Advances in Software for PQ Monitoring Systems

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Electrotek Office Locations

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Global Power Technology

DRANETZ

Electrotek
CONCEPTS

PQView 3 and PQWeb Software System

- PQView is a power quality database application
- Key Functions
  - Automatic data management
  - E-mail alarming
  - Analysis of single events or long-term trends
  - Report writing
  - Fault locating
  - Load growth estimation
  - Reports available via workstations and web browsers
  - Growing user base from around the world in collaboration to improve the system each year

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Who Uses PQView Today?

United States/Canada

- American Electric Power
- Alabama Power Company
- Baltimore Gas and Electric
- CMS Energy
- CPS Energy San Antonio
- Consolidated Edison Company of New York
- Detroit Edison Company
- Dominion Virginia Power
- Duke Energy Corporation
- East Kentucky Power Cooperative
- EnerNex Corporation
- Entergy Services
- EPRI
- Federal Aviation Administration
- FirstEnergy
- Georgia Power Company
- Hawaiian Electric Company
- Hydro One Networks
- Hydro Ottawa
- Oklahoma Gas and Electric
- Pepco Holdings, Inc.
- Public Service Electric and Gas Company
- Public Service of New Hampshire
- Salt River Project
- San Diego Gas and Electric
- Southern Company
- Tennessee Valley Authority
- United Illuminating Company
- Wisconsin Public Service
- Wireless from AT&T

Asia-Pacific

- Companhia de Electricidade de Macau (CEM)
- Ergon Energy
- Guangdong Power
- Northern China EPRI
- Orion New Zealand Ltd.
- Provincial Electricity Authority
- EGAT Thailand

Europe

- Agder Energi Nett AS
- BKK Nett AS
- CEE Energiteknikk AS
- Central Networks (E.ON)
- Elektro Slovenia
- Elektrobistand
- Hålogaland Kraft AS
- Helgelandskraft AS
- Hydro Aluminium AS
- Hrvatska Elektroprivreda (HEP)
- Istad Nett AS
- Lyse Nett AS
- Nordmøre Energiverk AS
- Notodden Energi AS
- PSE-Operator
- Rødøy-Lurøy Kraftverk AS
- SFE Nett AS
- Skagerak Nett AS
- SINTEF

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PQ View 3 Software (historical)

Permanent Power Quality Monitors

Data Translator

Digital Fault Recorders & Relays

Data Translator

Revenue Meters

Data Translator

Portable PQ Instruments

Data Translator

Data Characterizer

PQView Database

SCADA, Relay and Breaker Data

OSIsoft PI System Server

Event Viewer | Data Trending | Protection Analysis | Bench-Marking | Statistical Analysis | Report Writing

PQView Applications

Fault Location Process

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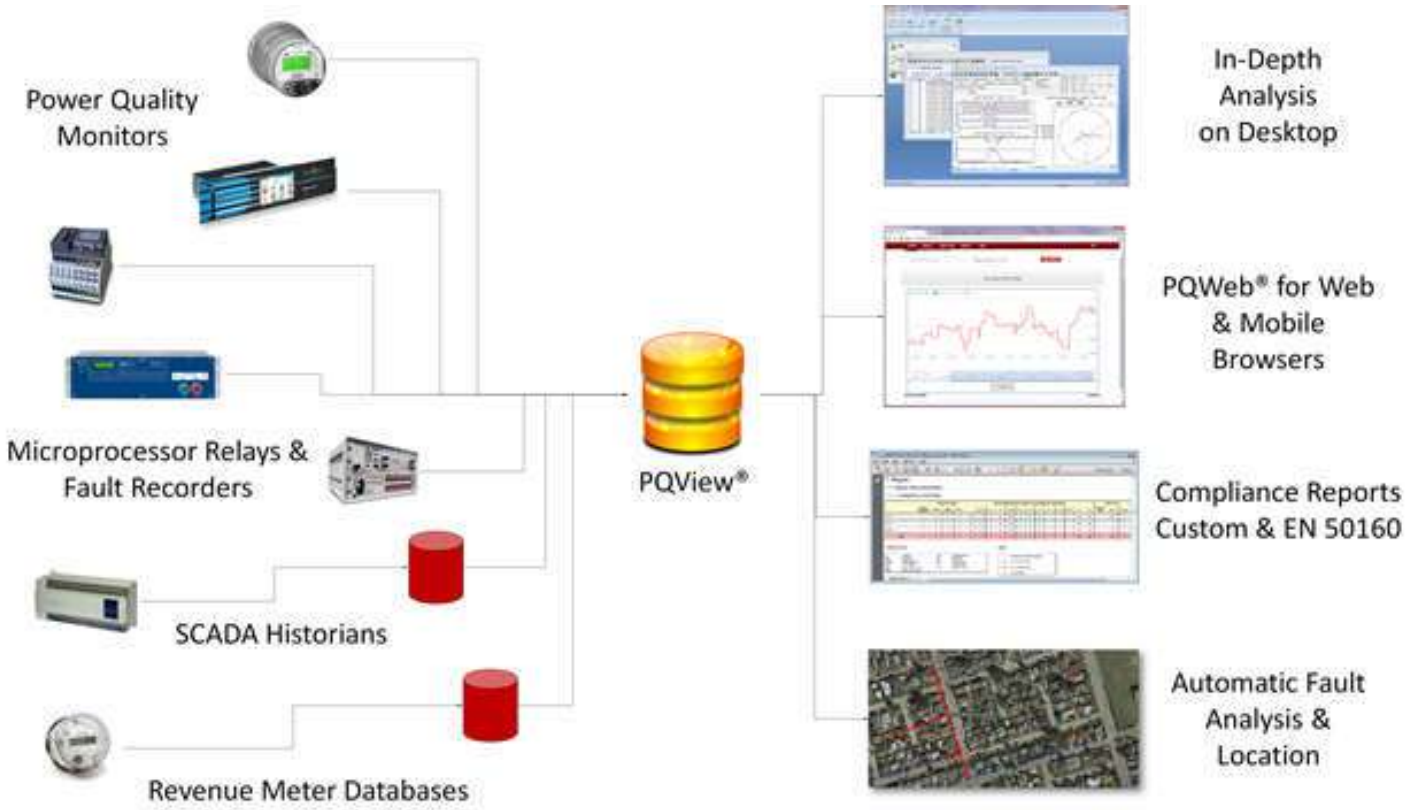
What is PQView?

- PQView integrates waveforms and data logs from power quality monitors, digital relays, digital fault recorders, SCADA databases, and smart meters
- PQView provides desktop and web power quality & fault, analysis, reports, and fault location.



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PQView Users Worldwide

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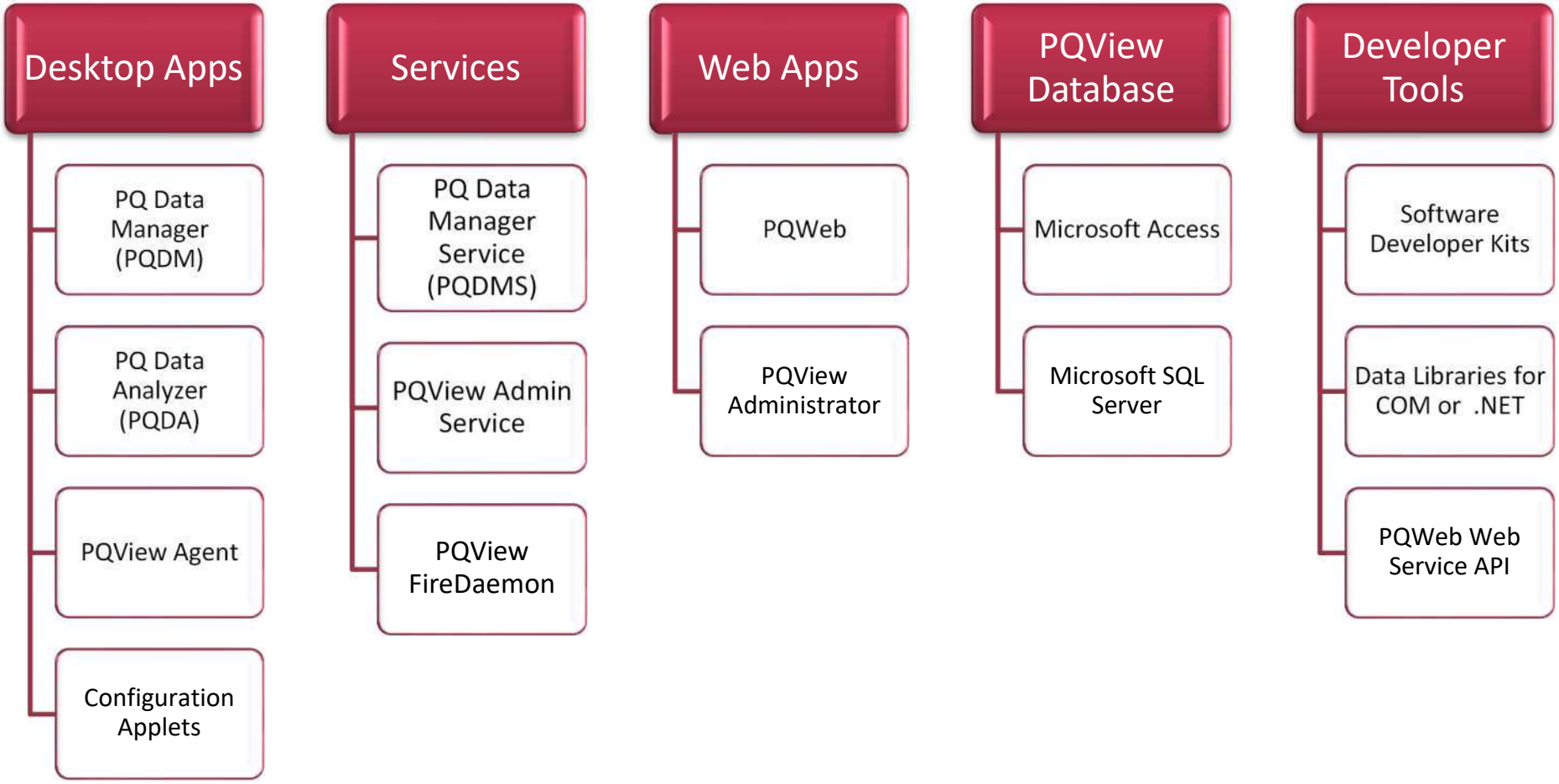
Components of PQView



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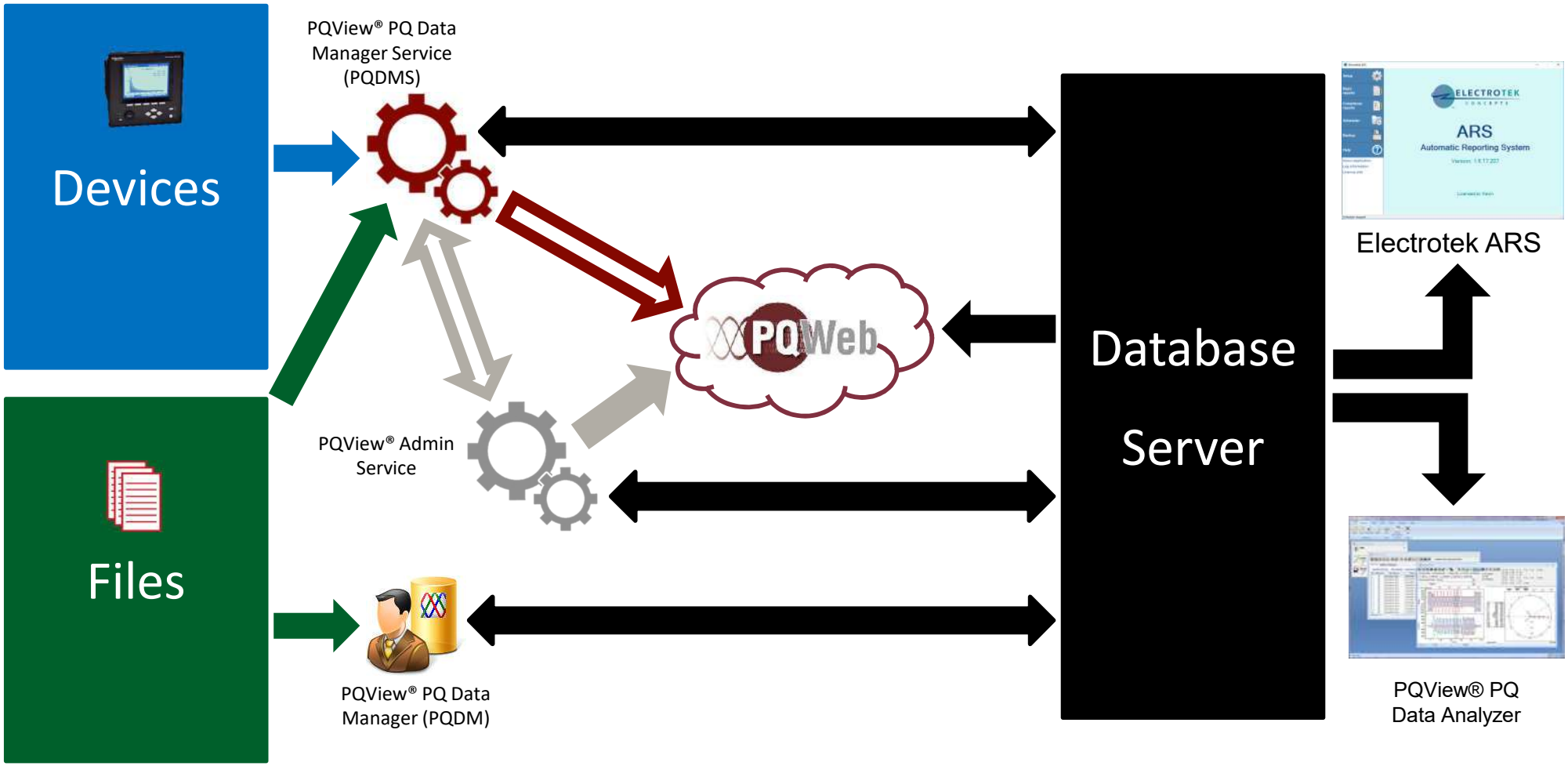

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What are the Data Sources for PQView?

