

ENCORE · INDUSTRY REPORT · 2026

The Value Leakage Report



How device trade-in programs lose 15–30%
of recoverable value — and what leaders
are doing differently.

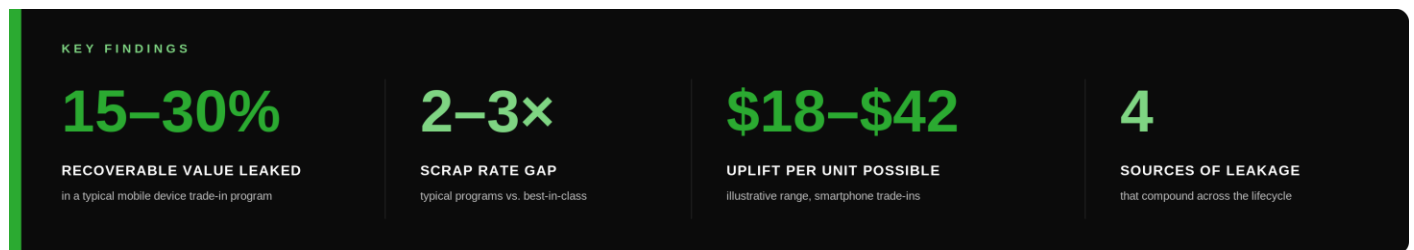
A benchmark study by Encore · Electronic Life-Cycle Management

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Executive Summary

The 15–30% That Doesn't Have to Leak

Mobile-device trade-in is a **multi-billion-dollar reverse-logistics market**¹ — and one of the most quietly underperforming. Across mid-tier programs at carriers, MVNOs, OEMs, retailers, and broadband providers, a meaningful share of recoverable value disappears between the customer hand-off and the secondary-market resale. This report quantifies that gap. Drawing on Encore's program audits, anonymized diagnostic data, and secondary-market pricing, we estimate that a typical program loses **15–30%** of its addressable recoverable value to **four compounding sources**: cosmetic downgrade, premature scrap, inconsistent grading, and slow model adaptation. The good news: every dollar of that leakage is recoverable with the right operating model. Programs that adopt cosmetic restoration, data-backed grading, and continuous engineering routinely recover **20–25% more revenue per unit** on the same intake — without acquiring a single additional device.



WHO THIS REPORT IS FOR

- **Reverse-logistics, supply-chain, and operations leaders** running trade-in programs at scale
- **Finance and commercial leaders** evaluating recovery economics
- **Sustainability and ESG leaders** accountable for circular-economy outcomes

The State of Device Trade-In

Three forces are pushing device value-recovery higher up the executive agenda.

01 · THE SECONDARY MARKET HAS SCALED

Refurbished and pre-owned smartphones now represent a meaningful share of global smartphone shipments, with **double-digit annual growth**² in mature markets. Resale isn't an afterthought channel anymore — it's a **forecastable revenue line**.

02 · DEVICES LAST LONGER, SO CONDITION MATTERS MORE

Average smartphone replacement cycles have lengthened³, which means devices arriving into trade-in programs are **older, more diverse, and carry more cosmetic wear**. The grading and restoration playbook that worked five years ago leaves money on the table today.

03 · ESG MANDATES HAVE ENTERED THE ROOM

Disclosure regimes such as the EU CSRD⁴ and the SEC's climate-disclosure rules⁵ are forcing companies to put **auditable numbers on circular-economy outcomes**. Devices restored — not scrapped — are one of the cleanest, most defensible inputs to those disclosures.

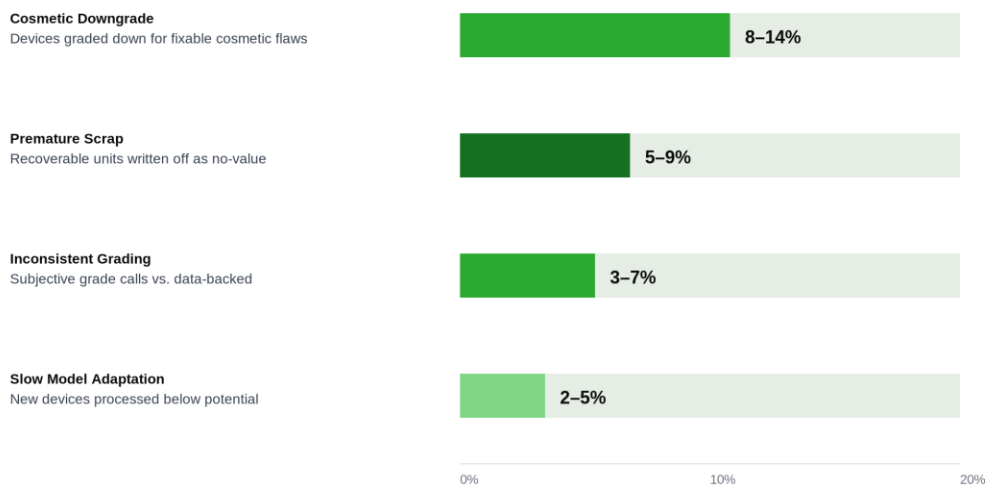
Where a trade-in program once existed to clear inventory, today it's a strategic margin lever — and an ESG signal.

