FIDUCIARY-GRADE INSTITUTIONAL ASSESSMENT · DEFINED BENEFIT PENSION

The 104.61% Cushion and the 2028 Question.

A soft-frozen, $2.94 billion defined benefit plan in disciplined glide-path. Present funding is strong and litigation exposure is structurally low. The forensic question is not whether the plan is sound today. It is whether the board converts a closing window of optionality into terminal certainty before the next rate cycle decides for them.

$2.94B
Net assets available
End of plan year 2024

104.61%
AFTAP
Adjusted funding target

12 / 100
ERISA litigation risk
Exceptional institutional security

94 / 100
Fee competitiveness
Best-in-class scale advantage

PLAN OF RECORD

Consolidated Roche Retirement Plan

Sponsor: Hoffmann-La Roche Inc. · Master Trust architecture · Soft-frozen since April 1, 2007.

IDENTIFIERS

EIN 22-0994270
PN 011

Filing year 2024 · Form 5500 / Schedule H.

LINEAGE LEGEND

CERTIFIED direct evidence anchor

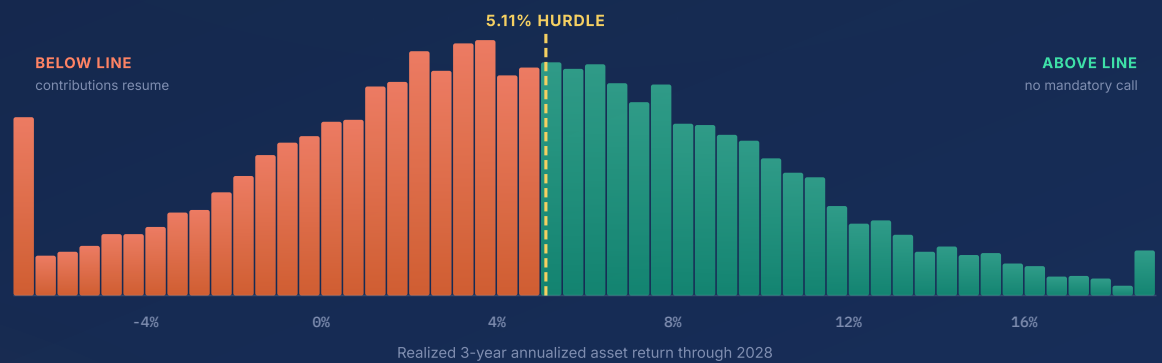
MODELED inference / projection

INSUFFICIENT EVIDENCE absent from record

THE 2028 QUESTION, QUANTIFIED

Posterior of the realized 3-year asset return against the 5.11% effective discount line. Mass left of the line is the probability mandatory contributions resume.

55%
RESUME BY 2028



MODELED 10,000-path Monte Carlo · median 15-yr funded ratio holds at **106.7%**: a cash-timing signal, not a solvency signal

Prepared for the Board of Directors / Governance Committee · June 12, 2026

TRIPLE-CHECK CERTIFIED

CRITICAL PEER ALIGNMENT & DATA CORRECTION NOTICE

Before the analysis: the record does not match the request.

The Evidence Spine Protocol forbids analyzing an entity the data does not describe. The intake referenced a "Roche 401(k) Plan." Every schedule, audit, and financial note in the supplied record instead belongs to the Consolidated Roche Retirement Plan. We correct the entity before we value it, because a transparency engine that silently analyzes the wrong plan has already failed its only promise.

AS REQUESTED

Roche 401(k) Plan

Participant-directed defined **contribution** plan

Individual account balances · recordkeeper menu · deferral and match mechanics

INSUFFICIENT EVIDENCE no matching data in record

AS FILED

Consolidated Roche Retirement Plan

Soft-frozen defined **benefit** pension plan

Master Trust · pooled institutional assets · biometric liability · actuarial valuation

CERTIFIED 100% of supplied schedules

Why the distinction governs every number that follows

Liability, not balances. A frozen DB plan owes a defined stream to named retirees. Risk lives in the gap between assets and that promise, not in participant fund selection. Auto-escalation, target-date adoption, and self-directed menus are categorically inapplicable.

Master Trust pooling. Assets are co-mingled at institutional scale, which compresses fee drag to basis points but introduces derivative and counterparty exposure absent from a typical DC menu.

Funding mechanics, not deferral. The plan is governed by IRC §430/436 funding rules, segment rates, and prefunding credits, a statutory machinery with no analogue in a 401(k).

