

AWS COST · SAMPLE DELIVERABLE

Handover Playbook and Monthly Cost Review

Week 6 of 6: Hand over · prepared for Copperwick Therapeutics, Inc.

Prepared by Charles Sieg · charles.sieg@vantalect.com · vantalect.com

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SAMPLE DELIVERABLE

This is a sample deliverable. Copperwick Therapeutics, Inc. is a fictional company: its people, programs, products, accounts, and figures are invented for this sample, and any resemblance to a real company, person, program, or medicine is coincidental. AWS prices are list prices from the AWS Price List API retrieved on October 13, 2026, and from the public AWS Price List bulk API on October 17, 2026; Spot prices are 30-day means for September 14 to October 14, 2026.

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Summary

The Optimization identified **\$4,310,044 a year** of savings, net of Copperwick's 6% private pricing discount, 23.5% of the in-scope bill. By the end of week six, **\$2,526,309 a year** was in place across 22 changes at the Analysis's estimates, **\$2,401,346** of it measured on Copperwick's Cost and Usage Report (13.1% of the bill), and **\$2,436,540 a year** counted for the guarantee against the \$105,000 gate. The gate is met with \$2,331,540 to spare, and the second invoice of \$17,500 is issued with the measurement report.

\$1,192,737 a year more is approved and scheduled across 13 changes, each with an owner and a date. **\$436,118 a year** was declined at the readout, and S3-4, worth \$119,686 a year, is in place with its first measurement window running Monday, May 11, to May 17, read at the monthly review on June 11. Once the deferred changes land the savings run at **\$3,713,769 a year**, 20.3% of the week-one bill, with the changes in place at what they measured. This report is the playbook that lets Copperwick finish the roadmap, keep the bill down while its planned growth lands, and run all of it without Vantalect.

Four things need an action from someone at Copperwick, in this order.

1. **Hold the first monthly cost review on Thursday, May 14**, chaired by Grace Mbeki, with the agenda in [the monthly review](#). It re-measures the changes that land in April and notes that S3–4's measurement window is open.
2. **Put each deferred change in its change ticket with its date and its rollback** ([the roadmap](#)). The earliest is April 6, the latest June 22. For the GxP changes, Dr. Lorraine Osei confirms the change advisory board Tuesdays in [the GxP change-request calendar](#).
3. **Put the commitment dates on Rafael Quintero's calendar**: January 14, 2027, March 11, 2027, and June 10, 2027, around the private pricing renewal that ends June 30, 2027 ([the commitment plan](#)).
4. **Name who watches each declined finding**. Four findings were declined for stated reasons; three come back when their reason stops being true ([the declined findings](#)).

What the identified figure became

Every dollar of the identified figure is in one row below, and the rows add to it. This is the table to open at the monthly review when someone asks where the savings went.

Identified to in place to measured to counted, net of the private pricing discount. Each row is rounded to the dollar, and the rows add up as printed.

Stage	What it is	Annualized, net
Identified	The Analysis: 36 findings, priced as 41 changes	\$4,310,044
Less: approved and scheduled	13 changes that wait on a date or an event (the roadmap)	-\$1,192,737
Less: declined at the readout	4 findings (the declined findings)	-\$436,118
Less: in place, not yet measurable	S3-4, first measurement window opens May 11 (the S3-4 section)	-\$119,686
Less: approved, then reversed	L-4, reversed by the CISO on March 11	-\$35,194
In place at the estimates	22 changes	\$2,526,309
Less: measurement against estimate	6 of 22 measured at their estimates; the rest are in the next table	-\$124,963
Measured	Public On-Demand cost times the discount's complement, seven days before against seven days after, times 365; B-1 at the Spot price paid; C-1 by its ARN	\$2,401,346
Plus: approved, then reversed, at its estimate	L-4; the terms count it	\$35,194
Counted for the guarantee	Against the gate of \$105,000, a margin of \$2,331,540	\$2,436,540

Three notes keep the numbers honest. Only L-4 is the reason counted exceeds measured, and it counts because the terms say a change approved at the readout and later declined counts at its estimate. One-time charges are listed in the measurement report and never annualized into any of these rows. And the share of the bill is the same net or at list: the measured savings are 13.1% of it either way.

The changes that measured below their estimates, largest shortfall first, then the changes that measured above theirs, net of the discount.

ID	Change	Why	Estimate	Measured	Short by
S-1	Workstation idle-stop and schedule	Six scientists overrode auto-stop during a structure campaign, about 272 more hours each a month	\$117,574	\$95,452	\$22,122
B-1	Genomics Batch: 40% to Spot	Spot prices in the window ran about 6% above the 30-day mean the estimate used, and retries were 15% of Spot hours, not 12%; and day-to-day usage in the two windows took 1.1 points from the 91.9% those alone give	\$238,111	\$216,229	\$21,882
S-3a	GMP val environments on a schedule	An executed LIMS operational qualification protocol held its val environment on for three nights of the seven	\$87,540	\$71,660	\$15,880
W-2	Notebooks stop after 60 idle minutes	Two notebooks carry an exemption tag for long-running training and billed 34% of hours, not 22%	\$182,152	\$168,063	\$14,089
W-4	Orphaned snapshots deleted	22.4 TB of the deleted snapshots' blocks were shared with retained snapshots and still bill on them	\$86,630	\$73,694	\$12,936
N-1a	S3 gateway endpoints, research VPCs	Two research VPCs whose route tables sit outside the platform template kept 21 TB a month of S3 traffic on NAT until their routes were added; and day-to-day usage in the two windows took 1.0 points from the 91.9% those alone give	\$135,143	\$122,913	\$12,230
	The other 8 changes that measured short	Each short by \$8,977 or less, every reason in the measurement report			\$34,983
W-1	Unattached gp2 volumes deleted	Measured above its estimate (102.7%): The 14 TB of volumes owners kept snapshotted to 9.6 TB of written blocks; a snapshot bills its blocks, not its volume's size, and the estimate priced all 14 TB			-\$2,541

