TESCO METERING

Nighthawk Issues Resolved and in Progress

TESCO's Meter School
TESCOOL
July 20-23, 2025

Monday July 21, 2025
1:00PM – 2:30PM
Dan Falcone
John Williams
Chris Pierce

Water Endpoints (WEPs)

Symptoms:

- Customers experiencing high failure rate for non-comms with WEPs
- Most of the unit failures were due to dead battery well before expected 20-year lifespan.

Investigation:

- Background
  - TESCO operations moved from Carrolton, Texas to Bristol, PA
  - Problem was identified through direct customer contact as well as warranty RMA analysis.
- Lab analysis
  - RMA units were opened and visually inspected. Looking for shorted or damaged components, especially the batteries themselves.
  - Discovered many batteries with 0% energy availability.
  - Discovered multiple possible causes
    - Processors stuck in reset mode
    - Low-ohm partial short across filter caps
    - Variable consistency of potting material

Water Endpoints (WEPs)

Investigation (Continued)

- Conclusions
  - After review of original design specifications and R+D reports, we found that the potting process required a great deal of cleanliness of the board surface. The degree of cleanliness required (i.e. no finger touch or solder-process residue) was not easily achievable in a production environment.
  - The partial failure of the potting compound not setting up at the surface of the PCB caused long term semi-liquification of the compound. The compound in this state exhibits a low, but non-zero electrical conductivity, which could lead to a partial shorting of the battery.
  - After review of original design specifications and R+D reports, we also found that the battery being used did not have an integrated storage capacitor that assists in maintaining long battery life by minimizing times of high current draw, as would be the case when the WEP “wakes up” to communicate to the hub.

Water Endpoints (WEPs)

Corrective Action

- Replace potting material – We've tested a new, silicon-based material that will cure in less than pristine environments and at room temperature, reducing the possible heat risks to the components on the board. We have tested samples of this material on new PCBs sitting in a bucket of water and were able to prove out the material as having adequate waterproofing capabilities.

- Replacement of the battery – Though this is likely less-impactful, we decided to replace the Xeno battery with a Tadiran battery TLP-93311/A/SM, PulsePlus Battery packs. These batteries include the patented hybrid layer capacitor, making it perfect for this application where current draw is mostly quite low, followed by short bursts of high current draw.

- Future considerations
  - Make batteries field replaceable. This should allow for certain conditions that may cause the batteries lose power but not have to replace the entire WEP. This should reduce any time to replace and re-integrate the WEP.
  - Better diagnostics and pre-emptive notifications of failing batteries – will help in planning replacements.

Electric Meter Batteries

Symptoms:

- Customers experiencing high failure rate for outage non-comms
- Most of the unit failures were due to dead or damaged batteries

Investigation:

- Background
  - TESCO operations moved from Carrolton, Texas to Bristol, PA
  - Problem was identified through direct customer contact as well as warranty RMA analysis.
- Lab analysis
  - RMA units were opened and visually inspected. Looking for shorted or damaged components, especially the batteries themselves.
  - Discovered many batteries with 0% energy availability.
  - Also noted damaged batteries
  - Discovered single cause of failure to be incorrectly specified battery purchased during specific time frame. Vendor information was that certain batteries they supplied would comply with our specifications and use case. They were mistaken.