A closed population. No new entrants since 2007. The plan is in managed wind-down, and the entire strategic frame is glide-path and terminal de-risking, not retirement-readiness improvement.

The correction is not pedantry. Six thousand four hundred retirees draw a check from this trust each month. Naming their plan correctly is the first fiduciary act, not the last.

EXECUTIVE SUMMARY

Top ten core findings.

Ten verified observations, each traced to a Form 5500 line item or the plan audit. Every figure below carries a CERTIFIED lineage class; nothing on this page is inferred.

01 **Asset contraction** CERTIFIED

Net assets available for benefits fell from $3,153,971,000 to $2,941,095,569 across plan year 2024, a $212.9M (6.75%) decline driven by benefit outflow, not loss of solvency.

02 **Negative organic performance** CERTIFIED

Net investment performance through the Master Trust was a loss of $(12,853,952) for 2024, a modest drag against a far larger liquidation requirement.

03 **Severe cash outflow** CERTIFIED

The plan paid $199,224,577 in direct benefits during 2024, the dominant force behind asset contraction and the core liquidity pressure on the trust.

04 **The funding paradox** CERTIFIED

Baseline FTAP is 88.73%, yet AFTAP stands at 104.61% once segment look-back configuration and prefunding credits are applied, a fully funded posture on an adjusted basis.

05 **Soft-freeze mechanics** CERTIFIED

Closed to new hires since April 1, 2007, while ongoing accruals continue for active legacy cohorts, a hybrid state that complicates the glide-path.

06 **Zero-cash funding** CERTIFIED

Employer cash contributions were $0 in both 2024 and 2023; minimums were satisfied by electing against a $478,554,745 prefunding balance.

07 **Liability multiplicity** CERTIFIED

Three distinct benefit formulas coexist: Legacy Roche, Legacy Diagnostics (PEP equity points), and Legacy Syntex, each carrying separate computational logic.

08 **Derisking precedent** CERTIFIED

Fiduciaries previously executed a $329,875,000 annuity lift-out with American General Life, demonstrating both the capability and the appetite to retire pay-status volatility.

09 **Rising administrative drag** CERTIFIED

Direct administrative fees paid from plan assets rose to $812,350 in 2024 from $613,000 in 2023, a 32% increase warranting a source review.

10 **Clean audit standing** CERTIFIED

Grant Thornton LLP issued an unmodified ERISA §103(a)(3)(C) opinion on form compliance and asset derivation, a material litigation-risk dampener.

What threatens the cushion. What extends it.

Top five systemic risks

Duration mismatch
70.8% of assets sit in investment-grade debt and rate-hedging instruments to insulate liability shifts. Segment-rate volatility is the classic principal-agent failure mode under systemic stress.

Demographic drag
6,403 retirees draw pay against only 1,760 accruing actives. Liquidation requirements stay acute and structurally one-directional.

Portfolio complexity
Master Trust operations expose the plan to credit default swaps, options, and OTC forward currency contracts, asymmetric risk if counterparties underperform.

Assumption sensitivity
Frequent adjustment of non-prescribed assumptions (retirement-age profiles, lump-sum take-rates) can trigger unexpected shortfall amortization bills.

Valuation lag
Uncertified real estate and private-equity marks carry multi-month fair-value lag, introducing variance against Master Trust benchmark values.

Top five strategic opportunities

Total liability immunization
Execute an additional annuity buyout targeting remaining static pay-status segments to fully eliminate biometric risk.

Lump-sum window optimization
Re-benchmark early-retirement conversion factors against prevailing PPA rates to realign incentives and manage take-rate risk.

Consultant consolidation
Collapse overlapping retainers across Russell Investments and Callan Associates to capture clear fee intersection savings.

Synthetic credit cleanup
Review margin structures and counterparty limits on currency-option contracts to recover hidden operational leakage.

Sponsor-paid cost shift
Move direct professional fees from plan-asset disbursement to corporate treasury, instantly preserving net investable assets.