ID	Change	Why	Estimate	Measured	Short by
C-1	Compute Savings Plan, one year	Measured above its estimate (104.5%): Priced at m6i's one-year rate (26.5% off), the lowest it covers; it applied first to c6i usage at 27.7% off and the rest of each hour to m6i, so its \$1,200 a day covered \$1,652.64 of On-Demand usage, 27.4% off			-\$6,618
Total					\$124,963

The remaining roadmap

\$1,192,737 a year across 13 approved changes is still to put in place, each waiting on a reason its owner gave. None is abandoned and none counts toward the gate. Eight of the thirteen are GxP changes, so their dates are the dates their change requests allow ([the GxP change-request calendar](#)); the other five wait on a campaign, a benchmark, the tar job's capacity, or a disaster-recovery test.

The 13 approved-and-deferred changes, in date order, with the owner and the change path of each. E-2b is a GxP standard change with notice to Quality and no board vote; the other GxP changes go through the board.

ID	Change	Owner	Change path	Target	Per year, net
B-3	Cryo-EM GPU workers scale to zero	Hana Lindgren	Non-GxP	Monday, Apr 6	\$303,586
F-3	Cryo-EM Lustre per campaign	Hana Lindgren	Non-GxP	Monday, Apr 6	\$196,824
N-1b	S3 gateway endpoints, validated VPCs	Grace Mbeki	GxP change request	Tuesday, Apr 14	\$6,006
S3-3	GxP raw data to Glacier Instant Retrieval	Daniel Achterberg	GxP change request	Tuesday, Apr 14	\$84,451
G-1	Molecular dynamics to Graviton	Hana Lindgren	Non-GxP	Monday, Apr 20	\$65,875
S3-1b	Remaining run folders, second pass	Tomasz Reyes	Non-GxP	Monday, Apr 20	\$71,003
S3-5	Research replicas to Deep Archive	Tomasz Reyes	Non-GxP	Tuesday, Apr 21	\$205,899
E-2b	gp2 to gp3, validated, in a freeze	Ines Halvorsen	GxP standard change, after topline	Monday, Apr 27	\$12,706
S-3b	SCE val environment on a schedule	Ines Halvorsen	Frozen (clinical)	Monday, Apr 27	\$45,819
B-1b	Biomarker pipelines to Spot	Ines Halvorsen	GxP change request	Monday, May 11	\$42,020
R-3	LIMS database to db.r6i.4xlarge	Daniel Achterberg	GxP change request	Monday, May 18	\$30,698
R-4	MES database to db.r5.2xlarge	Daniel Achterberg	GxP change request	Monday, Jun 15	\$50,065
R-2	SCE grid from 8 to 6 nodes	Ines Halvorsen	Frozen (clinical)	Monday, Jun 22	\$77,785
Total					\$1,192,737

What releases each deferred change, the evidence behind it, and how to undo it. What travels with a change lets the person who runs it be someone who was not in the room.

ID	Waits on	Evidence	Rollback
B-3	The next cryo-EM collection campaign, a workflow change for the cryo-EM team	22% average GPU utilization; processing follows collection	Restore the standing workers
F-3	The next cryo-EM collection campaign, scheduled with B-3	The file system stands idle between monthly 12-day collection campaigns	Keep a persistent file system
N-1b	GxP change control: a change request approved on March 31 for execution on April 14	The validated VPCs reach S3 through the shared NAT in cw-network, over the Transit Gateway, so both charges fall; a new network path for a qualified system	Remove the route
S3-3	GxP change control: a change request approved on March 31, with a documented retrieval test, for execution on April 14	Millisecond reads meet the record-retrieval SOP; a 12-hour Deep Archive restore does not	Copy back to Standard
G-1	The molecular dynamics benchmark in April: throughput per vCPU on Copperwick's systems is unproven	The code has an arm64 build; throughput per vCPU on Copperwick's systems is unproven	Point the cluster back at c6i
S3-1b	The tar job's second pass in April (its capacity, not a decision)	The same as S3-1: ten-year retention, and a 12-hour restore is acceptable for research raw data	Restore the tars (12 hours, standard retrieval)
S3-5	The disaster-recovery test: the change alters the research data's recovery time in the DR plan	Regenerable intermediates (0.25 PB) can be recomputed from raw data. The 0.8 PB is the research replicas only; the GxP replicas sit in Standard-IA under Object Lock and are counted in that line	Change the rules back (expired intermediates are recomputed from raw data)
E-2b	The clinical freeze: a GxP standard change after topline, with no board vote	The same like-for-like conversion as E-2a, a GxP standard change with no board vote, on systems inside the clinical freeze, where nothing changes until topline; the same check as E-1: each volume's measured IOPS and throughput are checked against gp3's included 3,000 IOPS and 125 MiB/s before it is converted; the estimate prices the storage difference only	Modify back