- **IEEE® PQDIF**
- **IEEE® COMTRADE**
- MODBUS®
- Advantech®
- Arbiter® Systems
- BTECH®
- Cooper CYMDIST
- Dranetz®
- Eaton®
- EDMI
- Electro Industries®
- ENTSO-E Loads
- Environment Canada
- Fluke®/RPM
- GE®
- Gossen Metrawatt
- I-Grid®
- GridSense
- HIOKI
- OSIsoft® PI System
- Power Monitors
- Progress Energy FMS Database
- PSL PQube®
- Qualitrol® /LEM
- SATEC
- Schneider Electric®
- Schweitzer Engineering Laboratories®
- Siemens®
- Synergi Electric
- TECTRA ALFA
- Unipower®

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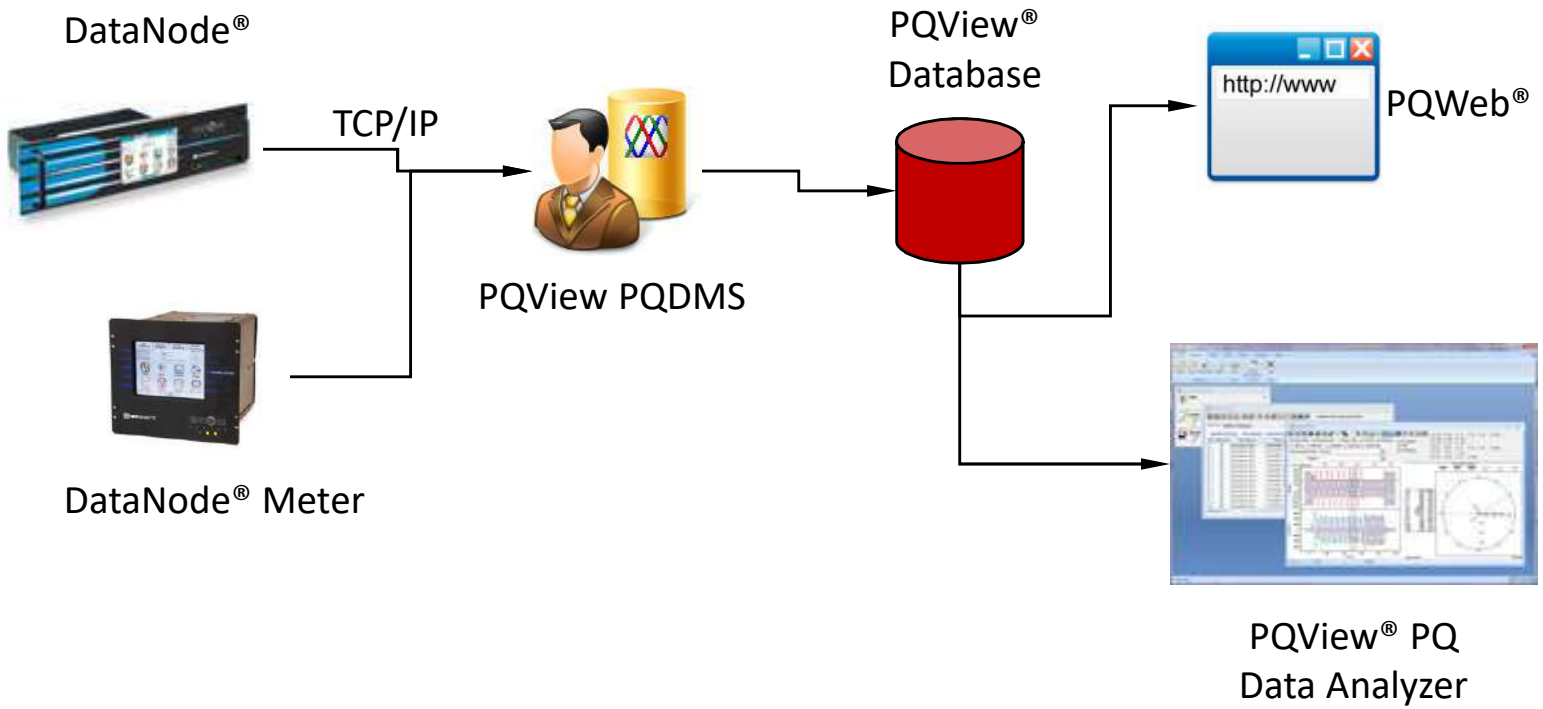
PQView Integration with Dranetz DataNodes



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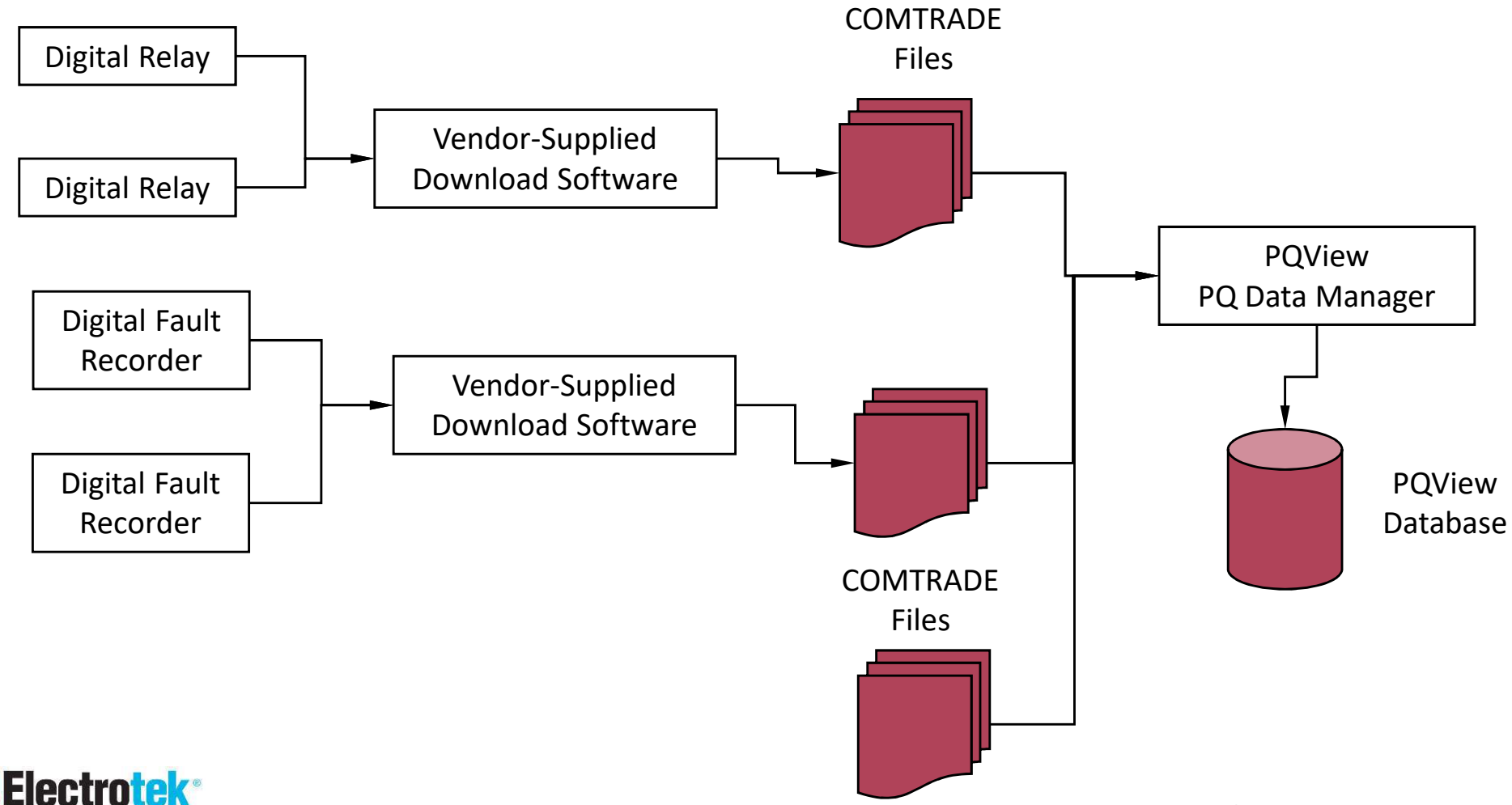
Data Handler for IEEE® Std C37.111-1991/1999 Data Files for PQView

COMTRADE Files Contain One Waveform or RMS Event



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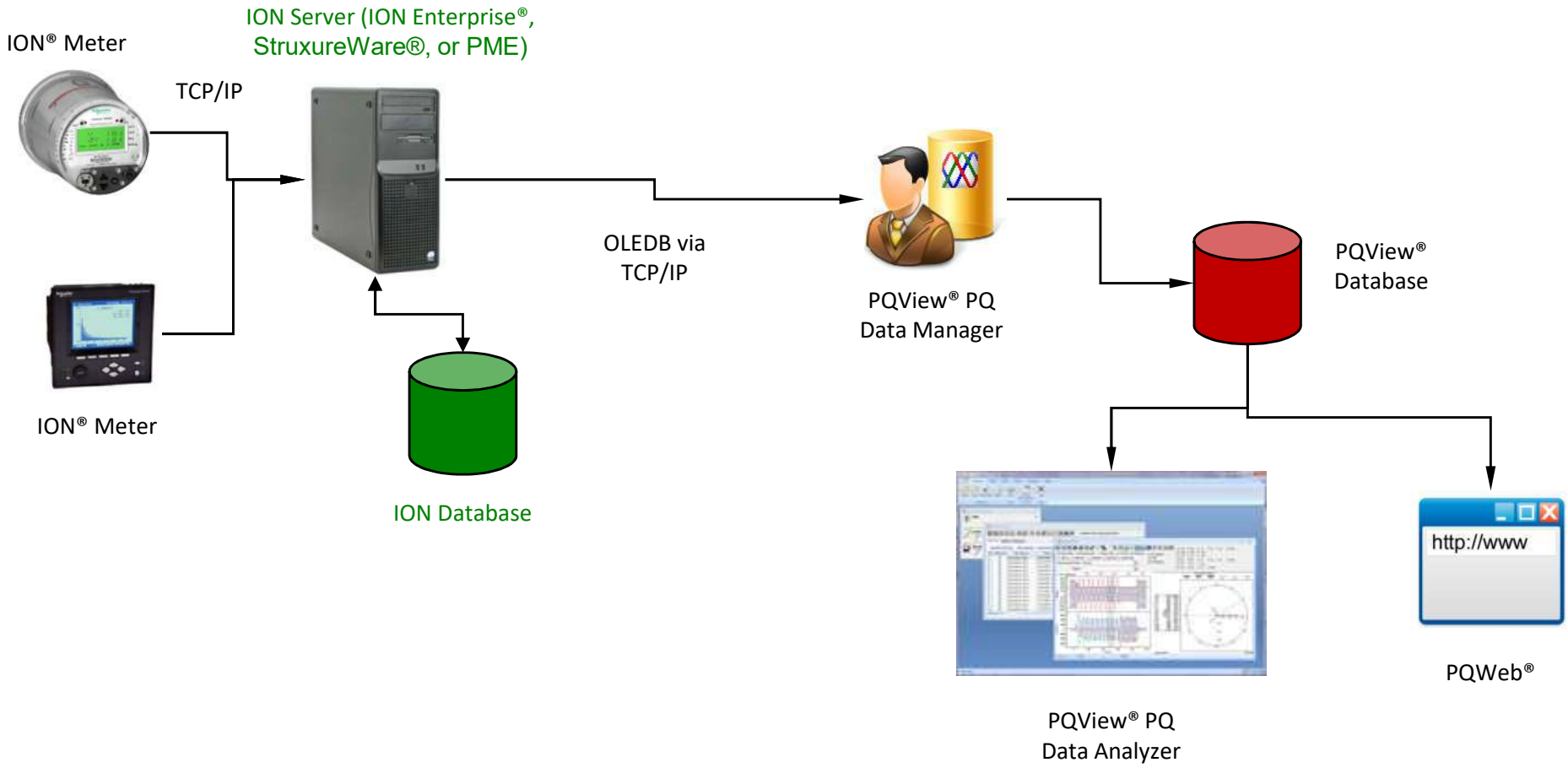
PQView Integration with Schneider Electric ION Databases



