Response to

Request For Qualifications

Advanced Metering Infrastructure

(AMI) Vendor Selection

March 11, 2025

Greenville Utilities Commission
Attn: Clive Haddock, Lifetime CLGPO, Procurement Manager
P.O. Box 1847
Greenville, NC 27835-1847

Subject: Response to the GUC Request for Qualifications

Dear Mr. Haddock,

Wesco is pleased to present our qualifications to Greenville Utilities in response to GUC's AMI Vendor Selection for Advanced Metering Infrastructure RFQ. Wesco's experience includes the deployment of over 200 AMI and AMR systems on various communication technologies (Powerline Carrier, both RF mesh and point to point, cellular and hybrid communications) for public power utilities. Over the years, our Technology Team has won industry awards from several AMI manufacturers for these efforts as well as for our ongoing support. Currently, Wesco is a finalist for two new AMI systems in North Carolina at public power utilities. As the prime on these projects, Wesco matches the best of the technologies available today with the needs of your utility. Wesco uses our experience and knowledge is integrate these technologies to provide an AMI system capable of providing a system to meet your needs today and in the future.

In past projects, Wesco has designed system with our partners to do AMI, Outage Management (OMS), Smart Grid Monitoring and Control, Meter Data Management (MDM), Consumer Portals, Distribution Automation and Control, Load Management, and more. With these partners, we bring a large, unified, well financially backed team to projects like this to make them successful.

A few of our key partners that we include in projects can be:

- For AMI – Aclara, Honeywell, Itron, Tantalus, and Eaton
- For MDM – Harris, Parsons (ElectSolve), UtilityHawk, UtiliSmart
- For Custom Portal - Harris, Parsons (ElectSolve), UtilityHawk
- For OMS – Parsons (ElectSolve), Harris, mPower, MilSoft
- For Meter installs and changeouts, Wesco has our own employees to do these and subcontracts Pedal Valve (a WBE/MBE company) to work with our crews in North Carolina. Wesco methodology is included as an attachment a later section of our response
- For installation of collectors, utility poles and antennas on towers or water tanks, Wesco have a group of license contractors we use in North Carolina

Ideally suited for the GUC's territory and long-term AMI 2.0, our suggested Aclara purpose-built point-to-multipoint, full-service, high-bandwidth secure RF system that operates on a single, licensed, RF network creates an umbrella network across your entire territory and deploy meters as necessary without the need to hop from meter to meter to collect information. Aclara's RF technology provides deterministic latency, message prioritization for critical data (i.e., Distribution Automation, Load Control), dedicated channels for each application, and a redundant secure network design. The RF AMI network architecture does not depend on meter-to-meter hopping, required in traditional RF mesh architectures. All communication is directly between the meter/communication module and DCU with a backhaul from the DCU using multiple options, such as Ethernet, fiber, cellular, etc. The Aclara RF system also allows for easy additions of collectors as application over the AMI network grow or as the GUC's topography changes. These collectors can go on any pre-existing utility pole or structure with having to buy or lease land and erect a radio tower to add data collectors or network throughout like other point to multipoint systems.

In addition, The GUC will gain a robust and primary-use FCC-licensed spectrum owned by the utility with unparalleled coverage. Aclara's communication protocol has proven to outperform all other AMI communication schemes due to superior materials penetration, better propagation, and designed-for-AMI advantages. Further, Aclara's system's read success rate is the best in the industry. A key factor for this is the frequency range used in the 450 MHz area instead of the higher, less powerful 900 MHz, used by other AMI vendors.

Aclara's RF network design is secure, resilient, and reliable, providing built-in redundancy through multiple collection and processing paths without the use of repeaters, which prevents a single failure from disrupting normal operation of the entire network.

Additional value and benefits provided to the GUC include:

- Longevity: Our commitment to backwards compatibility ensures there are no stranded assets or customers. Aclara has always had a policy of supporting all equipment on our network. The equipment you deploy today will continue to be supported throughout their lifetime.
- Commitment to Future Growth: Aclara's RF AMI network was designed to support future growth, including emerging grid solutions without the need to change out hardware. The system architecture, propagation study, and proposed solution will deliver on the utility's current requirements while accommodating future growth in terms of the GUC's footprint as well as emergent technologies. If needed, DCUs can be upgraded with an additional communication board(s) to easily expand capacity.
- Built-In Redundancy: In the default configurations, electric endpoints transmit their readings every 15 minutes for residential and every 5 minutes for commercial; daily (midnight) readings including kWh, kW, kVar, kVah and others can also be collected. These transmissions are collected and immediately forwarded to the headend by all DCUs within range, typically at triple redundancy. In default configuration, gas, and water MTUs capture hourly meter reads and transmit readings four times per day (or every 6 hours per day); both stores up to 96 days of hourly reads.
- Reliability: Critical to most utilities is timely, dependable, and accurate data – both for meter and network operations. Aclara's technology has been designed specifically to meet these needs with 100% coverage of relevant meters and our typical Read Success Rate (RSR) is over 99.5% of all hourly read intervals for all active endpoints.

Aclara's AMI solution can serve as the backbone to support a myriad of other grid management tools, including Distribution Automation, Level 2 EV charging, intelligent Load Control, leak and methane detection, and other grid edge applications and distribution devices from the Hubbell portfolio. Standards-based application interfaces guarantee effective integration with other applications including CIS, SCADA, OMS, and GIS. In addition, Aclara has experience integrating with the back-office applications in use by the GUC today.

This AMI solution will allow the GUC to improve operational efficiency and to enhance customer offerings while reducing costs through the collection of reliable interval meter data and integration into the GUC's billing and other back-office systems. Our AMI solution includes the following key components:

- Aclara AMI network design with guaranteed redundancy
- Aclara i210+c residential and kV2c-Gen5 commercial electric meters with Aclara RF Network Interface Card
- Aclara gas and water communications modules compatible with all major industry meter brands
- Aclara RF network Data Collection Units (DCU)
- AclaraONE software platform with analytics
- Optimized network design and software integration services from our experienced team of professionals
- Training for technicians and operators

Wesco, along with Aclara, looks forward to the opportunity to learn more about the GUC's current and future needs and to further discuss our solution.

Regards,

Hernan Nucci
Senior Director Sales - Technology and Innovation
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Company Background and Relevant Experience
Company Overview

Headquartered in Pittsburgh, Pennsylvania, Wesco International (NYSE: WCC) is a FORTUNE 500® company with more than $21 billion in annual sales and a leading provider of business-to-business distribution, logistics services and supply chain solutions. Wesco offers a best-in-class product and services portfolio of Electrical & Electronic Solutions (EES), Communications & Security Solutions (CSS) and Utility & Broadband Solutions (UBS).

The Company employs approximately 20,000 people, partners with the industry's premier suppliers and serves thousands of customers around the world. With millions of products, end-to-end supply chain services and leading digital capabilities, Wesco provides innovative solutions to meet customer needs across commercial and industrial businesses, contractors, government agencies, institutions, telecommunications providers, and utilities. Wesco operates approximately 800 branches, warehouses, and sales offices in more than 50 countries, providing a local presence for customers and a global network to serve multi-location businesses and multi-national corporations.
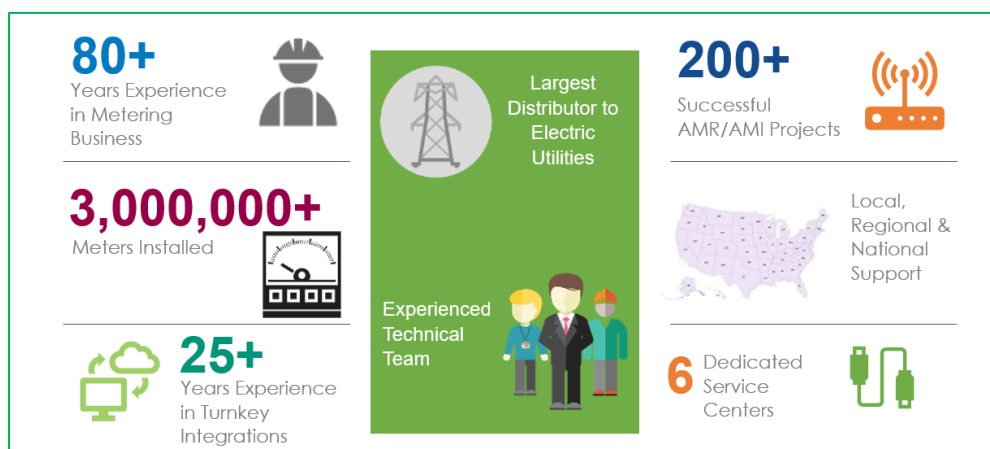
Wesco has extensive experience deploying AMI systems together with our preferred vendor partners. We have successfully deployed more than 270 AMI and AMR systems for cooperatives throughout the US.

As the largest utility distributor in North America, with over 80 years of experience in the metering business, Wesco offers large-scale field resources, technical expertise, financial strength, and industry-leading technology partnerships to execute your project. Wesco. has been selling and installing AMR/AMI solutions for over 25 years, totaling approximately 3,000,000 + endpoints. We are eager to leverage our experience for the Greenville Utilities. Wesco will be utilizing their staff for electrical meter installation.

Since 2018, Aclara Technologies has been a division of Hubbell Utility Solutions and a wholly owned subsidiary of Hubbell Incorporated, continuing a legacy of nearly 50 years as a world-class supplier of smart infrastructure solutions (SIS) and services to the utility industry. Integrating into publicly traded Hubbell has enhanced Aclara's global distribution capabilities while furnishing increased access to resources for innovative R&D.

Aclara has been providing innovative tools and technology to the utility industry for nearly 50 years, while Hubbell has been in business for more than a century. Aclara helped pioneer the AMI business in 1972 with its Two-Way Automatic Communication System (TWACS), a technology that paved the way for the first fixed network RF AMI system in 1997.

Aclara has been recognized for its vision and end-to-end solution strategy by Navigant Research, won a Global Smart Energy Networks Enabling Technology Leadership Award as well as a North American New Product Innovation Award from Frost & Sullivan, and was named a finalist in three categories of the Platts Global Energy Awards.

Additionally, Hubbell, Aclara's parent company, has been named by Ethisphere for four years in a row as one of the most ethical companies in the world for the company's unwavering commitment to business integrity. Ethisphere presented awards to just 135 companies representing 47 industries and spanning 22 countries.

Aclara Technologies maintains three offices in the U.S.:

- 77 West Port Plaza Drive #500, St. Louis, MO 63146-3126 (Headquarter)
- 13650 Dulles Technology Dr #300, Herndon, VA 20171
- 30400 Solon Rd, Solon, OH 44139

Financial Stability

Aclara Technologies LLC is a wholly owned subsidiary of Hubbell Incorporated (NYSE: HUBB), operating under the Hubbell Utility Solutions segment (HUS). In 2024, Hubbell, Inc. was added to the S&P 500 listed companies with annual revenues exceeding $5B. In 2023, Hubbell's reported revenue was $5.4 billion, with the HUS segment's revenue at $3.3 billion. Hubbell's 2023 Annual Report can be downloaded at:

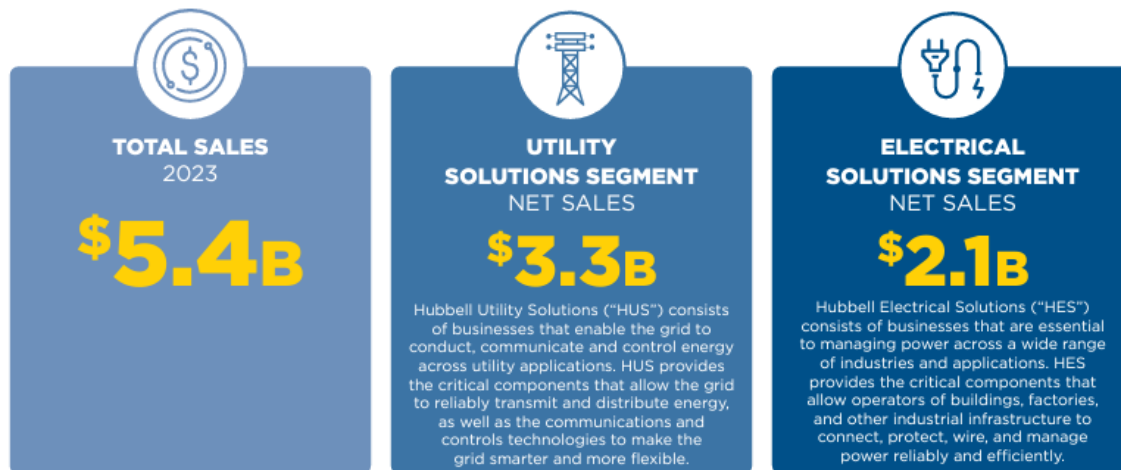https://investor.hubbell.com/ar2023/images/Hubbell_AR2023.pdf.

TOTAL SALES
2023

$5.4B

UTILITY SOLUTIONS SEGMENT
NET SALES

$3.3B

Hubbell Utility Solutions ("HUS") consists of businesses that enable the grid to conduct, communicate and control energy across utility applications. HUS provides the critical components that allow the grid to reliably transmit and distribute energy, as well as the communications and controls technologies to make the grid smarter and more flexible.

ELECTRICAL SOLUTIONS SEGMENT
NET SALES

$2.1B

Hubbell Electrical Solutions ("HES") consists of businesses that are essential to managing power across a wide range of industries and applications. HES provides the critical components that allow operators of buildings, factories, and other industrial infrastructure to connect, protect, wire, and manage power reliably and efficiently.

Figure 1: Financial Strength

With 135 years of profitable operation, Hubbell provides stability and can bring strong financial resources but more importantly can offer a total turnkey system solution, including meter installation and AGI applications, under one umbrella.