Electric Meter Batteries

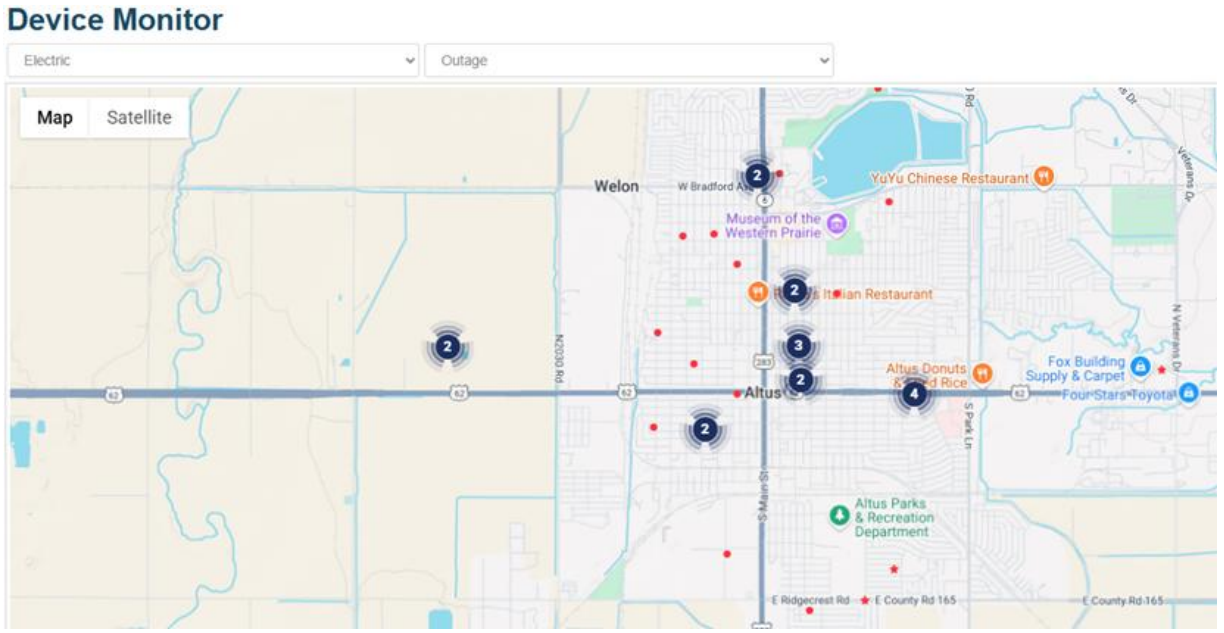
Corrective Action

- We were able to identify the time frame during which the improper batteries were purchased and the serial numbers and customers whose meters may have this issue.
- We cross-checked those customers with diagnostics data on meters that are failing to report outages.
- We are contacting those customers and providing replacement batteries and instructions on how to replace them.

Known & Resolved Issues

Known Issues:

- Outage Notification Failures
  - Meters are failing to send “last gasp” messages during outages. A battery-related failure is the suspected root cause, preventing the meter from broadcasting its outage status.
  - TESCO field services is actively replacing the batteries onsite for impacted customers.
- Outage Restoration Delay
  - Meters often remain flagged as being in an outage even after power has been restored. Manual intervention using the Check Status command in Meter Soul is currently required to update the meter's status in the AMI Headend.