ID	Waits on	Evidence	Rollback
S-3b	The clinical freeze: topline on April 24, then a change request	The same evidence as S-3a; the SCE is in the clinical freeze	Remove the schedule tag
B-1b	The biomarker pipelines' revalidation in May: an instance-type change is a revalidation under their validation plan	The pipelines run in their own validated Batch environment, never on the research fleet; an instance-type change is a revalidation under their validation plan	Point the job queue back
R-3	The LIMS release, with an operational qualification regression and a month-end performance test	14% CPU at the 95th percentile; FreeableMemory never below 61%; buffer-cache hit ratio above 99.6%	Modify back to db.r5.8xlarge in a maintenance window
R-4	The MES maintenance window after the GMP campaign and the annual periodic review	11% CPU at the 95th percentile; memory and wait statistics within the vendor's guidance at half the size	Modify back in a maintenance window
R-2	The post-topline analyses for the clinical study report, the grid's busiest weeks, then a change request after a scripted operational qualification regression in SCE val	The grid's queue never held more than six nodes' work outside the database-lock weeks	Add the nodes back

The same story, grouped by date, is the deferral calendar the other reports quote:

The deferred changes by date. The target dates in the table above are these dates.

Date	Changes	Waiting on
Monday, April 6	F-3, B-3	The next cryo-EM campaign
Tuesday, April 14	N-1b, S3-3	Approved change requests (S3-3 with a documented retrieval test)
Monday, April 20	S3-1b	The tar job's second pass
Monday, April 20	G-1	The molecular dynamics benchmark
Tuesday, April 21	S3-5	The disaster-recovery test
Monday, April 27	S-3b, E-2b	Topline: S-3b by change request, E-2b as a standard change
Monday, May 11	B-1b	Biomarker pipeline revalidation
Monday, May 18	R-3	The LIMS release, with operational qualification regression
Monday, June 15	R-4	The MES maintenance window after the periodic review
Monday, June 22	R-2	After the post-topline analyses, by change request

For every change, follow four steps: put it in its window's change ticket with its rollback; get it through its change path (a pull request for the non-GxP changes, a change request for the GxP ones); check the changed resource's daily cost the next day; and re-measure it seven days after, with the method in the week-six measurement report, recording the measured figure beside its estimate.

The GxP change-request calendar

Fifteen of the 41 changes touch validated or qualified systems, \$709,873 a year at the estimates, net. Four of them (S-3a, E-2a, L-2, and L-3; \$190,678) are in place; eight are deferred (\$349,550), two were declined (\$134,451), and one (L-4; \$35,194) was approved and then declined before it was applied. The validated accounts are about 8.7% of the in-scope bill, so a small share here is expected. Dr. Lorraine Osei, Senior Director, Quality Assurance, Computerized Systems, owns the process.

How a change reaches a validated system. A change inside the infrastructure qualification is controlled but does not revalidate the applications above it.

Path	What it needs	Changes on it
Non-GxP	The platform team's normal change process	Most of the savings
GxP standard change	A pre-approved change type in the qualified infrastructure catalog: a ticket, an executed installation checklist, and notice to Quality	E-2a, L-2, L-3, L-4, E-2b
GxP change request	A validation impact assessment, risk-based testing (unscripted where the risk is low, scripted operational qualification where a GxP function could be affected), Quality approval, and a release window; the board meets on Tuesdays	B-1b, D-2, N-1b, R-3, R-4, S-3a, S3-3
Frozen (clinical)	A freeze stops every change in its scope, with no exception for cost (the one exception is a security change, such as removing a supplier's access); the clinical freeze runs to topline, and each change then goes by its own path	E-2b, R-2, R-5, S-3b

The board meets on Tuesdays. Inside the engagement its dates were March 3, March 10, March 17, March 24, and March 31; the same Tuesday cadence continues, and Dr. Lorraine Osei confirms each date. A change request goes to the board 14 days before its window: one week to decide it and one to prepare the checklist. That rule reproduces the decision already made: N-1b and S3-3 were approved on March 31 for execution on April 14. The validation impact assessments for the rest were filed with the board on March 24, and the board decides each on the Tuesday below. E-2b does not go to the board: it is a GxP standard change, with notice to Quality, run on its date, after topline.

The change-request calendar for the deferred GxP changes. The board Tuesday is the Tuesday on or before the window less 14 days; a standard change has no vote.

