

OPERATING CASE STUDY / OPERATIONAL EXCELLENCE

Recovery Forecast & Delivery Commitments

A target-closing spreadsheet does not establish when performance will recover

An operating-project case on answering an executive return-to-plan question. It reconciles competing plan rows, conflicting reporting series, recovery arithmetic and action dependencies, then designs a test of the forecast-to-commitment workflow.

FORECAST INTEGRITY & EXECUTIVE COMMITMENTS

BLUF / BOTTOM LINE UP FRONT

Define recovery, fix the measurement basis and validate the forecast before committing.

RECALCULATED FINDING

Analytical finding: a positive required future rate below the historical best does not make annual attainment impossible. Monthly compliance can arrive through a looser seasonal target while performance remains flat. These are different decisions from sustained recovery.

CONTRIBUTION IN THE SOURCE RECORD

Provisional contribution: workbook analysis and authored answer variants. Publication, target approval and operating delivery had separate owners.

EVIDENCE STATUS

Original artifacts were not recovered. The record supports an analytical answer and governance case; adoption, recovery and savings remain unverified.

BLUF: analytical inference. Source contribution: historical record. Client and internal identities anonymized.

STRUCTURED ABSTRACT / DECISION BRIEF

Make a recovery commitment answer the right question

[AI] A return-to-plan answer is decision-useful only when the metric, target, exposure, maturity and meaning of return are fixed.

Context

[HR] An executive asked when a delivery business would return to plan. The analyst examined competing planning rows, challenged an algebraic gap-closing projection, decomposed component variances and identified inconsistent reporting series. Several authored and published answers used different bases and commitments.

Objective

[HR] The assignment was to produce a defensible answer and identify the actions and unresolved dependencies needed to support it. The record attributes the workbook analysis and draft answers to the executive; another role consolidated and published the reply, while operating and technical teams owned delivery.

Approach

[AI] The Forecast-to-Commitment Evidence Contract (FCEC) separates a goal, a balancing formula, a conditional forecast and an authorized promise. It distinguishes first monthly crossing, sustained monthly compliance and annual exposure-weighted attainment. Exact constructions test claims that the source treated as settled.

Findings

[AI] A positive required future average below the historical best establishes a demanding scenario, not mathematical impossibility. A looser seasonal threshold can produce monthly compliance without better performance. The principal component dominates the net gap but is not its only adverse contributor. A component's net movement does not bound its reporting artifact without additional restrictions.

Decision value

[PD] The metric owner should reconcile the canonical series and approved target. The operating owner should provide feasible action timing and capacity; leadership should authorize the resulting promise. Release a date only after the forecast basis, calibrated uncertainty and dependencies are explicit. Compare the workflow against simple conservative rules in shadow before funding complexity.

Implications

[AI] The supported contribution is a provisional analytical and communication intervention. The case strengthens its logic and evaluation while preserving unresolved source versions. Historical adoption, avoided commitments, mature customer recovery and financial savings remain unverified.

[HR] Selected source register S1; originals and historical coordinates are private. [RC] recalculated; [AI] analytical inference; [PD] proposed design. No historical causal impact is established.

EXECUTIVE EXHIBIT 1 / ATTAINABILITY

A difficult remaining requirement is not an impossibility proof

[HR] The source declared the annual goal closed because the required remaining average was far below the best observed month.

ATTAINABILITY / HISTORY DOES NOT DEFINE THE FEASIBLE FLOOR

Independent hypothetical rates: annual target 100; first nine equal-exposure periods average 120

REQUIRED REMAINING AVERAGE

$(12 \times 100 - 9 \times 120) / 3 = 40$

A prior best of 90 does not prohibit 40

IF FUTURE FLOOR IS VERIFIED AT 60

Minimum annual result = 105

Only this added restriction rules out 100

DIFFICULT, UNLIKELY AND IMPOSSIBLE REQUIRE DIFFERENT EVIDENCE

All numbers are invented. The floor is an assumption to validate, not inferred from the historical best.

[PD] Independent illustration: the first nine equal-exposure periods average 120, and the annual target is 100. The remaining three must average 40. A hypothetical historical best of 90 does not prohibit 40. If an independently established future lower bound were 60, the best annual result would instead be 105, making the target unattainable under those assumptions.

Statement	Evidence needed
Required future performance	Fixed accumulated burden, remaining exposure and target definition. This is an arithmetic condition, not a probability of achievement.
Unlikely under current plan	A calibrated predictive distribution, attainable action package and stated dependency assumptions. Historical experience informs this assessment but does not supply a physical floor.
Mathematically impossible	A validated lower bound on future burden that exceeds the remaining allowance. Account for revisions, cohort eligibility and uncertainty in remaining exposure.

STATUS DECISION

[PD] Use a conditional risk statement until the feasible-set evidence supports a stronger claim. A forecast of likely failure can justify intervention without being relabelled a mathematical impossibility.

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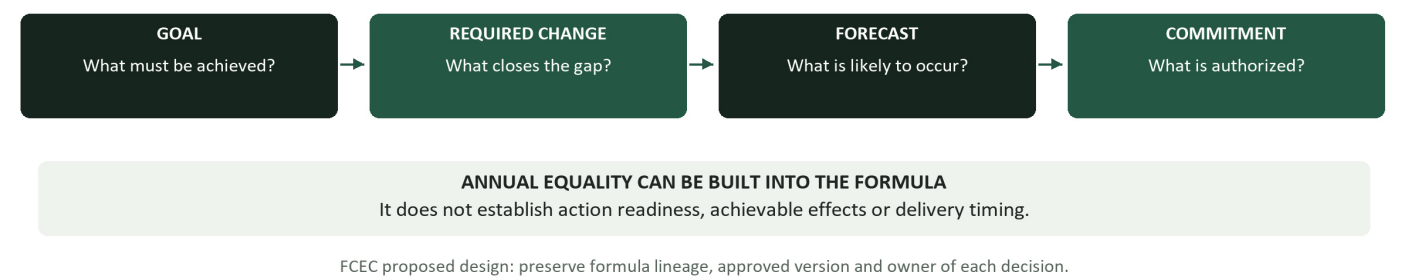
EXECUTIVE EXHIBIT 2 / MODEL FORENSICS

A balancing formula is a requirement for the plan to work

[HR] The register describes a planning file containing a seasonal target, an adjusted projection that closed the annual gap and a separate business-unit view. These rows could each be mistaken for the governing plan.

MODEL ROLES / KEEP THE PURPOSE OF EACH ROW VISIBLE

A target, a balancing allocation and a forecast answer different questions



Model object	Permitted use
Approved target	Defines what leadership requires, including monthly seasonality and annual aggregation. Approval and effective version establish authority.
Gap-closing adjustment	Allocates the difference needed to reach a target. A formula that guarantees annual equality identifies required improvement, not whether actions will deliver it.
Evidence-backed forecast	Predicts the outcome under stated actions, capacity, timing and uncertainty. It needs validation independent of target-closing arithmetic.