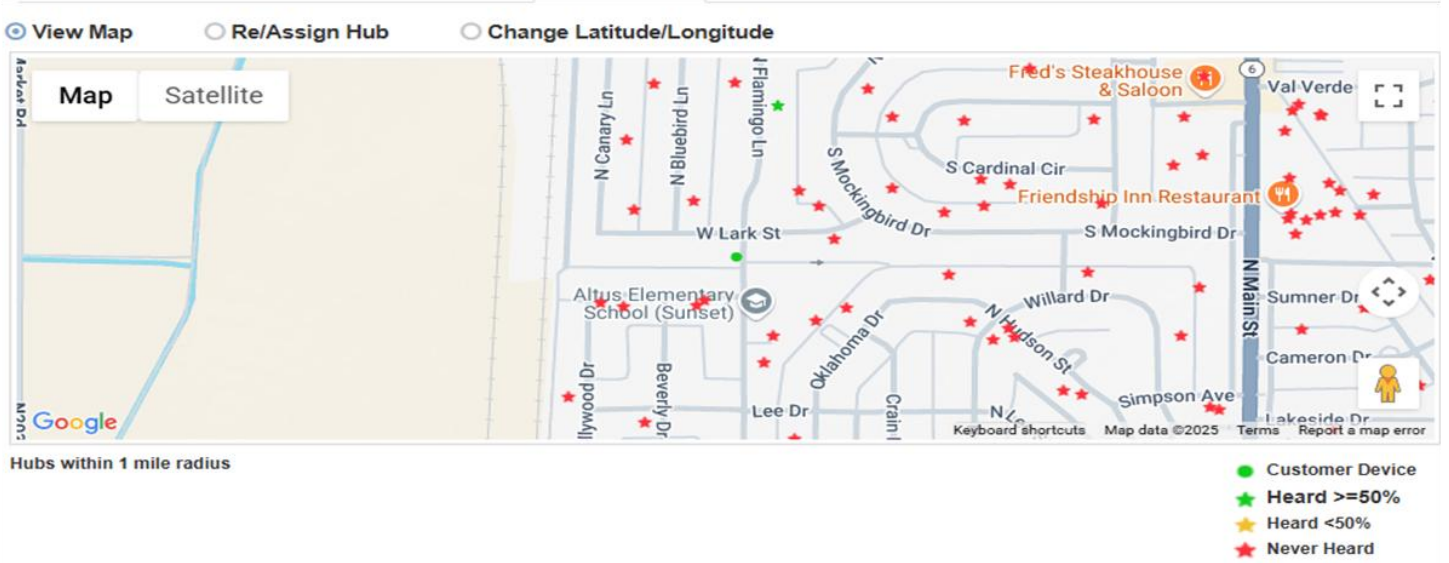
Known & Resolved Issues

Leaf Meter Hub Reassignment

- Leaf meters are not automatically reassigning to a closer or more optimal hub. This leads to connectivity inefficiencies and may result in slower data transmission.

- TESCO is working to resolve this issue in a future firmware release.

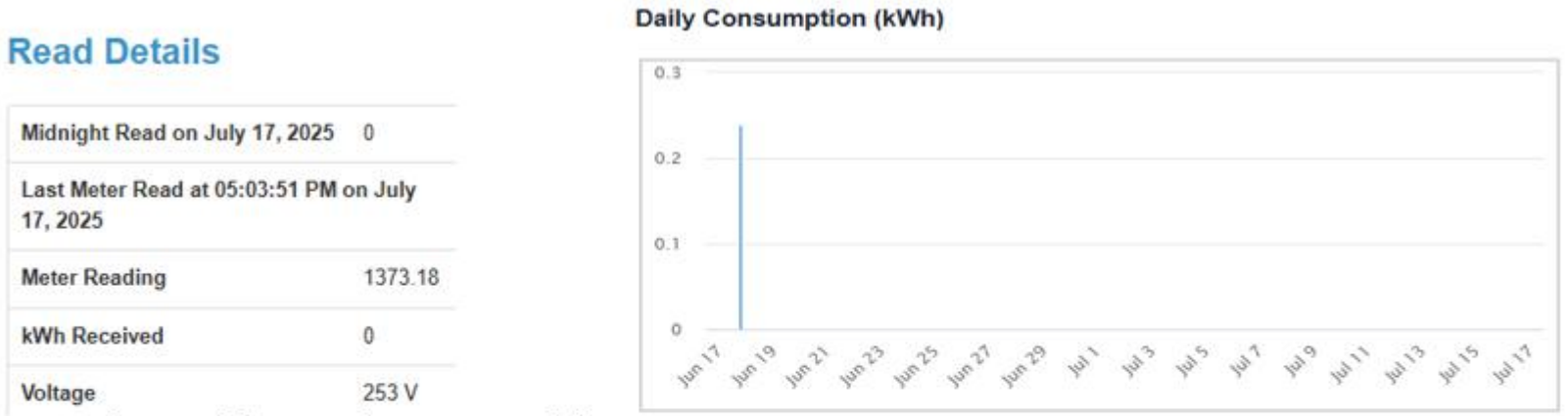
Alert Type	Alert time	Alert Information
Non Reporting	07/15/2025 03:00:00 AM	Device Serial Number: LL121218000190651 Meter: 82061001 **Next Read Date:** 7/15/2025 **Last Read Date & Time:** at 07/15/2025 03:00:00 AM **Reading Age** 2 Address: 1825 1/2 Sunset



Known & Resolved Issues

Interval Upload Failure

Some devices have been found to stop uploading interval data while daily register data is uploading.