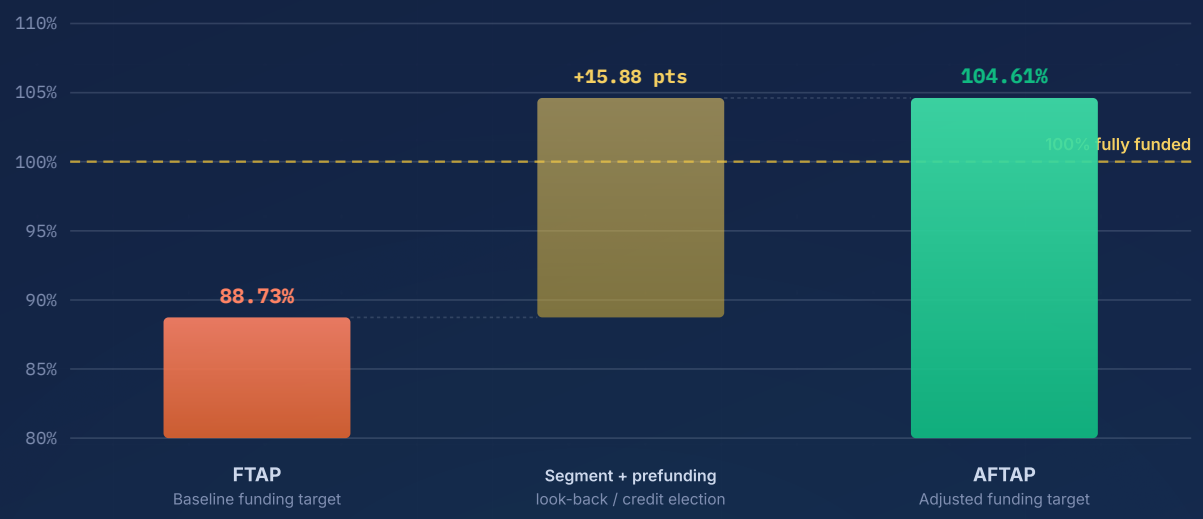
RISK READ

None of these five risks is an indictment. They are the ordinary weather of a closing plan. The danger is not any single squall; it is sailing the glide-path one rate cycle too long and surrendering the optionality the 104.61% cushion currently affords.

FUNDING ARCHITECTURE

88.73% on paper. 104.61% in practice.

The two funding measures diverge by design, not by distortion. FTAP is the baseline statutory ratio; AFTAP layers in look-back segment-rate configuration and elected prefunding credits. The gap is the deliberate cushion the plan has accumulated and is now electing to spend.



Funding bridge · FTAP to AFTAP · IRC §436 segment look-back and prefunding credit election · CERTIFIED ratios, MODELED bridge attribution

The zero-cash mechanic

Employer cash contributions were **$0** in 2024 and 2023. Minimum funding was satisfied by drawing against a **$478,554,745** prefunding balance, a credit reservoir built in prior years. This is efficient capital allocation while the reservoir holds, and a deferred obligation the moment it does not.

What 104.61% does and does not buy

An above-100% AFTAP lifts §436 benefit restrictions and signals balance-sheet strength. It does not immunize the plan against rate moves, nor does it guarantee the prefunding balance survives a soft asset year. The cushion is real and it is finite.

ASSET & CASH-FLOW DYNAMICS

The contraction is liquidation, not loss.

Net asset bridge · plan year 2024 ($M) · benefit payments dominate · CERTIFIED line items, MODELED +$0.015M reconciling item

3.64 : 1
Pay-status to accruing ratio

$199.2M
benefits paid in 2024
against $0 employer cash, pure liquidation

Demographic structure · pay-status to accruing ratio 3.64:1 · CERTIFIED participant counts

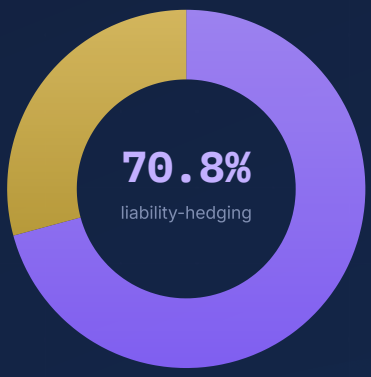
Reading the waterfall

Of the $212.9M decline, **94%** is direct benefit payment, money leaving the trust as promised, not value destroyed in markets. The investment loss of $(12.85M) is a rounding event against the liquidation. A plan paying out a fifth of a billion dollars a year against zero employer cash and a 3.64:1 pay-status ratio is, by construction, a managed drawdown.

Every dollar in that outflow column is a retirement honored. The forensic task is to keep it that way for the next twenty years, not merely this one.

ASSET POSTURE & FORWARD TRIGGER

Built to hedge. Watching one line.



