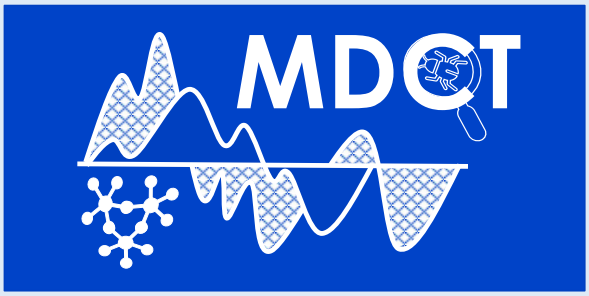
Supplemental Project Notice

Measurement Data Cleaning and Utilization



PROJECT HIGHLIGHTS

- Evaluate SCADA/AMI measurement data quality
- Remediate contaminated measurement data
- Develop a measurement data cleaning tool (MDCT)
- Deliver validated measurement data cleaning procedures
- Enhance data acquisition, planning and operational studies

Background, Objectives, and New Learnings

The increase in metering and monitoring devices on the distribution grid have created an influx of SCADA and AMI measurement data. The abundance of this data has promising applications across planning and operational studies. However, much of the data is not readily usable due to data quality issues - missing data, time synchronization issues, zero values, noise introduction, etc. Additionally, identifying and addressing all possible data quality issues for large data sets can be challenging. Data handling processes are largely manual and vary depending on how the data will be applied in planning and operational studies, which can result in significant time required from engineers to make use of these new datasets. Given these challenges and the impact on study results, it is essential to create capabilities to support improved SCADA/AMI measurement data utilization.

To meet this need, EPRI has been developing methodologies to automatically detect measurement data problems and remediate based on intended applications. The objective of this supplemental project is to advance these methods and create a tool that automatically detects, and processes time-series measurement data issues based on intended applications.

This project aims to evaluate large quantities of SCADA/AMI measurement data across a wide range of customer classes and feeders to understand the behavior of the measurements and their evolution over time. Statistical analysis and diagnosis of measurement data will aid in identifying consistent issues that affect the quality of measurement data. Methodologies to address these issues, based on recognized sources of contamination, will be identified and implemented.

Benefits

The project is expected to have the following key values:

- Guide development and enhancement of measurement data cleaning methods.
- Increase efficiency of processing, understanding, and correcting measurement data.
- Improve utilization of data to build models and more reliably perform planning/operational studies.

Project Approach and Summary

EPRI intends to support utilities in processing SCADA/AMI measurement data for better utilization. The project tasks include:

- Conduct workshop with project participants to obtain insight on known measurement data processing challenges, data needs and applications, and data quality concerns.
- Work with each participant to identify use case and collect measurement data. Conduct the following analyses using the EPRI methodology:
  - Statistical analysis and diagnosis to evaluate measurement data and assess the quality based on identified erroneous values.
  - Processing and visualization to address erroneous values by implementing various techniques based on desired use case.
  - Format, track, and store measurement data changes based on the intended application.
  - Validate processed data and update methods as necessary.
- Incorporate data handling processes into a measurement data cleaning tool with graphical user interface.

Periodic webcasts to update progress will be conducted to enable members to share feedback and provide guidance.

Deliverables

The following deliverables will be made available to the funding utility:

- Summary report documenting the measurement data processing framework, data utilization challenges, lessons learned, and validation.
- Processed measurement data for participant's use case.
- Measurement data cleaning tool.
- Half-day training on the tool.
- Tool support.

The non-proprietary results of this work will be incorporated into EPRI R&D Program 200, and made available to the public, for purchase or otherwise.

Price of Project

$70,000

The project qualifies for Self-Directed Funds (SDF). Funding can be distributed across two calendar years.

Project Status and Schedule

This project is intended to span 12 months from the acquisition of measurement data.

Who Should Join

Utilities that are currently or intending to utilize SCADA/AMI measurement data in planning and operational applications but are hampered with the difficulties and/or limited resources to adequately prepare that data.

Contact Information

For more information, contact EPRI Customer Assistance at 800.313.3774 (askepri@epri.com).

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