CONCEPT

Smart Metering and Revenue Protection: Non-Technical Losses, Theft and Prepayment

5 – 9 September 2027
Dammam - Eastern Province five-star



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Introduction:

Smart metering and revenue protection decide how much of the energy and water a utility delivers is actually billed and paid for. Bypassed meters, illegal hooks, weak installation work, estimated bills and billing data errors quietly drain income while network losses are blamed. This Core Concept course trains electricity and water utility staff to run the metering-to-cash chain end to end: planning a smart meter rollout, managing meter data, balancing feeders and district metered areas, inspecting sites, handling prepayment and recovering revenue. Participants leave with a Revenue Protection and Loss Reduction Plan.

Course Objectives:

- Map the metering-to-cash chain of an electricity or water utility and quantify where revenue leaks between connection, reading, billing and collection
- Plan a smart meter rollout wave with installation quality controls, asset records and read performance monitoring
- Apply validation, estimation and editing rules to meter data and resolve read exceptions before billing
- Calculate energy balance per feeder or transformer and water balance per district metered area to locate non-technical and apparent losses
- Run field inspections, evidence handling, back-billing, disconnection, reconnection and prepayment processes within clear customer and data protection controls
- Build a Revenue Protection and Loss Reduction Plan with assurance KPIs, targets and a recovery business case

Target Audience:

- Staff responsible for metering operations, meter installation and meter asset records in electricity or water utilities
- Revenue protection and loss reduction staff who investigate theft, tampering and illegal connections
- Billing and meter reading staff who handle read exceptions, estimated bills and billing corrections
- Field inspection supervisors who plan site visits, disconnections and evidence collection
- Customer service and collections staff who manage prepayment accounts, complaints and payment arrangements
- Network operations staff who own feeder, transformer or district metered area loss figures

Course Outline:

Day 1: Metering-to-Cash Chain and Revenue Loss Baseline

- Metering-to-Cash Process Map: Connection, Meter Reading, Billing, Collection and Disconnection
- Technical Versus Non-Technical Loss Classification for Electricity and Water Networks
- IWA Water Balance Components: Authorised Consumption, Apparent Losses and Real Losses
- Revenue Leakage Points Register Across Onboarding, Reading and Billing Stages
- Revenue Protection Maturity Self-Assessment and Loss Baseline Worksheet

Day 2: AMI Building Blocks and Smart Meter Rollout Planning

- AMI Operational Layers: Endpoint Meters, Data Concentrators, Head-End System and MDMS
- Meter Communication Options Compared: PLC, NB-IoT and LTE-M, RF Mesh and Wireless M-Bus
- Rollout Wave Planning by Loss Level, Customer Class and Network Readiness
- Installation Quality Checklist: Sealing, Wiring Verification, Commissioning and Photo Evidence
- Meter Asset Register, Firmware Version Tracking and Read Success Rate Monitoring

Day 3: Meter Data Management, Balancing and Loss Detection

- VEE Rule Set Design: Validation Checks, Estimation Methods and Audited Edits
- Feeder and Distribution Transformer Energy Balance: Input Metering Versus Billed Consumption
- District Metered Area Inflow Versus Billed Volume Reconciliation for Commercial Water Losses
- Tamper Alarm Triage: Cover Open, Magnetic Interference, Reverse Energy and Missing Neutral Events
- Suspicion Rules for Inspection Targeting: Consumption Drops, Zero Reads and Peer Comparison

Day 4: Field Inspection, Enforcement, Prepayment and Controls

- Field Inspection Work Package: Target Lists, Crew Kits, Safety Briefing and Inspection Forms
- Evidence Chain: Site Photographs, Seized Meter Custody, Accuracy Testing and Case Files
- Back-Billing Assessment, Disconnection and Reconnection Procedure with Customer Notice Steps
- Prepayment Metering Operations: Token Vending, Credit Modes, Emergency Credit and Vulnerable Customer Safeguards
- Insider Fraud Controls, Customer Data Privacy and AMI Cybersecurity at Overview

Day 5: Case Study: Revenue Assurance KPIs and Loss Reduction Plan

- Revenue Assurance KPI Set: Loss Ratio, Read Rate, Estimated Bill Share and Recovered Value
- Electricity Case: High-Loss Feeder From Energy Balance to Ranked Inspection List
- Water Case: District Metered Area With Rising Apparent Losses and Meter Sample Testing
- Loss Reduction Business Case Worksheet: Recovered Revenue, Programme Cost and Payback
- Revenue Protection and Loss Reduction Plan Presentation and Peer Review

Skills You Will Gain:

- Metering-to-Cash Process Mapping
- Smart Meter Rollout Planning
- Meter Data Validation
- Energy and Water Balance Calculation
- Tamper and Theft Investigation
- Field Evidence Handling
- Prepayment Account Management
- Revenue Assurance Reporting

Why Attend This Course:

- Turn feeder and district metered area balances into ranked inspection lists that field crews can act on the same week
- Cut estimated bills and billing errors by fixing read exceptions and data handling faults before invoices are issued
- Handle theft cases, back-billing and disconnections in a way that stands up to customer challenge and protects customer data
- Take back a Revenue Protection and Loss Reduction Plan with KPIs, targets and a recovery business case for your utility

Conclusion:

Revenue is protected at every step between the meter and the bank account, not only at the end of the month. The week moves from the metering-to-cash chain and loss baseline through AMI layers and rollout quality, then into meter data validation, feeder and district metered area balancing and tamper triage, before field inspection, evidence, disconnection and prepayment practice. On the final day participants work electricity and water cases and complete a Revenue Protection and Loss Reduction Plan for their own network.