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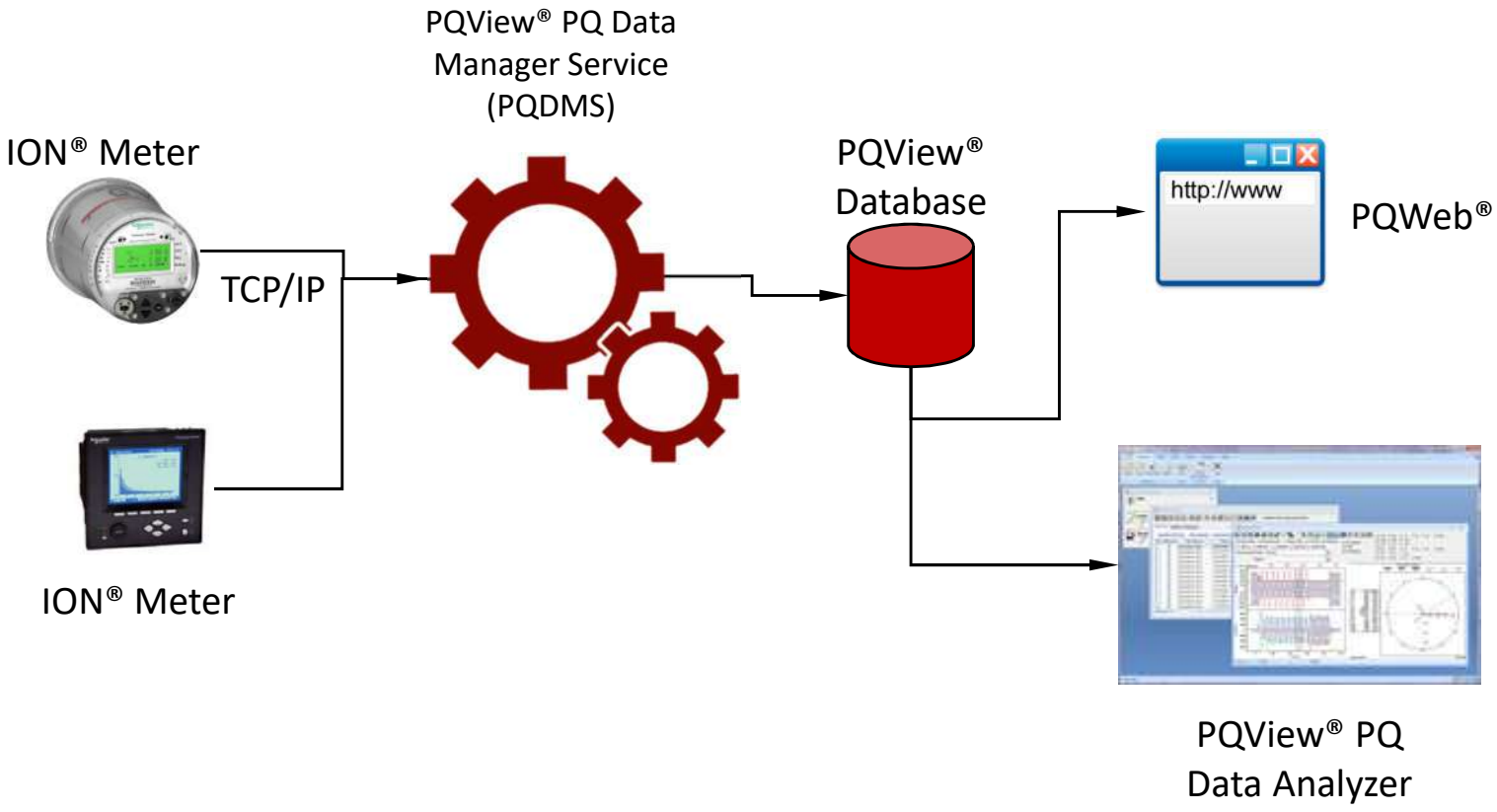
PQView Integration with Schneider Electric ION Meters



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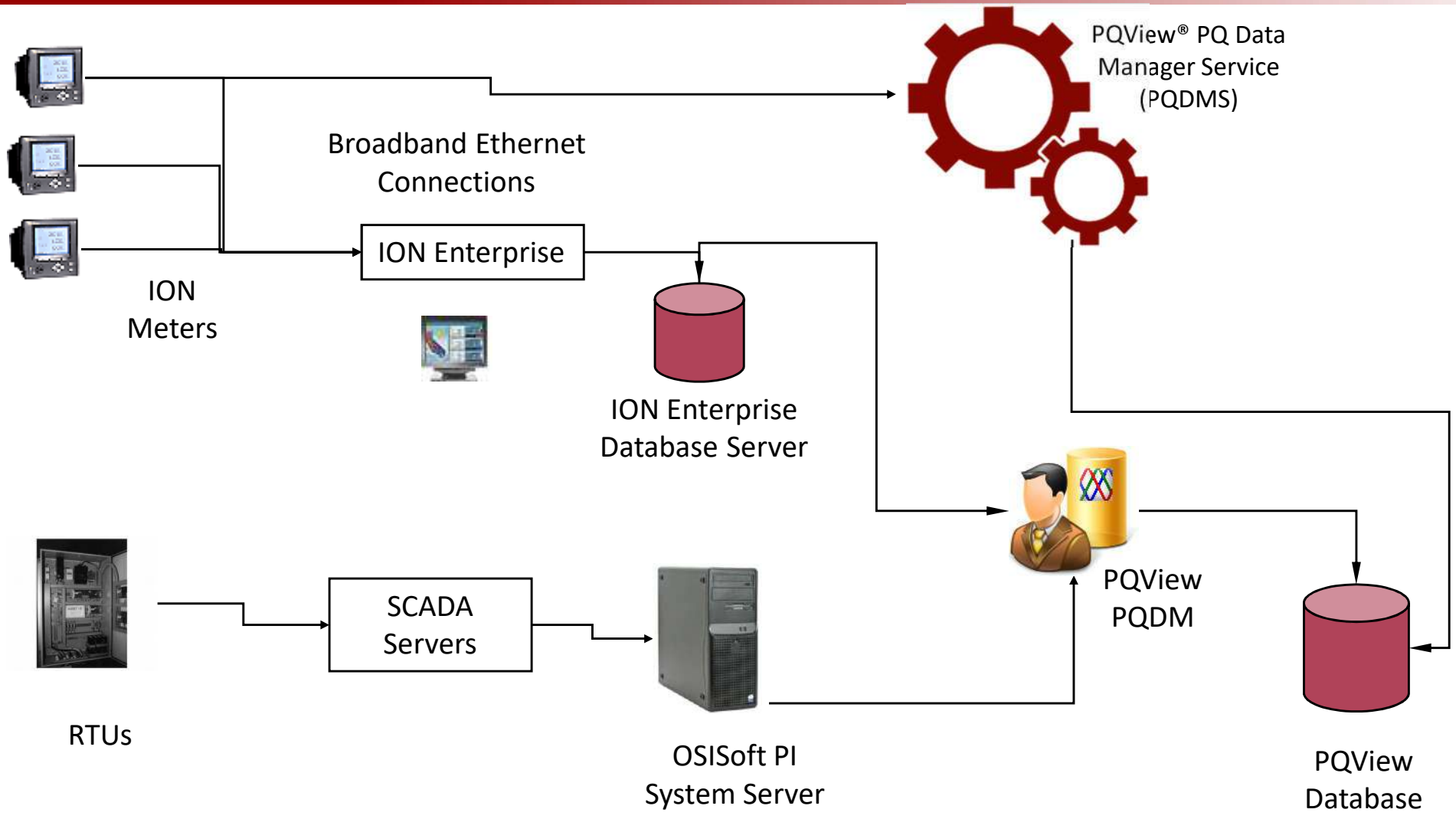
PQView PQDMS Download Capability

		Real-Time Values				
Company	Monitor	Metering	Waveforms	Phasors	Data Download	Meter Setup
Advantech® Corporation	ADAM Analog and Digital Modules	✓			✓	✓
Arbiter® Systems	Power Sentinel 1133A	✓		✓	✓	✓
GE®	KV Meter	✓			✓	✓
Dranetz®	DataNode® 5520, 5530, 5560, 5571, 61000, HDPQ, HDPQ SD	✓	✓	✓	✓	✓
Dranetz®	ES210, ES220, ES230, 5540	✓			✓	
Dranetz®	PQNode® 7100, PQNode® 8010, DataNode® 5571				✓	
MODBUS® Devices		✓			✓	✓
Power Standards Lab®	PQube® Classic, PQube® 3	2Q 2017			✓	
Rockwell Automation	I-Grid Website				✓	
Schneider Electric	ION and PME using ION Protocol	✓			✓	
Schweitzer Engineering Laboratories® (SEL)	Relays, Reclosers, Concentrators, and PQ Monitors				✓	

Data Integration at Large Utility



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Data Integration and Federation

Dranetz PQNode

Telnet/XMODEM/YMODEM

Dranetz DataNode

UCA 2.0

Dranetz DataNode

HTTP via RAS

PQView PQDMS

SQL via TCP/IP

Serial

Advantech ADAM Sensors

ION Meters

HTTP via Frame Relay

Download Server

PQView PQDM

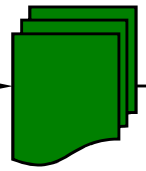
SQL Server

SEL Relays and GE Relays

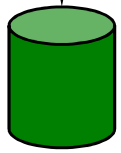
Frame Relay

Download Servers

File Share



COMTRADE Files



PQView Databases

SCADA RTU Sensors

GE XA/21

OSIsoft PI System

PI SDK

conEdison

Current PQView Data Sources

- IEEE® Std 1159.3 PQDIF Files
- IEEE® Std 37.111 COMTRADE Files
- PQView® Database
- PQView® Text Files
- BTECH® Battery Validation Manager Database
- Cooper/CYME CYMDIST Network and Equipment Database
- Dranetz® ESS/InfoNode® Server
- Dranetz® PASS® Database or PASS Archive
- Dranetz® PES PQPager® 3100 Database
- Dranetz® PES PQNode® Database
- Dranetz® DDB File from Power Xplorer, PowerGuide, PowerVisa, or Energy Platform
- Eaton Power Xpert
- EDMI Multidrive Database
- Electro Industries/General Electric® Communicator Log
- Environment Canada
- Fluke®/RPM PAS Omega Database
- Fluke®/RPM Scenario Database
- Gossen Metrawatt MAVOSYS
- Gossen Metrawatt MAVOWATT
- GridSense PowerView CSV Folder
- HIOKI Hi-View Pro Text Files
- Landis+Gyr® MAXsys PRN Text File Folder
- NOAA Daily Geomagnetic Data
- OSIsoft® PI System
- Qualitrol® LEM Instruments QIS Database
- SATEC PAS Database
- Schweitzer Engineering Laboratories® (SEL) EVE Folder
- Schneider Electric® PEGASYS Database
- Schneider Electric® ION Enterprise® Database
- Schneider Electric® StruxureWare® Database
- Siemens® SIMEAS® Text File Folder
- Silver Spring Networks Export Folder
- SoftSwitching® I-Grid® Web Site
- Unipower PQ Secure Database
- ENTSO-E System Loads
- ERCOT System Loads
- IESO System Loads
- ISO-NE System Loads
- NYISO System Loads
- PJM System Loads
- Custom Databases