[RC] The source’s candidate target is more consistent with its chosen reporting basis, but the recalculated variances do not exactly reproduce the printed variance columns. Arithmetic proximity supports a lead for reconciliation; it does not authenticate the canonical row. The alternative weighting and release definitions remain part of the decision record.

MODEL OWNER ACTION

[PD] Label every row by purpose, freeze formulas and inputs, document approvals and expose residual adjustments. Require program-level evidence before promoting a gap-closing allocation into a dated delivery forecast.

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EXECUTIVE EXHIBIT 3 / DIFFERENT PROMISES

Monthly crossing, sustained recovery and annual attainment can diverge

[HR] The answer tied late-year monthly compliance to a relaxed seasonal target. Other answer variants offered a different month or a broader quarter window.

RECOVERY PROMISES / ONE TRAJECTORY CAN GIVE THREE ANSWERS

Independent hypothetical illustration: rate stays 120; monthly targets are 100, 100 and 150

PERIOD 1

Rate 120 / target 100

OUTSIDE PLAN

No change in physical rate

PERIOD 2

Rate 120 / target 100

OUTSIDE PLAN

No change in physical rate

PERIOD 3

Rate 120 / target 150

WITHIN PLAN

No change in physical rate

First crossing: period 3. Annual outcome still depends on past burden and exposure.

A finite-horizon sustained date is a separate truth function; a looser target is not physical recovery.

Recovery statement	Exact question
First monthly crossing	What is the first future month whose mature rate meets its own approved monthly target? Later relapse remains possible.
Sustained through the horizon	What is the first month from which every remaining month meets its respective target? A finite horizon does not establish indefinite sustainability.
Annual attainment	Does total mature burden divided by original eligible exposure meet the approved annual goal? A simple average answers this only under its required weighting conditions.

[AI] With a flat hypothetical rate of 120 and future targets of 100, 100 and 150, monthly compliance first arrives in the last period while service has not improved. The annual rate can still miss its target. A moving threshold explains the crossing; it is not an estimated operational recovery.

[AI] The source’s incomplete current month is a provisional input, not a settled full month. Exposure-weighted and equal-month annual calculations require separate bases. A broad published window may contain a draft month without adopting its underlying forecast or confidence.

COMMITMENT FORMAT

[PD] State the outcome, target version, weighting, maturity cutoff, forecast conditions and confidence separately. Publish first crossing, sustained compliance and annual attainment as distinct answers when leadership needs all three.

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EXECUTIVE EXHIBIT 4 / COMPONENT ACCOUNTABILITY

Prioritize the dominant driver without erasing other adverse gaps

[HR] The source correctly challenged a diagnosis based on metric mix, but then described the gap as belonging entirely to the largest adverse component.

SIGNED GAP / A DOMINANT DRIVER CAN EXCEED THE NET TOTAL

Conceptual accounting bridge; historical component sizes remain private



A METRIC MIX SHARE IS NOT A SHARE OF THE REMEDIATION REQUIREMENT
Conditional component ceilings change when other components or exposure change.

Reconciliation identifies priorities; causal action effects require their own evidence.

[RC] The component bridge includes a dominant adverse gap, another smaller adverse gap and a favorable offset. Their signed sum reconciles the total. A driver can exceed the net gap because another component offsets it; this does not imply that all remediation must come from that driver.

Diagnostic distinction	Operating consequence
Metric share versus target gap	A large share of total defects can be inside its own target. Assign priorities from incremental opportunity and feasibility, not mix alone.
Net gap versus adverse burden	A favorable component can conceal an adverse gap elsewhere. Show signed contributions and avoid treating an offset as delivered corrective action.
Conditional component ceiling	Holding other components flat converts a total target into a component requirement. If the held components or exposure change, recompute the ceiling and its needed action.

[AI] The current incomplete-period movement cannot be allocated across components without matched mature data. A historical comparison labelled flat or improving also needs a valid time series; sparse within-limit movement does not establish a persistent trend.

PRIORITY RULE

[PD] Focus attention on the dominant adverse component while retaining the smaller adverse contributor, favorable offset and interaction risks. Require a scoped action-to-outcome link before attributing the component gap to a program.

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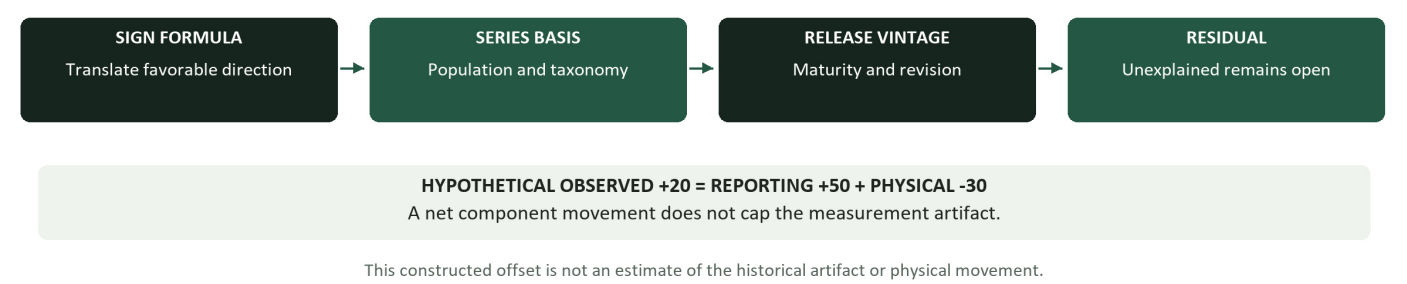
EXECUTIVE EXHIBIT 5 / REPORTING INTEGRITY

Decode the signs and reconcile the series before interpreting the trend

[HR] A summary table and narrative reported different levels for the same business and week. They also used opposite sign conventions for unfavorable movement.

SERIES CONTRACT / DECODE THE SIGN BEFORE EXPLAINING THE CHANGE

Opposite presentation conventions can both describe worsening performance



Finding	Correct interpretation
Opposite printed signs	Both conventions can describe worsening. Decode the formula before claiming opposite performance direction or a formatting error.
Different underlying levels	The discrepancy remains after signs are decoded. Reconcile population, maturity, classification and release vintage; do not average incompatible series.
Prior downward revision	Evidence that earlier data changed. It does not establish the direction or magnitude of the next revision or validate a favorable extrapolation.

[AI] The net movement of an artifact-exposed component is not automatically an upper bound on the artifact. For example, an independent hypothetical observed increase of 20 could combine a reporting addition of 50 and real improvement of 30. Unallocated change is not automatically operational when reattribution and other measurement pathways remain open.

PUBLISHER ACTION

[PD] Name the series in every answer, preserve the competing versions and request an owner-approved reconciliation. Estimate artifact contributions from linked records and a defined counterfactual; do not label the unexplained residual a proven operating failure.