Hubbell is a leading provider of infrastructure technologies to the electrical transmission and distribution, water, and gas utilities across North America. The advantage to working with Hubbell is the breadth of Hubbell's Grid Automation suite. As depicted in Figure 2, coupling Aclara's Advanced Metering with our other product technology offerings enables the future of complete grid automation through visibility, control, prediction, and prevention.
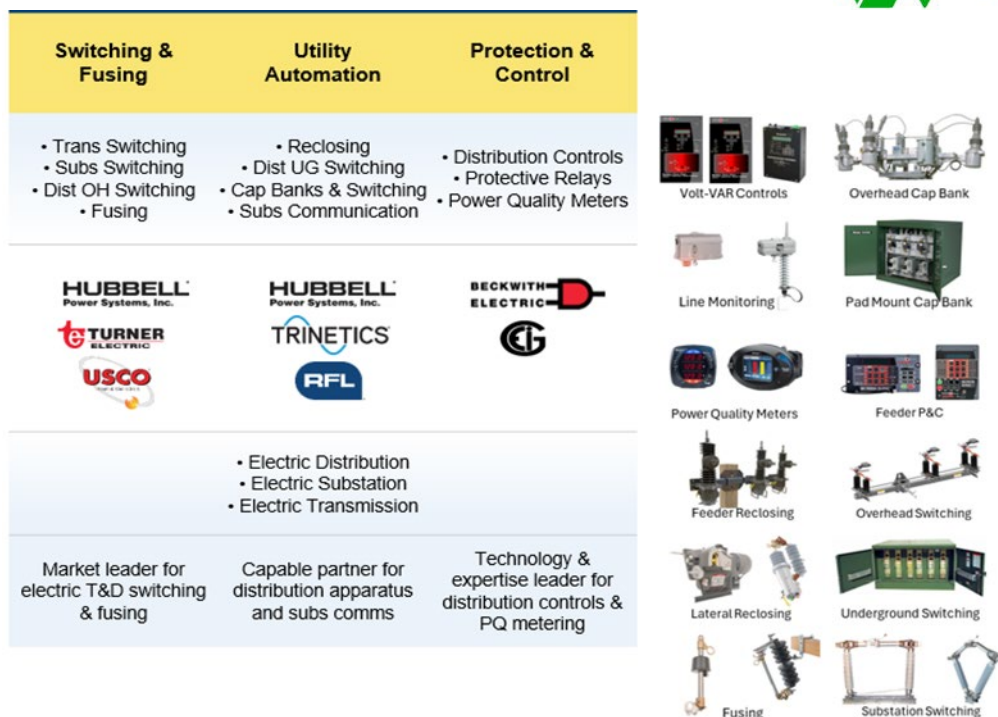
Figure 2: Reliability & Optimization

This breadth can provide single sourcing options for end-to-end solutions that deliver a grid equipped for the future. Selection and deployment of these solutions can be broken into multiple phases over time to meet evolving utility needs and budget constraints.

The following are some examples of solutions that can be addressed over time with evolving customers' needs:

Circuit Optimization
- Reduce peak loading
- Unlock circuit capacity
- Provide energy savings
- Minimize DER curtailment

Circuit Reliability
- Improve SAIDI and SAIFI
- Enhance crew and public safety
- Minimize off-hours deployment

Distribution Awareness
- Predict future grid state
- Identify emerging conditions
- Identify faults and event locations accurately
- Provide enhanced ADMS performance

DER Visibility and Control
- Identify grid impacts
- Reduce peak loading
- Defer Capex and avoid Opex
- Provide secure and accurate billing data

Relevant Project Experience and Project References

Aclara has deployed more than 1,100 AMI systems to the utility industry. These include Two-way Automatic Communication System (TWACS) technology (for electric utilities) that communicates overpower lines and RF AMI technology that will be proposed to the GUC that communicates via licensed radio frequency.

Aclara's RF technology has been proven to be extremely versatile, allowing us to bring the benefits of AMI to electric, water, and gas utilities, including combinations of these systems on the same network. In our history of technological innovation, we are in our third generation of DCUs, but many of our early deployed systems still operate because of our commitment to never strand an asset.

Please see Figure 3 below for a depiction of Aclara's more than 500 current AMI clients, which represents all electric, gas, water, and combo deployments.
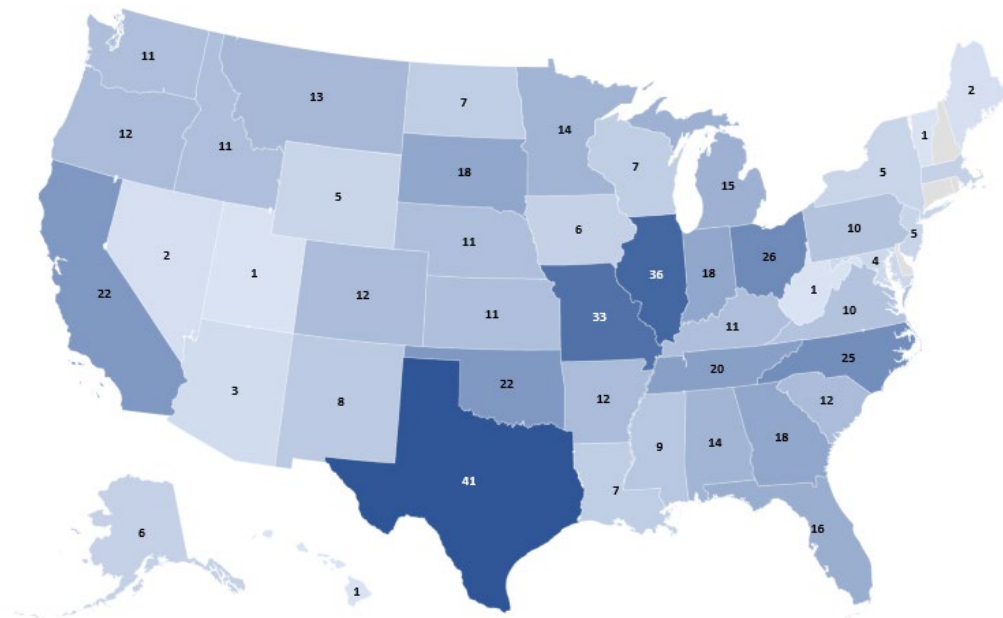

Figure 3: AMI Customer Count per State

Aclara has experience in implementing a wide range of AMI solutions throughout its history. Our extensive AMI experience includes implementing the two largest stand-alone gas AMI systems in North America at PG&E and Southern California Gas (SoCalGas), each early adopters of technology. Combined, PG&E and SoCalGas have over 11 million endpoints read by more than 9,000 Aclara RF Network Data Collector Units (DCUs), providing proven read-rate reliability throughout the state of California. Our customers like the city of Stillwater, OK (15,000 water and 20,000 electric endpoints) Guadalupe Valley Electric Cooperative, TX (90,000 endpoints), Austin Utilities, MN (9,000 water, 11,000 electric, and 10,000 gas) demonstrate confidence in Aclara's AMI solutions. Other customers such as People's Electric Cooperative and Wiregrass Electric Cooperative leverage Aclara's DA solutions and solutions such as Phase Detect and ExactaGuard.

Asheville Water Resources
The city has approximately 62,000 metered services.

Asheville Water Resources
Brandon Buckner, Division Manager: Backflow/Mapping/Meters/Taps
(828)777-9003 / bbuckner@ashevillenc.gov

City of Seguin, TX

A prior Aclara TWACS customer, in 2021 the City transitioned to the Aclara RF network for its 6,300 water and 7,000 electric endpoints. Aclara has supported the City by providing professional and project management services including network design, systems integration, support services, and AclaraONE implementation.

City of Seguin, TX

John Saldana, Applications System Analyst

(830) 401-9762 / jsaldana@seguintexas.gov

City of Dothan, AL

The City of Dothan's Utilities Department is municipally owned and operated, offering electric and water services in southeastern Alabama. For this project, Aclara provided Aclara RF network including DCUs, electric meters and water MTUs, AclaraONE headend software, integration, and project management for the City's 31,825 electric and 35,000 water meters. Implementation took please in 2019 – 2020.

City of Dothan, AL

Dan Danford, Engineering Assistant

(334) 615-3316 / drdanford@dothan.org

Austin Water (TX)

Austin Water (AW) serves over a million customers covering a 540 square mile service area. AW wanted an AMI Network as a Service solution that would control costs for the 20-year contract. Aclara installed its RF AMI network - including 139 DCUs - and replaced nearly all the city's water meters and fitting the new meters with Aclara MTUs. Project implementation and meter replacement spanned 2019 – 2023; AW and the Aclara worked together to overcome challenges presented by the COVID Pandemic. At the end, more than 235,000 Aclara water MTUs had been installed.

Austin Water (TX)

Daniel Layton, AMI Project Manager

(512) 972-1000 / daniel.layton@austintexas.gov

We invited the GUC to visit our website and review this case study of how Aclara's network stood up to Hurricane Sandy, showing how Aclara's proven redundancy features have shown their worth in the real-world. For our customer in New York City, the network not only withstood the storm, serving its primary design function of reading meters, but also helped provide vital information to both residents and other agencies during emergency response efforts. This case study examines how Aclara's RF network incorporates smart sensors on its network to reduce non-revenue water loss. The city of Elmhurst, IL chose Aclara not only for the strength of its fixed-network meter reading technologies as a replacement for its drive-by system but our ability to provide an acoustic leak detection system.

Transition Experience

Aclara has the experience and capabilities to provide a smooth transition to Aclara's advanced AMI technology, which has helped utilities navigate an ever-changing landscape of complex technologies and changing customer demands. Aclara assisted customers Guadalupe Valley Electric Cooperative and Dixie Power in their transition from AMR to AMI, employing the deployment methodology detailed in the Project Management and Implementation Strategy section below.

Additionally, Aclara can provide its Bridge2Connect solution to GUC to smooth the transition to Aclara's AMI solution. Bridge2Connect integrates GUC's water meters equipped with the Itron ERT endpoint modules into the AMI system while keeping the MV-RS / FCS software and system in-place and running in parallel to the Aclara RF AMI system. The integration is a simple and straightforward solution that consists of pushing data exchanges regularly. The benefits of such an approach are unifying all the data into a single MDMS repository in AclaraONE under a single pane of glass, no stranded assets, and no additional costs for the Itron MV-RS/FCS collection software or new equipment to purchase. As routes are eliminated, ERTs are replaced by Aclara MTUs with a seamless transition to the Aclara RF AMI system. The illustration below shows the existing billing system workflow and future workflow with Bridge2Connect. There are no changes in workflows during the transition and no new systems to learn.

The information flows through AclaraONE with a single integration point to the billing system using AclaraONE's MDMS and taking advantage of its powerful analytics with no additional charges.

Figure 4: Bridge2Connect Transition to Aclara AMI

Technical Approach and Solution Design

AMI System Design and Scalability

Aclara RF AMI Network

Aclara's proposed RF AMI solution will allow the GUC to efficiently gather accurate meter data, provide timely and accurate billing, improve outage detection and response times, provide timely leak detection, and reduce operational and labor costs while improving staff safety, as well as protect revenue by reducing staff visits for meter reads. Aclara's AMI solution includes the following key components:

- Aclara RF AMI Network
- Aclara AMI Network Infrastructure Data Collection Units (DCUs)
- Aclara Electric Meters with Network Interface Cards (NICs)
- Aclara Meter Transmission Units (MTUs) for Water Meters
- Aclara Meter Transmission Units (MTUs) for Gas Meters
- Integration and Project Management
- Installation Training and Services
- Operator Training and Ongoing Support

Edge Devices & Communications:
Smart Meters
Line Sensors
EV Charging Solutions
Grid Data Management Platform
RF Coms Network
Installation Services

Protection & Control:
Regulator Controls
Capacitor Controls
LTC Controls
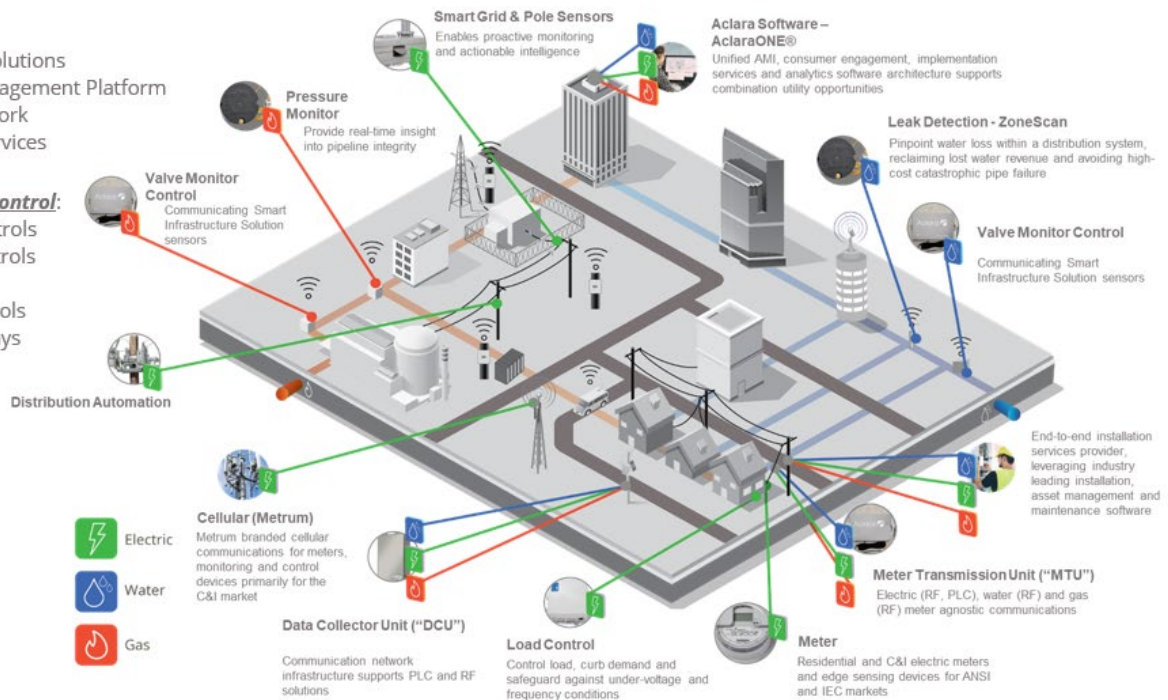Recloser Controls
Protective Relays

Figure 5: Aclara AMI RF Network Overview

Aclara's AMI solution employs a two-way point-to-multipoint (P2MP) architecture that transmits data directly from meters to multiple DCUs and then to the AclaraONE. The backhaul from the DCU network to AclaraONE includes multiple options, such as ethernet, fiber, cellular, etc. For this opportunity, Aclara has quoted DCUs that are provisioned for cellular backhaul.