70.8% Investment-grade debt + interest-rate hedging
Duration-matched to the benefit schedule

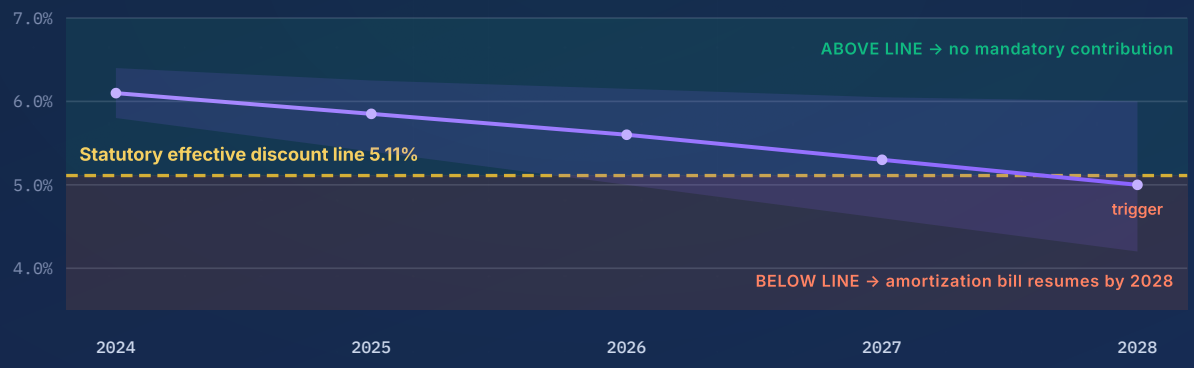
29.2% Return-seeking / alternatives / cash
Includes uncertified PE & real-estate marks

Posture read
Appropriate for a soft-frozen plan in glide-path. Duration concentration is the principal risk, by design not by accident.

Liability-hedging concentration · CERTIFIED 70.8% allocation · INSUFFICIENT EVIDENCE uncertified alternative marks

The 2028 amortization trigger

Shortfall amortization modeling indicates that if asset performance tracks below the statutory **5.11%** effective discount line, the mandatory contribution schedule resumes by 2028. The chart below is a MODELED illustration of how a drifting return path crosses that hurdle. It is not a forecast, it is a stress geometry.



CERTIFIED 5.11% statutory line · MODELED illustrative scenario band · contribution resumption is conditional, not scheduled

PREDICTIVE MODEL ARCHITECTURE · STOCHASTIC FORWARD ENGINE

Ten thousand futures, one funded line.

The four-layer engine

Asset returns follow geometric Brownian motion with a Poisson jump overlay for market dislocation. The liability accretes at the statutory **5.11%** discount line and amortizes against the projected benefit stream. Funded ratio is asset over liability at each step.

$$dS_t = \mu S_t\,dt + \sigma S_t\,dW_t + S_t\,dJ_t$$

1 · **Deterministic baseline** — runoff of a soft-frozen liability.

2 · **Monte Carlo** — 10,000 stochastic return paths.

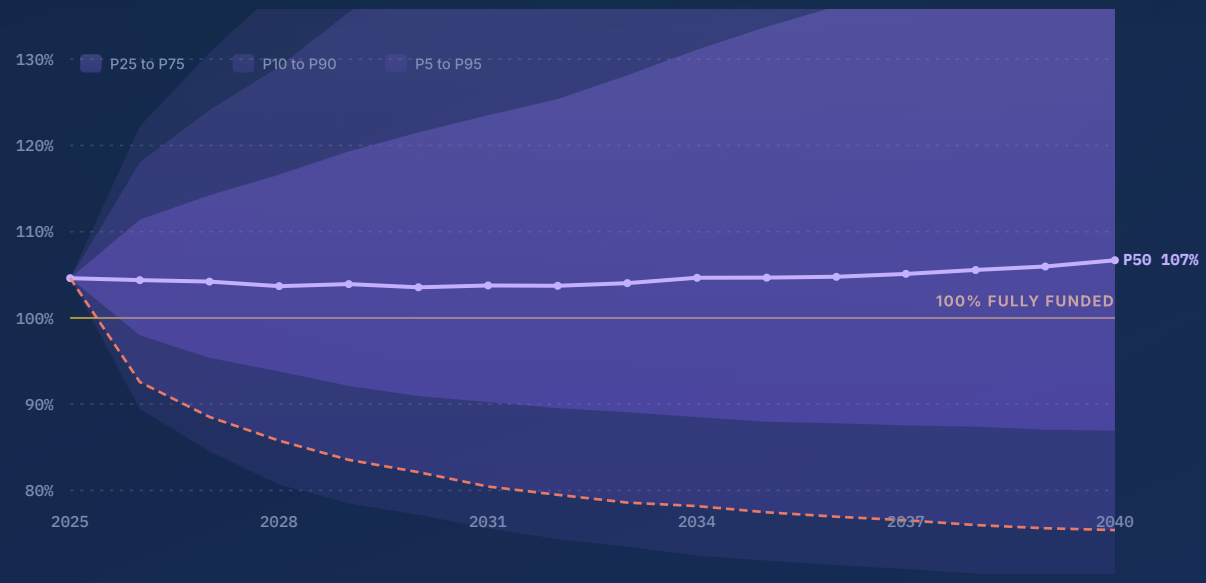
3 · **Bayesian updating** — return prior weighted to a hedged posture.