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EXECUTIVE EXHIBIT 6 / DEPENDENCY AND ENTITLEMENT

A recovery forecast needs timed, scoped and nonduplicated actions

[HR] The source identified an untagged gap-closing allocation, a blank principal-component program row and operational dependencies without confirmed delivery dates.

DELIVERY CONTRACT / LINK EACH REQUIRED CHANGE TO AN ACTION

An untagged adjustment is an evidence obligation, not a forecasted benefit



A NONMATCHING LABEL NEEDS A VALIDATED CAUSAL BRIDGE
One month of credit composition does not define the whole remaining portfolio.

Proposed action ledger: accountable owner, accepted evidence and conditional delivery date.

Evidence obligation	Why it changes the commitment
Program and population mapping	Credits tagged to another outcome cannot be inserted directly into the target identity. An indirect causal effect is possible, but requires an explicit, validated bridge.
Month-specific treatment and exposure	One month’s credit composition cannot be extended over all remaining months without evidence. Conversion factors and overlapping benefits must use the same scope.
Dependency, capacity and readiness	A roadmap phase is not a completed capability. Unconfirmed technical dates, constrained sites and missing staffing affect timing and attainable benefit.

[AI] Different published phase counts may describe different levels of detail; the record lacks the mapping needed to reconcile them. A single named blocker is not proved to be the sole binding constraint. Peer-network effects, untargeted financial entitlements and unattributed pilot gains cannot fill this business’s forecast gap.

FORECAST RELEASE RULE

[PD] Require an owner, eligible population, completion evidence, expected effect distribution, ramp and overlap treatment for each action. Present unallocated improvement as a requirement still to be supported. Keep conditional dates conditional.

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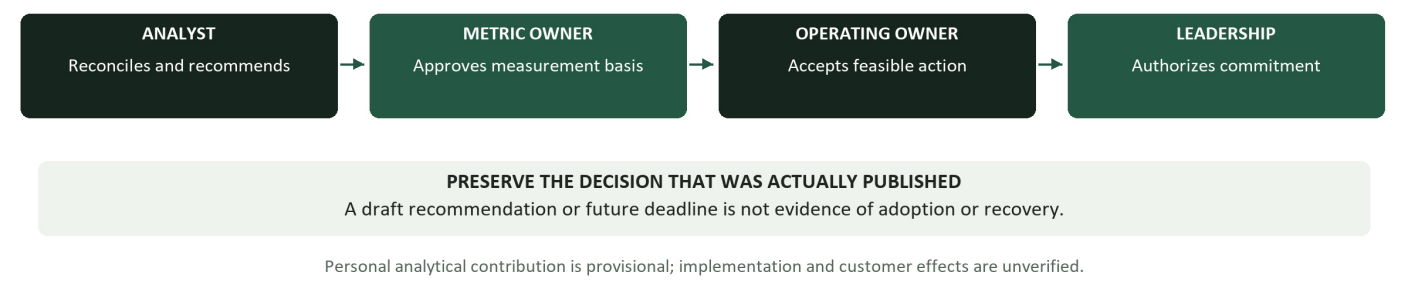
EXECUTIVE EXHIBIT 7 / CONTRIBUTION AND DECISION RIGHTS

Preserve the authored analysis and the published commitment as separate records

[HR] The register attributes the workbook investigation and answer drafts to the executive. A colleague supplied the operating action list; another role consolidated and sent the reply.

AUTHORITY CONTRACT / RETAIN DRAFT AND SENT DECISIONS

Analysis ownership, publication authority and operating delivery are separate roles



Role or claim	Contribution grade and limit
Workbook forensics and authored variants	Provisional hoop support from the derivative record. Original file recovery is needed to authenticate the exact work and versions; no sole program ownership follows.
Published reply and target status	Publication belonged to the consolidating role. A recommended status change does not establish leadership adoption or the canonical measurement choice.
Operating implementation and recovery	Assigned to field and technical owners. A requested resubmission date, named action or colleague’s similarly named credit does not establish delivery or personal outcome impact.

[PD] FCEC assigns the data owner to approve the series, the planning owner to approve the target and forecast, the operating owner to accept dependencies, and leadership to authorize the commitment. Preserve draft-versus-sent differences and make unresolved obligations visible at the next review.

TEST THE WORKFLOW

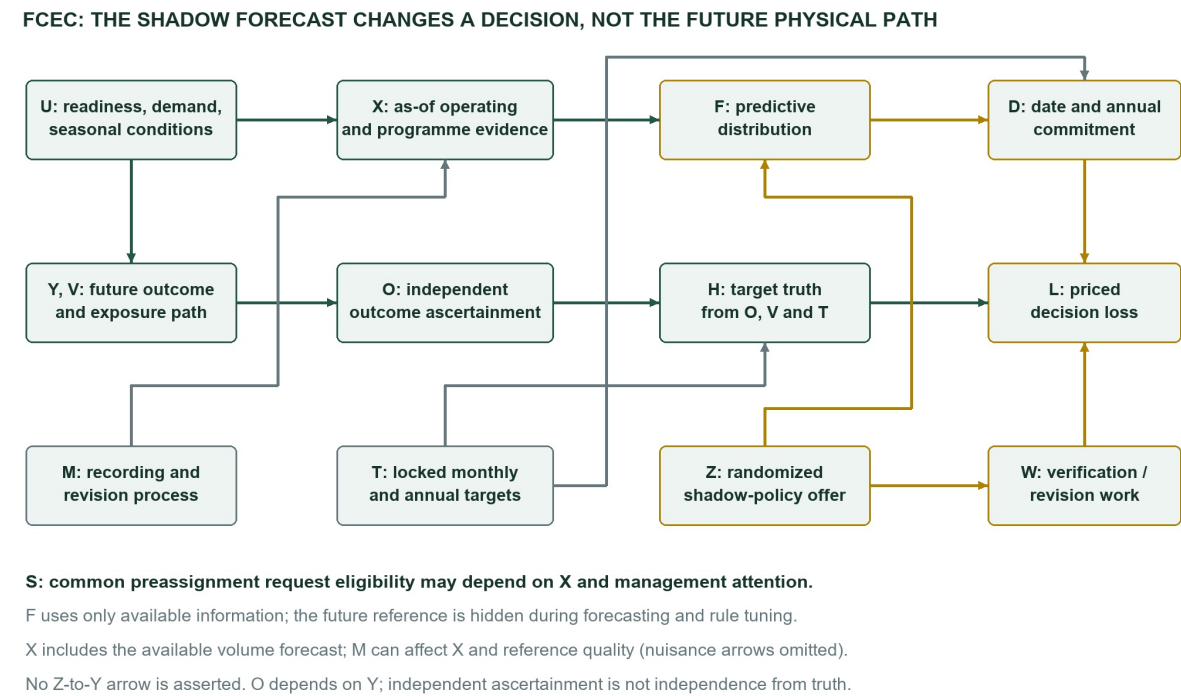
[PD] Compare recommendations in shadow against independently matured original cohorts and simple conservative rules. Price premature assurance, unnecessary deferral and all work. Beating a weak comparator does not justify added complexity or establish improved customer outcomes.