Aclara's AMI network delivers meter readings through a secure, long-range wireless network using private licensed radio channels in the 450-470 MHz band. By using licensed FCC channels, the network will operate on the same dedicated frequency channels without the need to perform frequency hopping. This feature drastically increases reliability and read success rate while reducing network complexity, without the need for repeaters to create redundancy.

The system provides timely, high-resolution meter readings that enable the GUC to eliminate on-site visits and estimated reads, reduce theft and loss, and profit from all the financial and operational benefits of a fixed-network AMI system.

Superior RF Penetration
Aclara's AMI network delivers meter readings through a secure, long-range wireless network using private licensed FCC radio channels, allowing the network to operate on the same dedicated frequency channels with no need for hopping. This feature drastically increases reliability and read success rate while reducing network complexity.

The 450-470 MHz band is a 20 MHz span of the RF spectrum designated for low-power use. It contains approximately 1600 channels, each 12.5 kHz wide, which are used for licensed, private radio operations. All equipment operating in this band must adhere to strict FCC rules regarding channel spacing, frequency accuracy, and efficient spectral use. Any product operating on a channel in this band must be certified for such operation.

Some of the advantages from having a licensed spectrum compared to an unlicensed spectrum are detailed below in Table 1.

	Licensed Spectrum (Aclara networks)	Unlicensed Spectrum (Non-Aclara networks)
Availability	Limited to license holders	No barrier to use, likely crowded with no controls or limits on users or consumed bandwidth by other applications
Range	Extensive, consistent, and predictable; several miles between network nodes and endpoints	Limited and variable depending on network conditions and interference
Infrastructure Requirements	Minimal due to long range; "homerun" deployment technique for direct endpoint to collector communications; nearly instant network restoration	The unlicensed spectrum propagates far less successfully than our licensed 450mHz band, and therefore requires more infrastructure
Latency	Predictable with high data throughput	High and variable; proportional to the number of hops required and interference sustained; 5 hops decreases throughput by 80%.
Reliability	Complete network restoration in minutes.	Can be compromised in high-interference environments and network complexity; complete network restoration in hours or days
Penetration	Our licensed lower licensed frequency can penetrate foliage and standard construction materials more effectively and can transmit almost 100% through a basement wall.	A higher frequency has less penetrable capabilities and requires up to four times the power to transmit a signal the same distance.

Table 1: Licensed vs. Unlicensed Spectrums

Powerful FCC Protection

The frequency license will be owned by GUC. Ownership is valid for 10 years and is renewable thereafter through the FCC. Aclara will assist GUC in obtaining the license from the FCC; ownership of the license will always reside with GUC, with no additional recurring fees from Aclara. GUC will not lose its frequency band throughout the 20-year life of the system.

The license allows operation of the equipment on specific channels in a designated geographic location, preventing others from operating on the same channels in the same location. Once the license is recorded, all future radio channel assignments by the FCC will be planned to avoid interference with the network. Any intentional or unintentional interference on a licensed channel is considered a violation of FCC rules, and there is a clear and direct path for resolution of such issues. In the extremely rare cases that this has occurred, the FCC has shut down the interferer in a matter of days.

Safeguards Against Loss of Data

The Aclara RF network safeguards against loss of data by providing the following:

Built-In Redundancy	Every water and gas MTU transmission consists of six new readings obtained since the last transmission, and six redundant readings from before the last transmission. An electric endpoint can store 35 days of readings at its default configurations. Anywhere from four days to more than a thousand days are available, depending on the endpoint configuration. These transmissions are collected and forwarded to the headend by all DCUs within range, typically with triple redundancy. This redundancy ensures continuous communications and results in a typical read rate of more than 99% of all daily reads.
Data Protection	The DCU's self-contained battery recharges via a solar panel or an AC line and can operate without charging for several days. If charging is interrupted for an extended period, the DCU will proactively monitor its battery voltage and shut down non-critical services to maintain the ability to collect reads for as long as possible. DCUs also have internal memory to store data in case of a backhaul outage. Readings are stored in non-volatile memory and are maintained even through a complete loss of backup battery power. Once power or backhaul is restored, all stored readings will automatically begin transmitting to AclaraONE.
Failover Routing	The RF network provides dynamic failover routing. A failure of one network device does not affect the entire network. The success of the RF network is due to a conservative design, built-in redundancy, and multiple collection and processing paths to prevent single-point failures from disrupting normal operation. The distribution of collectors throughout the utility service territory provides a high level of redundancy, compared to competitor network designs.
Historical Recovery	This feature ensures high success in reading every viable electric meter in the system. In the event interval reads are missed, the system will automatically interrogate specific endpoints for the missing interval data. This ensures all data is collected from the endpoints and provided to the headend in a timely manner.

The robust design of the Aclara network will provide the GUC a resilient system against extreme weather events. From Hurricane Sandy in New York City in 2012 to Helene in Asheville, NC in 2024, the Aclara network has proven its resilience.

Aclara Hardware

Aclara RF DCU2+
The Aclara RF DCU2+ is multifunctional, supporting electric, water, and gas load control, distribution automation (DA), Smart Infrastructure Solutions (SIS) and other advanced applications. It provides reliable and flexible, two-way communications to support a utility's infrastructure for decades to come.

The DCU is the backbone of an AMI network, communicating with endpoints over individual 450–470 MHz radio frequencies, and to the Aclara RF headend using a network backhaul of choice. The device communicates over cellular, fiber-optic, Ethernet, Wi-Fi, and WiMAX on public or private networks. For further details see Aclara RF Data Collection Unit cutsheet in the Attachments.

DCU Feature/Benefit	What it means to UTILITY
DCUs are tuned to **a unique frequency**, minimizing external interference from other sources.	The GUC will benefit from **increased reliability** and avoid concerns regarding **signal quality**.
Point-to-multipoint design **does not require add-on repeaters** or similar devices.	The GUC will realize **cost benefits** from less infrastructure and maintenance.
Aclara DCUs are **small, inexpensive, reliable, and low maintenance**: typically, 30 ft antenna.	**Flexibility** in site locations. The GUC can **leverage existing assets**.
DCUs can be mounted at street level with a remote antenna for **ease of access**.	The GUC's employees do not require a bucket truck or climber for any needed **access**.
Message encryption, passphrase for DCU console access, DCU door access and tamper notifications offer **multiple levels of security**.	Only the GUC's authorized agents can access with alarms if anyone else attempts. **Worry-free security** and encryption ensure the GUC's consumer data is safe and private.
The DCU transmits **AES 256-bit encrypted**, reading and alarm data to the utility and sends commands back to endpoints.	**Two-way** dedicated communications allow the GUC to act and react in **near real-time** securely and reliably.
Detailed diagnostic data for calls, alarms, system redundancy, location, battery charging, current and temperature **allows total control over the system**.	The GUC will benefit from constant **network health monitoring,** making it one of the **most reliable** utilities in the region. Many of Aclara's client/partners boast such a claim.
Remote firmware upgrades for **ease of network management**.	Field visits are not required for firmware updates **saving GUC resources**.
Battery backup, power save mode, and data retention during power outages **protect important data and operations**.	Even during severe weather events, the GUC will be able to **rely on their Aclara system**. Not Even a hurricane could stop the network in NYC.
Rugged, weatherproof design installs on poles, rooftops, buildings, or water towers.	Such flexibility allows Aclara to provide the GUC with the most **strategic network design**.

Aclara Electric Meters

Aclara's I-210+c residential and kV2c commercial meters will deliver a flexible technology solution to cover the GUC's metering needs and provide advanced functionality to meet evolving system needs.

Residential	Commercial
I-210+c w/ or w/out Remote Disconnect	kV2c
Aclara's most full-featured residential meter, offering demand, load profile, time-of-use (TOU), service switch, and a full complement of communication options.	Aclara's flagship meter product offering all required revenue-grade metering functionality and advanced power quality monitoring for polyphase metering.

Aclara NICs are factory integrated with Aclara's single-phase and polyphase solid-state, ANSI-certified residential and commercial meters. Our endpoints minimize risk and ensure accurate, reliable, and efficient measurements. In addition to reading meters, the units support demand, load profiling, time-of-use, and net metering for distributed generation.

Features and Benefits:
- Outage notification programmable from 5 to 300 seconds from meter notification
- Accesses data directly from ANSI C12.19 tables
- Residential: 5/15/30/60-minute load profile channels transmitted at the end of every interval or buffered and transmitted at longer intervals (e.g., 4 blocks of 15-minute data sent hourly). Up to 8 channels are available; the number of channels and transmission frequency is configurable
- Commercial: 5/15/30/60-minute load profile channels transmitted at the end of every interval or buffered and transmitted at longer intervals (e.g., 4 blocks of 15-minute data sent hourly). Up to 20 channels are available; the number of channels and transmission frequency is configurable
- Large amount of storage (dependent on configuration)

For further details see cutsheets for residential and commercial meters included in the Attachments.

Aclara Gas MTUs

Aclara's gas MTU connects to all major gas meter types and transmits readings to a DCU via an FCC-licensed 450–470 MHz radio channel at regularly scheduled intervals. Aclara's gas MTUs also interface to other smart infrastructure solution components such as Electronic Volume Correctors (EVCs) and Electronic Pressure Monitors (EPMs). The Aclara RF network gas MTU is a reliable and energy efficient radio transmitter with a 20-year permanent battery capable of transmitting data reliably from the most challenging gas meter installation locations.

MTUs are typically configured to capture hourly meter reads and transmit readings four times per day with all meter reads time-stamped and system clocks synchronized to the GPS clock in the DCUs (±5 seconds). The time synchronization feature also allows a network-wide reading of system gas consumption at a single point in time, which can be used to compare system input volume to measured consumption, quantifying non-revenue distribution system losses.

Aclara's gas MTU is user-configurable for read rates varying from 15 minutes to 4 hours. MTUs can transmit groups of readings anywhere from once every hour to every two days. The default setting is hourly reads transmitted four times a day.

The Aclara RF Network enables on-demand reads to the MTU and firmware downloads over the air. The MTU will also store up to 96 days of hourly readings (2,304 total reads) onboard and available for extraction over the air if needed.

Aclara's MTU is meter agnostic and is compatible with all major gas meter manufacturers currently available on the market, giving the utility the greatest flexibility to choose the best meters for your specifications, application, and budget.

Please refer to the Attachments for a list of all meter types, makes, and models compatible with the Aclara gas MTU and the data spec sheet for additional information.

Aclara Water MTUs

Aclara series 3400 Meter Transmission Unit (MTU) is a reliable, energy efficient radio transmitter with a 20-year field proven battery life capable of transmitting data reliably from the most challenging water meter installation locations. MTUs are typically configured to capture hourly meter reads and transmit readings four times per day (or every 6 hours per day). All meter reads are time-stamped, and system clocks are synchronized to the GPS clock. The water synchronization feature allows a network-wide reading of system water consumption at a single point in time, which can be used to compare system input volume to measured consumption, quantifying non-revenue distribution system losses.

The Aclara MTU is user-configurable for read rates varying from 15 minutes to four hours. MTUs can transmit groups of readings at any time from once every hour to once per day. Hourly reads with four daily transmissions to AclaraONE are the default setting.

The Aclara RF network enables on-demand reads to the MTU and firmware downloads over the air. The MTU will also store up to 96 days of hourly readings (2,304 total reads) onboard, which are available for extraction over the air if needed.

Like the gas MTU, the water MTU is meter-agnostic, allowing the GUC to easily retrofit to existing meters and freedom to select the best meters for its needs going forward. Water MTUs will be provided with an Itron compatible waterproof inline connector to make retrofit of MTUs to existing meters very simple.
Please refer to the Attachments for a list of all meter types, makes, and models compatible with the Aclara water MTU and the data spec sheet for additional information.
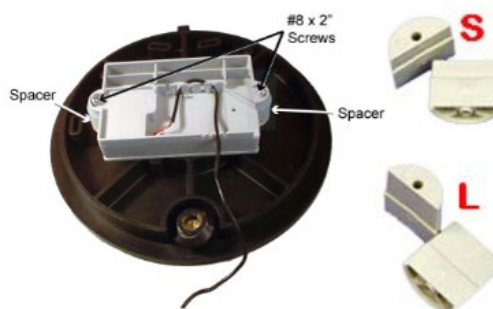
MTU Installation

When installing MTUs in pits, vaults, or below-grade areas, sufficient signal strength must be obtained for optimum radio frequency (RF) signal propagation. The most common strategy is to outfit the pit (or an access port on the vault) with a non-metallic lid, which can be fitted with the standard MTU mounted underneath the lid. Aclara recommends mounting beneath non-metal pit lids for the best combination of performance and protection from external damage.

Aclara also has remote antenna MTUs where a low-profile antenna is mounted on top of a metal lid with a cable running through the lid to the MTU in the pit. Aclara has many years of successful deployments both under RF-transparent lids and with through-the-lid antennae; Figure 6 below depicts these two mounting styles.