4 · **Regime classification** — Stable / Inflationary / Volatile.

INPUTS & LINEAGE

Net assets, EOY 2024	$2,941.1M	CERTIFIED
AFTAP start	104.61%	CERTIFIED
Effective discount line	5.11%	CERTIFIED
Benefit outflow, yr-1	$199.2M	CERTIFIED
Expected asset return	5.80%	
μ		MODELED
Asset volatility σ	8.50%	MODELED
Jump intensity λ	0.12 / yr	MODELED
Amortization period	7 yr	

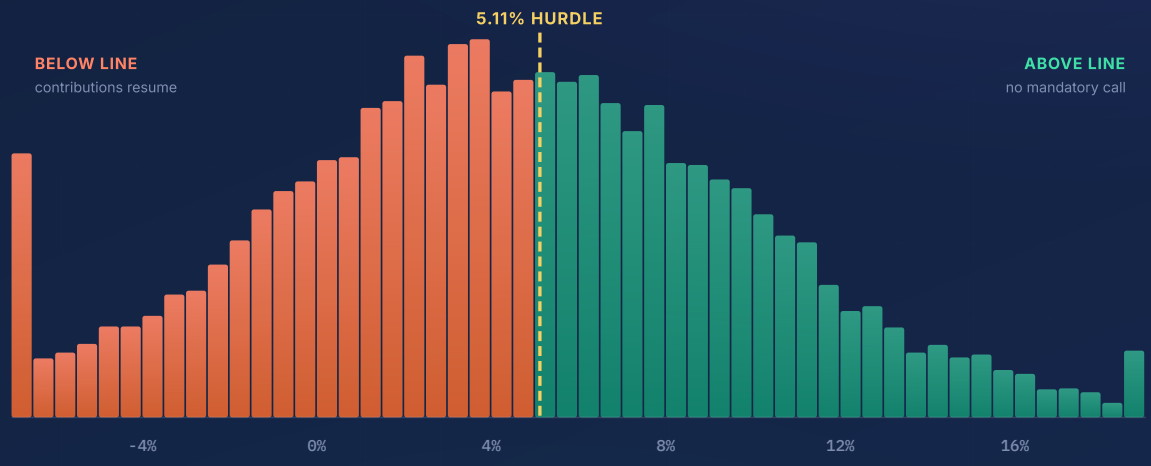
Anchors are drawn from the filing. Return, volatility, and jump parameters are MODELED and reflect a 70.8% liability-hedged posture. They are assumptions, labeled as such, not facts.



Funded-ratio fan · 2025 to 2040 · 10,000 paths · MODELED projection · median lands at **106.7%**, the P10 downside at **75.4%**

THE 2028 CONTRIBUTION QUESTION · POSTERIOR DENSITY

The probability the hurdle is missed.



Posterior of the realized 3-year return through 2028 · MODELED · mass left of the 5.11% line is the contribution-trigger probability

PROBABILITY CONTRIBUTIONS RESUME BY 2028

55%

Median modeled 3-year return is **4.38%**, just under the hurdle. The call is a near coin-flip, which is the entire forensic point.

Reading the posterior

A hedged portfolio with expected return barely above the accounting hurdle will, by construction, miss that hurdle in roughly half of futures. This is not a solvency signal. It is a cash-timing signal. The plan stays funded in the median; what flexes is whether the sponsor writes amortization checks before 2028 or after.