Board Tuesday	Change	Change path	Release window	Status
Mar 31	N-1b, S3 gateway endpoints, validated VPCs	GxP change request	Tuesday, Apr 14	Approved
Mar 31	S3-3, GxP raw data to Glacier Instant Retrieval	GxP change request	Tuesday, Apr 14	Approved
Apr 7	S-3b, SCE val environment on a schedule	Frozen (clinical)	Monday, Apr 27	To decide
Apr 21	B-1b, Biomarker pipelines to Spot	GxP change request	Monday, May 11	To decide
Apr 28	R-3, LIMS database to db.r6i.4xlarge	GxP change request	Monday, May 18	To decide
May 26	R-4, MES database to db.r5.2xlarge	GxP change request	Monday, Jun 15	To decide
Jun 2	R-2, SCE grid from 8 to 6 nodes	Frozen (clinical)	Monday, Jun 22	To decide
No vote	E-2b, gp2 to gp3, validated, in a freeze	GxP standard change	Monday, Apr 27	A standard change after topline, with notice to Quality

The two freezes. The GMP campaign has ended; the clinical freeze ends at topline, after which its changes go in on their dates.

Freeze	From	To	Scope
Clinical freeze	Mar 2	Friday, Apr 24	From March 2, ahead of Program Basalt’s database lock (March 13), to topline (April 24): SCE production and val, CDR production, and the biomarker pipelines
GMP campaign freeze	Mar 16	Friday, Mar 27	The GMP campaign of three clinical-supply batches for Basalt’s open-label extension: LIMS, MES, and CDS production and the process historian

The four declined findings

A declined finding stays on the roadmap with its owner’s reason, in the owner’s words. \$436,118 a year was declined, and none of it counts toward anything. Three of the four come back when their reason stops being true; the rest stay closed unless production changes.

The four findings declined at the readout. A declined change counts for nothing until it is approved and in place.

ID	Finding	Decided by	The owner’s reason	What reopens it	Per year, net
C-2	Instance Savings Plan for the p4d fleet	Mateo Varga and Rafael Quintero	The training fleet moves to a newer accelerator within the year, and a family-locked plan would strand.	Revisit when the new accelerator is chosen	\$264,705
D-2	Multi-AZ off on the val databases	Dr. Lorraine Osei	The val environments’ performance qualification includes failover tests, and val must match production’s configuration.	Not revisited: the val configuration must match production	\$80,763
R-5	Clinical data repository from 8 to 6 nodes	Ines Halvorsen	The CDR feeds unblinding. Nobody touches it until topline, and after topline it grows for the integrated summaries.	Revisit in the fall, after the integrated summaries	\$53,688
B-2	Genomics Batch pinned to one zone	Priya Okonkwo	One zone means a third of the Spot pools. I’d rather pay the cross-AZ toll than eat interruptions.	Revisit if Spot interruptions in the zone fall	\$36,962
Total					\$436,118

L-4, CloudTrail read events dropped on research buckets, was approved at the readout and reversed by Rosalind Tran before it was applied (\$35,194 a year): the read events on research buckets feed the insider-risk detection for sequence designs. It is not revisited, and it stays in the gate at its estimate.

S3-4: the first measurement

S3-4, Analysis results to Intelligent-Tiering, was applied on March 11 and is in place, but it counts for \$0 toward the gate. Intelligent-Tiering moves an object only after 30 days without access, so the first objects became eligible on April 10 and nothing could be measured by week six. The evidence behind it: Access logs show 55% of the objects untouched for 30 days; 20% of all objects, inside that 55%, untouched for 90. So 35% bill at the Infrequent Access tier and 20% at the Archive Instant Access tier. Its estimate is \$119,686 a year, net. Its one-time transition charge is \$340 at list (\$319.60 net), listed and never annualized.

The first measurement window opens Monday, May 11, and runs to May 17. With the Cost and Usage Report's two-day lag the result is ready on Tuesday, May 19, and the monthly review on June 11 reads it; Tomasz Reyes owns the measurement. It uses the same method as every other change, on the bucket: the seven days before March 11 (March 4 to March 10) against the seven days of the window (May 11 to May 17). If the stored volume grew between the two weeks, compare the cost per terabyte stored. The May window measures the Infrequent Access tier only: the first objects reach Archive Instant Access on June 9, so that tier is measured in a later window and read at the monthly review on July 9.

```
SQL
SELECT date(line_item_usage_start_date) AS day,
       sum(CASE line_item_line_item_type WHEN 'SavingsPlanCoveredUsage' THEN
pricing_public_on_demand_cost
                                WHEN 'DiscountedUsage' THEN
pricing_public_on_demand_cost
                                ELSE line_item_unblended_cost END) * 0.94 AS cost
FROM cur2.copperwick_cur
WHERE line_item_resource_id = '<analysis-results-bucket>'
      AND line_item_usage_type LIKE '%TimedStorage%'
      AND billing_period IN ('2026-03', '2026-05')
GROUP BY 1
ORDER BY 1;
-- daily saving = the average of the first window less the average of the second; times 365 is
the annual figure
```

The commitment plan for the 2027 renewal

Copperwick holds three commitments, and they renew in a fixed order. The private pricing agreement ends June 30, 2027. C-1, the one-year No Upfront Compute Savings Plan at **\$50.00 an hour**, was bought on Thursday, March 19, and ends March 19, 2027. The existing three-year plan (\$150.00 an hour, from August 1, 2024) ends July 31, 2027. At the commitment decision on Thursday, March 19, Rafael Quintero said: "I'm not locking three years a year before I renegotiate the agreement."