Metallic Lid Mount with Antenna
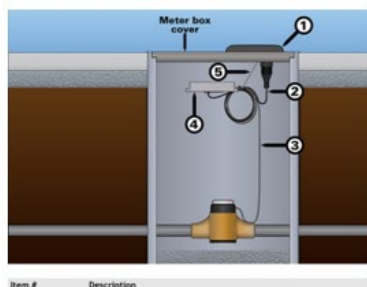
Item #	Description
1	Antenna
2	Antenna cable
3	MTU cable
4	MTU
5	Meter cover MTU mounting bracket (optional)

Non-metallic Lid Mount

Figure 6: MTU Pit Mounting Options

The typical installations for GUC will be under a composite lid or through-the-lid where the lid is not composite such as on a commercial vault.

AclaraONE allows utilities to operate their distribution networks securely, reliably, and efficiently. From meter to cash, network management, distribution operations, sensors, and analytics, AclaraONE delivers the broad set of functionalities utilities require to improve the operation of their infrastructure under a single platform. Equipped with robust, scalable, next-generation AclaraONE smart infrastructure solution software, network operators can react faster and more effectively while improving the technical and economical operation of their distribution network.

The AclaraONE platform will provide functionality to allow the GUC's staff to access and analyze data collected from meters and other devices on the distribution network while maintaining the health of the AMI system. It is a single, unified platform that monitors, optimizes, and improves network operations, and increases customer satisfaction.

AclaraONE offers advanced capabilities in the following major areas:

1. Meter-to-cash software offers a single, centralized enterprise service featuring consumption-based analytics, billing analytics, and a portal with tools for customer service representatives (CSRs).
2. Network management functions link securely to critical business systems through a single, centralized headend.
   a. Collector Installation. Installation, recognition, and system administration of network collectors (DCUs) for Aclara's RF network.
   b. Network Messaging. Filtering, routing, queuing, de-duping, decrypting inbound and outbound traffic for all endpoints. AclaraONE underlying network management system has been performance tested for 12 million endpoints.
   c. Health-monitoring. The AclaraONE headend includes a comprehensive set of alarms and software-generated analytic alerts. Alerts and alarms feed a standard time-stamped, prioritized, "events" framework.
   d. Two-Way Communications OTA. Over-the-air (OTA) communications include authentication, encryption, firmware management, on-demand reads, ping, trace, diagnostics, communications configuration, collection, and interval rates. All communications are timestamped and logged for integration into a complete audit trail of system access.
   e. Network Devices. The AclaraONE headend communicates with a comprehensive set of devices such as meters, sensors, and controls. Network devices cover core meter-to-cash operations as well as sensors for smart infrastructure solutions.
   f. Systems Integration. The headend supports inter-operable, industry-standard integration adaptors, as well as standard and customizable file-based options. APIs include interfaces for billing, customer-service and all other utility systems that are commonly served by AMI networks.
3. Distribution operations software provides distribution system awareness that analyzes data throughout the network. This enables advanced smart infrastructure solutions on the GUC's network such as distribution automation, load control, and other future capabilities.
4. Analytics in AclaraONE will help extract information from the data that GUC collects from meters and sensors on the distribution networks, which will provide real-time insights, alerting staff to events affecting operations, and enable quick response to identified problems.

AclaraONE is powerful platform that enables Aclara's communications technology and adds comprehensive solutions to transform business operations, increase efficiencies, reduce costs, and increase customer satisfaction. It was built to provide actionable insights, and the situational awareness required to handle growing distribution challenges.

1. Meter to Cash
- Billing analytics
- CSR portal and tools
- Consumption analytics

2. Network Management
- Device Installation
- Network messaging
- Device management and control

3. Distribution Operations
- Grid visibility
- Grid optimization
- Fault detection

4. Sensors and Analytics
- Load control
- Pressure monitoring
- Leak detection
- Distribution automation
- Methane detection

The AclaraONE platform will integrate into the GUC's existing architecture. The AclaraONE Integration Hub provides secure, reliable connectivity between the AclaraONE platform and the utility's back-office systems. Aclara can provide integration points using flat file exchange (.csv), or other API type protocols (WebServices, MultiSpeak, etc.). Flat files are commonly used because of their simplicity, audit tracking capabilities, and ease of maintenance.

<u>Additional Grid Enhancement Products and Services</u>
Below are products and services to support utilities in addressing challenges presented by climate change, diverse outage conditions, aged infrastructure impacts, and new loading conditions from our customers.

The Aclara edge gateway is a communications module that supports the DNP3 protocol and enables Intelligent Electronic Devices (IEDs) to communicate to ADMS / SCADA over Aclara's RF network. The Aclara edge gateway interfaces via serial or ethernet to IEDs for equipment such as reclosers, capacitor banks, voltage regulators, and load tap changers (LTCs) so that utilities can gain grid visibility, monitor equipment statuses, and control devices on the grid. It also provides notification of events, descriptive events, and diagnostic conditions typically brought back from IEDs and controllers to SCADA.

With these new actionable insights in hand, utilities can detect, locate, and isolate faults for speedier restorations and improve reliability metrics. The solution can also help operators better optimize their grid by managing voltage distribution, load control, and phase balancing by using Aclara edge gateway connected voltage regulators, LTCs, and capacitor banks.

The Aclara Grid Monitoring (AGM) platform is a suite of smart line sensors that are sophisticated but simple to use and simple to deploy. Our suite of sensors includes the Medium Voltage (MV), Power, and SmartFCI. The array of sensor types can be deployed individually or as a mix, depending on the utility's data needs and requirements.
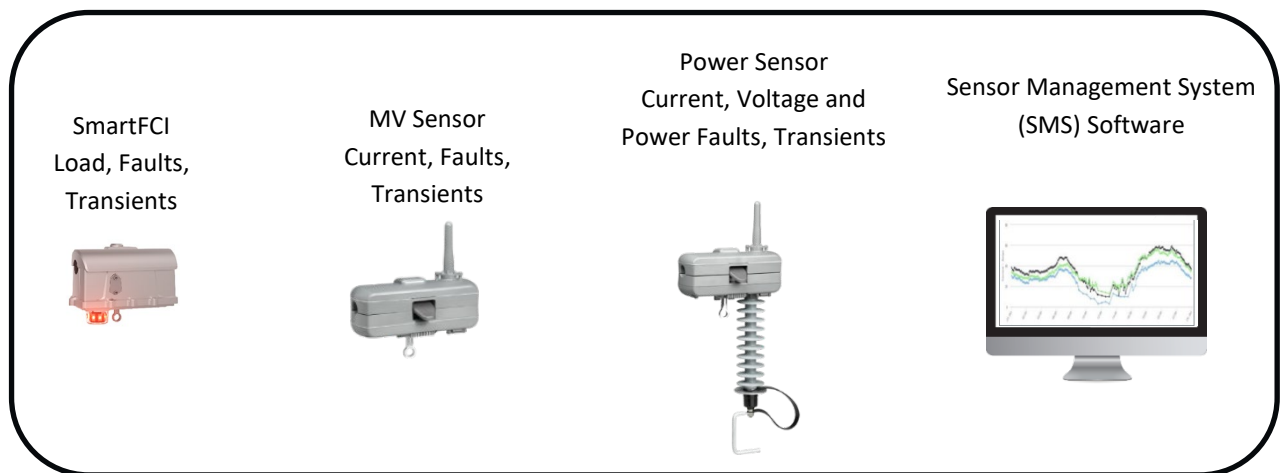

Figure 5: AGM Platform

All AGM devices are managed by Aclara's Sensor Management System (SMS) software. The platform also includes powerful head-end software. Aclara's sensor technologies give utilities the real-time visibility to monitor and manage their distribution networks, monitor key circuits or distribution assets, and predict and respond to conditions before small problems become major system and service interruptions. Whether it is providing fault information to quickly dispatch crews, monitoring load, or reporting 0.5% accuracy in voltage measurements to optimize efficiency, Aclara is helping utilities solve real-world challenges and improve the reliability of the distribution grid.

With Aclara's Grid Monitoring platform, utilities can detect faults with real-time information and continuously monitor power quality across all three phases of their medium voltage distribution network, sub-transmission networks and at substations. With this actionable data, utilities can boost the reliability, efficiency, and power quality across their distribution system with enhanced situational awareness to:

- Reduce outage duration (e.g., improve SAIDI and CAIDI) and momentaries (e.g., improve SAIFI, MAIFI).
- Support FLISR solutions.
- Improve power quality and customer satisfaction
- Detect transient fault conditions to help avoid developing failures
- Reduce wildfire risks
- Perform real-time load and substation monitoring
- Plan for and monitor DERs

Our all-in-one monitoring platform provides a multi-application value proposition:
- Live installation: Quick and easy install, saves time and lowers operations cost
- Integrated Communications: Lowest total cost of ownership
- Oscillography: Troubleshoot challenging faults
- Analytics software: Event classification, predictive
- Software-defined, over-the-air upgradeable: Future proof

Below is additional information on Aclara Grid Monitoring sensors and SMS software capabilities.

Feeder Level Phase ID: Significant issues, confusion and mis-operation can arise if feeder or lateral phasing is incorrect, which can occur after storm restoration, with overhead/underground transitions, and incorrect lateral taps. The AGM solution helps ensure proper phase ID for feeder level monitoring and alerts utilities to locations where there are mismatches between intended versus actual phase of MV conductors.

Figure 8 reflects the Aclara Grid Monitoring feeder-level Phase ID functionality with Aclara smart sensor, providing Aclara distribution circuit monitoring.
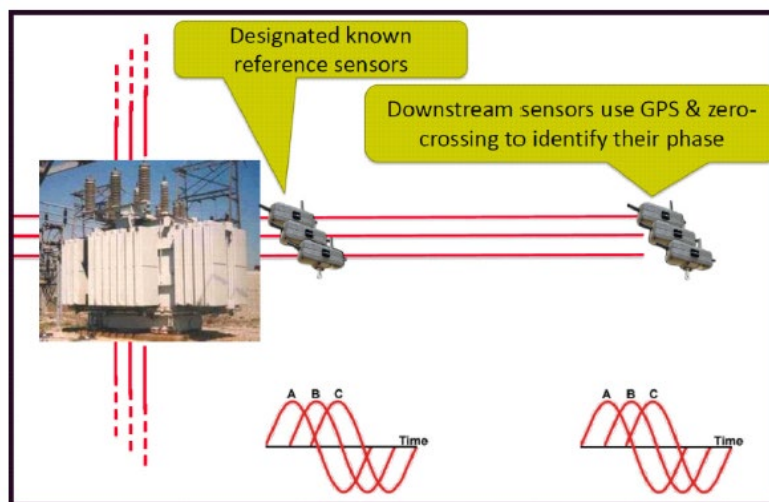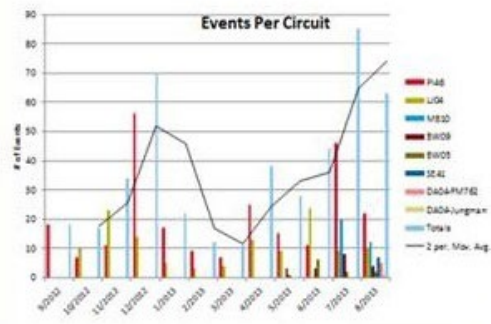

Figure 6: Feeder Level Phase ID

Worst Feeder Report: The worst feeder reports assist with SAIDI, SAIFI and reliability. Aclara's AGM SMS software provides an analytics report to track trends in reliability performance such as faults, outages, momentaries, and transient line disturbances on a per circuit basis and to rank worst performing circuits.

This reporting tool tracks faults and disturbances per circuit, ranking them from worst to best performers. This allows utilities to view performance over time, including seasonal variations, and then prioritize preventative maintenance.

Figure 7: Worst Feeder Report

Predictive Analytics – Frequent Disturbance Alert: Faults and Outages always require immediate dispatch of troublemen to resolve. However, utilities are increasingly taking steps to proactively address developing issues before they turn into outages. The AGM SMS software continuously monitors circuits for patterns of recurring disturbances and momentary faults and alerts the utility to conditions that indicate developing issues at specific locations on feeders to be investigated. Issues related to vegetation, failing regulators and transformers, downed conductors, and others can be addressed before becoming critical events. Please see the Predictive Grid Analytics whitepaper available on the web for additional information.

Figure 10 is an example of an event that can be associated with critical pre-fault conditions.
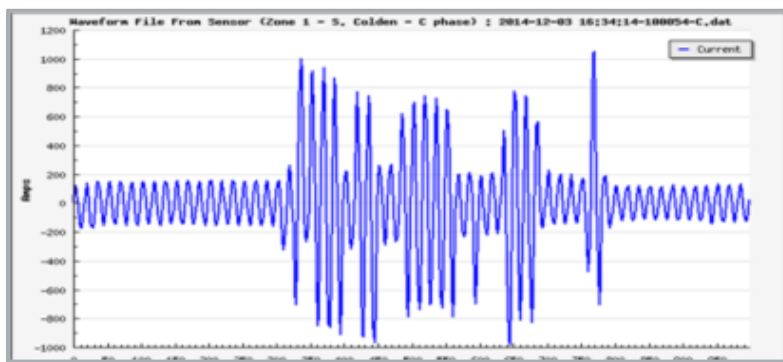

Figure 8: Fault Current Waveform

Load Imbalance Report: A variety of conditions can lead to significant load imbalance conditions on distribution feeders, resulting in inefficient network operation and wasted energy due to thermal loss. The AGM SMS software provides analytics report to track feeder load balance and percentage loss. Figure 11 below provides a graphical report.
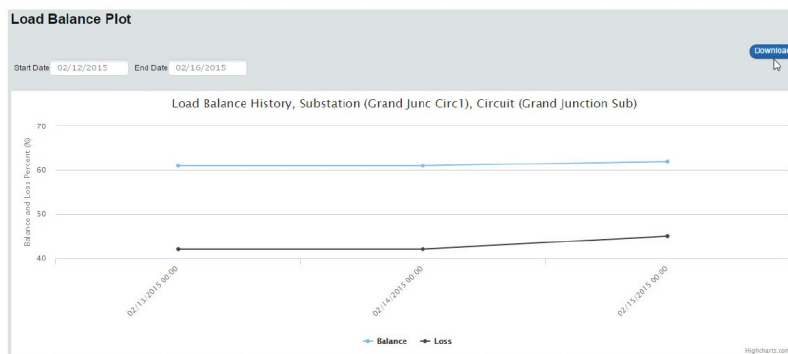

Figure 9: Load Imbalance Report

Substation Transformer Overload Report: Substation transformers are some of the most expensive and critical assets in the utility network. Transformers are built with a maximum rated supported MVA; when total load exceeds the transformer's nameplate rating for extended periods of time, it leads to stress and premature aging of the transformer. The AGM SMS software provides an analytics report to track aggregate load on each substation transformer and can generate alerts when configurable thresholds are exceeded.