www.pqview.com/data-sources/

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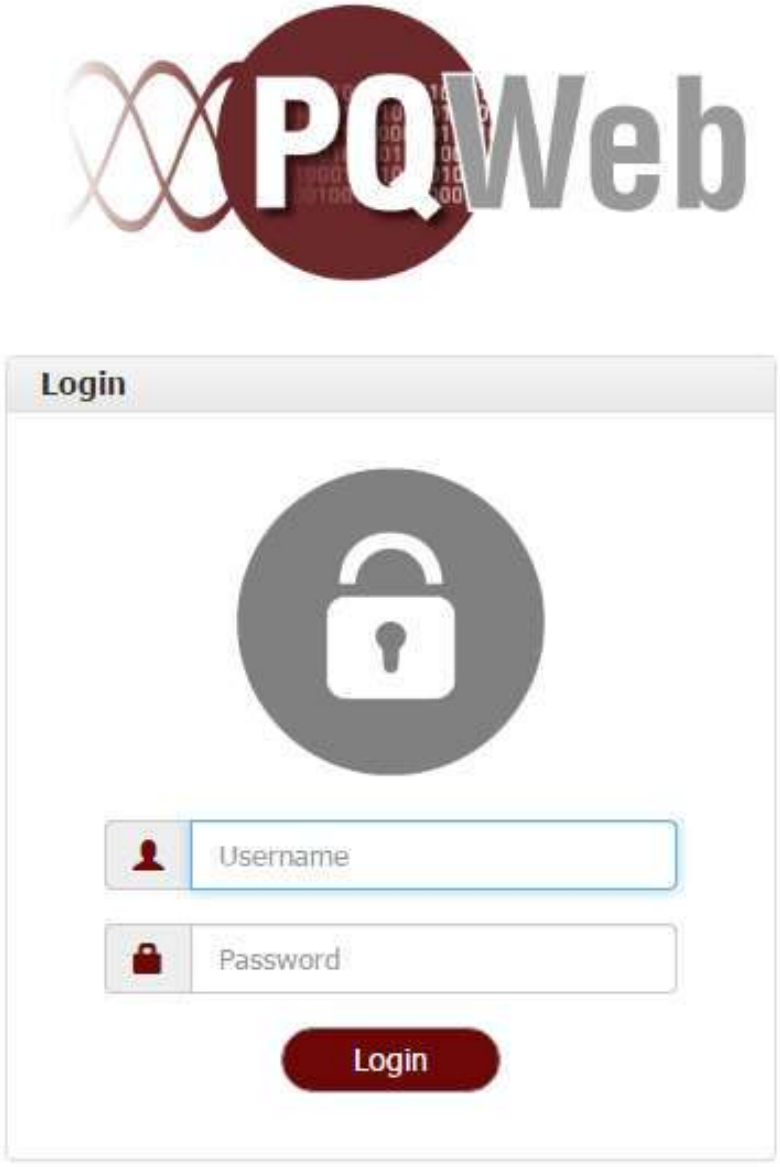
Login



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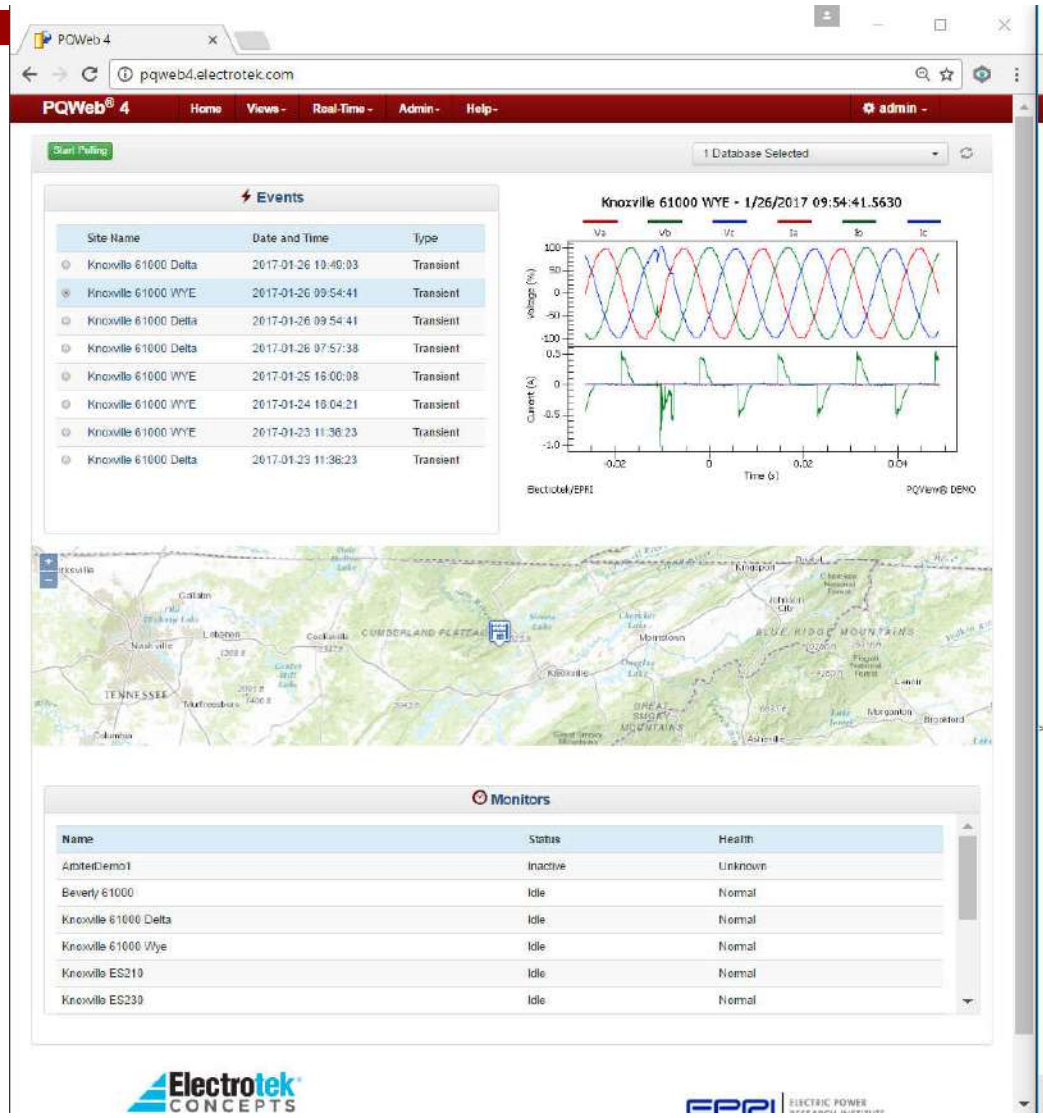
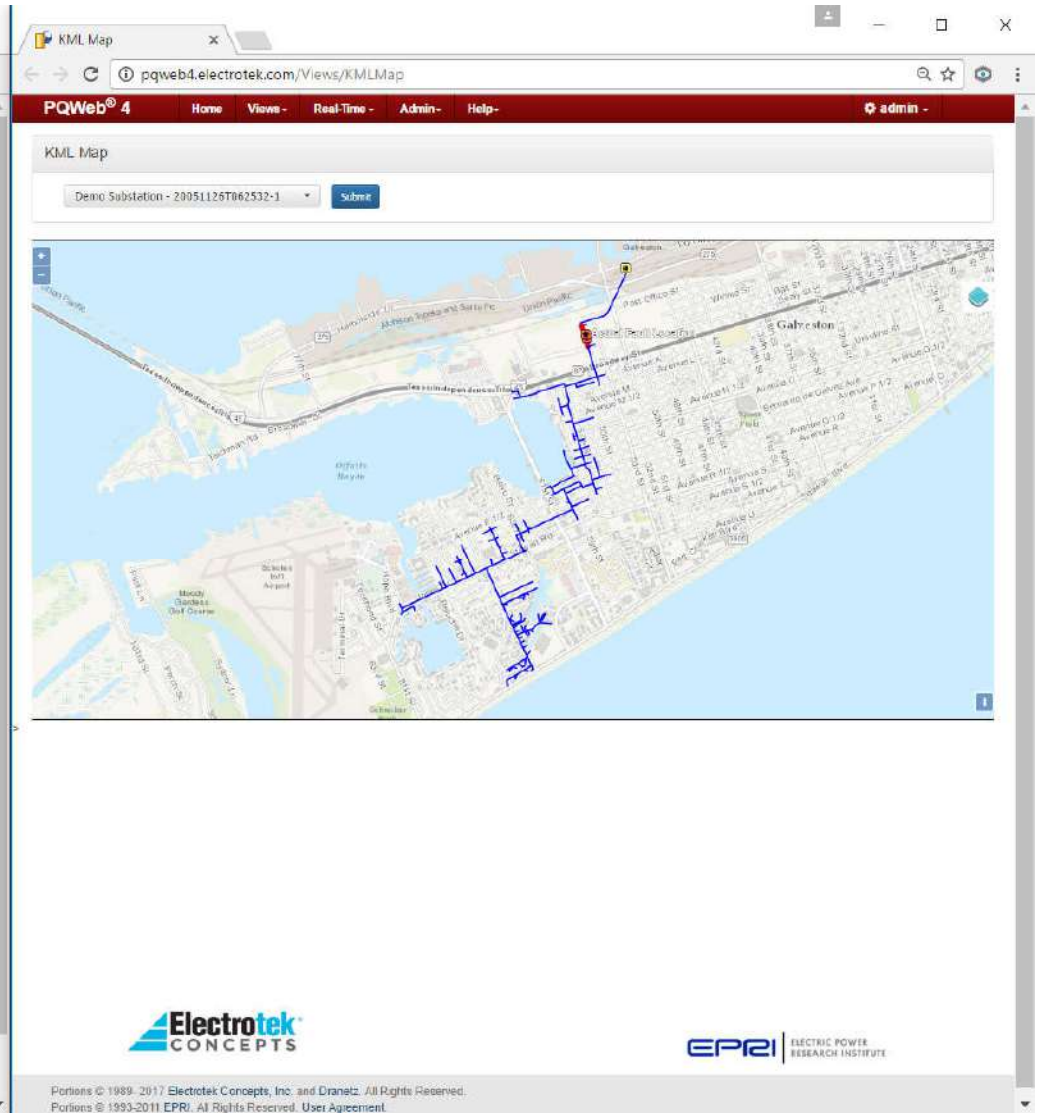
PQWeb Dashboard and Fault Location





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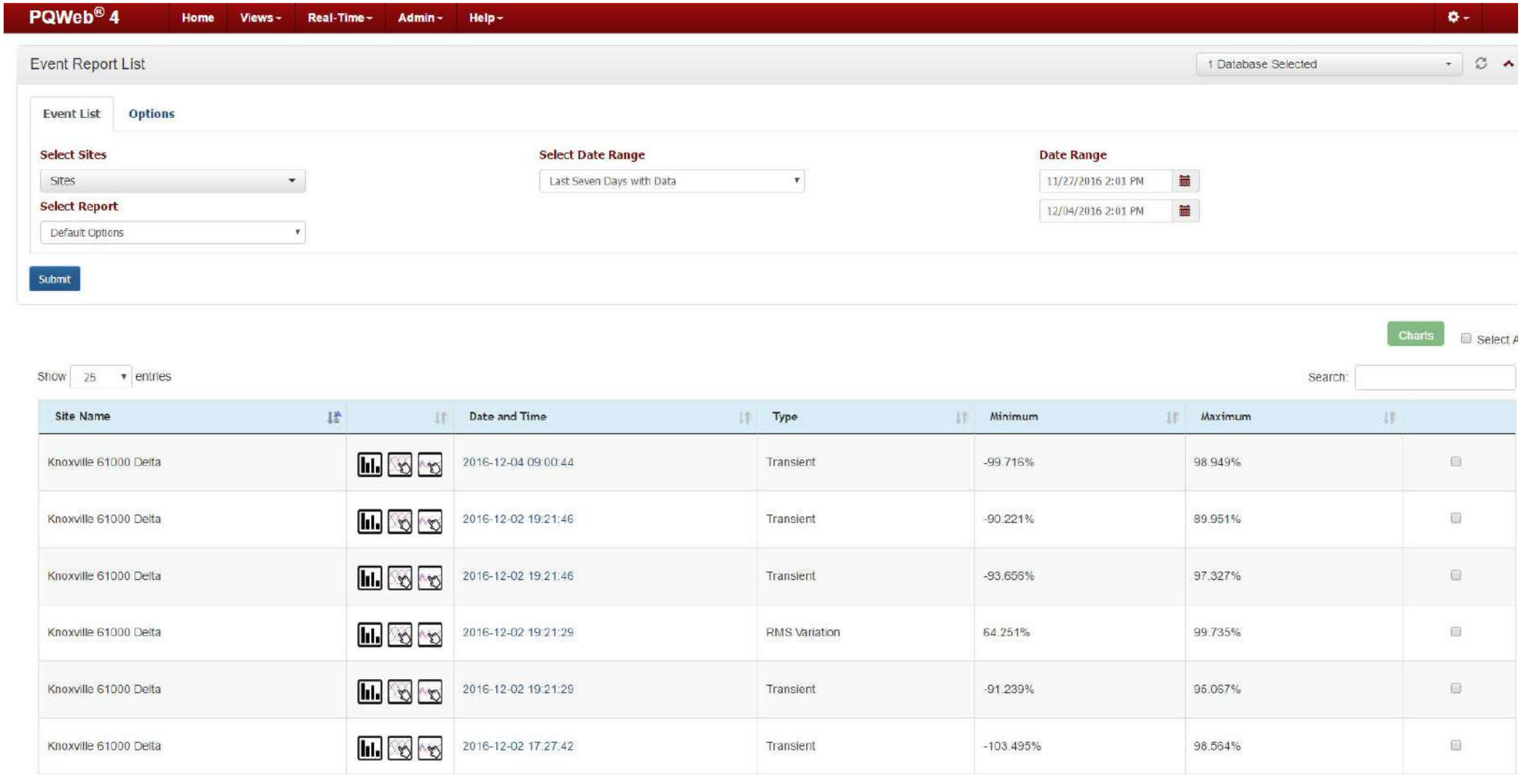
Event List