The renewal calendar, in date order. The reviews fall on the second Thursday of the month; the other dates are fixed by the plans and the agreement.

Date	What happens	Owner
Thursday, July 9, 2026	Read the floor with every deferred change landed, and re-measure coverage and utilization	Rafael Quintero
Thursday, January 14, 2027	Open the private pricing renewal with six months of the post-roadmap bill in hand	Rafael Quintero
Thursday, March 11, 2027	Decide what C-1 becomes: lapse into the renewal, or a one-year bridge if the renewal is not signed	Rafael Quintero
Friday, March 19, 2027	C-1 ends	Rafael Quintero
Thursday, June 10, 2027	Size the replacement for the existing three-year plan on the signed agreement and the floor measured that month	Rafael Quintero
Wednesday, June 30, 2027	The private pricing agreement ends; the new agreement starts the next day	Rafael Quintero
Saturday, July 31, 2027	The existing three-year Compute Savings Plan ends	Rafael Quintero

What the floor says. The existing plan covers \$295.77 an hour of On-Demand usage and C-1 covers \$68.06, together \$363.83 an hour. The always-on non-GPU floor is \$412.64 an hour with the changes in place and \$395.50 after every deferred change (R-2, B-1b, and G-1 take \$8.06, \$5.88, and \$3.20 out of it). Both plans therefore stay 100% used, coverage of the floor is 88.2% now and 92.0% once the deferred changes land, and \$31.68 an hour of On-Demand usage stays uncovered, about \$23.27 an hour of commitment at C-1's rate. That is not worth a purchase, and it waits for the renewal.

Why the three-year plan waits. At the same coverage as C-1, a three-year plan would discount 49.3% against C-1's 26.5%, about \$10,626 a month more, net of the discount. It would also commit about \$907,043 at list over its term, against \$438,000 for C-1's year. A Savings Plan can be returned only within seven days of purchase, in the same calendar month, and only if its hourly commitment is \$100 or less; after that it cannot be canceled. C-1's window closed on March 26. A three-year plan bought before the agreement is renegotiated would be fixed for three years on a floor that the renewal itself may change, so it waits until the commitment and the plan can be sized together.

What the renewal decides. The agreement commits \$27,000,000 a year in spend net of the discount. The whole organization spends \$34,964,476 a year net today, \$32,563,130 with the measured savings, and \$30,654,432 if the whole roadmap lands, which leaves \$3,654,432 above the commitment. The savings move the commitment from 77.2% of today's spend to 88.1% of the post-roadmap spend, before planned growth. That is the value for the renewal: Copperwick can commit to a lower annual figure, or hold the figure and ask for a deeper discount. Size the renewal on the post-roadmap spend plus the growth the plan commits to, not on the 2026 bill. This value is real and is not counted anywhere in this engagement.

What waits, and what is declined.

- **Database Savings Plans:** A Database Savings Plan covers Generation 7 and newer database instances only. Every in-scope database runs db.r5 or db.r6i, and R-3 and R-4 keep those generations, so none is eligible; a plan becomes worth sizing only if a database moves to a Generation 7 class.
- **SageMaker Savings Plans** are not worth it after W-2: the notebooks now bill about a fifth of the hours.
- **C-2, an EC2 Instance Savings Plan for the four remaining p4d.24xlarge** (\$264,705 a year), was declined by Mateo Varga and Rafael Quintero: "The training fleet moves to a newer accelerator within the year, and a family-locked plan would strand." Revisit when the new accelerator is chosen. The GPU fleet stays On-Demand, and that is a decision, not an oversight.

Each rung follows the same steps: size to the floor and never the average; write a short memo comparing renew, resize, and wait; have Rafael Quintero approve it; and record it in the commitment register (plan, hourly amount, term, start, end, approver, next decision).

BASH

```
aws savingsplans describe-savings-plans --states active queued
aws ce get-savings-plans-utilization --time-period Start=<first-of-month>,End=<first-of-next-month> --granularity MONTHLY
```

The monthly cost review

One meeting a month, 60 minutes, on the second Thursday, after AWS has finalized the previous month's report: May 14, 2026, June 11, 2026, July 9, 2026, and on. The first reads April, the month in which most of the deferred changes land. It is how everything in this engagement stays done.

Who attends the monthly cost review and what each brings.

Role	Who	Brings
Chair	Grace Mbeki, Senior Director, Cloud Platform	The agenda, the register of changes, the guardrail exceptions
Finance	Rafael Quintero, Vice President, Financial Planning and Analysis	The invoice, commitment approvals, the next renewal date
Quality	Dr. Lorraine Osei, Senior Director, Quality Assurance, Computerized Systems	The change-request calendar and the freeze calendar
Workload owners	Priya Okonkwo, Mateo Varga, Hana Lindgren, Tomasz Reyes, Ines Halvorsen, Daniel Achterberg	The unit-cost denominators and the status of their deferred changes
Security	Rosalind Tran, Chief Information Security Officer	Anything that touches CloudTrail, detection, or retention
Sponsor	Adaeze Whitfield, Chief Information Officer	Decisions that cross teams; attends quarterly

The agenda, in order. Each item has one lead and one input, so nobody comes without something to read.

