



WHAT IS THE METER-TO-CASH PROCESS IN UTILITIES? A COMPLETE GUIDE FOR UTILITY OPERATIONS LEADERS

Abstract

The meter-to-cash process is the revenue backbone of a utility, connecting meter reads, validation, billing, payment, and collections into one continuous cycle. This guide explains why billing issues often originate upstream in metering, validation, rate logic, or system handoffs; where revenue leakage typically occurs; and how stronger data governance, real-time payment posting, better VEE practices, and fewer fragmented systems can improve billing accuracy, reduce disputes, lower write-offs, and accelerate cash realization.



The standard description of M2C makes it sound straightforward: meter reading, billing, payment. Done. In practice, that understates both the complexity and the places where things go wrong.

M2C is the coordination of three distinct realities that must stay aligned:

- The operational reality of what physically happened in the network

- The customer's reality of what the customer experienced and expects to pay for
- The cash reality of what the utility can invoice, collect, and defend.

When those three realities diverge — because a meter read arrived late, because a rate code was wrong, because a payment

posted to the wrong account — the process does not throw a visible error. It quietly produces a wrong bill, a dispute, or a write-off.

That is the reason M2C failures feel like billing problems even when they are not. The billing system is often doing exactly what it was told to do. The instructions may have been incorrect.

The seven stages of the meter-to-cash process

Every utility's revenue cycle runs the same sequence, regardless of whether reads come from a manual handheld, an AMR drive-by system, or a fixed AMI network. The technology changes the speed of each stage. The sequence does not.

Meter reading and data collection

Consumption is measured at the meter and captured for downstream processing. This is the input to everything that follows. A missed read, an offline endpoint, or a skipped route puts the entire billing cycle for that account into estimation mode before a bill has even been generated. The quality of data at this stage determines the quality of every stage after it.

Validation, Estimation, and Editing (VEE)

Raw reads are checked against expected ranges, missing reads are estimated, and anomalies are flagged before data is allowed through to billing. First-pass VEE rates of 90 to 94% are achievable in well-configured platforms; anything below that starts filling exception queues that billing teams then clear manually. Most utilities under-invest in VEE and then over-invest in the exception management that results from that under-investment.

Determinants and rate calculation

Validated consumption is matched against the customer's rate schedule: tiers, time-

of-use windows, demand measures, fixed charges, taxes, and any special agreements or assistance programmes. Rate code mismatches at this stage do not throw an error. They produce a wrong bill — often one that silently underbills the account for months before anyone notices.

Bill calculation and generation

The system produces the invoice, applying calculated charges, prior balance, payments received, and any adjustments. If the preceding three stages supplied clean data, this step is fast and largely automated. If they did not, the errors stack here.

Bill delivery and presentment

The bill reaches the customer — by post, email, or digital portal. A correct bill delivered late, or one that displays a corporate entity name the customer does not recognise rather than the utility's trading name, still delays payment. M2C touches the customer for the first time at delivery.

Payment processing

The weak links and leakages

The pattern across M2C breakdowns is consistent: early failures do not stay contained. They cascade downstream and become expensive at later stages.

The most damaging failures are the quiet ones. One electric co-operative recovered \$3.2 million in a single year after discovering meter exchanges that had never been reconciled, service connections still on temporary rate codes months after activation, and commercial accounts billed on the wrong schedule. The billing system had processed every invoice without complaint.

The customer pays, and the payment posts against the correct account. The faster and simpler this step is, the sooner revenue clears. A system that posts payments in an overnight batch rather than in real time creates stale-balance problems: customers who have already paid still see an outstanding balance, and some pay twice or call the office.

Exception handling and collections

Identity errors are where the meter, premise, service point, and customer relationship are misaligned and produce disputes that take weeks to resolve because the issue is not the usage data. It is the underlying assignment of that data to the wrong account. Validation failures allow anomalies to pass through and become wrong bills. Determinants errors silently corrupt billing logic. Collection gaps let disputes age past recovery thresholds.

Revenue leakage in utilities in developed countries is estimated at 1 to 5% of

Unpaid balances, disputes, and adjustments are worked, and the cycle closes. At this stage, the cost of every upstream failure occurs: dispute resolution labour, credits, collection notices sent to customers who have already paid, and write-offs on balances that have aged past the point of collectability. A dispute worked within seven days is almost always recoverable.

revenue. Healthy utilities run write-off rates under 1% of billed revenue. Fragmented M2C operations commonly run 2 to 4%. The difference, in a utility with substantial annual billings, is material enough to justify serious investment in fixing the upstream stages that create it.