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TECHNICAL ANALYSIS

A forecast informs a commitment; it does not cause recovery

[PD] The proposed Forecast-to-Commitment Evidence Contract (FCEC) separates operating truth, as-of evidence, targets, predictions and the decision to publish a recovery date.



[PD] U denotes operating readiness, demand and seasonality. It affects available evidence X and the future outcome path Y. V is future exposure; T is the frozen monthly and annual target contract. M is capture, classification and revision behavior. Independently ascertained O reconstructs Y at the declared horizon; independence concerns ascertainment, not statistical independence from truth.

[PD] Randomized shadow policy Z changes how F, a forecast distribution, is produced and translated into commitment D. Priced decision loss L compares D with the adjudicated target truth derived from O, V and T. W records verification and revision effort. There is no Z-to-Y operating-treatment arrow in this benchmark: improved forecast decisions are not customer service gains.

[AI] Selected underperforming regions and requests S can depend on observed X and management attention. Randomization inside a common preassignment request frame identifies an offered-policy effect for that frame. It does not identify why historical performance deteriorated or what would happen if the forecast were implemented as an operating intervention.

Basis: proposed FCEC and DAG [PD]; measurement and identification boundaries [AI]. All source quantities remain private.

TECHNICAL ANALYSIS

A demanding remainder is not a mathematical impossibility

[AI] This exact construction uses twelve equal-exposure periods and an arbitrary rate unit. It is independent of every historical coordinate in the case.

Synthetic annual contract	Exact result
First nine periods each have rate 120	Observed sum = 1,080
Annual goal is 100	Allowed twelve-period sum = 1,200
Required mean for the remaining three periods	40
A previous observed best was 90	Does not constrain future rates to be at least 90
Future rates 40, 40, 40	Annual goal is attained
Independently established future floor of 60	Minimum annual rate is 105; goal cannot be met

[AI] In general, future event allowance equals annual target times total annual exposure minus accrued events. Divide by remaining exposure to obtain the required future rate. A negative allowance is incompatible with nonnegative future events when the accrued event count is final and corrections are excluded. A positive allowance is not an achievement probability, nor does it guarantee operational feasibility.

[HR/AI] The source substitutes the best observed past performance for an attainable future floor and treats meeting later monthly targets as maximal execution. Neither restriction is established. Earlier counts and the current partial period may still revise; future exposure is also a forecast. Preserve those uncertainties rather than presenting an impossible-year conclusion as algebra.

[AI] A separate synthetic plug starts with future rates 100, 100, 100 and subtracts 60 from each to close the annual gap exactly. That arithmetic supplies a requirement, not a predictive distribution. The source formula is interpreted by its documented dependency on the goal, not merely because a forecast happened to equal a target.

Basis: exact independent counterexample.py/json [AI]; source formula and feasibility claims read conditionally [HR/AI].

TECHNICAL ANALYSIS

First crossing, sustained crossing and annual attainment differ

[AI] Keep the previous construction: nine past rates of 120, an annual goal of 100, and future monthly targets 100, 100 and 150. Sustained means through this declared three-period horizon.

Independent future path	First crossing	Sustained crossing	Annual rate
A: 40 / 40 / 40	Period 1	Period 1	100
B: 90 / 140 / 130	Period 1	Period 3	120
C: 120 / 120 / 120	Period 3	Period 3	120

[AI] Path B meets the first target, misses the next and later returns within target. Path C never improves physically: a looser last target alone produces a crossing. Neither monthly statement implies annual attainment. A commitment must specify which crossing, the required persistence horizon and whether target revisions are permitted.

[AI] Weighting changes the annual result even when the monthly path is unchanged. Give each past period exposure 1. For path A, future exposures of 0.5 each yield an annual rate of 108.57; exposures of 1 each yield 100; exposures of 4 each yield 74.29. Pool event counts and exposures before calculating a rate. The exact fractions are retained privately.

[HR/AI] A maintained current run rate and a seasonally different target can imply a conditional crossing date. They do not establish the likelihood of maintaining that rate. A broad published quarter range may contain narrower dates without logical contradiction; versions using different outcome definitions still need separate labels.

[PD] Lock the origin, numerator, exposure forecast, target version and end horizon. Publish both the distribution of sustained crossing time, including no crossing, and the annual-attainment probability. Gneiting distinguishes the elicited forecast from its loss-based decision; the forecasting literature does not make either historical date verified.

Basis: independent weighted and temporal constructions [AI]; FCEC reporting contract [PD]. No synthetic value maps to a source value.

TECHNICAL ANALYSIS

Reconcile the series before interpreting the recovery story

[HR/AI] The record contains competing plan bases, changing outcome series, maturity revisions and a goal-closing formula. A candidate variance match is approximate; source-owner authentication remains necessary.

Required distinction	Decision consequence
Target / baseline / forecast / plug	Label each role; preserve formula dependencies and author intent
Counts / units / packages / rates	Reconcile additive grains and exposure before aggregation
Observed / revised / projected values	Retain origin and extraction vintage, not just the latest number
Sign convention / outcome direction	A negative favorable-variance convention can still describe deterioration
Programme tag / causal outcome	A label crosswalk does not identify incremental outcome benefit

[AI] In a separate signed example, adverse components +30 and +5 with a favorable offset of -15 produce a net gap of 20. The first component is 150% of the net gap and is not the only adverse contributor. Improving the favorable component can still reduce the total. Ranking investment requires incremental avoidability, reach and cost, not merely distance from a bucket goal.

[AI] Nor does a component's observed net movement ceiling a reporting artifact. A true change of -40 and artifact of +60 produce an observed +20. Restrictions on offsetting physical, classification and denominator changes are needed before treating the observed component as an artifact bound or calling the residual operational.

[PD] Forecast reconciliation can impose valid count additivity when the hierarchy and error covariance are defensible, as Wickramasuriya and colleagues show. It cannot repair an unverified source hierarchy by averaging incompatible series. Preserve every decision-changing branch until the metric owner signs a canonical event, exposure and revision contract.

Basis: source-version assessment [HR/AI]; exact signed examples [AI]; proposed reconciliation [PD].

TECHNICAL ANALYSIS

Validate forecasts and the truth used to judge them

[PD] A lineage audit and an accuracy audit answer different questions. Formula correctness establishes what a workbook calculates; it does not establish that the output predicts an operating outcome.

[PD] The metric dictionary specifies eligible original cohorts, event and exposure grain, exclusions, geography, clock, target version, refresh vintage and accountable owner. Reconcile counts and denominators separately. Recover event-level additions, deletions and reclassifications across extracts; selected revision examples do not establish the direction or maximum size of future revisions.