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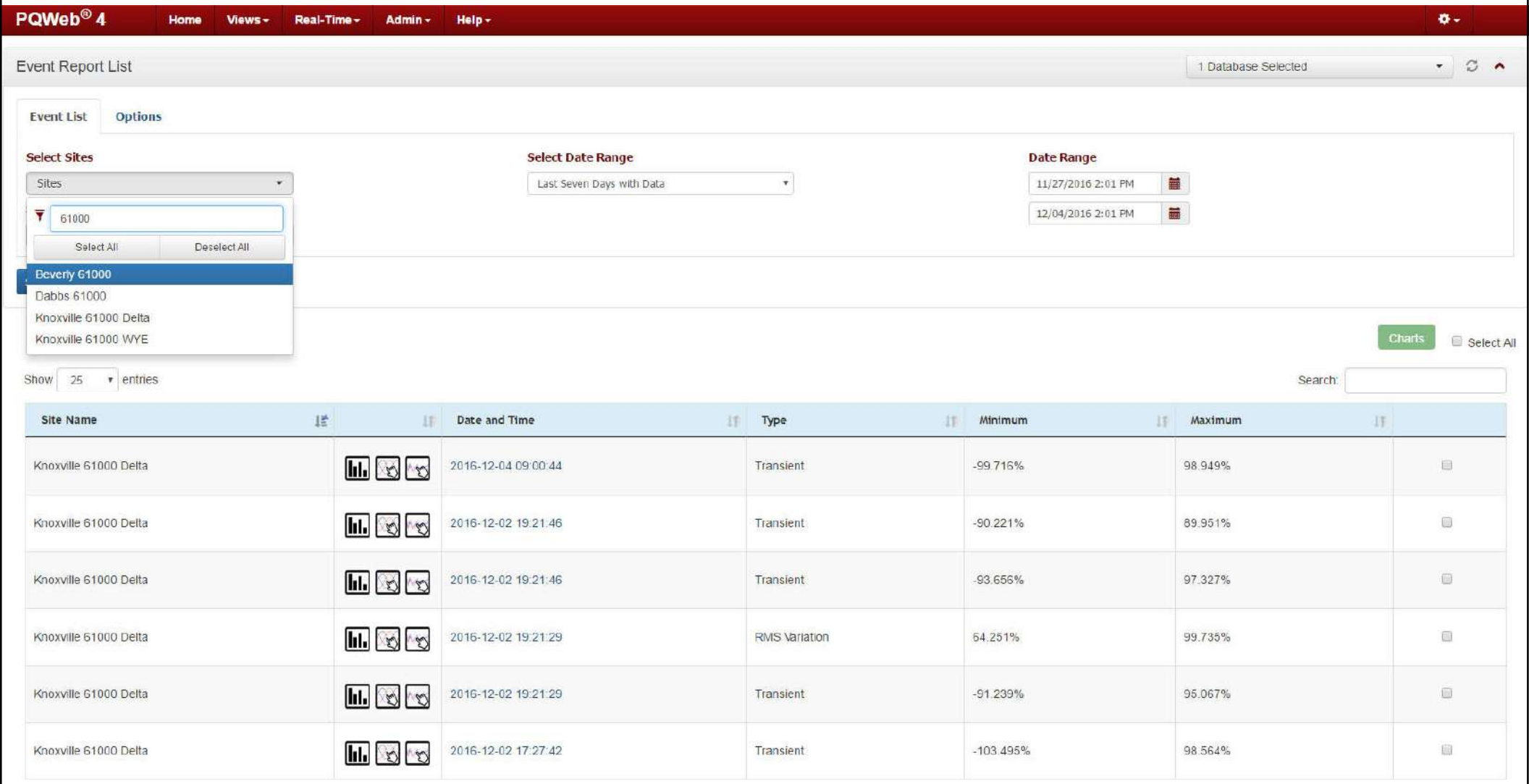
Event List – Site Filtering



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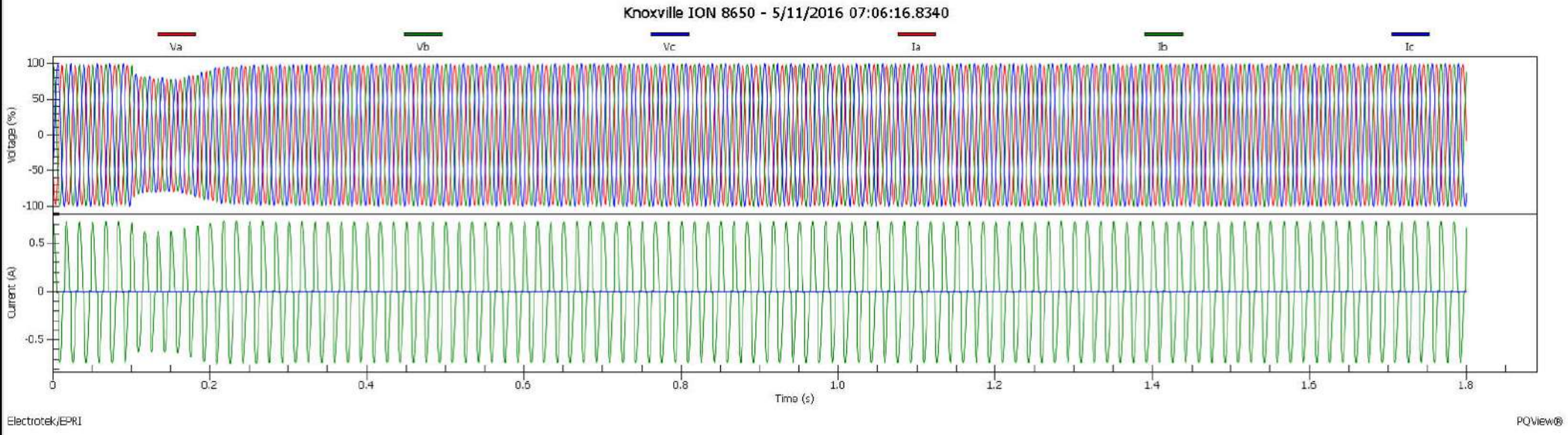
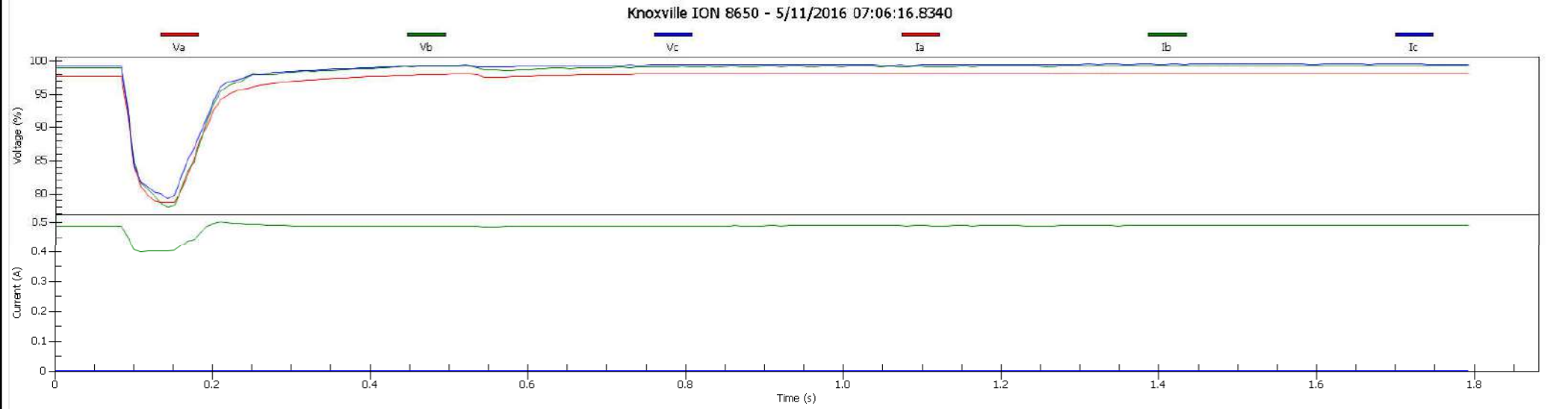
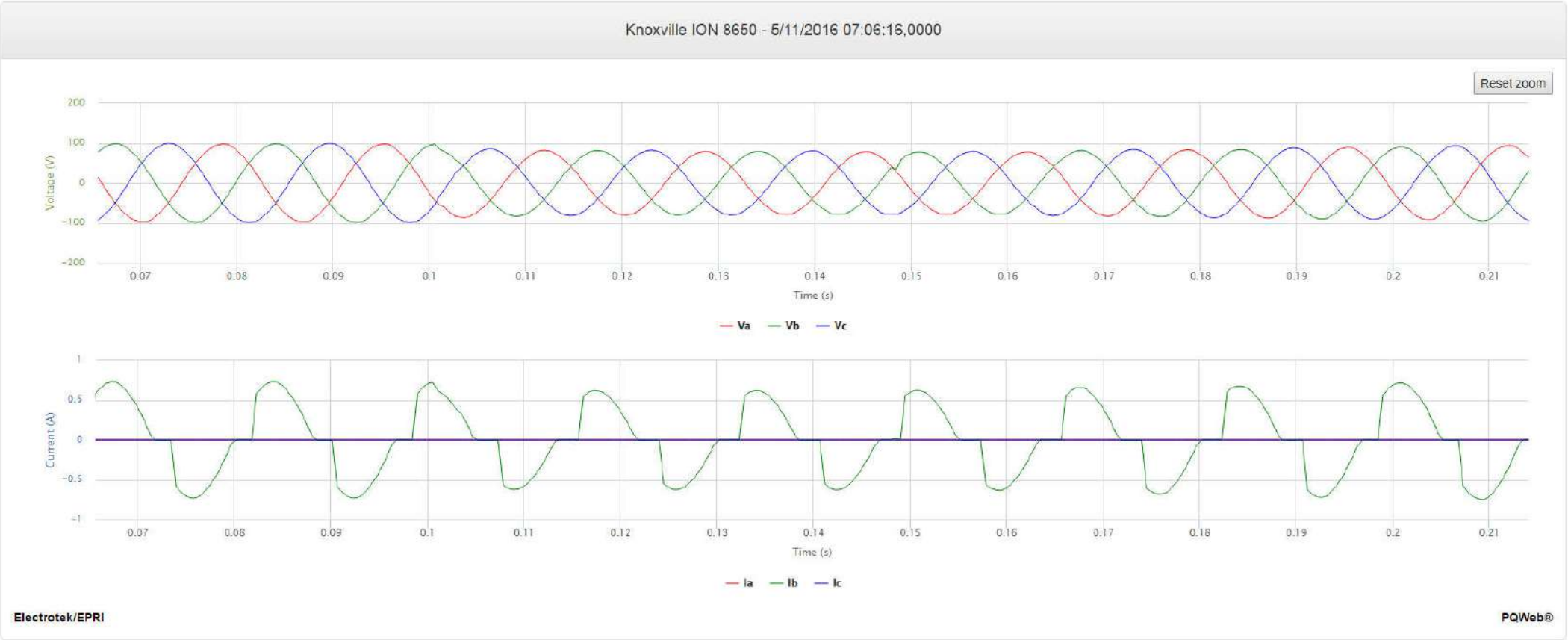
Static Event Charts



Interactive Chart



Interactive Event Charts – Waveforms



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Interactive Event Charts – RMS