Where Value Leaks

Value doesn't disappear at one stage. It leaks at **four** — and each one's loss multiplies through the next. The chart below shows the directional contribution of each source to total program leakage.

Where Value Leaks: Four Compounding Sources

% of recoverable value lost in a typical program · illustrative ranges based on industry priors



COMPOUND LEAKAGE

15–30%

of recoverable value lost across the lifecycle

Sources don't simply add — they compound across grading, scrap, restore, and resale stages.

Note: Ranges are directional; reflect typical mid-tier program performance vs. potential.

Interpreting the chart: the bars show the share of recoverable value lost at each stage in a typical mid-tier program. They don't simply add — they compound. A device downgraded at intake is unlikely to be restored later; a device wrongly scrapped is unrecoverable. By the time inventory reaches the resale channel, the cumulative loss lands in the 15–30% range.

SOURCE 01 OF 04

Cosmetic Downgrade

The biggest single driver of leakage

Cosmetic damage — scuffs, scratches, edge chips — is the most common reason a device gets **graded down or written off entirely**. In most programs, a Grade-C designation is final: the device moves to a low-value channel or directly to scrap.

That outcome is wrong far more often than the industry admits. A meaningful share of devices labeled C are mechanically and cosmetically **restorable to B-grade — sometimes higher** — through structured buffing, polishing, and housing-level work. Programs without a restoration step accept the downgrade as fixed.

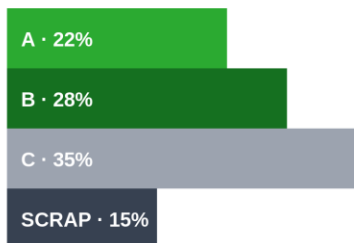
ESTIMATED LEAKAGE

8–14% of total recoverable program value, in a typical mid-tier program. This is the single largest correctable source of leakage we observe.

Grade Distribution: Typical vs. Restoration-Led

Illustrative grade mix at sale · 1,000-unit sample

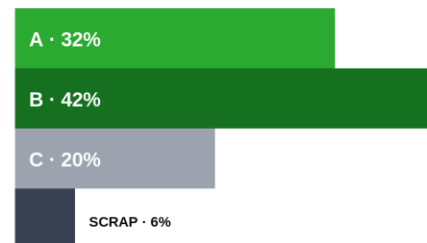
TYPICAL PROGRAM



Bias toward lower grades and scrap.
Cosmetic flaws push devices down.



RESTORATION-LED PROGRAM



Higher grade share, scrap cut by ~60%.
Same intake, more revenue per unit.

Note: Distributions illustrative based on typical broadband / wireless trade-in benchmarks.



SOURCE 02 OF 04

Premature Scrap

Writing off recoverable inventory

Some devices truly are unrecoverable — water damage with corrosion, structural breakage, or end-of-support models with no resale path. **Many that get scrapped don't fall into those categories.**

Without diagnostics that distinguish 'truly broken' from 'easily remediable,' programs default to scrap as a safe, fast disposition. Each scrapped unit destroys not only the device's residual value but the margin of every dollar that would have followed it through resale.

WHERE SCRAP-RATE GAPS ARE LARGEST

- **Battery-related disposition** (replaceable cells routinely scrapped)
- **Liquid-ingress flags** without confirmatory diagnostic
- **Cosmetic 'totals'** that are restorable in 5–10 minutes of bench time
- **New-launch devices** with no playbook yet on the line

ESTIMATED LEAKAGE

5–9% of total recoverable program value. The leakage is concentrated in a small number of disposition codes — meaning targeted process changes can move it quickly.



