
Utility Reliability Reporting, Outage Causes and Investment Priorities Training Course

25 – 29 April 2027
Muscat





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Programme Summary

Utility reliability reporting, outage causes and investment priorities form the subject of this five-day training course for utility and grid operations directors, network planning heads and regulators at a managerial level, ending in a reliability performance report with ranked investment priorities. Networks lose credibility when outage figures are reported inconsistently and spending is not tied to the interruptions customers feel. The programme moves from principles, through diagnosis of outage records, to design of targets and investment rules, then to application on one network. Mars Training Centre UK delivers this programme in utility reliability reporting.

The Business Case

When operations, planning and regulatory teams each count interruptions differently, reported performance cannot be compared year to year and investment follows the loudest complaint rather than the largest contributor. Leaders who define indices consistently, separate exceptional events from normal days and trace outages to their causes across feeders, regions and voltage levels can show what customers experience and where spending reduces it.

- Customer Interruption Minutes: Fall as the largest outage causes are ranked and addressed in order of contribution.
- Restoration Time: Shortens as switching, crew dispatch and fault location practice are measured and reviewed.
- Capital Efficiency: Improves as network investment is ranked by reliability benefit per unit of spending.

Principles and Evidence Base

- IEEE 1366 reliability indices: SAIDI, SAIFI, CAIDI and MAIFI define the measures the programme uses to report customer experience in Sessions 1 and 2.
- Major event day classification by the beta method: It separates storm and other exceptional days from normal operation, and shapes the trend analysis in Session 2.
- Reserve margin and loss of load expectation: They frame the adequacy assessment and security margin rules designed in Session 3.
- Pareto analysis: It ranks outage causes by contribution and drives the investment ranking built in Session 4.



Intended Participants

- Operations leaders accountable for network performance and its reported figures.
- Network planning heads who direct reinforcement, automation and replacement spending.
- Regulatory and performance managers who set, monitor or respond to reliability targets.
- Asset and maintenance managers whose programmes affect interruptions.

The programme serves electricity distribution companies, transmission operators, industrial energy suppliers and sector oversight bodies.

Learning Outcomes

1. Participants will be able to evaluate a network's reliability reporting against recognised index definitions.
2. Participants will be able to diagnose the main causes of interruptions from outage and fault records.
3. Participants will be able to construct reliability targets that separate exceptional events from normal performance.
4. Participants will be able to prioritise network investments by their effect on customer interruptions.
5. Participants will be able to appraise reserve and security margins against supply adequacy needs.
6. Participants will be able to justify a reliability performance report and investment ranking to an executive or oversight audience.

Programme Structure

Day 1: Utility Reliability Reporting Principles

What is counted as an interruption, and how is it reported?

- SAIDI and SAIFI Definition Sheet
- CAIDI and MAIFI Interpretation Guide
- Customer and Load Weighted Measures
- Outage Data Capture Format
- Reporting Roles and Ownership Map

Day 2: Diagnosing Outage Causes and Performance Trends

Which causes and which days drive the reported performance?

- Major Event Day Beta Method Test
- Pareto Ranking of Outage Causes
- Fault Location and Restoration Time Review
- Planned Versus Unplanned Outage Split
- Year-on-Year Trend Chart



Day 3: Designing Targets, Margins and Investment Rules

How are targets set and security margins judged?

- Reliability Target Setting Table
- Reserve Margin and Loss of Load Expectation Appraisal
- N-1 Security Check Sheet
- Performance Incentive and Penalty Design
- Reliability Benefit per Unit of Spending Model

Day 4: Resilience, Automation and Investment Ranking

Which investments reduce interruptions most for the spending?

- Feeder Automation Case Template
- Network Hardening Options Appraisal
- Vegetation and Weather Exposure Review
- Investment Priority Ranking Matrix
- Regulatory Submission Outline

Day 5: Applying Utility Reliability Reporting on One Network

Is the reliability report ready for an executive or oversight audience?

- Applying the Session 2 Cause Ranking to the Chosen Network
- Testing the Session 3 Targets Against Recorded Performance
- Checking the Session 4 Ranking Against Budget Limits
- Setting Reporting Governance and Review Cycle
- Completing the Reliability Performance Report

Methodology

The programme uses a data workshop built on anonymised outage logs, customer counts and investment lists. Participants work in small teams as operations lead, planning head and oversight reviewer, and carry one network from indices to an investment case.

- Suggested activity: Calculating SAIDI and SAIFI from an outage log and challenging the result.
- Suggested activity: Ranking outage causes and defending which investment comes first.
- Suggested activity: Presenting a performance report to a panel acting as an oversight body.



Capstone Output

Each participant completes a reliability performance report for one network or supply area. It holds index calculations, ranked outage causes, proposed targets, margin findings and an investment priority table. The report is used to brief executives, answer oversight questions and review each investment against its effect on customers.

Frequently Asked Questions

Is utility reliability reporting suitable for managers without an engineering background?

Yes. Utility reliability reporting is set at managerial level and assumes you answer for network performance figures, not that you design or operate the network yourself.

Which standards does utility reliability reporting rest on in this training?

Utility reliability reporting rests on IEEE 1366 index definitions, the beta method for major event days, reserve margin and loss of load expectation, and Pareto analysis of causes.

How is the report from utility reliability reporting used at work?

You use the reliability performance report to brief executives, answer oversight questions, set targets and rank investments by their effect on customers.

How does utility reliability reporting differ from a power system protection programme?

Utility reliability reporting centres on indices, outage causes, targets and investment ranking, while a protection programme centres on relay settings and fault clearance design.