[PD] Draw a prespecified stratified sample of original answered, deferred and unresolved requests across plan versions, business lines and maturity states. Two coders blinded to policy and final outcomes classify lineage and requested estimand. Report weighted agreement, confusion, prevalence and kappa with cluster-bootstrap intervals; adjudicate disagreement separately from independent outcome ascertainment. Under simple random sampling, 400 records give approximately 95% worst-case agreement precision of ± 4.9 percentage points. This is not a kappa-power calculation; clustering and rare classes require more information.

[PD] Freeze chronological training and test origins, input vintages, forecast horizons and recalibration rules. Do not let revised future information enter a historical forecast. Compare annual probabilities with a proper Brier score and interval forecasts with coverage and width; assess point errors on a consistent scale against a naive benchmark. Percentage errors and scaled errors need valid denominators.

[AI/PD] Gneiting–Raftery support proper scoring, Hyndman–Koehler benchmark scaling, and Tashman origin-based tests. Diebold–Mariano's accessed abstract motivates dependence-aware loss comparison; no such test is claimed implemented here. Forecast calibration, useful discrimination and the cost of a published commitment remain separate outcomes. Unknown final references remain in the original frame and receive explicit bounds.

Basis: proposed measurement and forecasting protocol [PD]; primary methods accessed at the scopes recorded in the private research memo.

TECHNICAL ANALYSIS

Separate process variation from selected recovery narratives

[RC/AI] The final inventory contains 30 source/sensitivity screens, 24 version audits, 12 mechanical design trajectories and 10 profiles. No fitted source screen crosses its tentative X or MR limits; no stable operating phase or eligible Laney panel is established.

[RC/AI] Two retrospective prefix probes give different results: the latest weekly observation exceeds frozen earlier X and MR limits, while the partial-month endpoint does not. These selected sparse/vintage sensitivities are not cause attribution. An engineered plan and a seasonal-weight profile have separate mechanical crossings, not natural-process signals. Nearest-unit rounding checks preserve the source-screen classifications.

[PD] Tentative individuals limits are mean plus or minus 2.66 times mean moving range; the MR upper limit is 3.267 times that mean. Preserve spacing, missing periods, taxonomy and maturity. Never reconstruct binary counts from rounded rates to manufacture a Laney panel.

[AI] Selecting the worst regions induces regression-to-the-mean risk. Under an explicitly assumed linear conditional-mean model, expected untreated follow-up is $m + \rho \times (x - m)$, where m is the population mean and ρ is assumed persistence. Values 0.4, 0.7 and 0.9 imply 60%, 30% and 10% reversion of the selected excess. These are hypothetical sensitivities, not estimated fractions of the source movement.

[PD] Prespecify moderators available before assignment: business line, baseline event mix, original exposure forecast, seasonal target shape, reference latency, evidence completeness and dependency readiness. Estimate interactions with uncertainty and retain the pooled intention-to-treat effect. Do not condition that effect on a policy-selected commitment date, realized forecast accuracy, later programme completion or a revised target.

[PD] If later operational adoption is observational, define a separate group-time ATT with not-yet or never-treated comparators, fixed original cohorts and mature customer outcomes. Show pretrend plots and equivalence/sensitivity diagnostics; nonsignificance is not evidence of parallel trends. Seasonal demand, concurrent programmes, interference and anticipation constrain transport from a shadow benchmark.

Basis: final private evidence_spc.json, 76 vectors and two retrospective prefix probes [RC/AI]; proposed selection and future causal protocol [PD].

TECHNICAL ANALYSIS

Attribute the analytical contribution at the supported level

[HR/AI] The registry records an assigned recovery-plan analysis and substantive metric challenges. It does not independently establish sole workbook authorship, adoption of one canonical answer or an achieved operating recovery.

Provisional claim	Process-tracing assessment
Assigned analyst developed and challenged the answer	Registry-level hoop: an assignment and derivative analytical record support participation
A formula and competing series were examined	Registry-level hoop: reproducible present analysis supports the calculation, not direct historical code authorship
One date became the accepted operating commitment	Unestablished: endpoint, version, author and publication scope differ
The work produced customer or cash benefit	Unestablished: no identified operating treatment or mature attributable outcome

[HR/AI] The personal document, a separate one-page draft and the visible forwarded summary are distinct artifacts. Broader and narrower date language may overlap; disagreement in outcome definition or basis still matters. The sender of a summary is not automatically the author of the underlying calculation. A similarly named contributor or a builder's default author field does not establish identity.

[AI] Alternative explanations include joint authorship, partner-supplied action lists, inherited formulas and later agent reconstruction. Repeated statements sharing the same lineage do not become independent corroboration. The historical analytical role is bounded separately from approval, implementation and results.

[PD] Close the contribution record with the original assignment, version history, formula lineage, author comments, recipient acceptance and an accountable decision log. Record the rule used to resolve competing series and the owner accepting the target and uncertainty. An analytical recommendation can remain useful while the final operating decision and its effect remain unknown.

Basis: selected historical registry and derivative provenance [HR]; bounded contribution inference [AI]. Original-source recovery status is maintained in the private manifest.

TECHNICAL ANALYSIS

Test commitment quality against a credible simple policy

[PD] Randomize independent review domains to the frozen usual rule or the proposed FCEC rule. Freeze all original eligible requests and their as-of contracts before assignment. Lock shadow answers at 48 hours; obtain the hidden reference after the final original period deadline plus 28 days.

[PD] The primary estimand is mean all-request decision-resource loss under the usual policy minus that under the offered policy, at the fixed adjudication horizon. Safety is the unconditional rate of unsupported commitments: a date earlier than the true sustained crossing or an annual green when the weighted annual target fails. These events can overlap and are not summed twice. A shadow forecast trial identifies decision effects only.

[PD] The finite prospective model separates future readiness, disruptions, exposure mix, noisy observations and a hidden final trajectory. Shared domain information quality induces dependence. A predeclared loss prices premature dates, delayed viable commitments, unsupported annual green, unnecessary withholding of green, deferral and work. Prices are hypothetical and require owner elicitation; proper scores supplement rather than replace them.

[PD] Compare every feasible fixed date/annual-status policy and always-defer under the same known-block rule. Beating a weak usual rule does not justify purchasing complexity if a conservative fixed policy has lower expected cost. A deployment test must use the strongest credible comparator and re-power after any changed prices or policy.

[PD] Report a few direct allocations, exact finite-law moments, explicitly approximate clustered planning and independent finite-process boundary checks. Compare positive-direction detection of the economic break-even effect with the MDE on the same scale; separately require net-value and false-commitment clearance. Validate actual boundary laws, not shifted Gaussian means. Repeated calibration, missing truth and distribution shift remain outside a few successful simulations.

Basis: proposed shadow randomized decision benchmark [PD]; prospective model and independent audit on following pages. No historical treatment effect is claimed.

TECHNICAL ANALYSIS

Falsifiable propositions and the limits of the commitment

[PD] FCEC is a proposed framework. Its value must survive the target, measurement, comparator and resource tests below.