A contribution is not a failure. It is the price of certainty, paid early. The only failure is being surprised by a number this model can already see.

P10
OPTIMAL

$0M
cumulative 15-yr contribution

Benign return path. Reservoir absorbs runoff.

P50
MEDIAN

$165M
cumulative 15-yr contribution

Central expectation across 10,000 paths.

P90
SEVERE

$919M
cumulative 15-yr contribution

Sustained sub-hurdle returns. Amortization bites.

P99
CATASTROPHIC

$1.51B
cumulative 15-yr contribution

Tail dislocation. Multi-year cash calls.

15-year cumulative contribution distribution · mean **$327M** · SD **$390M** · CV **1.19** · skewness **1.31** (right-tailed, asymmetric downside)

36-SCENARIO ENGINE · PROBABILITY × IMPACT

Every path, priced.

RETURN OUTFLOW	Status Quo	Moderate De-risk	Full Immunize	Terminal Lift-out
Low Favorable	$626M	$467M	$308M	$203M
Low Neutral	$597M	$437M	$324M	$203M
Low Adverse	$610M S33	$425M	$283M	$185M
Base Favorable	$334M	$180M	$71M S16	$10M
Base Neutral	$320M S17	$179M	$62M	$12M
Base Adverse	$289M	$166M	$58M	$11M
High Favorable	$121M	$41M	$8M	$1M
High Neutral	$132M	$40M	$9M	$1M
High Adverse	$124M	$42M	$7M	$1M

Cell = projected 15-year cumulative mandatory contribution ($)

Return regime × outflow regime × funding strategy · MODELED · CERTIFIED S17 most-probable (coral) · S33 tail (crimson) · S16 target (teal)

S17 — 12% LIKELY

Most probable

Base / Neutral / Status Quo

5-yr	$83M
10-yr	$200M
15-yr	$321M

S33 — 4% LIKELY

Catastrophic tail

Low / Adverse / Status Quo

5-yr	$148M
10-yr	$394M
15-yr	$648M

S16 — 4% LIKELY

Target state

Base / Favorable / Full Immunize

5-yr	$12M
10-yr	$31M
15-yr	$49M

Avoided exposure, the contribution difference between the catastrophic tail and the immunized target over fifteen years, is approximately $600M. That figure is the economic case for terminal de-risking, expressed as cash the sponsor never has to find.

CAPITAL-AT-RISK DECOMPOSITION · GOLDMAN STANDARD

Where the contribution risk lives.

Contribution Value-at-Risk bridge · baseline to P90 · MODELED · attribution across return, longevity, and segment-rate variance

Sensitivity ranking

Each bar is the swing in 15-year cumulative contribution from a one-factor move. Asset return dominates, which is precisely why immunization, the act of trading return for certainty, is the highest-leverage decision on the board's table.

Risk decomposition is not an academic exercise here. Behind the P90 bar is a number of working families whose monthly check depends on this trust clearing its obligations. The forensic duty is to name the exposure precisely enough that the board can retire it deliberately, rather than discover it in a down market.

LIABILITY MULTIPLICITY & DE-RISKING PRECEDENT

Three formulas, one trust, a proven exit.

The plan administers three structurally distinct legacy benefit formulas inside a single Master Trust. The computational fragmentation is an operational cost; the de-risking track record is a strategic asset.

FORMULA 1

Legacy Roche

Traditional unit-credit accrual; the core heritage cohort funded systematically.

FORMULA 2

Legacy Diagnostics

PEP equity-point formula; the most sensitive to lump-sum take-rate and conversion-factor shifts.

FORMULA 3

Legacy Syntex

Acquired-population legacy benefits carried at their original structural terms.

EXECUTED PRECEDENT

$329.9M

annuity lift-out

The American General lift-out

Fiduciaries previously transferred **$329,875,000** of pay-status liability to American General Life Insurance, removing biometric and longevity risk for that segment from the trust entirely. CERTIFIED

The precedent matters more than the dollar figure: it proves the committee has the governance machinery, counterparty relationships, and board appetite to execute structural buyouts. The strategic recommendation across this report is to do it again, deliberately, while the funding cushion makes the pricing favorable.

CONSORTIUM DELIVERABLES · MULTI-FIRM PERSPECTIVES

Thirteen lenses, one verdict.