Substation monitoring calculates total load up to every five minutes and provides threshold alarms that can be configured for winter and summer ratings. The graph in Figure 12 shows a substation transformer exceeding its nameplate rating; the report is a summary of data from three feeders' worth of load on that substation:
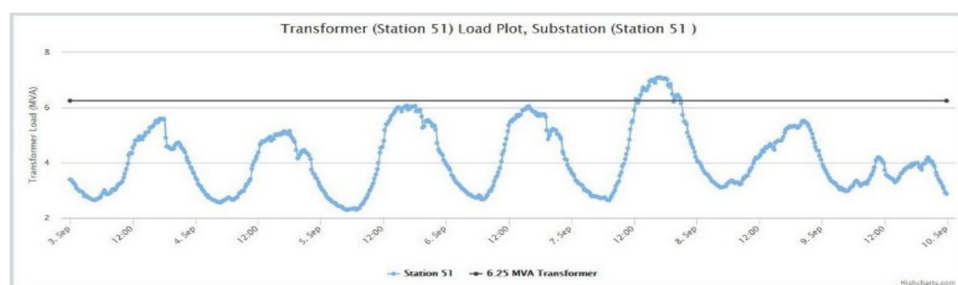

Figure 10: Substation Monitoring

The ExactaGuard Sensing Platform provides a unique Aclara RF solution for detecting and alarming on pole tilt condition and conductor drop sensing to add value to public safety, storm damage assessment, fault location identification, and fire mitigation.

Since Poles and Conductors are impacted daily by trees and vehicles, these events result in outages, damage to property, or worse. Many events are not immediately known to the utility. Downed conductors are a hazard to the public as sources of shock and electrocution, sources of localized property damage, and sources of wildfires. After large weather events where many poles have been downed, damage assessment times add to outage times, revenue loss, and poor SAIDI / SAIFI measures.

Longer term events due to pole rot, subsidence, etc., could be known and acted upon, but status information is not readily available to utility maintenance departments. The ExactaGuard Sensor Solution is a system of active sensors that measure important parameters of above ground electric distribution infrastructure to provide grid visibility to these conditions.
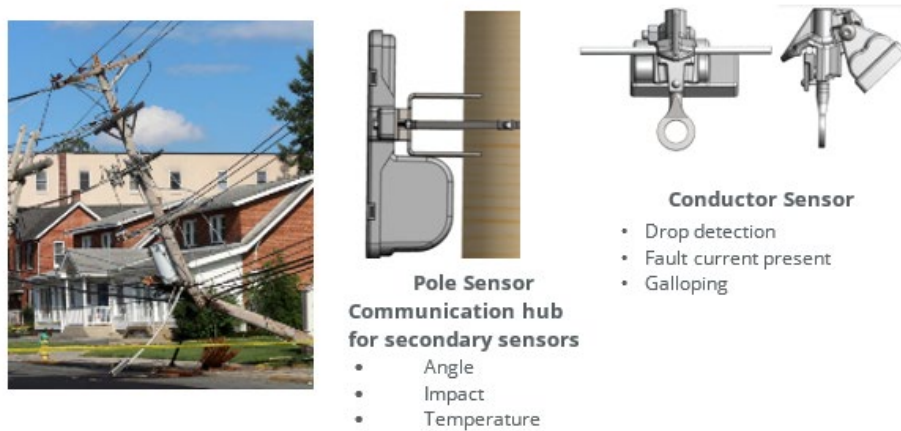

Conductor Sensor
- Drop detection
- Fault current present
- Galloping

Pole Sensor
Communication hub
for secondary sensors
- Angle
- Impact
- Temperature

Figure 13: ExactaGuard Sensing Overview

A short video is posted to YouTube that provides an overview of the solution and use cases:

https://www.youtube.com/watch?v=HgZW3KT3moQ

Aclara is developing a Level 2 Electric Vehicle charger with an integrated meter to be deployed as a sub-metered asset as part of the overall AMI network. This will allow the utility to use the AMI network and AclaraONE to collect EV Charging specific data and control the EVSE remotely. Consumption data can be used to structure and implement EV specific Time-of-Use rates and control can assist with mitigating demand management issues that arise. Our goal is to provide controls to make EVSE a manageable DERM asset, while gathering critical energy usage to assist in managing the overall network.
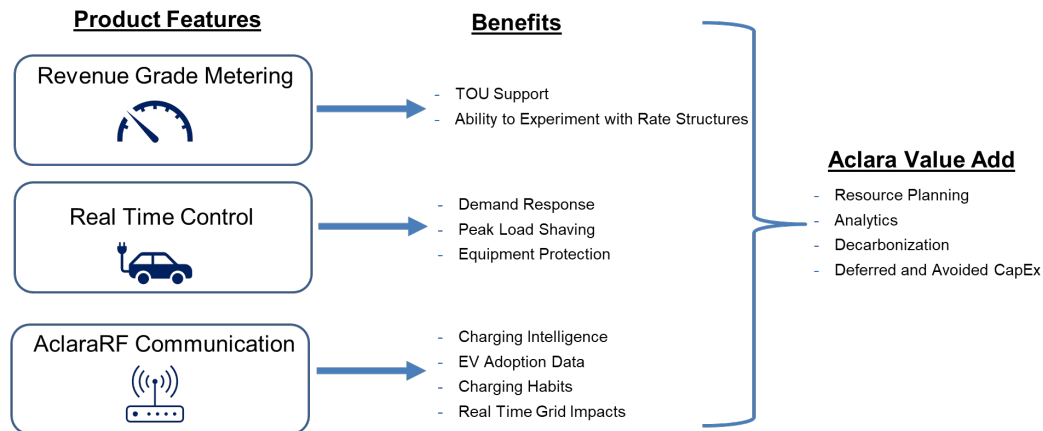

Figure 11: Electric Vehicle Supply Equipment

Aclara's L2 EVSE with an integrated ANSI-grade meter enables utilities to provide customers with an EVSE that has Aclara RF revenue metering capabilities and advanced TOU rate support without the need for an additional socket and submeter.

The Aclara EVSE solution provides critical information regarding status of connectivity and charging; visibility of usage; load profile data for new rates; and control of charging for on/off load control. Utilities can benefit from a single installation and no separate installation for a submeter; it is simple to connect to the Aclara RF AMI infrastructure to collect billing data and provide visibility and control during peak events, all with the inherent security via AMI.
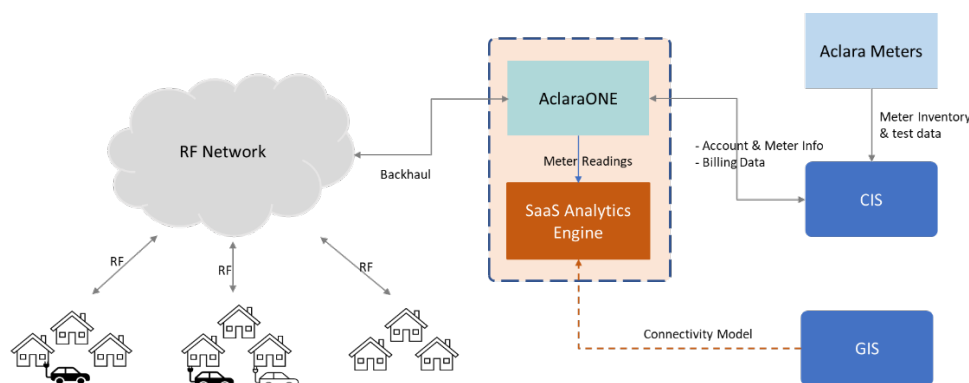

Figure 15: EVSE Network Integration

Aclara's Level 2 EVSE solution has several key differentiators:

- Aclara's EVSE solution provides utilities with control over a customer's EV charging load during periods of peak demand. A level 2 charger is the largest appliance in a resident's home. The Aclara EVSE will pull a maximum of 11.5 kW of power while charging an EV.
- Aclara's EVSE solution offers multiple wiring options that allow for user preference installations, i.e., a hardwired option and a plug-in option.
- Aclara's EVSE solution has an integrated revenue-grade ANSI electric meter built into the EVSE, which allows for industry leading accuracy at 0.5%. This feature is great for future-proofing the investment in case the Utility creates new EV consumer programs requiring consumption data.
- In addition, Aclara's EVSE solution can communicate via the AMI network and does not need to rely on the customer's Wi-Fi connection. This feature is extremely important when collecting usage data or sending control signals to the EVSE. Because of the AMI connectivity, if there is ever a need to disable EV charging during a distribution network event, a signal can be sent to the EVSE to temporarily turn off or defer EV charging to a later time. Note that our offering is flexible enough that it does not require any AMI connectivity for the EV owner to charge their vehicle. But having AMI with software enabled intelligent controls will make EVSE programs much less prone to residential demand spikes and offers critical insight via data collection into historic usage patterns for future distribution planning.

Aclara RF Phase Identification application identifies which phase the I210+c endpoint is on, and does so for all forms, including 12s on a single phase. The phase reference uses a cloud-based application to calculate and display the Phase angle 0°-360°. Phase results can be configured to display customer-preferred label assignments for Phasor ID number/Phase Angle (supports identification for both Wye-Wye and Delta-Wye networks). The phase identification can be filtered and exported as either CSV or PDF files from AclaraONE.

The Aclara RF ZoneScan II system combines the strengths of acoustic leak-detection technology from Gutermann International and two-way fixed network AMI technology from Aclara, yielding a powerful and efficient method of detecting water main leaks.

Aclara RF ZoneScan II provides a correlated result that will pinpoint the exact location of the distribution pipeline leak, within one to three feet. Known as the top-rated leak detection technology in the industry, Aclara RF ZoneScan II will result in cost savings by negating excessive digging for a leak that has been inaccurately pinpointed.

Using the existing Aclara RF network for communication, the purpose built STUs for ZoneScan II and the ZoneScan II loggers are deployed at regular intervals throughout the water pipeline network and attached to valves via the integrated magnetic base. ZoneScan II units monitor and analyze noise characteristics within the pipe network to detect and identify the presence and location of a leak.

Aclara RF ZoneScan II is the industry's only automatic remote cross-correlation solution. Major advantages include:

- Automatic correlation which eliminates the need for manual correlation in the field
- Correlated recordings pinpoint leak locations within a few feet – saving time and resources
- Immediate identification and correction of leaks – resulting in a fast payback period
- Data is gathered automatically and reported each morning
- Saves time and avoids the expense of collecting and verifying data in the field

The solution identifies and addresses small leaks before they develop into major repair issues. Aclara RF ZoneScan II can help the GUC quickly address small issues, identify potential problems, and perform preventative maintenance to assure reliable and predictable revenue generation, collection, and recovery.

Aclara's water pressure monitoring solution can provide near real-time monitoring of water pressure throughout the utility's distribution network. This pressure monitoring solution is easily installed, reliable, low-maintenance and will seamlessly integrate into the utility's AMI environment.

Major advantages include:

- Pressure ranges, accuracy, and pipe fittings can be configured to meet your needs for maximum flexibility of installation and operational conditions.
- Four user-configurable alert thresholds give maximum flexibility of operation, with each threshold configurable to send an immediate alert to the headend.
- Targeted software modules make analyzing network performance a snap.
- Alerts generated by exceeding thresholds can trigger email or text notifications to designated recipients for immediate notification and response.

Aclara's network supports and operates the FENIX F235W Remote Smart Valve. These valves can be controlled over the Aclara RF network from the AclaraONE software with simple, intuitive graphical controls. Shut offs or turn-ons can be directed to individual endpoints or groups. Typical response time from initiating a command to completion is under 5 minutes. No extra software is required and when installed with a short length ultrasonic meter (included in response pricing), the meter and valve simply install in the normal 7-½ laying length of a typical meter setting with no replumbing required. Remote disconnect saves truck rolls and has a very strong return on investment for the utility.

Aclara's solution for Residential Methane Detection (RMD) will alert the utility about the presence of methane concentrations in limited circulation areas such as meter rooms and undersets. Aclara has partnered with New Cosmos, the leading manufacturer of battery powered methane sensors.

Network Infrastructure Deployment

Aclara is committed to providing a communication network that meets the GUC's requirements. During the procurement process, we will provide a preliminary propagation study based on the details provided in the RFP. Our modeling software and RF propagation analysis will predict where the network communication devices will be required, using the location of endpoints along with the terrain and land clutter of the territory to provide the best RF propagation modeling. We will model utility assets (buildings, towers, poles, or available land) for placement of our network devices with the highest priority, with new asset locations provided where needed.

The Aclara RF solution is a point to multipoint 450MHz-470MHz licensed solution which would be licensed to GUC. The Aclara RF solution is not a meshing technology. Metering endpoints communicate directly with the Aclara RF network infrastructure DCUs with a single hop that provides deterministic latency and quicker response between endpoints and the Aclara RF DCU's. They do not need to communicate "hop" between other meters such as those in a mesh network to make it to the network infrastructure access point. With multiple hops on a mesh network, it introduced additional latency with each additional hopping. With the Aclara RF licensed point to multipoint network, network devices can operate with less chance of interference, low deterministic latency, transmit at a higher output power and provide greater range (typically 3-7 miles) than the range (less than a mile) mesh endpoints can provide operating on a non-licensed band. Additionally, with a licensed band network devices do not need to compete with other unlicensed devices, providing highly reliable communications.

