Municipal utility increases fiber intake

ESC engineering, Inc. (ESC) is pleased to join our client community in establishing Fiber Management solutions in support of reliable information sharing across the utility infrastructure. Development of fiber infrastructure and improved systems communications are essential in supporting status updates, system planning, and enabling informed decisions. Fiber infrastructure also provides utilities with communications to system conditions with operational support for IVR, AMI, SCADA, and OMS. Upgraded systems communications provides utilities with increased worker safety and system reliability, enhanced asset life-cycles, and further automation of manual processes which result in improved consumer satisfaction. The challenge in leveraging investments in fiber networks lies in the ongoing management of infrastructure assets. ESC provides the tools, training, and advisory services necessary to ensure ongoing success for fiber management initiatives.

GOALS:

- Identify fiber infrastructure
- Acquire tools for automation
- Centralize database for all fiber data
- Increase operational asset knowledge
- Maps / reporting
- Establish connectivity model / tracing

SYSTEM COMPONENTS:

- Data collection / training
- Consolidation of data sources
- Database development
- Implementation of ArcFM Fiber Manager
- Automated tools (tracking, connections)

HIGHLIGHTS:

- Increased communications
- Conditional awareness across fiber loop
- Fiber capacity analysis
- Up-to-date facilities / attribute data
- Location / maps of all fiber assets
- Improved decision-making
- Improved asset life-cycles / reliability
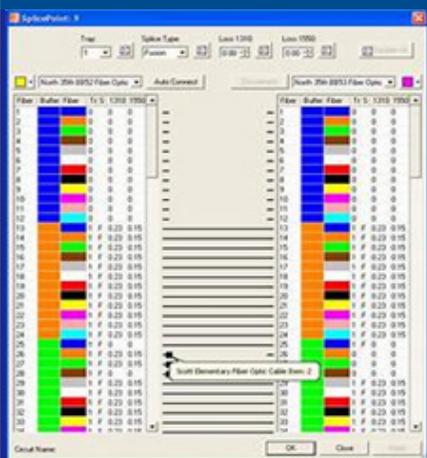
APPLICATION:

ESC's client partner had installed a City-wide fiber loop for increased communications across its key facilities, consumer accounts, and substation infrastructure. Following construction, the City was challenged with identifying asset conditions, connectivity networks, locations, and fiber connections for the management of infrastructure related to the City's fiber backbone. Work orders and system updates had been managed manually with limited reporting and information related to the fiber network and related crew assignments, and enterprise access to network statuses had not been available. Maintenance and management of the fiber network coupled with reporting, map viewing, and management tools were essential in maintaining the City's investment in its fiber network.

REQUIREMENTS:

The City required the identification of all fiber assets and the ability to manage its fiber loop for substation and key facility infrastructure as well as primary commercial and industrial accounts. Objectives for this project included improved information sharing, elimination of paper processes, access to infrastructure statuses, insights into connections, outages, network connectivity, and map viewing and reporting. The City also required the system to be capable of Optical Time-Domain Reflectometer (OTDR) tracing for outages, understanding asset conditions and connection outputs including easily developed reports for contractors and field crews, OTDR results in the field, fiber occupation and capacity reports, and HTML map viewing.

SOLUTION:

Prior to implementation of the Fiber Management solution, the City required identification of fiber infrastructure asset locations and conditions. ESC established a methodology for field data collection and provided City personnel with training for hardware and field services activities. This initiative leveraged ESRI's Collector App and ArcGIS Online applications for field services and database development. ESC also received existing information in the form of maps and photos which were compiled and modeled into a fiber geodatabase on an enterprise SQL Server. The City's personnel conducted an inventory of its fiber-related facilities while ESC developed and populated its fiber geodatabase. The system was modeled all the way from fiber sources to panels within its substations. Following database development, ESC implemented a Fiber Management solution providing the City with asset tracking, network connectivity, splice points, tracing, connection management, reporting, schematics, and training services. The installed solution met the City's objectives for the elimination of paper and manual processes, identification and attribute data for all fiber infrastructure, and information distribution including map viewing and reporting.

FOLLOW-UP:

Following the field data collection and implementation of the Fiber Management solution, the City has exceeded its expectations related to project objectives. The new system provides City personnel with a fully connected model and related attribute data for fiber assets. Administrators now use OTDR tracing to isolate outages with web-map viewing available to field personnel, resulting in improved outage planning and response time. City personnel can reference information related to fiber assets to better manage inspections, maintenance, and overall health of the network while distributing information to necessary personnel. Oversight of the system has resulted in improved asset life-cycles and system reliability with deeper understandings related to statuses and communications of substations, City facilities, and key accounts. ESC continues to support the City with ad-hoc requests and has conducted an upgrade of the system to further leverage the City's investment in Fiber Management.