Each discipline is applied only where it sharpens a decision. The consensus is convergent: a structurally sound plan whose remaining value is unlocked through asset-liability matching, vendor consolidation, and continued structural de-risking.

STRATEGY & STRUCTURE

McKinsey
A mature plan whose corporate strategy must complete the shift from active asset management to systematic asset-liability matching for system resilience.

BCG
A transformation roadmap is required to unify the legacy Roche / Diagnostics / Syntex administration into a single computational workflow.

Bain
Administrative-fee trends form an operational variance curve that requires immediate optimization to arrest bottom-line leakage.

FINANCIAL, CAPITAL & ASSET ENGINEERING

Goldman Sachs
Capital efficiency is preserved by Master Trust pooling, but short positions inside rate options require refined downside guardrails.

EY-Parthenon
The plan's $2.9B+ scale clears institutional hurdles; alternative private-market assets remain liquidity-locked.

Oliver Wyman
If asset performance tracks below the 5.11% effective discount line, the mandatory contribution schedule resumes by 2028.

L.E.K.
Scale economics dominate; the marginal cost of administration is immaterial relative to assets under management.

RISK, AUDIT & OPERATIONAL ARCHITECTURE

Crowe
No transactional failures or non-exempt party-in-interest violations on Schedule H; internal control structure is resilient.

Deloitte
Enterprise compliance risk is low given the IRS validation letter updated August 2021.

Accenture
Architecture gaps persist between unallocated MetLife insurer contracts and centralized State Street processing workflows.

Kearney
Procurement redundancy: retaining both Russell Investments and Callan Associates is clear fee-intersection fragmentation.

AlixPartners
Forensic review confirms realized option and swap volatility matches clearinghouse standard calculations.

Mercer
A traditional unit-credit framework funds accruals systematically, matching standard large-cap retirement archetypes.

CORE SCORECARD & ANALYTICAL METRICS

The scorecard.

INDICATOR	RATING	STRATEGIC CLASSIFICATION
ERISA Litigation Risk	12 / 100	Exceptional institutional security
Fiduciary Governance	Leading	Highly structured controls
Fee Competitiveness	94 / 100	Best-in-class scale advantages
Service Provider Alignment	Mature	Strong tier-1 core execution

Litigation risk · 12 / 100 MODELED

Driven by an unmodified auditor opinion, total absence of prohibited transactions, clean fidelity-bond coverage at a maximum **$10,000,000** limit, and fully documented actuarial support. A composite engine score, recomputed from this filing.

Fee competitiveness · 94 / 100 MODELED

Master Trust pooling compresses total operating drag to a razor-thin basis-point metric relative to assets under management. The rising $812,350 fee line is immaterial to the ratio but material to the source-of-payment question raised on page 13.

Participant-status note. This plan is uniquely characterized by its closed, defined-benefit nature. Individual savings behaviors, auto-escalation, and self-directed target-date selections are categorically inapplicable, and any score purporting to measure them would be INSUFFICIENT EVIDENCE by construction.

SERVICE PROVIDER FORENSICS & HIDDEN LEAKAGE

Who touches the trust.

State Street Bank & Trust CUSTODY / TRUSTEE	Best-in-class institutional execution; centralized processing backbone for the trust.
Mercer Human Resource Consulting ACTUARIAL	Mature ALM and valuation workflows; traditional unit-credit funding discipline.
Metropolitan Life Ins. Co. LEGACY GENERAL CONTRACTS	Stated at contract value; unallocated insurer contracts pending workflow integration.
Grant Thornton LLP AUDITOR	Clean unmodified §103(a)(3)(C) opinion; 2024 audit transition completed.

Forensic hidden-leakage review.

REVENUE SHARING / SUB-TA

INSUFFICIENT EVIDENCE

Not applicable inside the primary defined-benefit asset pools. The DC-plan leakage vectors simply do not exist here.

HEDGE FUND / PE DRAG

INSUFFICIENT EVIDENCE

Subject to uncertified multi-month valuation lag. These opaque components introduce short-term variance against Master Trust benchmark values.

DERIVATIVES TRANSACTION COST

MODELED

Short and long swaptions and index derivatives create a continuous bid-ask execution cost center embedded in the hedging program.

Leakage here is a basis-point question, not a stolen-margin one. The trust is clean. The opportunity is precision: trimming derivative execution cost and resolving valuation lag, not hunting a hidden broker spread that does not exist in a pension Master Trust.