SOURCE 03 OF 04

Inconsistent Grading

When subjective calls cost real money

Manual, vision-based grading is fast — and unreliable. Two graders looking at the same device often disagree at the boundary between grades. Across high volumes, that variance translates directly into **mispriced inventory and unhappy resale partners**.

Data-backed grading replaces subjective calls with structured measurements: screen analysis, frame integrity, battery health, function tests, and history checks tied to channel-pricing models. The result isn't just consistency — it's **grade-skipping**. **Devices that would have been B can be reliably routed as A**; C-grade devices that meet B-grade criteria can be moved up.

ESTIMATED LEAKAGE

3–7% of total recoverable program value. Smaller in headline size than restoration or scrap — but it's the source most likely to embarrass a program when an aggregator finds the inconsistency at intake.

The grading question isn't 'are we right?' — it's 'are we right consistently, and could we be right one grade higher?'



SOURCE 04 OF 04

Slow Model Adaptation

The cost of a stale playbook

Every new flagship launch is also a stress test for the recovery line. Display assemblies change. Frame materials change. Battery footprints change. The line that hasn't been updated quietly **mis-grades, mis-restores, or scraps the new device** — and stays in that pattern for months.

The fix is engineering discipline. Teardown-led playbook updates within weeks of launch. Tooling adapted for the new device. Restoration steps validated against actual resale outcomes. Without this, the leakage on the newest, highest-value devices is precisely the leakage that hurts the program the most.

ESTIMATED LEAKAGE

2–5% of total recoverable program value. Smaller in aggregate but disproportionately concentrated in high-end devices — meaning it's a **\$-per-unit problem, not a volume problem**.

Closing the Gap: The Recovery Uplift Math

When the four leakage sources are addressed in sequence, the recovery uplift compounds. The waterfall below illustrates the indexed revenue per unit gain at each stage relative to a typical baseline.

Recovery Uplift Waterfall

Indexed revenue per unit · typical baseline = 100



Note: Uplift values are illustrative aggregates; individual programs vary by device mix, channel, and intake quality.

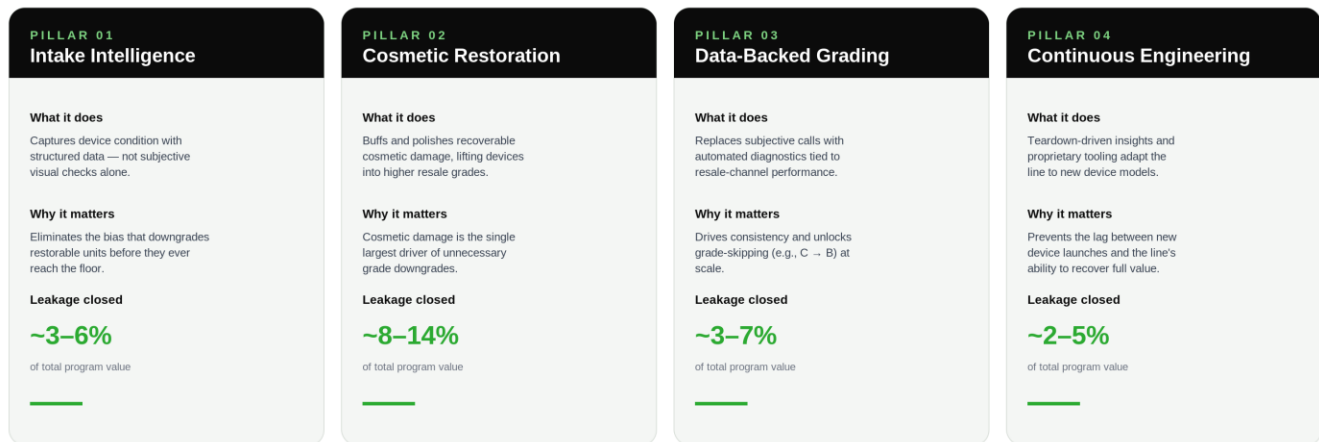
Even modest improvements at each stage add up. A 10-point lift from cosmetic restoration, six from data-backed grading, five from scrap reduction, and four from faster model adaptation produces a **25-point swing in revenue per unit** — without any change to intake volume, channel mix, or device acquisition strategy.

The Recovery Framework

Closing the leakage gap requires four operating disciplines working together. Each pillar maps to one of the four leakage sources — and to the corrective practices observed in the highest-performing programs.