Interval data can be requested from the meter using Meter Control Options

Known & Resolved Issues

Real-Time Alerts

- Current real-time alerts are limited in scope. Tamper alerts are only available via overnight readings, and Hot Socket and High/Low Voltage alerts are not currently available. These features are requested additions to enhance field visibility and response capabilities.

Tamper Events Report

Show 10 entries

CSV | Print | Copy

Filter

EventDateTime	SerialNumber	MeterNumber	Address	CustomerName	tamperType	oldValue	newValue
2025-07-09T03:19:16.973	LL042923001047341	88864470	2330 SMYTH LAKE Road LOUISVILLE,MS 39339	MR VACANT	Inversion	0	2

Showing 1 to 1 of 1 entries

Previous 1 Next

kV2c Interval Voltage Reads Unavailable

- Interval voltage data is currently not available from kV2c meters. This limits the ability to perform voltage profiling and compromises visibility into power quality trends over time.

- Currently we can only see Voltage snapshot values at the time of a Register Reading.

Known & Resolved Issues

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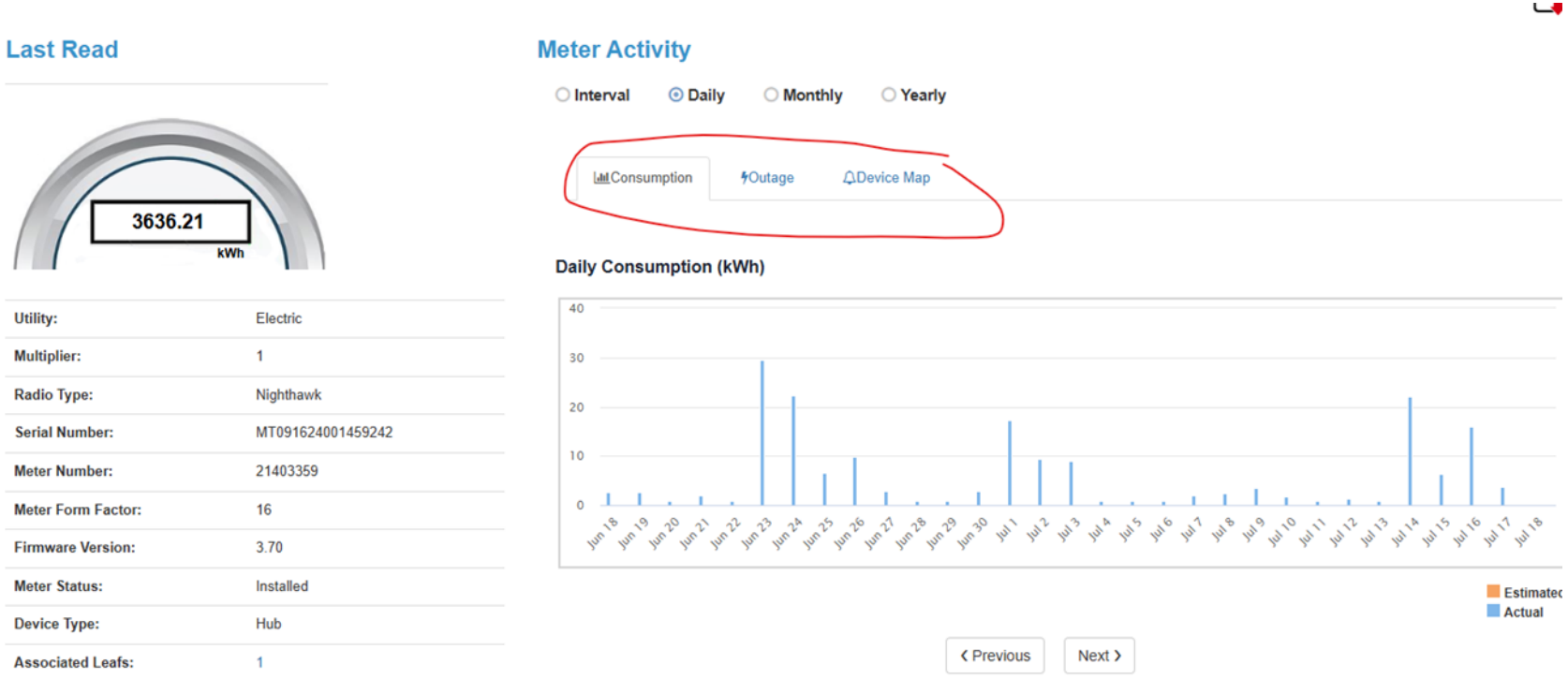
- Missing Here