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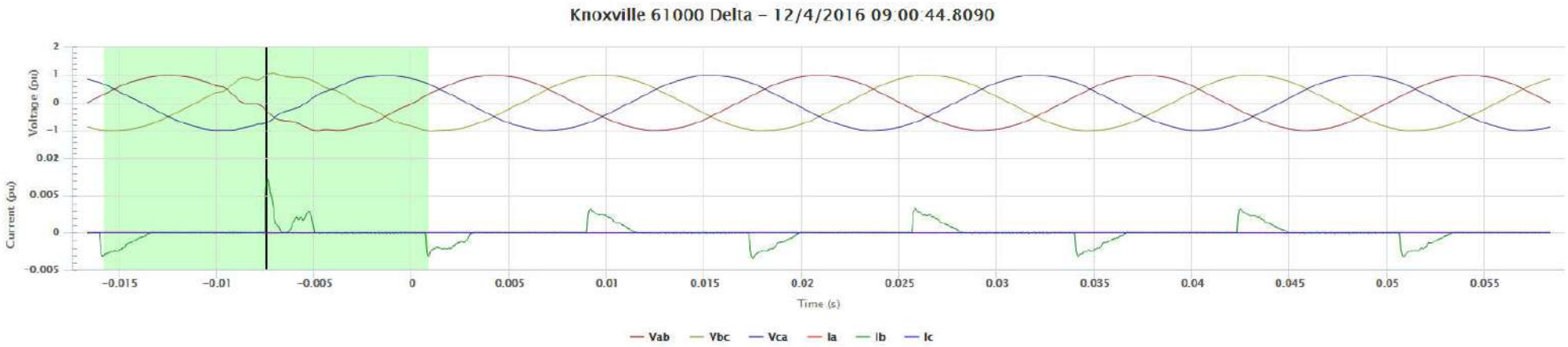
Derived Charts

Event Chart



Electrotek/EPRI PQWeb®

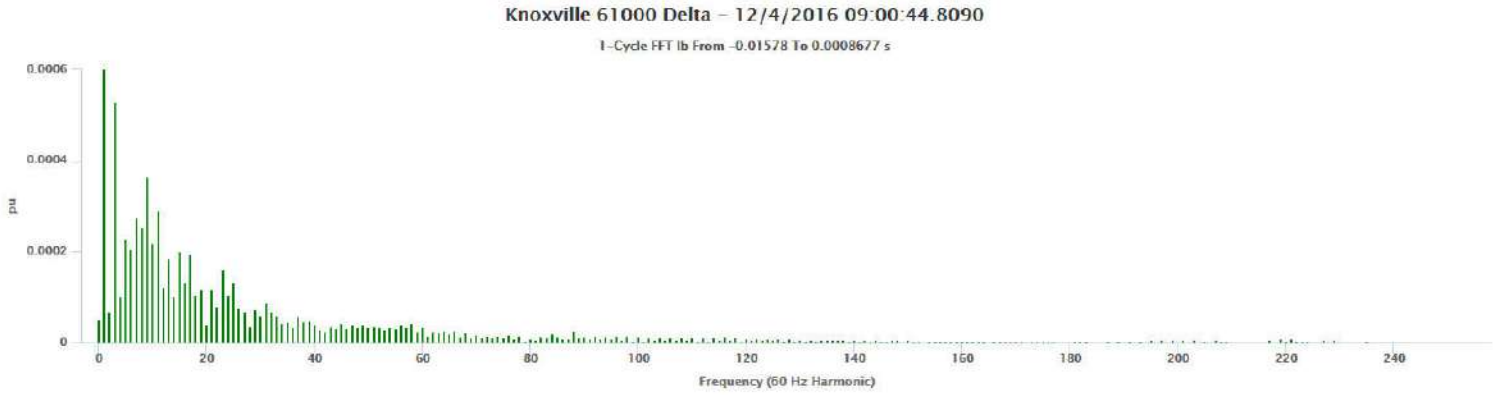
Derived Chart

Derived Chart Types

Spectrum from 1-Cycle Window

Show Derived Chart

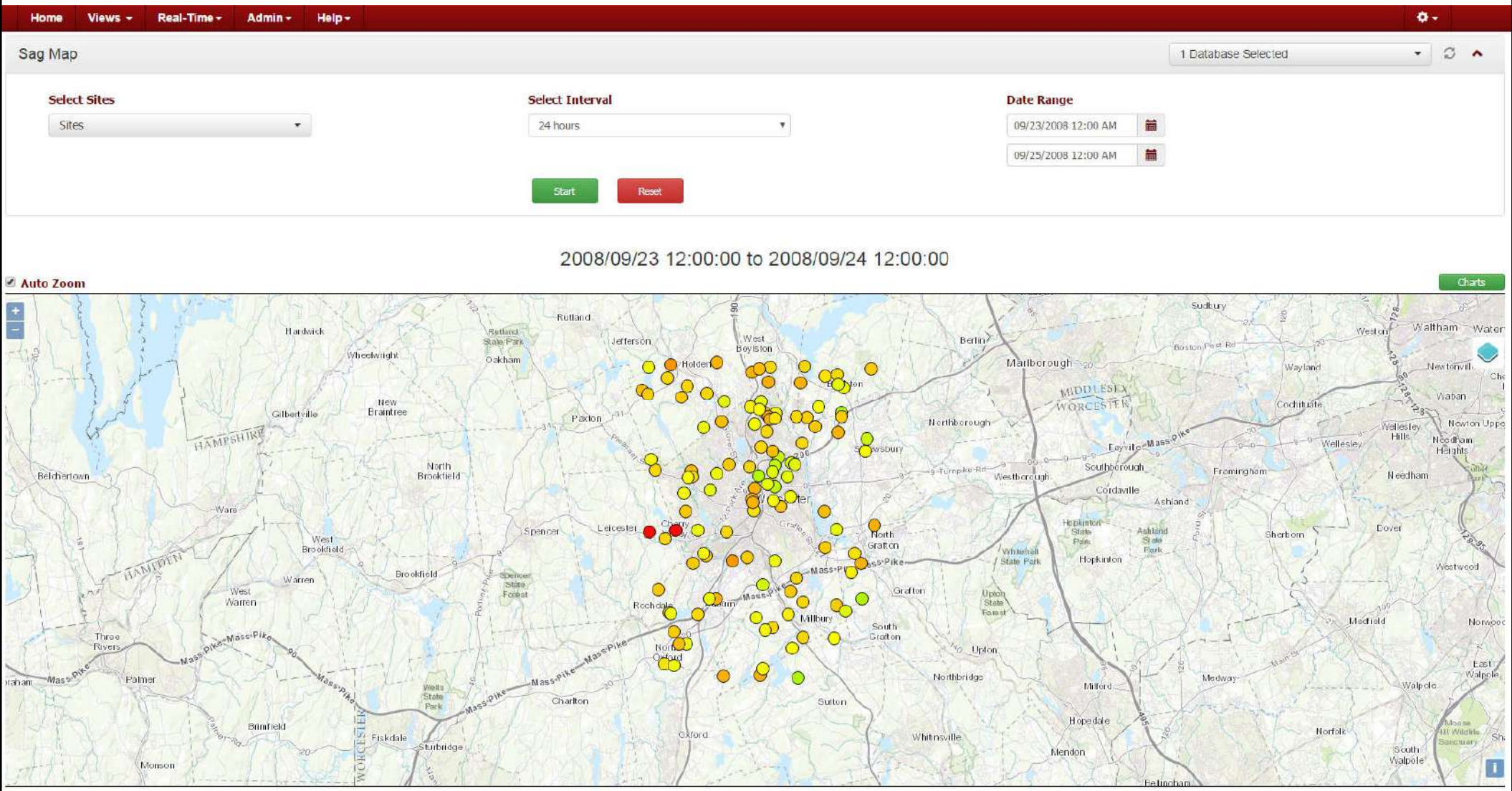
RMS:	0.0013
Fund:	0.0008
DC:	0.0001
Max:	0.0073
Min:	-0.0032
CF:	5.4810
FF:	2.2010
THD Fund:	136.4%
THD RMS:	80.53%
HRMS:	0.0011
Phase Jump:	-0.236°



PQWeb®

served.

Voltage Sag/Dip Map



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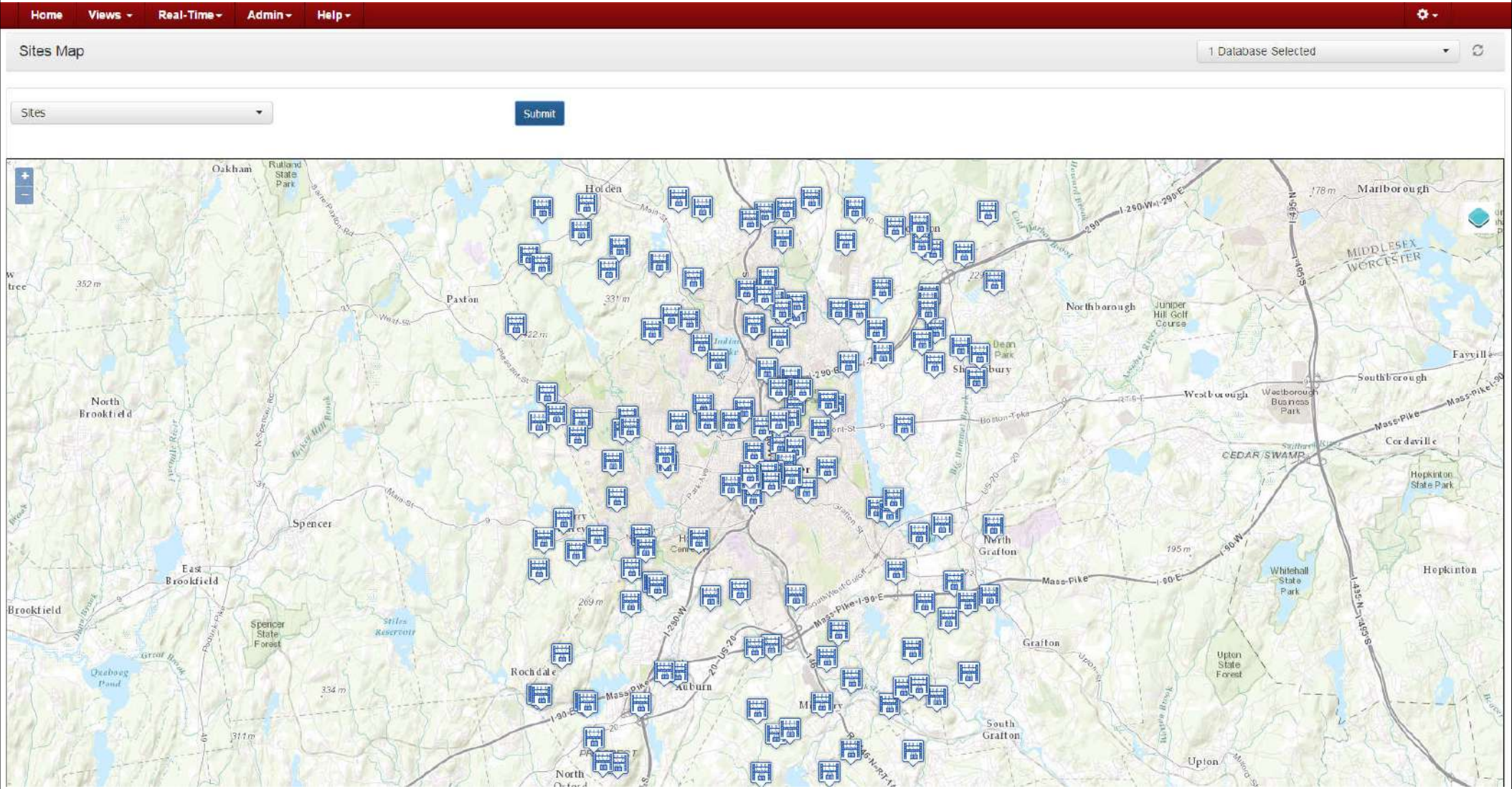
Site Map