Minutes	Item	Lead	Input
5	The month in numbers: the bill against the run rate, and the share of the bill saved	Grace Mbeki	Cost Explorer and the Cost and Usage Report, net of the discount
10	Unit costs: per genome, per campaign, per training run	Priya Okonkwo, Hana Lindgren, Mateo Varga	The numerators in the KPIs ; each owner's denominator
10	Budgets and anomalies that fired, and how each was answered	Grace Mbeki, Rafael Quintero	The anomaly digest and budget alerts, routed as in budgets and anomaly routing
15	The roadmap: deferred changes that reached their date, and the change-request calendar	Each owner, Dr. Lorraine Osei	The register of changes; the roadmap and the GxP change-request calendar
10	Commitments: coverage, utilization, and the next renewal date	Rafael Quintero	The Savings Plans reports; the commitment plan
5	Guardrail exceptions	Grace Mbeki	The exceptions register; the guardrail register
5	Decisions and owners recorded	Grace Mbeki	The decision list, read back

The ten questions the chair asks, in this order, every month. A question with no answer is an action item with an owner.

1. What did the bill do against the run rate, and is the gap explained by growth that was planned?
2. What are the three unit costs, and are they at or under the "after deferred" numerators for the same volume?
3. Which budget or anomaly alert fired, and what did its owner decide?
4. Which deferred changes reached their date, and what did the re-measurement show?
5. Which change requests are due at the board this month, and is each validation impact assessment current?
6. Did any change reach a validated system outside change control? (The answer is none, and the question is asked anyway.)
7. What are Savings Plan utilization and coverage, and is a renewal date within 60 days?
8. Which declined findings have a trigger that fired?
9. Which guardrail exceptions were granted, to whom, and until when?

10. What did the waste re-run find: unattached volumes, orphaned snapshots, idle GPUs, buckets with no lifecycle rule?

KPIs and unit costs

In a research estate the bill tracks experiments, so a bill that rises is good news only if the science is growing underneath it. The review therefore reads unit costs first. The numerators below come from the Cost and Usage Report today, net of the discount, in dollars a month. The denominators are Copperwick's own counts, taken from the lab's records, and the baseline is recorded at the first review: the measure is the numerator divided by that month's count.

The three unit-cost numerators, in dollars a month net of the discount. The same volume should cost the "after" figure once the changes are in place; a month that costs more per unit than that is an agenda item.

Measure	Numerator (what it reads)	Week one	With the changes in place	After the deferred changes
Cost per 30x genome equivalent	The research genomics pipelines: Genomics Batch and the genomics Lustre file system; moved by B-1 and F-1. The biomarker pipelines run in their own Batch environment and are not in this measure	\$132,152	\$92,880	\$92,880
Cost per cryo-EM campaign	Cryo-EM processing and its Lustre file system, one 12-day campaign a month; moved by B-3 and F-3	\$58,557	\$58,557	\$16,857
Cost per training run	ML training on the p4d fleet and the GPU notebooks; moved by W-2 and W-3	\$94,797	\$65,725	\$65,725

Coverage and utilization, and the share of the bill saved.

Measure	Now	Target	Basis
Commitment utilization	100% for the existing plan and for C-1	100%	Savings Plans utilization report, monthly
Commitment coverage of the always-on floor	88.2% with the changes in place	92.0% once the deferred changes land; never above the floor	\$363.83 an hour covered against a floor of \$412.64 now and \$395.50 later
Share of the in-scope bill saved	13.1% measured	20.3% once the deferred changes land	Measured savings over the week-one bill; same net or at list

The genome and campaign measures follow the lab. A month with more sequencing runs raises the numerator and the count together, and the unit cost stays flat; a numerator that rises while the count does not is Spot capacity lost (GR-3), a file system that grew (GR-6), or a GPU left on (GR-7). The training measure works the same way: a month of long training runs raises the numerator and the run count together.

Budgets and anomaly routing

GR-9, budgets and anomaly monitors per account family, routed to each owner, is owned by Rafael Quintero. There is one budget and one anomaly monitor per account family, and every alert goes to the owners of that family first and to Rafael Quintero second, so no alert lands in a shared mailbox that nobody reads. A budget is set at the family's trailing three-month average of finalized cost, net of the discount, and is reviewed at the monthly review; alert thresholds are set at the first review from the family's normal variation.

Budgets and anomaly monitors by account family, and who answers. An alert in a validated or qualified account is a ticket to Quality, never an automatic change.