Known & Resolved Issues

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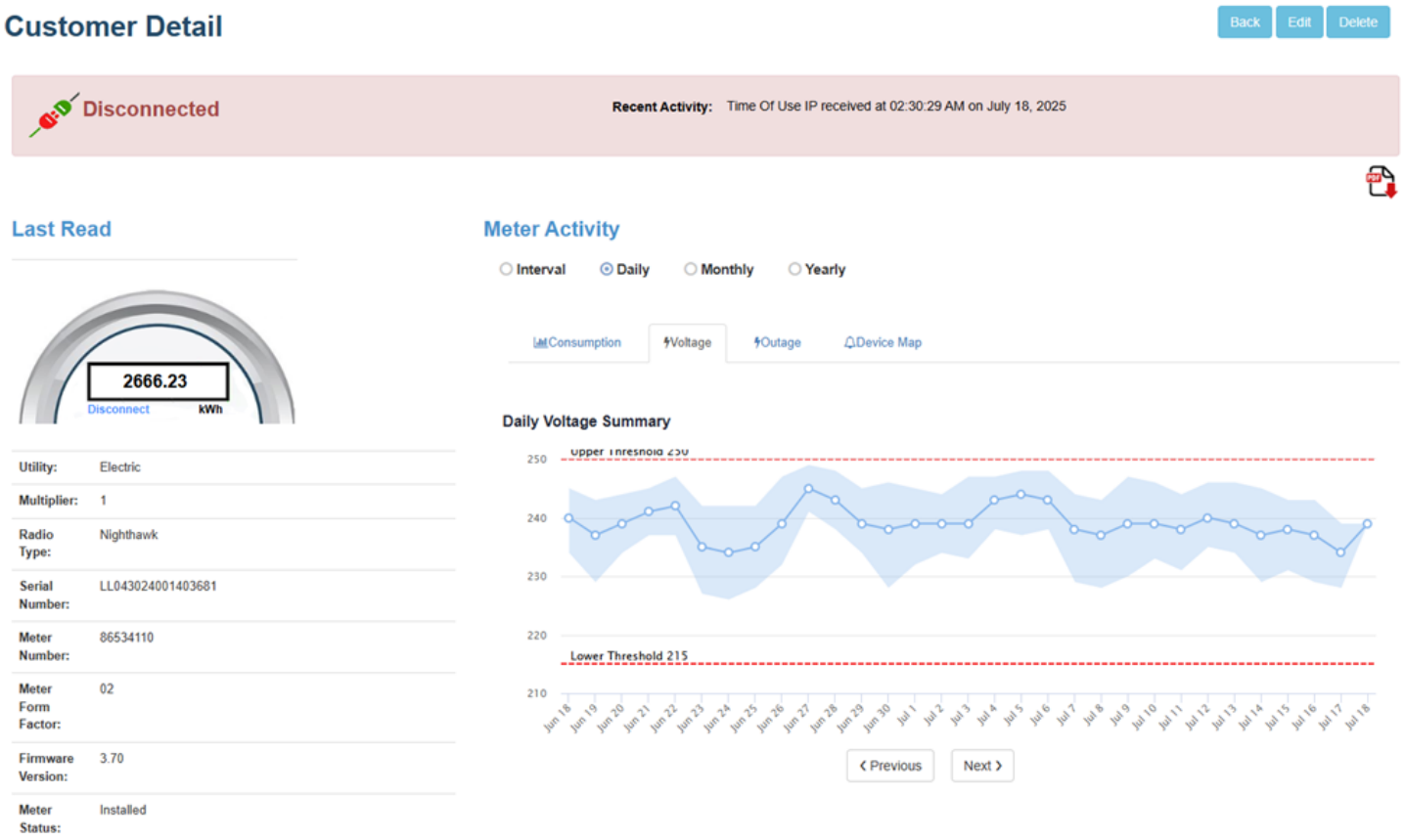
- Shown Here



Known & Resolved Issues

Ongoing ERT Collection Issues

The system is no longer reliably retrieving reads from ERT (Encoder Receiver Transmitter) modules. This affects meter data accuracy and disrupts scheduled collections.