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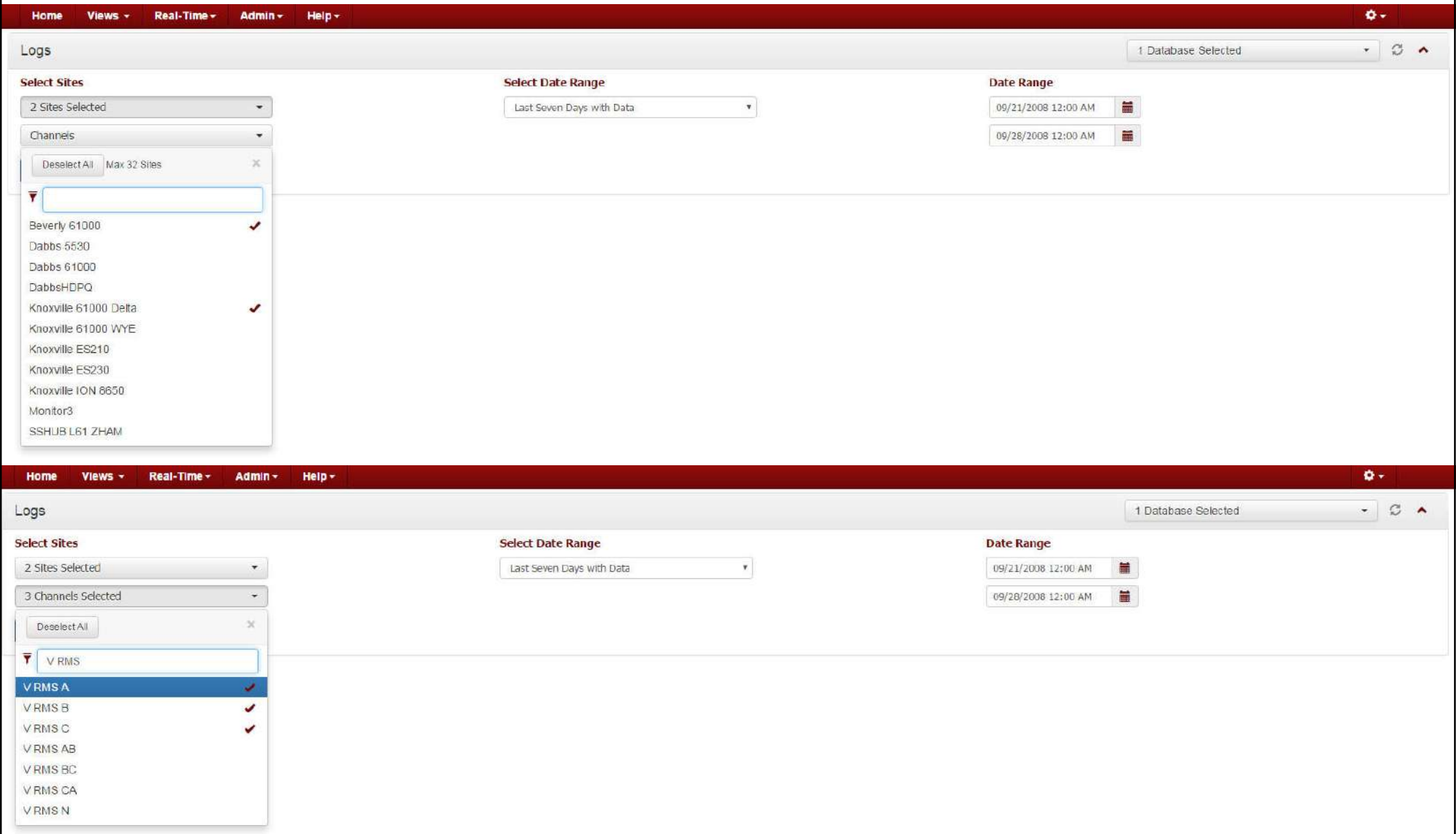
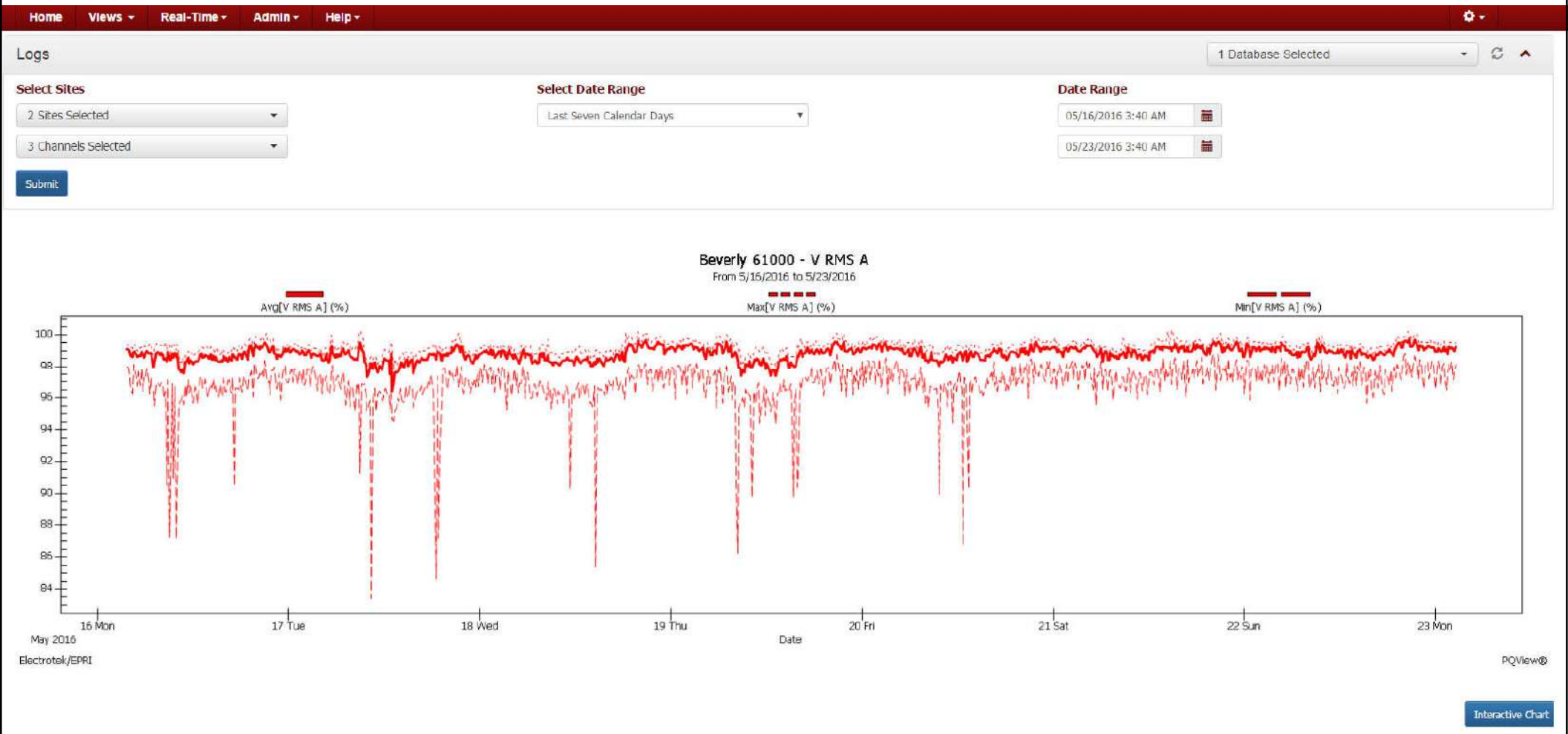
Data Logs – Site and Channel Selection



Data Log – Static Chart



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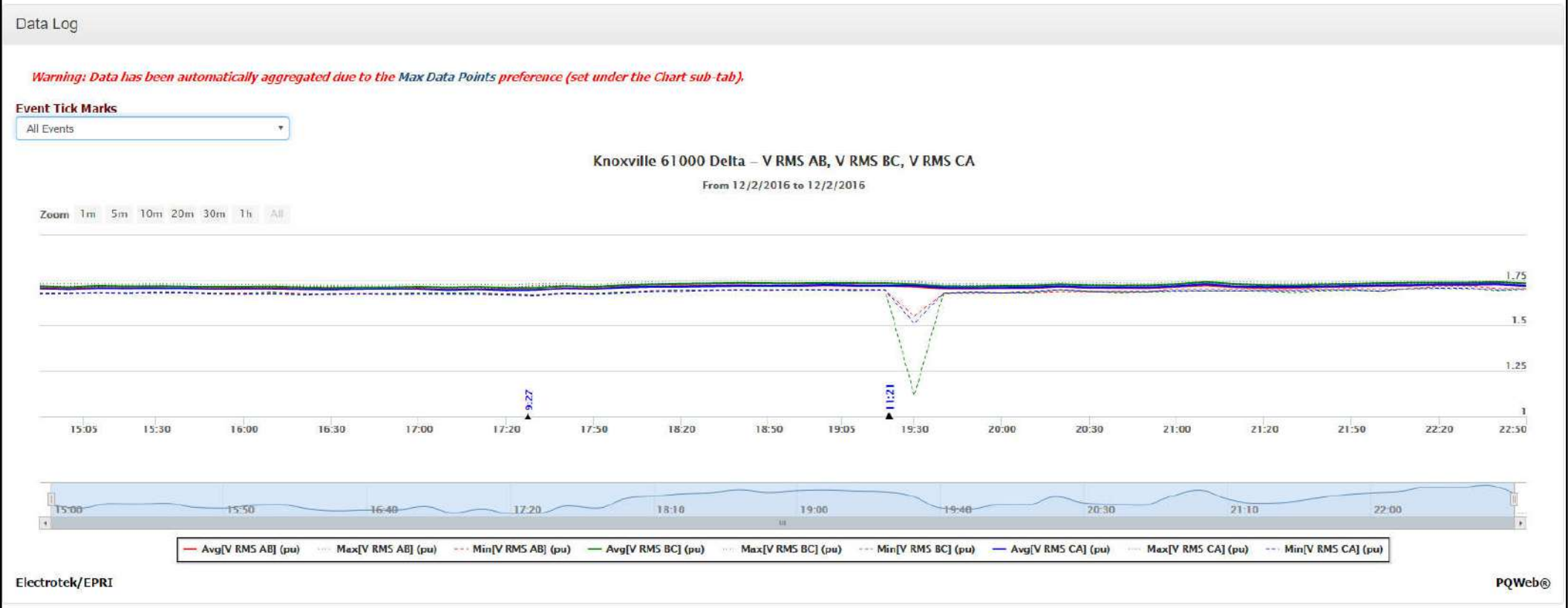
Data Log – Interactive Chart



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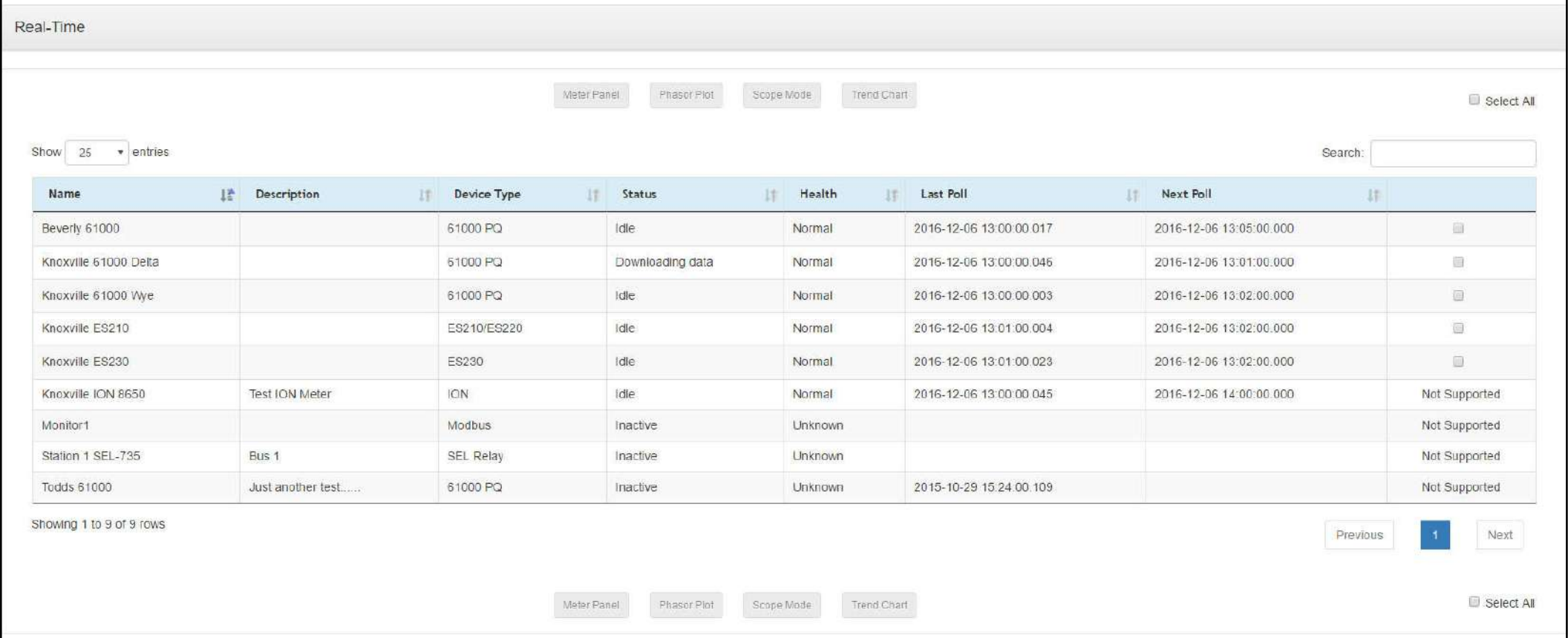
Real-time Meter Data