Account family	Accounts Alerts go first to	Validated or qualified What the owner does
Platform and shared	7 Grace Mbeki	5 Five are qualified infrastructure (network, shared services, log archive, backup, security tooling): a change inside the qualification is controlled, and notice goes to Quality
Research computing	9 Hana Lindgren, Mateo Varga, Priya Okonkwo	0 Not GxP: the normal change process
Scientific data platform	6 Tomasz Reyes	1 Not GxP, except in sdp-lake-prod, the GxP raw-data buckets and the account controls that protect them: a change inside the qualification is controlled and notice goes to Quality, and a research-bucket change follows the normal change process
Lab sandboxes	10 Priya Okonkwo	0 Not GxP: the normal change process
Clinical development	7 Ines Halvorsen	4 Four validated (SCE production and val, CDR production, biomarker pipelines): a ticket to Quality, never an automatic change; clin-sce-prod, clin-sce-val, clin-cdr-prod, clin-biomarker-prod in the freeze until April 24
GMP and quality systems	9 Daniel Achterberg	7 Seven validated (all but the two dev accounts): a ticket to Quality, never an automatic change; gmp-lims-prod, gmp-mes-prod, gmp-cds-prod, gmp-historian-prod in the freeze until March 27
Total	48	17

An alert that fires is answered by its owner within one business day, and the answer is recorded for the monthly review: expected and why, or a change with a ticket. An alert nobody answers is a defect in the routing, not in the alert.

The guardrail register

Each guardrail was built in week five, and each has one owner and a response. The ids, names, and owners below are the register in the week-five report. They are the reason the bill stays down after the people who found the savings have left.

The nine guardrails, each with the owner of the week-five register and the response when it fires.

ID	Guardrail	Owner	When it fires, do this
GR-1	The VPC template with S3 gateway endpoints	Grace Mbeki	A VPC without the gateway endpoints fails review: add them from the template, and ask the platform team to apply it to the account before the next deploy
GR-2	An SCP that refuses new gp2 volumes	Grace Mbeki	A refused gp2 launch is the guardrail working: change the template to gp3, or file a ticket with a reason that the platform owner approves
GR-3	Spot-by-default Batch compute environments; On-Demand needs an exception tag	Priya Okonkwo	A Batch environment that is not Spot needs the exception tag and a ticket; a validated pipeline's instance-type change also goes through its revalidation
GR-4	Log class and retention in the account baseline, with SOP retention on every GxP-tagged log group in any account	Grace Mbeki	A log group without its class and retention in the baseline gets them from the baseline; GxP audit logs keep their SOP retention and are never shortened
GR-5	The data-class lifecycle standard, co-signed by Dr. Lorraine Osei for its GxP class	Tomasz Reyes	Raw research data follows the data-class standard from day one; GxP data changes class only through a change request co-signed by Quality
GR-6	A throughput and capacity review before any new Lustre file system	Priya Okonkwo	A new Lustre file system needs the throughput and capacity review in its ticket before it is created, sized above the measured peak
GR-7	Idle-GPU alarms on every GPU instance	Mateo Varga	An idle-GPU alarm goes to the instance's owner; stop the instance, or tag it with the reason it must stay up and the date to review it

ID	Guardrail	Owner	When it fires, do this
GR-8	Notebook auto-stop and workstation idle-stop as account defaults	Mateo Varga	A notebook or workstation that opts out of idle-stop carries an exemption tag and a reason; the monthly review reads the exemption count
GR-9	Budgets and anomaly monitors per account family, routed to each owner	Rafael Quintero	Each family's owner answers a budget or anomaly alert within one business day; an anomaly in a validated account becomes a ticket, never an automatic change

A guardrail whose alerts nobody answers is worse than none, because it teaches people to ignore the channel. If an alert has no useful response, change the alert and do not leave it.

The same guardrails are the levers behind the cost avoidance on Copperwick's planned growth of about \$260,000 a month by March 2027 (a long-read sequencing core in June, a second cryo-EM microscope in August, Feldspar's Phase 2 biomarker work, ML growth). It is **not measured, not counted toward the gate, and not a saving on the bill**.

The levers, who owns them, and the share of planned growth each is aimed at. The shares are the aim, not a measurement.

Lever	Guardrails	Owners	Share of the planned growth
Batch lands on Spot	GR-3	Priya Okonkwo	3% to 5%
New results start in Intelligent-Tiering and intermediates expire (raw data moves only at 18 months, after March 2027)	GR-5	Tomasz Reyes	1% to 2%
No standing peak capacity	GR-6, GR-7	Mateo Varga, Priya Okonkwo	2% to 3%
GPUs bill when used	GR-8	Mateo Varga	1% to 2%
Storage, network, and logging defaults	GR-1, GR-2, GR-4	Grace Mbeki	1%
Total			8% to 13%

At 8% to 13% of \$260,000 a month, avoidance is \$20,800 to \$33,800 a month, about \$250,000 to \$410,000 a year at the March 2027 run rate. It is not measured, not counted toward the gate, and not a saving on the bill: a workload that does not exist yet has no "before" on the Cost and Usage Report. GxP data is never auto-archived by a default; its rule is the change-controlled one (GR-5).

Return on each fee

The return on each fee, net of the private pricing discount. Copperwick paid one fee, \$35,000: the Analysis is weeks one and two of the Optimization, so its column shows what the roadmap would return to a client who bought the Analysis alone. Payback and first-year net use the measured savings; the counted figure decides the gate only.