The Aclara RF network is designed to provide redundancy, so each endpoint can communicate using a single hop with multiple DCU network infrastructure devices. With this design coupled with a greater range, repeaters are not needed in more rural areas, where with mesh networks, additional infrastructure may be needed to compensate for the lack of coverage.

During implementation, a finalized network communication device plan will be developed to ensure specific deployment of a planning zone, deployment territory route, or installation path. For a program of this size and duration, network design is considered an open activity. As new service territories are open for consideration of meter exchange, the initial pass of the network studies will be tuned and optimized using the latest available land use (also referred to as RF clutter) as well as general available RF usage information. While changes are typically non-impactful to the overall design, it is important for Aclara and the GUC to consider any changes (e.g., new buildings construction) that could impact the network's performance.

Upon project initiation, Aclara's Project Management team reviews each of the proposed network device sites identified in the network design and recommends a site for installation, which will include all data presented in the "pre-approval" process defined for the network device installations. Additional detail concerning the data to be presented during this step includes:

- **RF Licensing**: RF Licenses will be acquired for the network device installation service area and will be reviewed to ensure FCC compliance and optimal performance.
- **Site Location Data**: During this stage, Aclara will ensure that the general scope of the network build out is mutually understood and that all options are considered for every deployed unit. Some information that is critical to the next steps include:
  o General site type data (whether facility is utility-owned or other)
  o Mount to an existing utility structure
  o Installation of new vertical infrastructure at utility facility/property
  o Installation of new vertical infrastructure at a non-utility site, such as utility right-of-way
  o Site make-ready work requirements
  o Recommended infrastructure and mounting type
  o Antenna height
  o Network concentrator type
  o Backhaul type (fiber/ethernet, cellular, etc.)
  o Site logistics such as accessibility, installation logistics notes (traffic management needs, crew size, etc.)

For a safe and successful deployment, Aclara and its partners will use a geospatial asset management tool to manage site selection, approval, preparation, installation, and quality control processes required in the deployment of the network system. These tools are fully scalable to handle thousands of sites' worth of data. This service will be used primarily by Aclara's Project Management team to include vendors and any parties performing services on behalf of Aclara.

The GUC's personnel will have access to data to track progress of the system deployment. These tools have been developed using both ESRI and Google GIS services to allow all data to be associated with a clear set of datapoints that define the location of the site, which provides the user with a relational view of all necessary network equipment on one singular page and view.

Our process is straightforward as well as comprehensive, and it considers every applicable datapoint to be gathered though every stage. This historian view and staged deployment process is inclusive of site selection, approval, acceptance, build, preparation, and installation as well as commissioning of the device and ongoing maintenance.

Wesco can provide the necessary partners to aid in the installation of any DCUs on radio towers or water tanks. Wesco also has partners that can erect new utility poles if any are needed in a certain area where GUC does not have existing poles and if GUC does not want to do this work themselves. Wesco uses local partners within North Carolina to do this additional work.

Hybrid Solution Availability

In addition, Aclara provides support for hybrid network solutions in which the network solution can operate using a mix of communication technologies such as the Aclara RF, Aclara TWACS power line communication, and Aclara Metrum cellular communication technologies. Aclara has vast experience with customers' hybrid and single technology networks. When considering a hybrid network, existing technologies being used by the utility are taken into account. Some Aclara customers that currently have TWACS powerline communication technology have deployed their RF network in a more densely populated region, keeping the TWACS power line communication in more rural areas to leverage their existing TWACS infrastructure investment, with plans in the future to expand their Aclara RF point to multipoint solution. For hard-to-reach areas, if TWACS powerline communication technology is not being used, customers can also deploy electric endpoints using cellular Metrum communication, providing for a cost-effective solution that minimizes the amount of network infrastructure needed to support rural, less densely populated endpoint areas.

The AclaraONE headend software can support a hybrid network of communication technologies such as the Aclara RF, TWACS, and Cellular as a common unified headend to utility back-office systems.

System Management Proficiency

A great benefit using the Aclara RF point to multipoint network is that it provides for scalability to meet GUC's future growth needs and future proof GUC's investment in network infrastructure and back-office software investment. Once the Aclara RF network infrastructure is deployed, GUC can incorporate other applications such as DA, Load Control, EV charging, and pole sensing within the same coverage area without the need to add additional network infrastructure. Those applications can be configured in the factory, so when they are deployed and powered up in the field, they will automatically begin to communicate over the GUC Aclara RF network to the AclaraONE headend.

Not only does Aclara's product portfolio evolves as new technologies are introduced, but our existing products evolve to support newer technologies as well. We can support backhaul technologies to the AclaraONE headend such as 5G, satellite, fiber, and PLTE to support rural and urban environments. In addition, on the development roadmap is a low cost DCU to support a limited number of endpoints for areas that may have very low density of endpoints, such as those seen at the edge of network or in apartment buildings for indoor applications.

Further, to ensure comfort in protecting a utility's investment, when Aclara introduces new products to the market, we ensure they conform to support legacy protocols so as not to strand any assets, yet they enable growth over a common communication network as our customers' needs change.

Integration Strategy

Aclara has deployed AMI systems at more than 400 utilities, and each of these deployments includes integration with back-office systems such as MDMS, CIS, GIS, OMS, etc. Aclara will leverage this experience to integrate into the GUC's systems. Aclara has developed and maintains a broad ecosystem of commercial and technology partners covering our suite of product offerings and encompassing a variety of business models. We have partnered with a myriad of other companies to support the integration of their technologies with Aclara's systems. Figure 16 depicts Aclara's growing ecosystem of partners.

Figure 12: Systems Integration Experience

Project Management and Implementation Strategy

Phased Rollout Plan

Wesco as the prime will be responsible for coordination of the project management and coordination of all the various vendors, systems, and equipment. Under Wesco's guidance, Aclara does their coordinated rollout of the system meeting the needs of Wesco's installation team and any integration that needs to be done with other key systems. If the full AMI project includes MDM, Customer Portals and other key new systems, Wesco is the lead to make sure they are all delivered and working properly with full integration.

Since this is just an RFQ with mainly the AMI needs identified, Wesco has included the following as to how Aclara does their part of the rollout of the project.

Aclara's Professional Services' project approach is one of communication, accountability, and risk assessment. Aclara's extensive experience in delivering AMI solutions greatly reduces risks, while a committed Professional Services team will meet the GUC's deployment timeframe and ensure ongoing results and satisfaction. Aclara uses a proven methodology to implement the proposed integrated AMI solution. The Aclara methodology of delivery is a phase-based approach, depicted in Figure 17 below, that brings principles from the Project Management Institute (PMI) and Project Management Body of Knowledge (PMBOK) into practice. Aclara will introduce a project direction to the GUC that blends these principles with years of lessons learned through successful deployments across nearly every client size and demographic within the industry. Aclara's methodology will direct the GUC through the experience of adopting the newly selected technology and partners into the utility's operations.
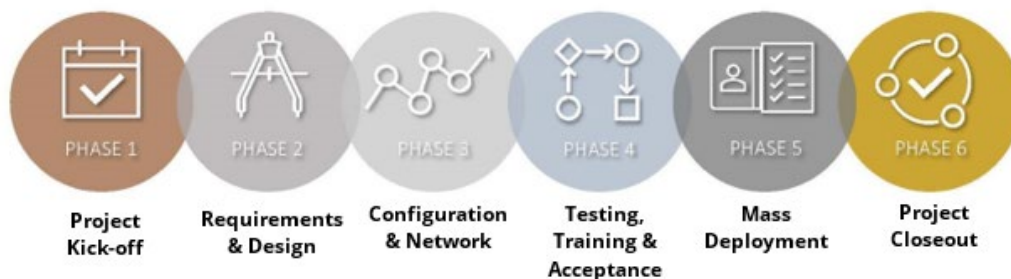

Figure 17: Phased Implementation Approach

It begins with the mutual agreement on solution principles and execution strategy, encompasses technology implementation and acceptance, oversees mass deployment of the solution, and continually grows a partnership through on-going optimization and enhancement within the GUC's operations. The Aclara methodology is divided into six phases, each of which has delivery has a specific set of defined deliverables and entry and exit criteria.

Phase 1 Project Kick-Off: Objectives, Deliverables

A kickoff meeting will be scheduled for Aclara and the GUC once Aclara receives the "notice to proceed". The objective is to identify and introduce the teams and stakeholders, confirm the project scope, define lines of accountability, and develop the communication plan.

Deliverables

- **Project kick-off materials:** Includes project kick-off meeting agenda and materials presented and discussed during the project kick-off meeting.
- **Project plan:** Lists the different phases and tasks, important milestones, approximate duration for each task, resource requirements, and projected start and end dates.
- **Project communication plan:** Includes project team member roles and responsibilities, contact list, escalation plan, and project logistics.

Phase 2 Requirements and Design: Objectives, Deliverables

A series of meetings will be held to confirm the detailed functional, integration, and infrastructure requirements for the system over the next ten days. Third-party vendors representing the GUC's or Aclara's software products may attend relevant meetings. The definition of all product hardware, software, and software integration requirements are clarified. Parameters are set for system acceptance testing. Product orders are submitted as needed. Field installation plans are created to define the requirements, approach, logistical needs, and schedules. Aclara will complete site surveys and perform additional spectrum analyses to finalize the DCU installation plan. Application to the FCC will be made on behalf of the GUC, and the process to begin securing permits for DCU sites will begin.

Deliverables

- **Final requirements document:** Lists final requirements agreed to by Aclara and the GUC necessary to accomplish solution implementation and operability. This includes functional and technical requirements for all input and output interfaces with the Aclara software.
- **Testing document:** Includes all testing scenarios to be discussed or reviewed for system acceptance testing along with timelines and parties responsible for administration.
- **Site surveys:** Describes specific location concerns and logistics needed for each DCU site placement. Aclara may need to help obtain access to some field sites.
- **Network design and propagation study:** Documents locations for DCU installation for optimal system read and functionality performance based upon site surveys. A draft propagation study based on existing asset location was performed and is included in this proposal.
- **Purchase orders:** Finalizes orders for all necessary hardware and software products needed for project.
- The formal requirements gathering phase will conclude when the GUC signs off on the final requirements document, indicating acceptance of the planned scope of work and projected timeline.

Phase 3 Configuration and Network Deployment: Objectives, Deliverables

In this phase, Aclara will complete all tasks to support the endpoint deployment and prepare for system user acceptance testing. If the GUC opts to use the Aclara hosting, the IT environment will be built in this stage and software will be installed.

Software interfaces will be written to interface to the CIS within the GUC's billing system and configured and enabled for data loading and testing. Validation of the DCU network begins after software interfaces to the CIS are complete.

During this time, Aclara finalizes software integrations and performs unit testing to integrate with the GUC's environment. Aclara also integrates and configures the field programmers into the GUC's meter shop environments, as applicable. During this phase, the GUC will provide sample integration data from the production systems to confirm successful validation and software functionality. Initial system user acceptance testing then begins.

For user acceptance testing, test criteria will be co-developed and include various test cases as needed to ensure a fully qualified system can be accepted prior to a full system deployment. Aclara welcomes and expects the GUC's participation during the drafting of test plans and test cases.

Aclara will provide full support during lab qualifications, field-based SAT, acceptance testing as well as final system acceptance qualifications. During test periods, an Aclara Project Manager will be overseeing all points of the test plan, leveraging both Aclara BSAs and RF technicians to test software deployment, integrations, and RF network performance, respectively.

Deliverables
- **Final test plan:** Lists test cases to be executed during system acceptance testing and testing logistics.

Phase 4 Testing, Training, and Acceptance: Objectives, Deliverables

This phase extends the testing from the previous stage to validate the system's full functionality, from the meter reading and data capturing phases through the billing phase. Training for all software solutions is completed in this period and on-site classes are scheduled for meter professionals so that endpoint installations are successful.

Severity Level	Description
1	Requires immediate attention – Service is lost or degraded for all users preventing operation of business
2	Requires priority attention – Service is lost or degraded for single or small number of users, affecting significant business functionality
3	Requires attention – Users are able to continue business operations, but a problem or issue has been identified that affects operation of business
4	There is a problem or issue that does not affect operation of business

Table 2: Issue Priorities

Final acceptance then begins. Any remaining issues are categorized into severity level 1 or 2. Please see Table 2 above for descriptions of these severity levels. The Aclara team is onsite as needed to resolve any issues.

Deliverables:
- **Training materials:** A PowerPoint presentation along with materials for training and post-training distribution.
- **Signed Certificate of Acceptance**
- This phase is concluded when the GUC signs a Certificate of Acceptance, agreeing that user acceptance training has been completed.

Phase 05 Mass Deployment: Objectives, Deliverables

After acceptance testing is complete, Aclara helps the GUC cutover the software solutions, so data begins flowing between the Aclara applications and the GUC production environment. Aclara, a third-party installation contractor, and/or the utility begin mass endpoint installations once the application cutover is complete.

Additionally, during this phase, the GUC will be introduced to Aclara customer technical support operations to receive technical support as needed. Technical department full-time staff are available to our clients via 1-800-892-9008, through the Aclara web portal, or by email at aclarasupport@hubbell.com.

Phase 6 Deployment Closeout

Once the endpoint deployment wraps up, the GUC and Aclara teams work to complete the final acceptance of the installation. Final acceptance marks the end of the deployment phases, and the teams will transition to Sales and ongoing support. Aclara will continue to provide a high bandwidth RF network and solution throughout the life of the system, including delivering online training for new employees and processing technical support questions.

Data Security and Compliance Strategy

Security Framework and Protocols

Aclara's proposed solution provides data security across all levels of its system, as depicted in Figure 19 below.