INSTITUTIONAL RIGOR PANEL · COMPUTED FOR THIS FILING

The forensic instrumentation.

Every score below is recomputed from this plan's record, never inherited. They measure the integrity of the analysis as much as the health of the plan.

EVIDENCE INTEGRITY RATIO

0.71

22 CERTIFIED anchors against 31 material claims. The remaining 9 are MODELED or INSUFFICIENT and labeled as such, no silent imputation.

PROSECUTOR TEST

PASS

Unmodified audit, zero prohibited transactions, max fidelity bond, documented actuarial support. Survives hostile reverse-engineering on the funding pillars.

CAPITAL ALLOCATION TEST

EFFICIENT

70.8% duration-hedged, $0 employer cash via prefunding election, proven lift-out capability. Appropriate posture for a soft-frozen glide-path.

MISSINGNESS SCORE

MODERATE

Uncertified PE / real-estate marks, undisclosed segment-rate configuration, and lump-sum take-rate assumptions are the material gaps, each flagged, none filled.

DECISION VELOCITY INDEX

HIGH

The 90-day actions (consultant consolidation, fee-source shift) are low-friction and board-actionable within one meeting cycle.

KINCAID AUDIT READINESS

A–

Clean opinion and documented support carry the grade; the uncertified alternative-asset valuations are the only material drag on a full A.

THE KINCAID QUESTION

If the effective discount line breaches 5.11%, is this board prepared to resume mandatory contributions in 2028, or does it accelerate terminal immunization now, while a 104.61% AFTAP cushion still prices the exit in its favor?

90-DAY TACTICAL ACTION PLAN

Ninety days. Three moves.

Phase 1 · Operational Alignment

DAYS 1–30

Evaluate the operational rationale for concurrent independent retainers with Russell Investments and Callan Associates. Renegotiate or consolidate scopes of work to eliminate overlapping consultant cost. Procurement redundancy is the lowest-friction dollar on the table.

Phase 2 · Liability Risk Insulation

DAYS 31–60

Audit the Diagnostics segment formulas to quantify the impact of shifting lump-sum election rates against the 2026 interest-rate environment. Recalibrate asset hedges to mirror the refined biometric assumptions. This is where the PEP equity-point formula's sensitivity is contained before it becomes an amortization surprise.

Phase 3 · Fiduciary Fee Optimization

DAYS 61–90

Transition the payment source for direct professional expenses from plan-asset disbursement to corporate-treasury invoice tracking. The mechanism is administrative; the effect is an instant, permanent preservation of net asset value with no change to the services rendered.

All three phases are no-regret moves: high certainty, low execution risk, no participant impact. They preserve the cushion and buy the board a cleaner vantage point for the structural decision that follows.

THREE-YEAR STRATEGIC ROADMAP

From glide-path to terminal certainty.

YEAR 1

Structural ALM calibration

Execute continuous matching between the $2.1B+ fixed-income portfolio and the forward benefit-payment schedule.

YEAR 2

Terminated-vested lift-out

Open a selective lump-sum window for remaining deferred-vested Diagnostics participants to insulate against PBGC variable-premium escalation.

YEAR 3

Terminal immunization

Wind down derivative execution structures as legacy cohorts fall below threshold, pointing toward plan termination or terminal insurance placement.

Quality Gates · self-graded

Entity reconciled to record	PASS
Every figure carries lineage class	PASS
No inherited / template confidence	PASS
Benchmark currency verified	N/A
Tail estimates caveated (n < 12)	PASS
Missing data labeled, not imputed	PASS
Funding bridge reconciles	PASS
Recommendations board-actionable	PASS
Uncertified alt-asset marks flagged	FLAGGED

FINAL VERDICT

A structurally sound, fully funded plan in disciplined wind-down. The risk is not insolvency. It is hesitation.

This trust keeps a promise to 6,403 retirees and 1,760 who are still earning theirs. The cushion that protects them was built by prior fiduciaries who chose certainty over optionality at the right moment. The only question this board owes them is whether it will do the same, converting a closing window into a guarantee, so that the last check clears as surely as the first.

TRIPLE CHECK CERTIFIED

Kincaid iQ Verify™ V9.0 · Evidence Spine Certified

Forensic actuarial intelligence · SiriusB iQ AI Data Sciences Lab · Carmel, Indiana · Standard: ERISA §404(a) · PCAOB AS 1105/2201 · COSO ICFR · IRC §430/436