Return	The Analysis, if bought alone (two weeks)	The Optimization (six weeks, the Analysis included)
Fee	\$25,000 if bought alone; for Copperwick it is weeks one and two of the Optimization, inside its fee	\$35,000: \$17,500 at signature and \$17,500 only past the gate. Everything Copperwick paid
What Copperwick has at the end	The ranked roadmap: \$4,310,044 identified, \$3,873,926 approved at the readout	\$2,436,540 counted, \$2,401,346 measured on its own bill, plus \$1,192,737 approved and scheduled
First-year return	Depends on the team's pace and its change calendar: half the approved roadmap in place within a quarter is \$1,936,963 a year	\$2,401,346 measured against \$35,000: \$2,366,346 net in the first year, a payback of about 5 days
Run rate once the deferred changes land		About \$3,713,769 a year, 20.3% of the week-one bill, with the changes in place at what they measured
Forward-looking, not counted	The same levers, if the team builds them	\$250,000 to \$410,000 a year, not measured, not counted toward the gate, and not a saving on the bill

The in-place changes are at their measured figure; the deferred changes and S3-4 are at the Analysis's estimates, because they have not been measured. With the 22 in-place changes at their estimates instead, the run rate would be \$3,838,732, 21.0% of the week-one bill.

What makes the run rate	Annualized, net
In place, as measured (22 changes)	\$2,401,346
Approved and deferred (13 changes)	\$1,192,737
S3-4, in place and not yet measurable	\$119,686
Run rate once the deferred changes land	\$3,713,769

Copperwick paid \$35,000 in total, the Optimization's fee; the Analysis was its first two weeks, not a second purchase. Bought alone, the Analysis's \$25,000 buys the roadmap, and what it is worth depends on how much of it the team puts in place and how fast. The Optimization's \$35,000 bought that work done and measured: \$2,401,346 a year on the bill, which repays the fee in about 5 days and nets \$2,366,346 in the first year. The gate was met, and the second invoice of \$17,500 is issued with the measurement report.

Cost avoidance is shown separately and never added. The range above is not measured, not counted toward the gate, and not a saving on the bill.

Open items

Decisions the engagement does not make for Copperwick, each with an owner and a date.

The open items, each with an owner and a date.

Item	Why it is open	Owner	By
Confirm the change advisory board dates after March 31	Only five Tuesdays were fixed during the engagement; the calendar above assumes the same weekly cadence	Dr. Lorraine Osei	April 7, the first board Tuesday after the engagement
The value of the Oracle processor licenses R-3 frees	The LIMS database is bring-your-own-license, so the licenses are Copperwick's agreement with Oracle, not an AWS charge, and this engagement does not price them	Daniel Achterberg, with Rafael Quintero	May 18, when R-3 lands
The renewal of the private pricing agreement	The savings change what Copperwick should commit to; the calendar is in the commitment plan	Rafael Quintero	January 14, 2027
Where R-5 stands in the fall	The CDR grows for the integrated summaries; revisit after they are done	Ines Halvorsen	The fall review
The next accelerator for the training fleet	C-2 returns when the choice is made	Mateo Varga and Rafael Quintero	When the choice is made

Running the playbook without Vantalect

Everything Copperwick needs is in this set of reports and in the registers it keeps. Nothing depends on Vantalect holding an account, a role, or a tool. The access role was read-only: the supplier assessment was done on February 12 and the access approved on February 19, both before kickoff, and Copperwick removes the role on April 2 by a dated standard change, with the notice to Quality signed by a QA delegate in Computerized Systems Quality. That day is inside the clinical freeze, and the freeze rules allow it: removing a supplier's access is a security change, which Copperwick's GxP change control permits during a freeze because it changes nothing a validated system does, so the role leaves the frozen clinical accounts the same day as every other account.

Where each part of the playbook lives, how often it runs, and who runs it.

Playbook piece	Cadence	Owner
The monthly cost review and its register of changes	Monthly, the second Thursday	Grace Mbeki
Waste register re-run, and the rightsizing plan on 30 days of fresh data	Quarterly	Priya Okonkwo
The change-request calendar and the freeze calendar	Monthly, at the review	Dr. Lorraine Osei
Commitment memo and register	At each renewal date	Rafael Quintero
Budgets and anomaly monitors per account family	When an account is added	Rafael Quintero
Savings measurement, with the queries in the week-six report	Quarterly, and for each large change	Grace Mbeki

To measure any change the way the terms define it, compare the daily cost of the changed resource for the seven days before and the seven days after, leaving the change day out, multiply the difference by 365, and apply the discount's complement. The week-six measurement report has the queries, including the per-genome form for B-1 and N-1a and the Savings Plan by its ARN. A new account joins the budgets, the anomaly monitors, and the guardrails on day one. Ask for a second opinion if the bill moves more than a fifth in a quarter with no planned growth to explain it.

The closing readout

The closing readout is Thursday, April 2 (Good Friday is a company holiday, so it is not Friday). It covers four things, in this order: the week-six measurement, which counts \$2,436,540 against the \$105,000 gate and issues the second invoice of \$17,500; the remaining roadmap and the change-request calendar; the commitment plan for the renewal; and the open items with their owners. Adaeze Whitfield and Rafael Quintero sign off the handover, and Grace Mbeki takes the chair of the first monthly review on May 14.

What you keep

The handover workshop, its recording and transcript, and every report, query, runbook, and decision are in your Pavilion workspace, and you take one archive of all of it at the close. Copperwick removes the access role from its accounts on April 2 by that dated standard change. Vantalect's working files are deleted from our systems within thirty days after the close.

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