Southwire

DIGITAL SOLUTIONS

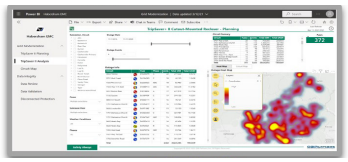
Services

SOUTHWIRE'S DIGITAL GRID RESILIENCY ASSESSMENT

IN AS LITTLE AS 30 DAYS, SOUTHWIRE DIGITAL SOLUTIONS' GRID RESILIENCY ASSESSMENT:

- Identifies areas for system reliability improvements by leveraging existing outage and GIS data.
- Finds circuit reliability issues at the device level and prioritizes equipment replacement and/or maintenance actions.
- Provides prescriptive recommendations with cost justification and expected reliability improvements.
- Assets are ranked by an Overall Equipment Ranking based on the Asset's Health and Network Criticality.
- Detects data integrity and connectivity discrepancies with system correction recommendations.
- Through AI and ML techniques, confirms and refines equipment failures, causes, root causes, and remedies.

The Assessment is performed in 30 Days which includes a **Findings and Recommendations** presentation with a 30-day Subscription to our **Grid Resiliency Solution** with access to the following solutions.



GRID MODERNIZATION

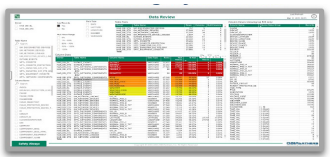
- Recommends equipment upgrades or replacements based on cost savings, number of failures, and reliability improvements.
- Users configure how they measure replacement criteria such number of failures, minutes of interruption, and causes.
- Assets include wire, protections devices, and transformers.
- Generates a Work Plan to be executed.
- As actions are taken, results are measured.

NETWORK RELIABILITY

- Provides IEEE 1366 reporting with advanced circuit analysis.
- Performance indices measured from the circuit to the device level.
- Analysis provided by organization, time, failure, and cause.
- SAIDI, SAIFI, and CMI calculations are embedded throughout modules.
- Extensive queries and analysis is fully supported.

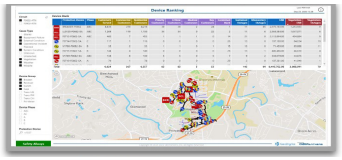
ASSET PERFORMANCE ANALYSIS

- Asset health and ranking is established by asset risk & criticality.
- Measures the health of your network on an ongoing basis.
- System supports O&M and CAPEX budgeting with expected improvements based on actions planned.
- Generates a Work Plan for execution by WMS.
- Loaded Labor, Material, equipment costs are supported for improved Cost accuracy.



DATA INTEGRITY & CONNECTIVITY MODEL

- Ensures data quality & completeness for accurate decision making.
- Identifies where data issues need to be corrected at the source level.
- Connectivity Model spatially constructs protection zones, and customers affected for accurate impact.
- The Model is also used for Phase Balancing, Segmentation recommendations and other analysis.



VEGETATION OPTIMIZATION

- Identifies Asset at Risk from external factors such as vegetation and weather.
- Places a Probability of Failure based on multiple criteria.
- Establishes a priority based on probability and impact.
- Generates a Work Plan to be executed.
- Supports ongoing analysis as improvements are made.

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DIGITAL SOLUTIONS Services

SOUTHWIRE'S DIGITAL GRID RESILIENCY ASSESSMENT

UNLOCKING THE POWER OF YOUR DATA

Our applications provide valuable insight to enable utilities to make strategic operational decisions for Transmission & Distribution O&M and Capital Investments. These tools have been used in determining protection device with location and cable replacement strategies, segmentation, and proactive maintenance prioritization. Recommendations are based on predicted Benefits with a Return on Investment (ROI).

GIS Shapefiles, ESRI, or other GIS database export.	OMS Database dump, CSV, xlsx, or other file format.
NETWORK DEVICES Breakers, Reclosers, Switches, Fuses, Transformers, Open Points, Open Elbows, etc. **REQUIRED NETWORK DEVICE ATTRIBUTES** • Device Name or Id (that would support linking to OMS data) • Device Type • Phase (ABC, AB, A, etc.) • Normal Status (Open/Closed, by Phase if appropriate) • Circuit Name or Id • Geometry	**SUSTAINED OUTAGES (MULTIPLE YEARS)** **REQUIRED OUTAGE INFORMATION** • Outage Number/ID • Begin Time / Restore Time • Number of Customers Affected • Interrupting Device – Name, as well as unique id that links to GIS • Cause (as well as sub-causes if available) • Comments (Operator, Crew, etc.)

OPTIONAL NETWORK DEVICE ATTRIBUTES
• Voltage
• Control Type (Reclosers)
• Rating where applicable
• Configuration where applicable (i.e., Delta, Wye, etc.)
	OPTIONAL OUTAGE INFORMATION SUSTAINED OR MOMENTARY
	• Region, Substation, Circuit
	• Fault Equipment
	• Weather
	• Partial Restoration Steps
	  • Deenergize Time/Customer Count
	  • Reenergize Time/Customer Count

CONDUCTORS **REQUIRED CONDUCTOR ATTRIBUTES** • Overhead or Underground • Phase (ABC, AB, A, etc.) • Circuit Name or ID • Geometry **OPTIONAL CONDUCTOR ATTRIBUTES** • Voltage • Primary Wire Type (per phase if available/applicable) • Neutral Wire Type	**OPTIONAL CUSTOMERS SERVED** • Customer Count per Transformer • Customer Type (Residential, Commercial, etc.) • Customer Priority (Critical, Medical, Key, etc.) • Customer Business Name – (Non-Residential) This is used to create facility type groupings/priorities (i.e., schools, police & fire, communications, medical, grocery, etc.) SIC or NAICS code
NOTE: If GIS data is not available, we can work with the OMS data to derive an equipment hierarchy based on interrupting device and affected customers.	**OPTIONAL OUTAGE CALL INFORMATION** • Call Time • Outage Number/ID • Call Codes or Flags • Call Comments **OPTIONAL CALL INFORMATION** • Call Source (i.e., AMR, IVR, Web, etc.)

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