Inability to Retrieve Missed Billing Schedule Reads

If a billing read is missed, there is currently no process to retrieve that data after the fact. This impacts billing accuracy and may require estimated usage in customer invoicing.

Demand Limit Visibility

There is currently no mechanism for utilities to search for or identify meters that have been placed in Demand Limit mode. This limits oversight and control of demand management settings in the field

Known & Resolved Issues

Resolved Issue:

- Mismatched Snap Address
- A manufacturing process swapped the internal Radio ID and Meter ID between a few pairs of devices
- Billy and Chris were dispatched to manually replace devices with incorrect or mismatched Snap addresses. The issue has been successfully resolved.

Batch Disconnect

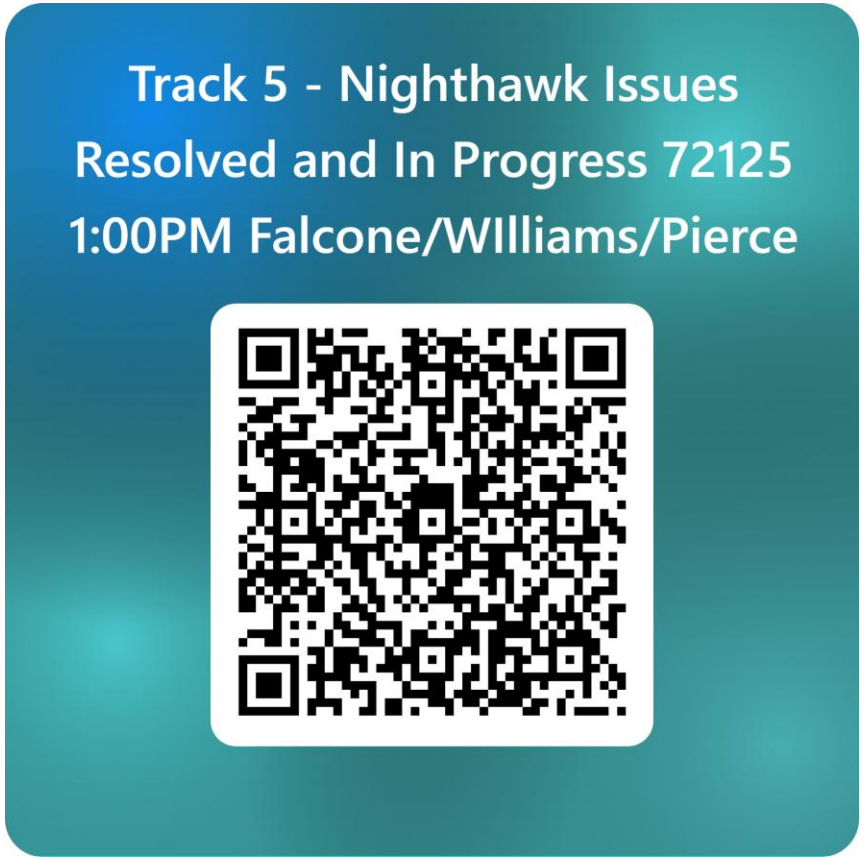
- Service issue was causing batch disconnect service to freeze. On restart pending batches would run. This caused devices manually disconnected to disconnect again later in the day.
- Service was replaced with better scheduling architecture. There have been no new occurrences of this issue.

EEPROM Er000002 -Battery Fail and Power Loss

- EEPROM-related errors are causing some meter displays to freeze. This has been addressed through reprogramming. Meters in the field can be corrected by either:
- Replacing the front-facing factory battery (simplest approach), or
- Reprogramming the meter on-site.

Course Feedback

Please Take a Few Minutes To Provide Feeback About The Course & Instructor



Questions and Discussion

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This presentation can also be found under Meter Conferences and Schools on the TESCO website: tescometering.com

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