Aclara's network provides for bi-directional AES-256 encryption, along with a standards-based high-security authentication using a high-strength SHA-256 hashed-based message authentication code (HMAC) authentication algorithm with relay protection. Each Aclara communication module uses a unique per device encryption key. The key is generated from a hardware random number generator (RNG) output and protected with multiple physical security protections. This method of encryption and hashed-authentication is well-suited for security, battery-preservation, and network performance.

All application data sent to or received from each endpoint is authenticated (proving its integrity) and AES-256 encrypted (keeping it confidential). If any legitimate traffic is captured and replayed to the device again (e.g., attacker sends command to close RCD switch again), the replayed traffic will be automatically detected and dropped. Each endpoint has a unique key that is protected inside of a specialized security chip. This unique key is used to establish a secured session end-to-end between each end point and AclaraONE.
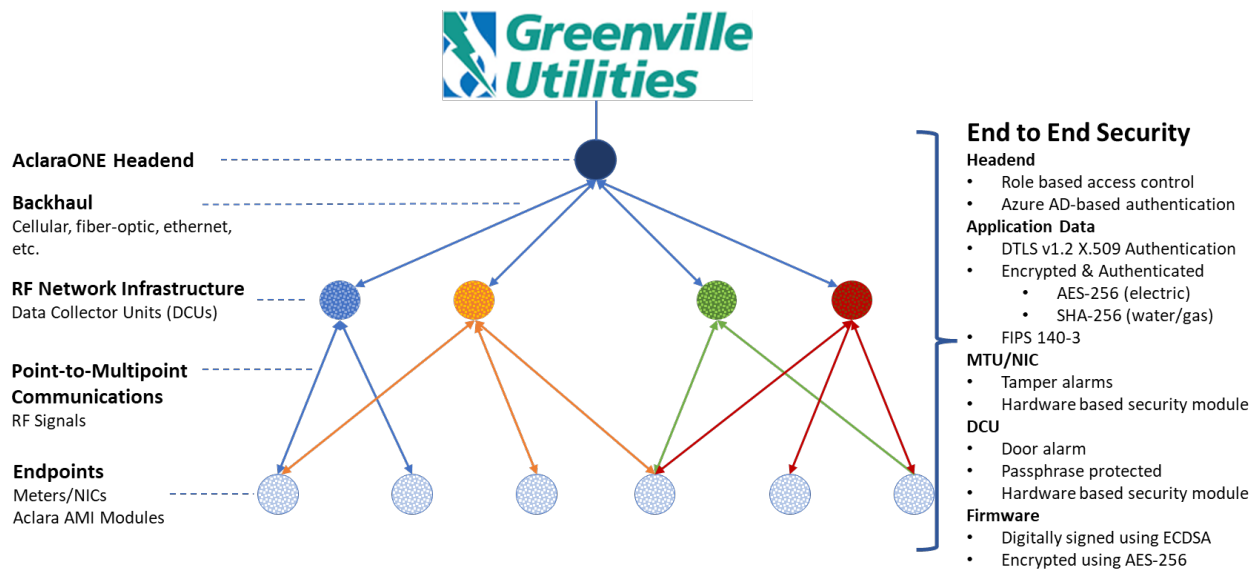

Figure 13: Security and System Architecture

Microsoft Azure Data Center Security
Aclara uses the Microsoft Azure tech stack as our primary cloud solution. The AclaraONE software is hosted in a secure, 24/7 data center environment. Customer data is stored on mirrored drives and backed up daily; backups are kept in offsite storage. Live data retention is for two years but can be modified per the utility's needs.

Aclara maintains firewall protection and redundant, high speed internet connections for the private label site(s). Maintenance services including new versions, error corrections, enhancements, and improvements are provided at a level selected by the customer.

The purpose-built Tier-3 data centers have redundant power-supply and server virtualization. Virtualization and redundancy support 99.99% uptime, at the Microsoft data center level. The utility's AclaraONE hosted system will be deployed in an Azure data center in the Eastern US and will be replicated in an Azure data center in the Western US to ensure high availability and facilitate disaster recovery. Server snapshots and back-ups are stored hourly, daily, and weekly for recovery and restoration.

Azure Physical Data Center Security

Aclara uses Microsoft datacenters for its hosted solution. Microsoft takes a layered approach to reduce the risk of unauthorized users gaining physical access to data and the datacenter resources. Datacenters managed by Microsoft have extensive layers of protection: access approval at the facility's perimeter, at the building's perimeter, inside the building, and on the datacenter floor. Layers of physical security include:

- Access request and approval. Visitors must request access prior to arriving at the datacenter and are required to provide a valid business justification for visit, such as compliance or auditing purposes; all requests are approved on a need-to-access basis by Microsoft employees. After Microsoft grants permission, an individual only has access to the discrete area of the datacenter required, based on the approved business justification. Permissions are limited to a certain period of time, and then expire.
- Visitor access. Temporary access badges are stored within the access-controlled SOC and inventoried at the beginning and end of each shift. All visitors that have approved access to the datacenter are designated as Escort Only on their badges and are required to always remain with their escorts. Escorted visitors do not have any access levels granted to them and can only travel on the access of their escorts. The escort is responsible for reviewing the actions and access of their visitor during their visit to the datacenter. Microsoft requires visitors to surrender badges upon departure from any Microsoft facility. All visitor badges have their access levels removed before they are reused for future visits.
- Facility's perimeter. Visitors enter through a well-defined access point. Typically, tall fences made of steel and concrete encompass every inch of the perimeter. Cameras are around the datacenters, with a security team monitoring their videos at all times. Security guard patrols ensure entry and exit are restricted to designated areas. Bollards and other measures protect the datacenter exterior from potential threats, including unauthorized access.
- Building entrance. The datacenter entrance is staffed with professional security officers who have undergone rigorous training and background checks. These security officers also routinely patrol the datacenter and monitor the videos of cameras inside the datacenter at all times.
- Inside the building. After entering the building, visitors pass two-factor authentication with biometrics to continue moving through the datacenter. If identity is validated, individuals can enter only the portion of the datacenter to which access has been approved. You can stay there only for the duration of the time approved.
- Datacenter floor. Visitors are only allowed onto the floor that have been approved to enter. Visitors must pass a full body metal detection screening. To reduce the risk of unauthorized data entering or leaving the datacenter without our knowledge, only approved devices can make their way into the datacenter floor. Additionally, video cameras monitor the front and back of every server rack. When exit the datacenter floor, visitors again pass through full body metal detection screening. To leave the datacenter, visitors are required to pass through an additional security scan.

Aclara Corporate Security and Data Protection

Aclara and its parent company Hubbell have a rigorous, multi-layered information security infrastructure designed to defend our data, network, and employees. We align cybersecurity policies with the NIST SP800-53 controls outline, and these policies are regularly reviewed and approved. Our Security and Privacy Controls include Access Controls, Awareness Training, Audit and Accountability, Control Assessments, Configuration Management, Contingency Planning, Identification and Authentication, Incident Response, Maintenance, Media Protection, Physical and Environmental Protection, Planning, Program Management, Personnel Security, PII, Risk Assessment, System Services and Acquisitions, System & Information Integrity, and Supply Chain Risk Management. Additionally, our Data Protection policy includes requirements and guidelines on data encryption, data security, back up, storage, testing, and disposal.

Future-Ready Security Capabilities

AclaraONE is engineered using big data architecture that incorporates an industry-standard technology stack, ensuring both compatibility and scalability. The system is designed to be inherently adaptable to the latest advancements in AI and machine learning. It features a robust architecture that supports extensive data availability, crucial for effectively training sophisticated ML models.

AclaraONE efficiently manages and streams real-time data, facilitating predictive analytics and enabling near-real-time decision-making supported by AI. The system's adaptability facilitates the integration of new analytical tools as technology evolves.

Aclara leverages an adaptable security approach that is enhanced by a third-party party tool and managed serviced, including AI-powered cybersecurity detection technology.

Training and Knowledge Transfer Plan

Initial Training Program Structure

Aclara Customer Support and Education Services strive to provide dedicated training unique to the product and customer and to the unique challenges of day-to-day operations. As such, all training materials provided are available via Aclara Connect and provided in printed form and electronically when training is conducted onsite. Documentation includes logical and physical network diagrams of all process data flow. In addition, continued learning opportunities are available for new hires or as refresher training in the form of free webinars and through on-demand, online courses (also available for free 24/7) through Aclara University.

In addition to classroom topics, training sessions provided by our training department include hands-on training, often applied as structured field exercises during a class to not only provide practical experience to the field personnel, manager, and/or system administrators involved but also to serve as an opportunity to apply the knowledge learned through the course. Training materials, such as field guides, are often used in these field exercises and are recommended to be used for future work on Aclara's systems for reference and to reinforce learning. As future revisions of documentation and online courses are released by Aclara, these new resources become available online via Aclara Connect and Aclara University, respectively.

Below are representative agendas for water, gas, and electric training sessions; in our experience, gas and water technicians frequently have the same skillset and address both commodities while electric field technicians are a separate group. Actual training for the GUC will depend on its staff proficiency with each commodity. If the GUC has entirely separate teams for each commodity, we recommend holding separate sessions in parallel or will send trainers out on separate weeks.

Aclara RF Water and Gas MTU Installation Certification Training
Recommended attendees for this course include field service (utility and contractor field service installers, field supervisors, network monitors) and administrative (customer service, administration, usage analysts, network monitors) personnel.

Day 1	Topics	Audience
8:30-9:00 AM	Welcome: Introductions	All
9:00-9:15 AM	Objectives; Documentation	All
9:15-9:45 AM	Lesson 1: Aclara RF Overview	Field Service
9:45-10:30 AM	Lesson 2: Water & Gas Meters	Field Service
10:30-10:45 AM	BREAK	
10:45-11:30	Lesson 3: Water & Gas MTUs	Field Service
11:30 AM-Noon	Lesson 4: RF Fundamentals	Field Service
Noon-1:00 PM	LUNCH (provided)	
1:00-2:30 PM	Lesson 5: Water MTU Installation	Field Service
2:30-2:45 PM	BREAK	
2:45-4:15 PM	Lesson 6: Aclara Mobile Programmer	Field Service
4:15-4:30 PM	Day 1 Review, Follow-up; Discuss Day 2	Field Service

Day 2	Topics	Audience
8:30-8:45 AM	Day 1 Review	Field Service
8:45-9:30 AM	Lesson 7: Gas MTU Installation	Field Service
9:30 AM-Noon	Field exercises: plan & perform water and gas MTU installations (one each per trainee)	Field Service
Noon-1:00 PM	LUNCH (provided)	
1:00-1:30 PM	Upload MTU programming records	Field Service
1:30-2:15 PM	Check software for MTU Installations	Field Service
2:15-2:30 PM	BREAK	
2:15-3:45 PM	MTU Troubleshooting	Field Service
3:45-4:00 PM	Day 2 Review, Follow-up; Discuss Day 3	Field Service

Day 3	Topic	Audience
8:00-8:15 AM	Recap Day 2, Review Installations, Q&A	All
8:15-9:00 AM	AclaraONE Software General Navigation – menus, search function, tables (sort, filter, customize, export), graphs (hover, click, export)	All
9:00-9:30	Customer Service functions – account info (consumption, meter, readings, on demand readings)	All
9:30-9:45 AM	BREAK	
9:45 AM-Noon	Aclara RF Water – Equipment details (DCUs, MTU Installations, water meters, MTUs, MTU to DCU Communication; Reporting – Meter Issues)	All
Noon-1:00 PM	LUNCH	
1:00-2:15 PM	AclaraONE (Water) MDM – Events (3 views, event groups, triggers & severity thresholds)	Administrative
2:15-2:45 PM	Administration – report groups	Administrative
2:45-3:00 PM	BREAK	
3:00-3:30 PM	Water AMI System Health Checks	Administrative
3:30-4:00 PM	Aclara Connect; Aclara U; Wrap-up, Questions, Action Items	All

AclaraONE RF Electric Training Agenda

Recommended attendees for this course include administrative (service and financial directors, supervision, billing agents, it, analysts, clerks, customer service representatives and Field Service (utility and contractor field service installers, and individuals designated to monitor the Aclara network equipment).

Day 1	Topic	Audience
8:00-8:15 AM	Welcome: Introductions	All
8:15-8:30 AM	Documentation	All
8:30-9:00 AM	Aclara RF Network Overview	All
9:00-10:00 AM	RF Fundamentals	All
10:00-10:15 AM	BREAK	
10:15-11:00 AM	RF Electric Meters	All
11:00 AM-Noon	AclaraONE Overview	All
Noon-1:00 PM	LUNCH	
1:00-1:45 PM	Questions & Review	All
1:45-2:30 PM	AclaraONE Software Live System Demo	All
2:30-2:45 PM	BREAK	
2:45-3:45 PM	AclaraONE Software Live System Demo continued	All
3:45-4:00 PM	Review, Aclara Connect, AclaraU	All

Knowledge Transfer and Documentation

Aclara's managed services team will provide long-term support for the GUC and offers extensive resources within the Aclara Connect customer portal, our private social network and comprehensive knowledge base, depicted in Figure 20. Aclara Connect allows open access to our collaborative community of customers and employees exchanging ideas, sharing experiences, and fostering relationships. Aclara Connect includes:

- General news and updates
- Customer discussion threads
- Software downloads
- User guides
- Training registration
- Certified partner information
- Client conference information
- Support ticket submission and tracking
- Online order and RMA tracking
- Access to the Aclara University Online Learning Center

The Aclara Connect portal also functions as a site for the GUC to submit enhancement ideas for monthly evaluation by our Product Management team. We designed various new features of our AclaraONE software, including the DMA and Polygon Lasso tool, with direct customer feedback from portal submissions. Aclara Connect serves as a starting point for any questions or feedback and expedites communication with our team, turning client input into action and keeping customers updated on their projects every step of the way.