Proposition and mechanism	Disconfirming observation / boundary
P1: Separating target, plug and forecast improves annual calibration	Fails if held-out errors and proper scores do not improve under fixed vintages
P2: Explicit sustained crossing reduces premature dates	Fails if unconditional premature commitments do not decline at the same horizon
P3: Volume and series reconciliation improves decision quality	Fails if adjudicated lineage errors or priced all-request loss do not improve
P4: Better evidence warrants its incremental cost	Fails if net benefit is absent or a feasible fixed policy is cheaper

[AI] Deming's tampering warning applies to rewriting dates around unstable revisions. Campbell and Goodhart explain why a goal-closing cell can lose its relationship to operations. Ittner–Larcker require evidence linking programme inputs to mature outcomes; programme labels alone do not provide it. Tucker–Edmondson highlight hidden work and unresolved dependencies behind apparently closed answers. Composite-indicator methods require explicit exposure and value weights. The new contribution is the joint crossing, annual-feasibility and commitment contract, not a claim that these theories were tested historically.

Limitations and identifying assumptions

[HR/AI/PD] Original operating records, a canonical owner-approved series and a linked customer panel are not established here. Short revised sequences do not identify a causal recovery rate, a hard attainable floor or a distribution of completion dates. Contribution is provisional. The synthetic shadow law requires calibrated forecast errors, dependence, prices, reference quality and recruitment feasibility; it does not establish field transport or customer impact. Alternative operating interventions require their own causal design. Public confidentiality limits disclosure, while private versioned code, exact arithmetic and issue logs preserve reproducibility.

Basis: untested FCEC propositions [PD]; source and identification limits [HR/AI]; case-specific applications of continuing literature [AI].

Test the answer on one future trajectory

[PD] This shadow benchmark tests forecast decisions, not delivery improvement. FCEC separates the first monthly crossing, sustained compliance through the declared horizon, and weighted annual attainment.

[PD] Randomize independent planning domains, each with 24 original requests. Requests are independent conditional on shared forecast-quality grade (60% / 40%); arms receive independent batches. Lock the question, targets and original cohorts at intake; answer at 48 hours. The hidden reference follows the final original promise by 28 days. It is unavailable for rule tuning. No customer promise or remedy changes.

Invented trajectory	Finite construction
Past / future exposure	1,800 units with 63 events; then 600 units in three periods
Future volumes	100 / 200 / 300 with probability 60%; otherwise reversed
Readiness period	1 / 2 / 3 / later: 25% / 30% / 25% / 20%
Rates and disruptions	9% before readiness, 3% after; middle +3 points (20%), final +4 (25%)
Monthly / annual targets	6% / 4% / 10%; annual 4%, weighted by original units
Common known blocker	10% unresolved linkage: no date or annual green; retained

[PD] Policies see noisy readiness forecasts, disruption warnings and series-to-volume links, never future truth. The illustrative usual rule uses first crossing, no shock allowance and equal future-period weights. FCEC uses sustained crossing and linked volume weights. Neither workflow changes the trajectory.

[PD] Price both kinds of mistake

Terminal resource loss: premature date 8; unsupported annual green 6; unnecessary defer 3; valid no-date hold 0.5; unnecessary later commitment 0.6 per period; forgone correct annual green 1.5. False commitment means either a premature date or unsupported annual green, per every original request.

[PD] Entirely invented finite fixtures and uncalibrated resource prices. A late seasonal crossing is not a claim of operational recovery or impossibility.

Power the economic boundary, then challenge the comparator

[PD] Exact finite moments support normal planning; simulated errors remain conditional. A large full-effect signal does not ensure sensitivity to an economically small improvement.

[PD] Two gates use fixed law-derived radii: positive 97.5% normal lower bounds for false-commitment reduction and resource gain above fixed cost K. Coverage is approximate, not studentized. The hypothetical mixture invokes FCEC per request with probability lambda; a quadratic variance envelope covers zero to one. This is not measured compliance.

Direct design	Domains/arm	Detect BE	MDE index	Joint floor
Initial	32	18.5%	16.86	>99.9%
Base	256	86.4%	6.01	>99.9%
Forecast stress	256	87.8%	5.92	52.1%
Corroborated version	128	98.0%	8.47	>99.9%

[PD] Beneficial-tail MDE uses the upper critical value of a two-sided 5% zero-effect test and 80% power. Break-even is 6.55 index points for base/stress and 12.01 for corroboration. The initial design fails that sensitivity requirement. Base needs 512 domains / 12,288 dockets; recruitment is unverified. Its expected gain lower bound is 44.18, above cost 6.55.

[PD] Severe forecast transport error lowers joint normal-planning floor to 52.1%; paid corroboration is a new workflow, not a sample-size repair. In eight independently seeded sets of 8,000 finite trials, base/corroborated full success was 8,000/8,000 each (Wilson lower bound 99.952%); stress was 52.73% [51.63%, 53.82%].

[PD] Restricted comparison only

Base economic-boundary false clearance was 2.03% [1.74%, 2.36%]; false-commitment null rejection 2.41% [2.10%, 2.77%]. These selected boundaries do not prove uniform coverage or field transport. Passing against usual does not establish superiority to the simpler rule on the next page.

[PD] MDE and K use index points; usual variable decision-resource burden = 100. Joint floor is a union bound within the normal approximation, not an exact finite guarantee.

A cheaper rule defeats the complex workflow

[PD] Keep the adverse result. Under the locked prices, the best of eight fixed date/annual-status rules beats both FCEC versions; forecast assurance has not earned an investment recommendation.

Policy	Resource loss/request	False commitment
Usual illustrative workflow	4.579	33.40%
FCEC, including fixed cost	2.663	11.35%
Corroborated, including fixed cost	2.592	5.62%
Fixed last-period date; annual at-risk	1.709	4.50%
Defer both answers	3.591	0.00%

[PD] Every fixed rule obeys the same known-block hold. Cheap deferral (0.5 rather than 3) makes all-defer loss 1.216, below FCEC 2.344. Raising later-commitment cost from 0.6 to 3 per period instead makes corroboration cheaper than the fixed late rule (2.746 versus 3.092). The decision owner must validate prices independently; they were not raised to secure a win.

[PD] $Net_raw = a * h * S - H - verification - K$. Here a is avoidability and h non-overlap. S/H split favorable/adverse changes separately within each loss category, trajectory and grade, including added defer and reservation costs. This assumed conditional valuation identifies no individual causal harm. All adverse categories and new work remain fully charged.

a / h	Base net index	Stress net index	Corroborated
1.00 / 1.00	+41.84	+4.32	+43.38
0.75 / 0.80	+17.56	-8.50	+13.33
0.50 / 0.80	+5.41	-14.91	-1.69

[PD] Common work is 0.15/request. New verification costs 0.45 or 0.85, including blocked requests; K is 0.30 or 0.55 for registry/link control, owner review and maintenance. At 1.5 times K, full-realization net is +38.57 / +1.04 / +37.38 index points, respectively. Research adjudication is separately budgeted.