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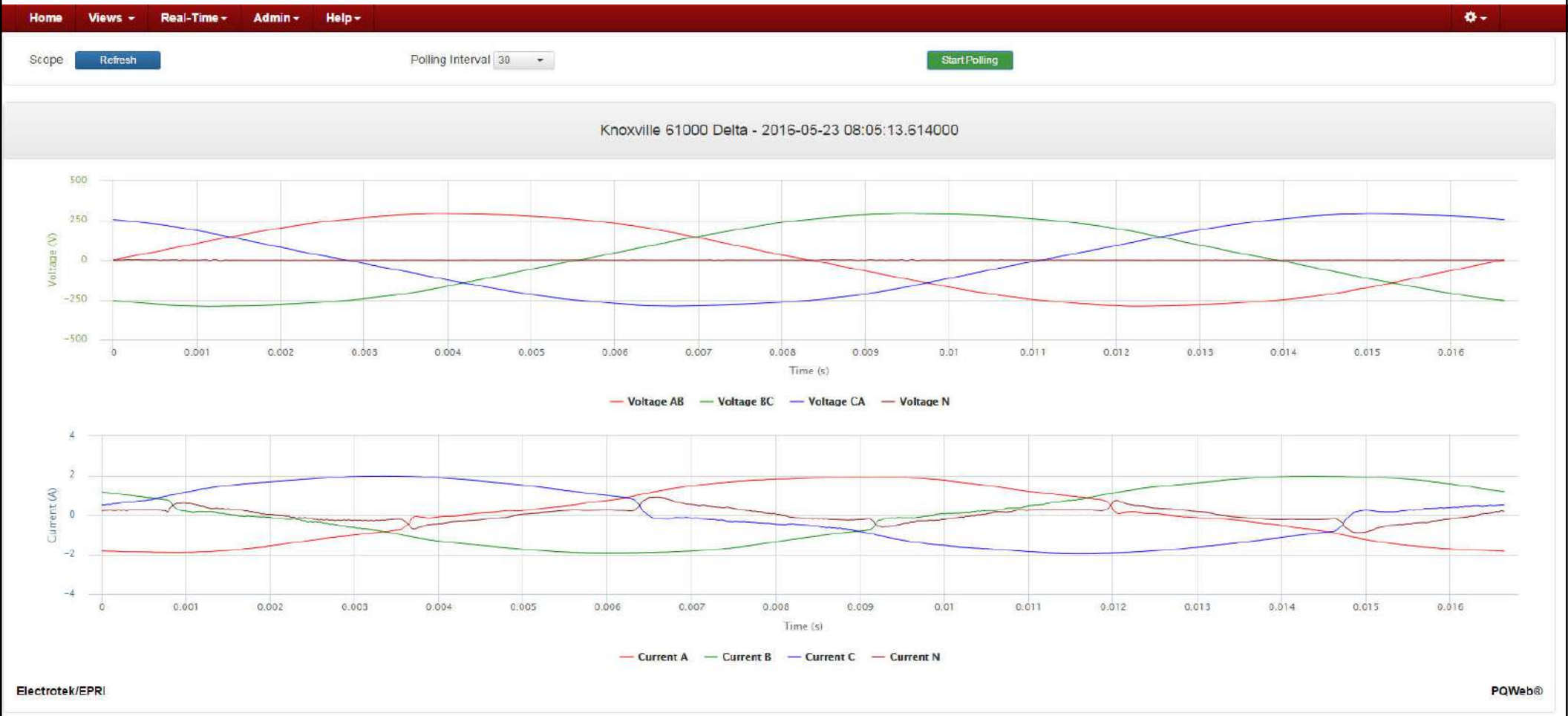
Real-time Meter Data – Scope Mode



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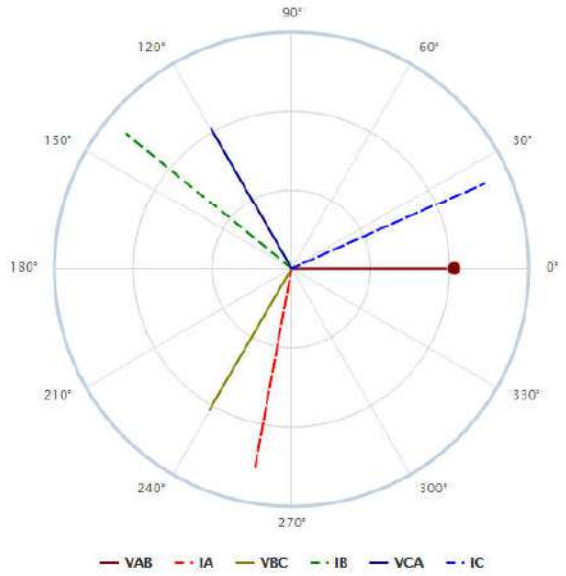
Real-time Meter Data – Phasor Plot

Home | Views | Real-Time | Admin | Help

Phasor Plot | Refresh | Polling Interval 30 | Start Polling

Knoxville 61000 Delta

VAB	206.398	0.003229°
IA	1.28469	-100.442°
VBC	207.44	-120.28°
IB	1.35429	140.655°
VCA	205.741	119.79°
IC	1.3385	23.9331°
Zero Sequence Voltage		0.22342
Zero Sequence Current		0.05143
Positive Sequence Voltage		206.483
Positive Sequence Current		1.31465
Negative Sequence Voltage		0.807832
Negative Sequence Current		0.0099
V Unbalance (S2/S1)		0.391225
I Unbalance (S2/S1)		0.753205
V Unbalance (S0/S1)		0.108203
I Unbalance (S0/S1)		3.91203



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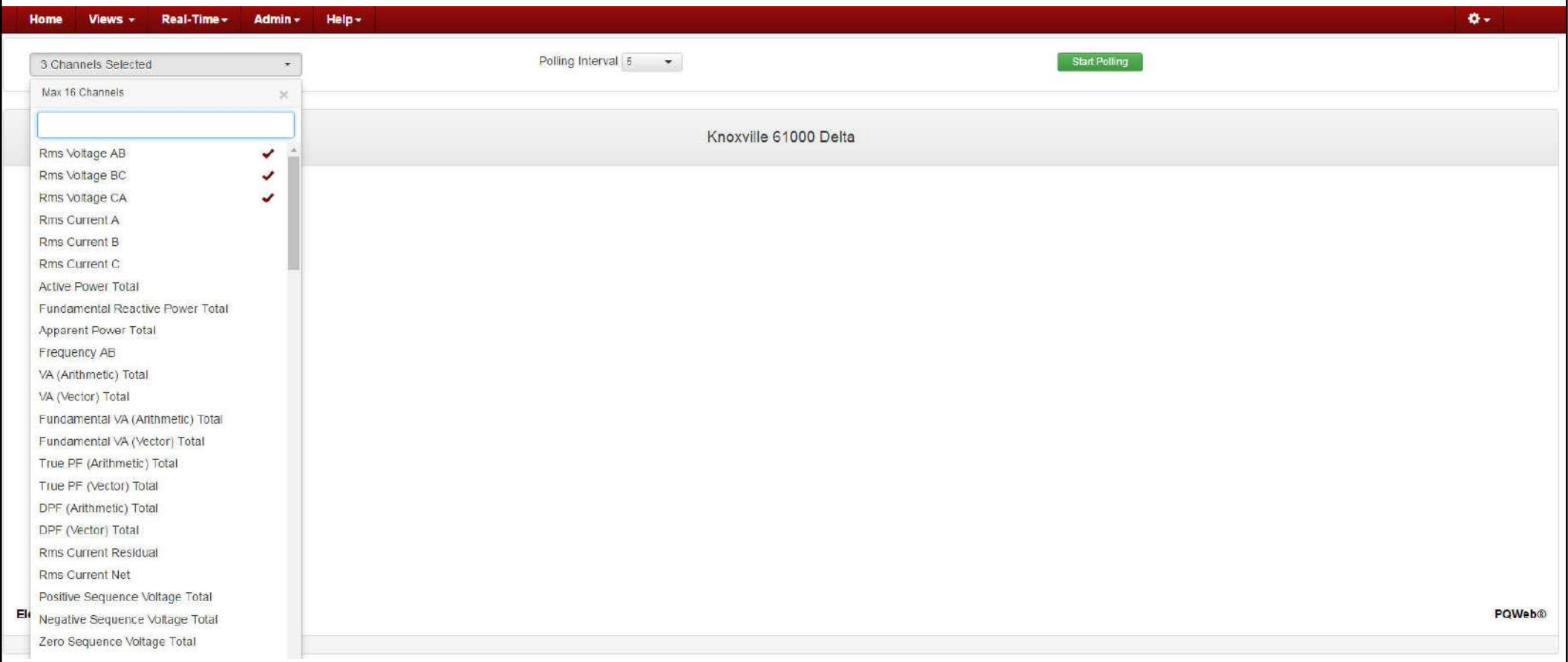
Real-time Meter Data – Trend Chart



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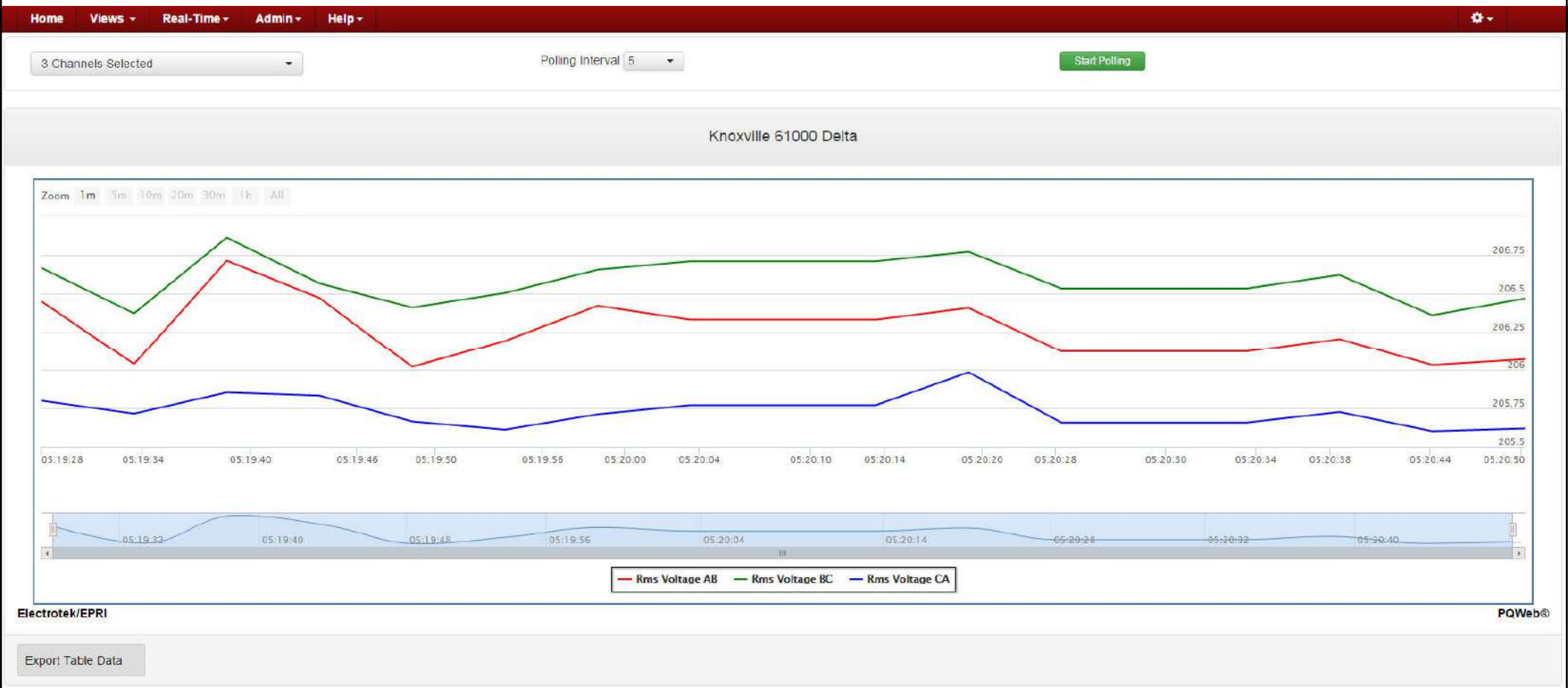
Real-time Meter Data – Trend Chart



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Try it yourself!

http://pqweb4.electrotek.com

Login: pqtester

Password: pq4test

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