Figure 14: Aclara Connect – our Collaborative Community

In addition, our Customer Service and Education department is available to clients via a toll-free number at (800) 892-9008 or by email at aclarasupport@hubbell.com. Issue tracking is managed in a sophisticated customer relationship management software, interfaced directly with Aclara Connect.

Data Analytics and Predictive Capability

Data Management and Analytics Approach

Since a specific MDM was not part of the RFQ, we have included what is available from the AclaraOne software today. This is a subset of the MDM applications that Parsons (ElectSolve) has and are included as part of the AclaraOne system.

The AclaraONE software platform unifies data management and analytics into a single extensible platform, empowering the GUC's team with powerful data and the awareness to act. It is an end-to-end, future-proof solution to manage the utility's network, support billing and CIS business processes, and engage internal operations. It allows the utility to access and analyze data collected from meters and other devices on its distribution networks and is a single, unified platform for monitoring, optimizing, improving network operations, and increasing customer satisfaction.

AclaraONE provides strong and unique support for the creation and lifecycle management of important operational and health events, whether these events are generated directly from the hardware devices (e.g., prioritized alarms, commands, notifications) and/or produced by software analysis (e.g., signal strengths, reading performance, device charging levels, consumption, DMA, etc.).

Events—which are anomalies that illustrate alerts and alarms—populate on the main dashboard and are presented on filterable lists, graphs, and maps, with ready links to drill down into the source details, or proactively provided by subscription in outbound notifications. The actionable event-based alerts are the primary visualization of system health, but list or report views are also strongly supported.

Note: Images below are a combination of Aclara's demo site and a live, triple commodity customer; sensitive personal information has been redacted from the live site screenshots.

The event summary dashboard, depicted in Figure 21, is the homepage that shows any events associated with meters, Meter Transmission Units (MTUs), and Data Collector Units (DCUs) in the service area or subgroup, on a map. The entire network, or subsets of the network through the grouping capability, are monitored and displayed on the dashboard and throughout the application.
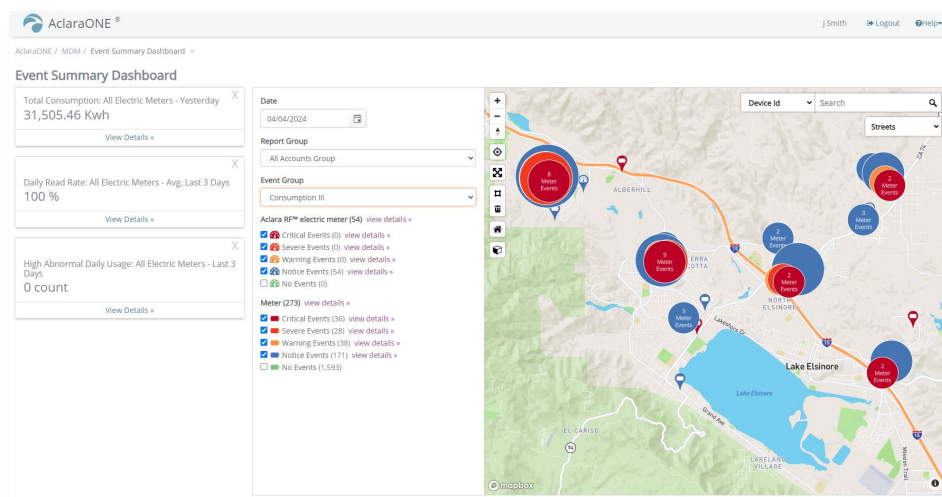

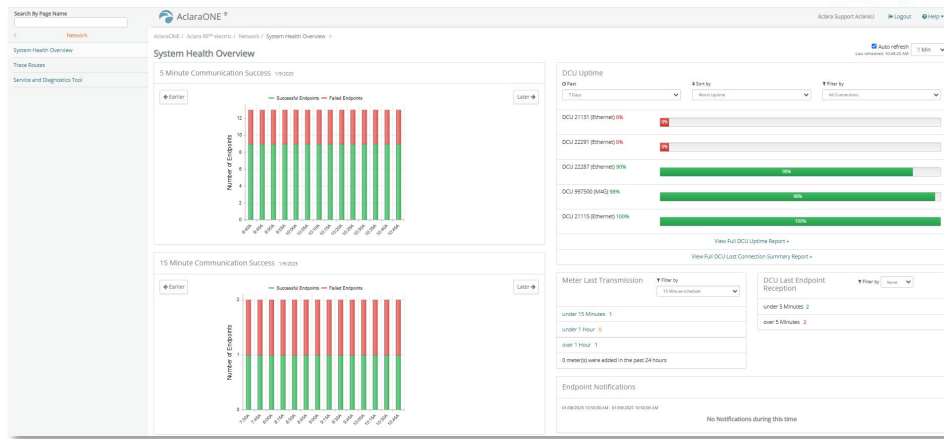*Figure 15: Event Summary Dashboard*

Figure 16: System Health Overview

Another key feature of AclaraONE is the ability to configure and generate proactive event notifications sent directly to utility personnel ([Figure 23]). AclaraONE can notify utility personnel of events, such as whenever a tamper alarm occurs or a continuous usage, bringing important information to them so they can do their jobs more effectively and efficiently.
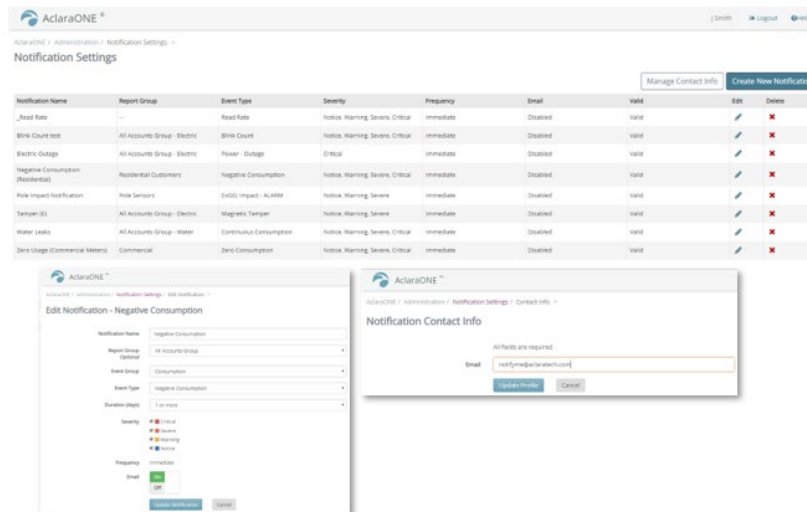

Figure 23: Notification Settings

Utility personnel will have access to view events in a variety of formats, including map-based (Figure 24 and Figure 25), graphical (Figure 26) and list (Figure 27). Events can be sorted, filtered, and exported as reports. Utility-set variables include start and end dates and the number of consecutive days for the event. Events such as potential pipe bursts (Figure 24) or events such as possible renewable energy installation locations (Figure 25) can be identified as well.

Figure 17: Event Showing Potential Pipe Burst-Map

Figure 18: Events Showing Possible Renewable Energy Installation-Map

Figure 19: Event Trends

Figure 20: Event List

Figure 28 depicts remote connect/disconnect functionality. Figure 29 shows the drill-down into a multi-commodity account.

Figure 21: Remote Disconnect Device (RDD) Control

Figure 22: Account Details
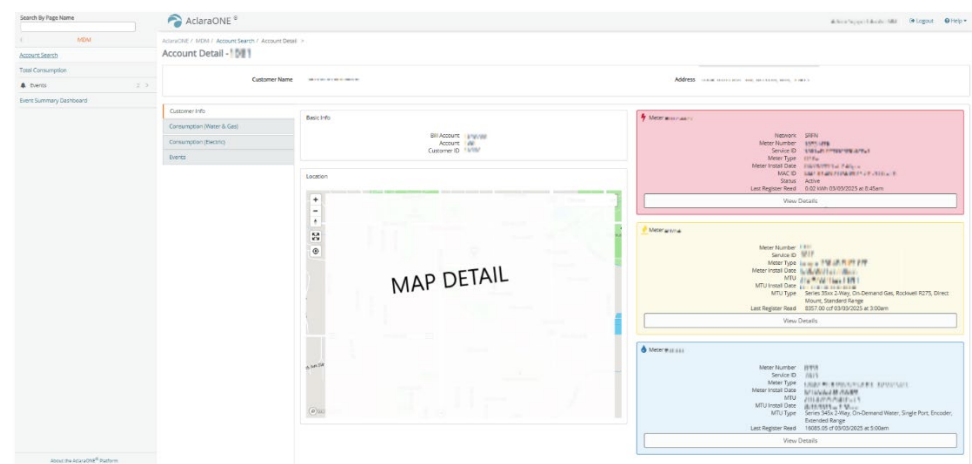
Future Technology Adaptability

The key building blocks of Aclara's AMI system (electric meters, gas, and water MTUs, DCUs, and AclaraONE software) regularly evolve in response to market and user needs. Improved and extended functionality (such as adding new meter alarm sets) are rolled into production and available as needed with firmware over-the-air pushes. Other upcoming capabilities will include a cellular endpoint for hard-to-cover and hard-to-hear locations. AclaraONE SaaS is an evolving software platform with ongoing bimonthly releases that are focused on enhancing efficiency and functionality while adapting to technological advancements and evolving industry standards.

Aclara has announced a partnership with Utilidata to develop an advanced meter for the future utilizing the NVIDIA chipset. This product is expected to provide AI machine learning capabilities to enable real-time decision making it the field based on the state of the distribution network.

Aclara also continues to develop Smart Infrastructure/IoT applications. Roadmap applications include flood alarm, tank levels, hydrant monitoring, water quality, and others.

Aclara RF Phase Identification and Synchrophasor: This product provides a means to detect the phase each residential meter is connected to on the distribution network for load balancing and optimization. AclaraONE provides reporting and filtering capabilities showing the phase, phasor, phase angle. This product will soon include a visual indication of the phasor as well as an indication of whether that angle has recently changed. In addition, Phase ID will also be able to be shown on the meter ID LCD.

Distributed Synchrophasor information enables additional value for substation to end point capabilities and energy analytics. Features of this product in development include:
- Real-time power flow visualization
- Dynamic System Optimization
- Predictive and preventive diagnostics
- High-impedance fault detection
- Find floating neutrals
- Substation Phasors
- Meter Phasors
- System anomalies
- Graphic display

Cap Bank Planning Tool: Management of VARs and Power Factor is a critical task for Distribution Planning teams. Identification of locations and proper sizing for capacitor banks is a challenging and time-consuming but essential planning task. AGM Power Sensors are easy to deploy to gather and report circuit profiles for load, voltage, and VARs. The AGM SMS software roadmap includes a new Capacitor Bank Planning Tool to aid in the analysis of circuit VAR data to recommend appropriate fixed and switch capacitor bank sizing.
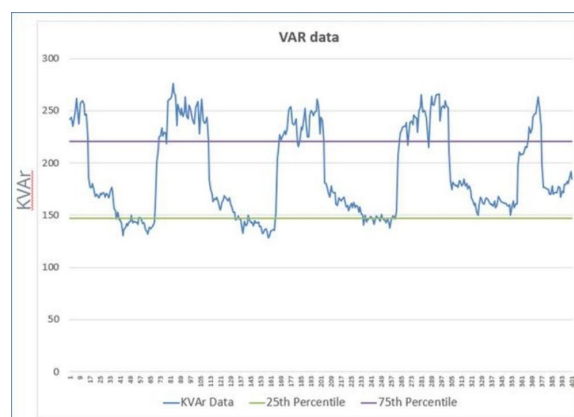

Figure 23: Managing VAR Data

Cap Bank Failure Detection Analytic: Capacitor banks periodically have a variety of common failures such as blown fuses, failed or stuck switches, or improper controller settings. Failed conditions can be hard to detect and can create imbalances and ineffective management of VARs, power factor, and circuit voltage. The increased use of CVR and VVO applications and increased penetration of DERs will significantly increase the rates of cap bank switching and risk of failures. The AGM SMS software roadmap includes a new Capacitor Bank Failure Detection analytic to aid in the detection of switched capacitor bank failures.
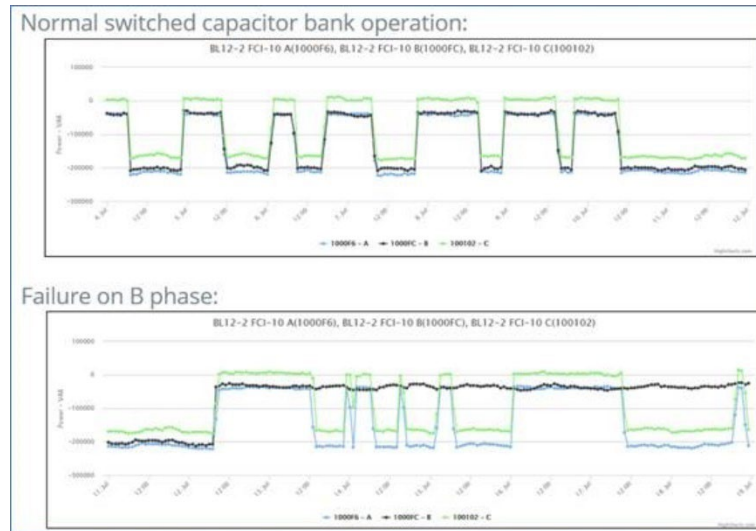

Figure 24: Cap Bank Failure Identification

Required Forms and Adherence to GUC Policy, Other Requirements and Wesco Project Plan

RFQ Acknowledgement an

E-Verify Form.pdf

Greenville NC Aclara Attachments.pdf

Wesco has provided the attached COI as our Insurance Acknowledgment Statement that is required.

24-25 WESCO Evidence of Coverage

Greenville NC Aclara Attachments.pdf

Project Managent Overview.pdf

Installation Services Overview.pdf