[PD] Hypothetical resource units, not dollars or customer savings. $Net_index = 100 * Net_raw / 4.578589$; comparison scope and reference stay fixed.

PROPOSED FORECAST ASSURANCE / 4 OF 4

Buy the evidence that changes the choice

[PD] Immediate work is bounded calibration of prices, forecast inputs and reference truth. The prospective validation must include the simple fixed rule, not merely the weaker usual comparator.

[PD] Independently reconstruct the original manifest, monthly target and common vintage. Readiness forecast, volume link and disruption-warning accuracy are synthetic conditional likelihoods, not historical calibration. Preserve failed mandatory checks and all deferred requests. A finite final vintage does not prove ultimate completeness.

Separate research action	Ready basis	Dependency uncertain	Basis mismatch
Retain process	8	-5	-12
Bounded calibration	2	3	1
Corroborate / rebuild	-4	1	10

[PD] Separate planning priors are 45% / 35% / 20%. A three-label study reports the true state with the accuracy below and splits errors equally; all 27 policies are enumerated. Without new information, bounded calibration has expected utility 2.15. Perfect information is worth at most 4.50.

Study accuracy	Gross EVSI	Research cost	Net EVSI
55%	0.495	0.40	0.095
75%	2.275	1.20	1.075
90%	3.610	2.50	1.110

[PD] If epsilon of each arm's original dockets has unresolved final truth, conservative contrast uncertainty is up to 30 * epsilon resource units and 2 * epsilon false-commitment probability. Uncertain stratum/series membership needs its own analysis. Recompute crossings under later vintages; common incomplete capture can move a date discontinuously.

[PD] No field value estimate

A later authorized operating trial would require original-cohort ITT customer outcomes, all added harms and full implementation cost. This shadow experiment changes no physical outcomes, so its decision-resource gain and research EVSI cannot be booked as customer benefit or added together.

[PD] EVSI uses separate research-decision utility units. Fixed prices, likelihoods and protocol require independent calibration before a confirmatory comparison.

REPRODUCIBILITY / READER PROTOCOL

Reproduce the promise before evaluating the answer

[AI] FCEC makes the plan basis, forecast assumptions, decision rule and eventual reference outcome separately auditable.

Reproduction layer	Required reconstruction
Source and authority	Verify the selected register cells, original-recovery attempts, authored variants and published reply. Preserve the difference between analysis, target approval, publication and delivery ownership.
Target and forecast	Recover formulas, effective versions, monthly targets, annual weighting and program allocations. Recompute the balancing adjustment without assuming it is an achievable forecast.
Attainability and gaps	Calculate the remaining requirement and any validated feasible lower bound. Reproduce signed component variances, conditional ceilings, series conventions and revision alternatives.
Commitment workflow	Generate the policy-invariant future trajectories and fallible evidence. Reproduce first crossing, sustained-through-horizon compliance and annual attainment as separate truth functions.
Decision value and comparison	Charge false assurance, late answers, unnecessary deferral and all work. Compare the proposed policy against simple rules, recalculate power and test information value separately.

Public illustrations and protected history

[AI] Historical values, ratios, indexed coordinates, raw versions and identity mappings remain in the private annex. Public calculations are independent hypothetical constructions. Common positive rescaling preserves algebraic signs when related targets, prices and decision thresholds are transformed together.

What a successful test would establish

[AI] A shadow evaluation could establish better recommendations for a defined request population under calibrated decision prices. It would not establish that the historical answer prevented a commitment or improved delivery. An operational deployment changes incentives and behavior and requires a separate, appropriately powered evaluation.

DECISION HANDOFF

[PD] Agree on the meaning of return, approve the measurement basis and price the consequences of error. Retain the simplest validated rule until a more complex workflow demonstrates sufficient incremental value.

Private source maps, calculation code, finite models and hash-bound reviews support reproduction. Reproducibility does not authenticate missing originals or demonstrate historical impact.

RESEARCH REFERENCES / FORECASTS AND DECISIONS

Match the forecast to the decision and evaluation target

Primary research informs interpretation and prospective design. It does not authenticate historical files, validate the source's recovery date or supply a missing operational effect.

Gneiting T, Raftery AE. Strictly Proper Scoring Rules, Prediction, and Estimation. *Journal of the American Statistical Association*. 2007;102(477):359–378. doi:10.1198/016214506000001437. Original full paper, selected sections 1–3 and 6: assess predictive distributions with proper scores; keep forecast quality separate from a priced commitment decision.

Gneiting T. Making and Evaluating Point Forecasts. *Journal of the American Statistical Association*. 2011;106(494):746–762. doi:10.1198/jasa.2011.r10138. Published paper, introduction and section 3.3: the elicited point forecast depends on the declared loss and target functional.

Hyndman RJ, Koehler AB. Another look at measures of forecast accuracy. *International Journal of Forecasting*. 2006;22(4):679–688. doi:10.1016/j.ijforecast.2006.03.001. Author preprint, sections 2.4 and 3: compare forecast errors with a declared naive benchmark; percentage and scaled errors have denominator conditions.

Tashman LJ. Out-of-sample tests of forecasting accuracy: an analysis and review. *International Journal of Forecasting*. 2000;16(4):437–450. doi:10.1016/S0169-2070(00)00065-0. Published author-uploaded paper, sections 3–4: freeze origins, forecast horizons, test samples and recalibration rules before evaluating commitments.

Wickramasuriya SL, Athanasopoulos G, Hyndman RJ. Optimal forecast reconciliation for hierarchical and grouped time series through trace minimization. *Journal of the American Statistical Association*. 2019;114(526):804–819. doi:10.1080/01621459.2018.1448825. Author preprint, introduction and section 2: coherent forecast reconciliation requires an actual aggregation structure and defensible error covariance; coherence alone is not truth.

Diebold FX, Mariano RS. Comparing Predictive Accuracy. *Journal of Business & Economic Statistics*. 1995;13(3):253–263. doi:10.1080/07350015.1995.10524599. Primary abstract and bibliographic metadata accessed; full proof not claimed read. Correlated errors and asymmetric losses motivate dependence-aware forecast comparison, not an implemented Diebold–Mariano test here.

Hyndman, R. J., and Athanasopoulos, G. (2021). *Forecasting: Principles and Practice*, third edition. OTexts, section 1.2. Authors' full online section: distinguish forecasts, desired goals and action plans. FCEC adds an explicit authorization step; a target-closing identity does not predict delivery.

Primary scholarly or official sources; access scope is documented privately. Forecasting and measurement principles do not transfer empirical effects across settings.

RESEARCH REFERENCES / MEASUREMENT AND EVALUATION

Preserve the population, reference and comparator

Primary research informs interpretation and prospective design. It does not authenticate historical files, validate the source's recovery date or supply a missing operational effect.