The Recovery Framework

Four operating disciplines that close the leakage gap

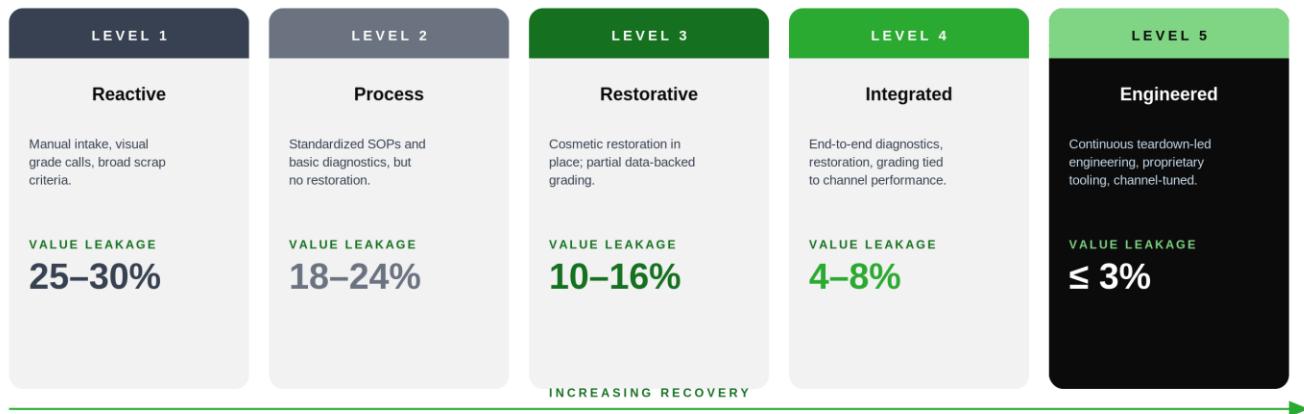


Where Are You On the Maturity Ladder?

Most programs are not Level 1 or Level 5; they're somewhere in between, with strength on some pillars and gaps on others. Use the ladder to position your program honestly — and to prioritize the pillar that closes the most leakage first.

Recovery Program Maturity Ladder

Where does your trade-in program sit today?



A useful exercise: rate your program separately on each pillar (intake, restoration, grading, engineering). Most programs cluster around Level 2–3. **Moving one pillar up a level frequently funds the rest of the program.**

The ESG Angle: Recovery Is Sustainability

Every device restored and resold is a device kept out of the e-waste stream — a measurable, auditable circular-economy outcome that aligns directly with the leading disclosure frameworks⁶.

THE ESG ANGLE

Every device restored is a device kept in circulation.

~70 kg CO ₂ e AVOIDED per smartphone kept in service*	≈ 60% SCRAP REDUCTION in restoration-led programs	Scope 3 DISCLOSURE-READY aligned to CSRD & SEC frameworks	Circular ECONOMY OUTCOME measurable, auditable, reportable
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* Illustrative; actual avoidance depends on device, channel, and remaining useful life.

Per-device CO₂e estimates referenced above draw on major manufacturers' product environmental reports and industry lifecycle analyses⁸.

WHY THIS MATTERS NOW

- **Scope-3 emissions** are the largest reporting gap for most carriers and OEMs⁷
- Circular-economy KPIs are **increasingly required, not optional**
- Restoration creates a **clean numerator**: devices kept in service and the CO₂e they avoid
- The same operating practice that **closes leakage also produces the disclosure data**

In Practice:

A Broadband Provider Closes the Gap

A leading U.S. broadband provider serving roughly 7M customers partnered with Encore Repair Services to apply the framework above to its mobile-device trade-in program. The brief was simple: **recover more, scrap less, and drive higher resale value** — without increasing volume.

WHAT WAS DEPLOYED

- **Cosmetic restoration** tailored by device condition (Pillar 02)
- **Data-backed grading** powered by automated diagnostics (Pillar 03)
- **Proprietary tooling** for rapid model adaptation (Pillar 04)
- **Teardown-driven insights** informing processing decisions (Pillar 04)

WHAT CHANGED

- **85% of devices upgraded** to higher cosmetic grades
- **Grade skipping achieved** (C → B), increasing resale value per unit
- **Significant reduction** in unnecessary scrap
- **Higher overall recovery rates** across total volume

This is not traditional refurbishment. It's engineered value recovery.