Seventy to eighty per cent of avoidable revenue loss in M2C sits in the first three stages: meter reading, validation, and rating. The most prominent symptoms appear at stages 6 and 7, i.e., payment disputes and write-offs. This is why those stages attract the most attention.



The systems behind meter-to-cash

M2C is not a single system. It is a chain of systems that must exchange data reliably for the cycle to work. Ferranti identifies four core platforms that underpin every M2C operation.

Meter Data Management System (MDMS)

An MDMS system collects, stores, and validates consumption data from meters. It receives readings from smart meters, AMR systems, or manual entry, runs VEE logic, and makes clean, validated data available to the billing engine. Its output quality sets the ceiling for everything downstream.

Billing engine

Billing engines calculate charges by applying rate schedules, tariff logic, taxes, and adjustments to validated consumption data. It is often blamed for billing errors

that originate in the MDMS or in incorrect rate configuration.

Customer Information System (CIS)

CIS holds customer identity, premises, contract terms, and service agreement data. The CIS is the front door for customer-facing activity, bill presentment, account messages, and the context that contact centre agents use during calls. When CIS cannot explain what changed and why, call volume rises, and disputes extend.

ERP system

ERP systems handle financial processing and payment reconciliation. When payments received do not match open invoices in the ERP, the result is false delinquencies, wrongful disconnection notices, and the risk of legitimate

customers being sent to collections.

In practice, many utilities supplement these four with dedicated payment gateways, contract management tools, OMS for outage correlation, SCADA for operational telemetry, and GIS for spatial asset data. Each connection between systems is a handoff. And each handoff is a place where data can be delayed, dropped, or corrupted before it reaches billing.

Most small and mid-size utilities run three to four separate systems across the M2C cycle. The more systems in the chain, the more manual transfers between them, and the more places errors can compound before they become a bill.



Building a stronger meter-to-cash operation

The single biggest operational lever in M2C is reducing system handoffs. Not upgrading any single system, not adding headcount to exception queues, and reducing the number of boundaries that data must cross between a meter read and a cleared payment.

Beyond that structural priority, four disciplines determine whether an M2C operation is healthy or fragmented.

Validate early, not downstream. VEE is the cheapest point in the M2C cycle to catch a problem. A zero-usage anomaly caught at stage 2 costs nothing to fix. The same anomaly that reaches stage 7 as a customer dispute costs staff time, a credit, and sometimes the customer relationship. Investment in VEE configuration, custom thresholds by customer class, automated

anomaly flagging, and clear ownership of exception queues pays for itself repeatedly.

Govern rate and determinants logic actively. Rate code mismatches and determinants errors are the most dangerous failures in M2C because they are silent. Bills generate without errors. Revenue leaks without alarms. The fix is active governance: scheduled audits of customer-to-rate-schedule assignments, defined workflows for rate changes after meter exchanges and new activations, and clear accountability for catching mismatches before they compound over billing cycles.

Widen payment channels and post in real time. Stage 6 is where billed revenue becomes available cash. A payment system that posts in an overnight batch delays

that conversion and creates stale-balance problems that generate unnecessary contact volume. Real-time payment posting, mobile payment options, and automated matching of payments to invoices all accelerate the cash flow end of the cycle.

Treat security as part of M2C operations, not a separate IT concern. Within M2C specifically, a compromised billing or payment system does not just create IT problems. It disrupts billing cycles, pauses payment collection, and can trigger mass customer data exposure. The \$17.8 million average annual cost of cyberattacks per utility company that the IEA documented is partly an M2C cost, not a back-office one.

Measuring a healthy M2C cycle

Four operational metrics tell you whether your meter-to-cash cycle is performing or fragmented.

Metric	Healthy benchmark	Fragmented benchmark
Billing accuracy rate	Above 95% without manual correction	Below 90%, with significant rework each cycle
Exception rate	Under 10% of accounts per cycle	Over 20%, with backlogs carrying into the next cycle
Days Sales Outstanding (DSO)	5 to 15 days reduction versus legacy stack	30+ day cycles, with stale-balance complaints
Write-off rate	Under 1% of billed revenue	2 to 4% of billed revenue uncollectable

A healthy M2C process improves all four metrics over time. A fragmented one holds them flat even when teams work harder.

End note

Meter-to-cash is not a back-office process. It is the operational control loop that determines how much of the utility's earned revenue actually becomes cash,

how often customers receive wrong bills, and how much staff time disappears into exception management rather than service delivery. Getting it right means

treating it as a connected system with one accountable owner, not as a set of departmental problems that happen to sit near each other in the revenue cycle.

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