NIST/SEMATECH. e-Handbook of Statistical Methods, section 6.3.2.2: Individuals Control Charts. Official method. Calculate tentative limits for the sparse ordered observations, but separate planned milestones, cross-sectional groups and conflicting source definitions. Within-limit movement does not establish either improvement or a stable operating phase.

Laney, D. B. (2002). Improved Control Charts for Attributes. *Quality Engineering*, 14(4), 531–537. Primary publisher abstract. Extra-binomial adjustment requires actual counts, denominators and rational subgroups. The available baseline snapshots lack an eligible repeated count panel; rounded rates are not converted into invented exposure counts.

Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, 20, 37–46. Primary publisher record. Assess agreement and kappa in a blinded, stratified taxonomy audit. Report prevalence, confusion and uncertainty; high agreement between coders cannot authenticate a shared defective reference.

Barnett, A. G., van der Pols, J. C., & Dobson, A. J. (2005). Regression to the Mean: What It Is and How to Deal with It. *International Journal of Epidemiology*, 34, 215–220. Primary abstract. A selected worst-site cohort can recover without an intervention. The case uses explicitly assumed reliability sensitivity and requires independent recurrence and comparison data.

Hudgens, M. G., & Halloran, M. E. (2008). Toward Causal Inference with Interference. *Journal of the American Statistical Association*, 103, 832–842. Original manuscript. Shared analysts, planning tools and decision ownership can create spillovers across requests. Randomize independent planning domains and measure leakage; a shadow benchmark does not estimate the operating effects of a deployed commitment.

Callaway, B., & Sant'Anna, P. H. C. (2021). Difference-in-Differences with Multiple Time Periods. *Journal of Econometrics*, 225, 200–230. Author manuscript. A later nonrandom workflow rollout needs group-time comparisons, eligible controls and defensible parallel trends. It requires separate power and transport analysis; it cannot authenticate the historical forecast basis.

Strong, M., Oakley, J. E., Brennan, A., & Breeze, P. (2015). Estimating the Expected Value of Sample Information Using the Probabilistic Sensitivity Analysis Sample. *Medical Decision Making*, 35, 570–583. Author repository. Information has value when it changes a feasible decision under a specified prior, payoff and likelihood model. Evidence cost is subtracted; EVSI is not added to the trial's operating benefit.

Primary scholarly or official sources; access scope is documented privately. Forecasting and measurement principles do not transfer empirical effects across settings.

RESEARCH REFERENCES / OPERATING GOVERNANCE

Connect the promise to evidence and authority

Primary research informs interpretation and prospective design. It does not authenticate historical files, validate the source's recovery date or supply a missing operational effect.

Collier, D. (2011). Understanding Process Tracing. *PS: Political Science & Politics*, 44, 823–830. Primary publication. Grade each specific role and action against competing explanations. A derivative register supports a provisional contribution claim; a named request, working draft or colleague's delivery row does not establish convening, delivery or sole authorship.

Tucker, A. L., & Edmondson, A. C. (2003). Why Hospitals Don't Learn from Failures. *California Management Review*, 45(2), 55-72. Author manuscript. Local workarounds can resolve immediate tasks while leaving system conditions unresolved. FCEC carries unresolved forecast and series obligations into the next planning review; no healthcare effect is transferred.

The W. Edwards Deming Institute. The Funnel Experiment. Official exposition. Repeated adjustment to routine variation can worsen performance. FCEC distinguishes sparse reporting fluctuations from an established recovery trend; target revisions or repeated action changes need explicit evidence.

Campbell, D. T. (1976). Assessing the Impact of Planned Social Change. Original institutional record. Accountability measures can change both behavior and reporting. Track eligibility, capture, unknowns and independent service outcomes so that changing an exemption or reason code cannot substitute for improving physical receipt.

Goodhart, C. A. E. (1992). The Objectives for, and Conduct of, Monetary Policy in the 1990s. Reserve Bank of Australia Annual Conference. Original author paper, section1(b)(i). An intermediate measure can change its relationship to the ultimate objective. Audit reporting, classification and capture separately from physical customer outcomes; no monetary-policy effect is transferred.

Ittner, C. D., Larcker, D. F., & Randall, T. (2003). Performance Implications of Strategic Performance Measurement in Financial Services Firms. *Accounting, Organizations and Society*, 28, 715-741. Author manuscript. Connect a strategic measure to its mechanism and decision consequence. A target-closing projection does not demonstrate that the proposed action portfolio can deliver its required operating change.

OECD / European Commission JRC (2008). Handbook on Constructing Composite Indicators. Official handbook. Definitions, denominators, weights and compensation assumptions determine aggregation. Preserve exposure weights, category partitions and source versions; a parent total is not automatically valid when its components change definition.

Primary scholarly or official sources; access scope is documented privately. Forecasting and measurement principles do not transfer empirical effects across settings.

FINAL REFEREE REPORT / INTERNAL AGENT-ASSISTED REVIEW

Accept the reconciliation and test complexity against a strong baseline

[AI] This author-led, agent-assisted review is not external peer review. Acceptance is limited to the analytical corrections and proposed evaluation; historical implementation and benefits remain unverified.

Major issue	Disposition in the revised case
Difficult treated as impossible	A positive remaining requirement below past best is not an impossibility proof. Separate forecast probability from a validated feasible lower bound.
Several meanings of recovery	Define first crossing, sustained-through-horizon compliance and annual exposure-weighted attainment separately. Seasonal target relief does not establish physical improvement.
Plan identity treated as prediction	Keep target, balancing formula and forecast roles visible. Variance proximity does not authenticate the canonical series or approve a target.
Gap and artifact overclaims	Retain the smaller adverse component and favorable offset. Net component change cannot bound a gross artifact without restrictions; unexplained residuals remain open.
Complexity justified by weak comparison	Compare paid workflow recommendations with simple conservative rules. Preserve scenarios in which the simpler alternative or deferral wins; do not tune prices to manufacture a favorable conclusion.

Partner critique: can a COO act on page one?

[AI] Yes: require an explicit recovery promise, a reconciled metric and target, credible dependencies and approved decision authority. The immediate action is bounded forecast and valuation calibration, with a strong comparator, before committing to greater analytical complexity.

Remaining conditions and minor issues

[AI] Original authentication, source-series reconciliation, mature cohorts, program mappings, feasibility bounds, forecast transport and error prices remain unresolved. Drafts and the sent reply differ. Neither their chronology nor the proposed model establishes adopted recommendations, customer recovery or avoided cost.

REVIEW DISPOSITION / PASS WITHIN STATED SCOPE

[AI] Accept the evidence reconciliation and falsifiable commitment design. Unsupported authority, invalid reference measurement, undetectable break-even or failure against a simpler rule requires revision before reliance.

Internal evidence, numerical, methodological, executive and actual-page reviews. No external endorsement, consulting rank or verified historical effectiveness is claimed.