Methodology & Data Notes

The figures in this report are illustrative ranges intended to be directionally accurate at the program level. They are not representations of any single client's data. The ranges synthesize four data sources:

1 Program audits

Encore process and grading audits across mid-tier and enterprise programs.

2 Diagnostic data

Anonymized aggregate device data from Encore-served processing lines.

3 Channel pricing

Secondary-market resale pricing to translate grade migration into \$.

4 Industry priors

Public benchmarks, third-party reports, and Encore's prior case work.

HOW TO READ THE RANGES

Programs vary substantially by device mix, geography, intake quality, and resale-channel access. The ranges in this report are intended to **bracket typical mid-tier performance and the achievable outcome** under restoration-led operations. Encore is happy to refine these against an individual program's data on request.

ON COMPARABILITY

'Recoverable value' is defined here as the maximum revenue obtainable from secondary-market resale across the available channels for a given inventory. It excludes acquisition cost and treats scrap as zero-revenue.

Sources & References

The framing claims in this report (market sizing, growth, replacement-cycle, ESG-disclosure, and per-device CO₂e references) draw on the public sources listed below. Last reviewed: 2026.

1. IDC, Worldwide Used Smartphone Forecast (annual editions); Counterpoint Research, Global Refurbished Smartphone Tracker.
Used for: Market-sizing context for the reverse-logistics / mobile trade-in market.
2. IDC, Worldwide Used Smartphone Forecast; Counterpoint Research, Global Refurbished Smartphone Tracker; Persistence Market Research, Refurbished Electronics Market reports.
Used for: Refurbished and pre-owned smartphone growth-rate framing.
3. Strategy Analytics, Smartphone Replacement Cycles research; Counterpoint Research, Global Smartphone Replacement Cycle Tracker; CIRP (Consumer Intelligence Research Partners), iPhone retention data.
Used for: Device-longevity and replacement-cycle framing.
4. European Parliament and Council of the European Union, Directive (EU) 2022/2464 (Corporate Sustainability Reporting Directive), Official Journal of the European Union, 16 December 2022.
Used for: EU disclosure regime.
5. U.S. Securities and Exchange Commission, The Enhancement and Standardization of Climate-Related Disclosures for Investors, Final Rule (Release Nos. 33-11275; 34-99678), March 2024. Aspects of the rule have faced legal challenge; refer to current SEC guidance.
Used for: U.S. climate-disclosure regime context.
6. World Resources Institute and World Business Council for Sustainable Development, GHG Protocol Corporate Value Chain (Scope 3) Standard; IFRS Foundation, IFRS S2 Climate-related Disclosures; Task Force on Climate-related Financial Disclosures (TCFD), Final Recommendations.
Used for: "Leading disclosure frameworks" framing.
7. Greenhouse Gas Protocol, Corporate Value Chain (Scope 3) Standard; Carbon Disclosure Project (CDP), technical guidance on Scope-3 reporting practice.
Used for: Scope-3 emissions as the largest reporting gap.
8. Apple Inc., Product Environmental Reports (per-model lifecycle assessments); Samsung Electronics, Sustainability Report; GSMA, The Climate Impact of Smartphones and Mobile Net Zero.
Used for: Per-device CO₂e estimates.

ON ILLUSTRATIVE RANGES

Program-level percentages — including the 15–30% total leakage estimate, the 8–14% / 5–9% / 3–7% / 2–5% source breakdown, the +25-point recovery uplift, and the maturity-ladder tiers — are **directional ranges constructed by Encore Repair Services to bracket typical mid-tier program performance**. They are not drawn from any single named study. Encore is happy to refine these against an individual program's data on request.

Take Action: Find Your Leakage. Reclaim It.

Most programs are leaking 15–30% of recoverable value — and most leaders have no third-party benchmark against which to size their own gap. Encore offers a **complimentary Recovery Audit** for qualifying programs, designed to surface exactly that.

TAKE ACTION

Find your leakage. Reclaim it.

Encore offers a complimentary Recovery Audit for qualifying programs:

- Independent grade and scrap-rate review on a representative sample
- Quantified uplift opportunity tied to your actual channel pricing
- Maturity-ladder positioning and a 90-day improvement plan

[REQUEST A RECOVERY AUDIT](#)

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ABOUT ENCORE

Encore (Electronic Life-Cycle Management) is a device value-recovery company specializing in cosmetic restoration, automated diagnostics, data-backed grading, and continuous-engineering operations for mobile-device trade-in programs. Our methodology consistently lifts client programs into the top quartile of recovery performance.

