoring

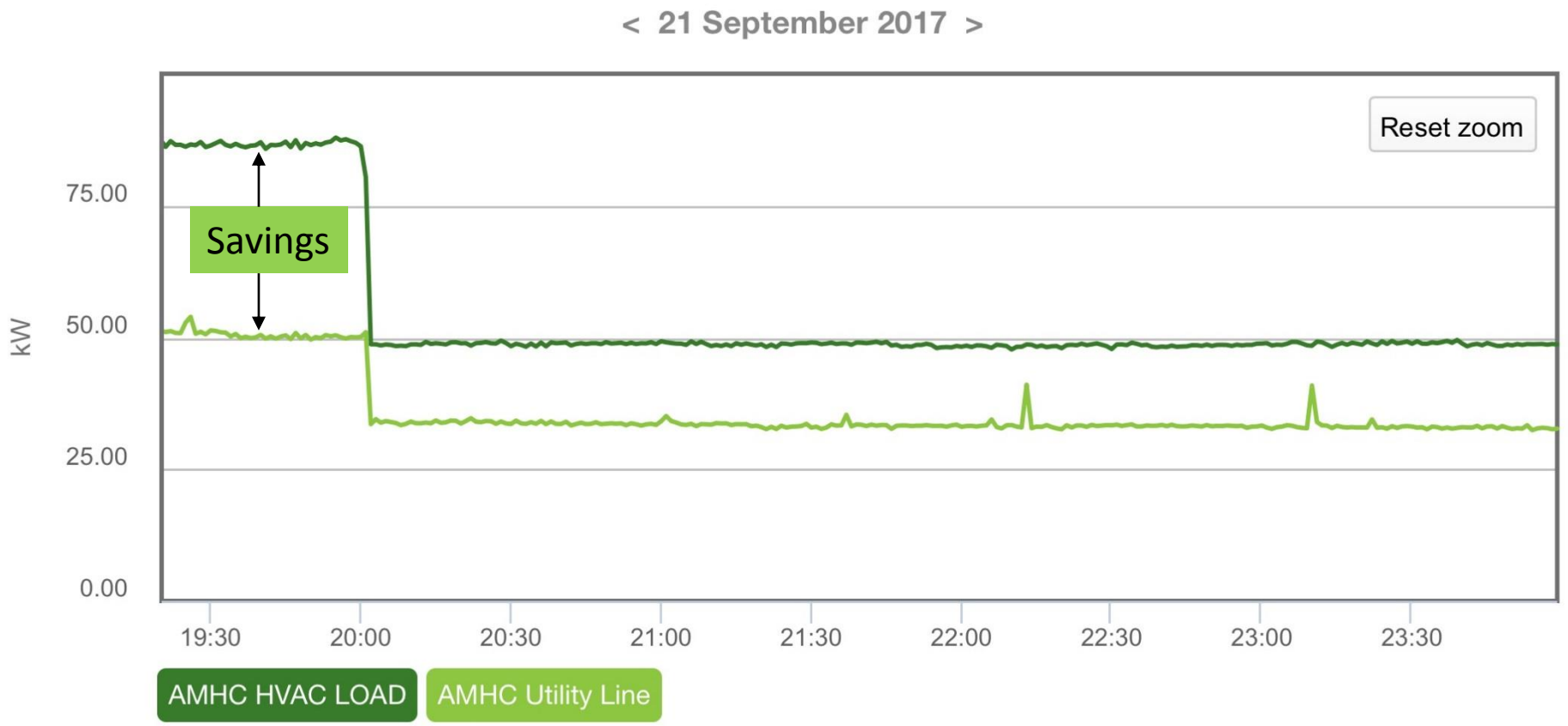


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Performance Verification of the MPTS Device

Real Time Monitoring

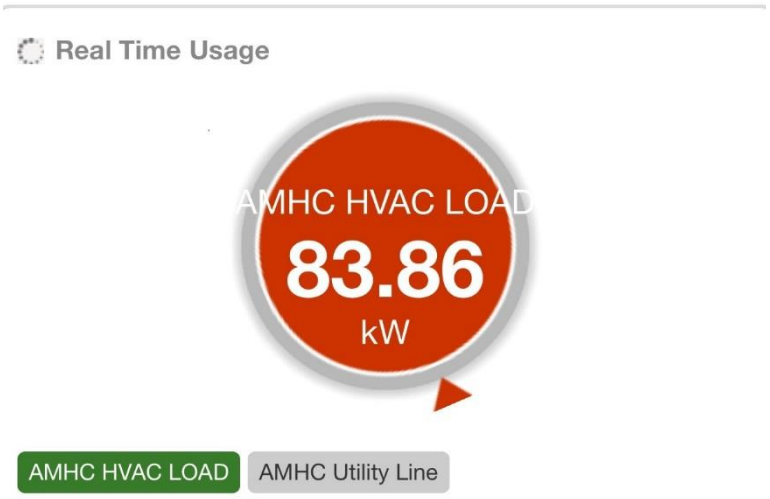
MPTS is a Real time dynamic solution

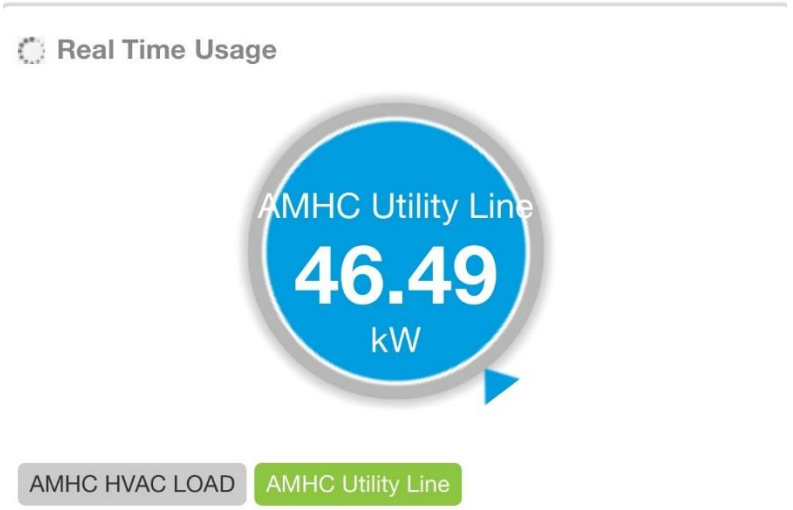


Report

Performance Verification of the MPTS Device

Real Time Monitoring
With MPTS





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