Reducing OR Operating Costs and Pollution

Executive Summary | Findings from a multi-specialty ASC pilot at an academic medical center, April 2026

Annual Operating Savings	GHG Reduction	Time to First Savings
$250K–$588K per facility per year	**20–40 MT CO_2e** per facility per year	**60–90 days** from zero-capital actions

The Case

Operating rooms are the most resource-intensive space in any hospital—20–33% of hospital waste, disproportionate energy use per square foot, and a large share of a health system's supply chain footprint. For ambulatory surgery centers, the financial and environmental levers are the same: reducing per-case supply cost, disposal expense, and energy consumption simultaneously reduces operating margin pressure and Scope 1–3 emissions.

The figures below are drawn from a recent pilot at a multi-specialty ASC at an academic medical center—ten ORs, approximately 11,900 annual cases across orthopedics, ENT, gynecology, urology, plastics, and surgical oncology. The pilot site began from a strong baseline (LED lighting, substantial renewable electricity, existing device reprocessing) and still identified $250K–$588K in annual savings. Facilities with less mature baselines typically identify proportionally more.

Financial Opportunity

Savings ranges below are illustrative, calibrated to the pilot facility's case volume, OR count, waste volume, and sterilization data. Actual savings are confirmed through targeted validation—energy audits, device collection compliance reviews, pack audits by service line, and waste stream characterization—before implementation commitments are made.

Savings Category	Annual Range	Capital Required	Primary Drivers
Supply chain & procurement	$81K–$172K	None	Pack redesign, EPP substitutions
Device reprocessing	$50K–$150K	None	Collection compliance, new device categories
Waste stream optimization	$58K–$133K	Low / phased	RMW reclassification, rigid containers
Energy efficiency	$50K–$100K	Capital (offsettable)	OR-level demand-based HVAC control
Clinical gases & pharmacy	$11K–$33K	Minimal	N_2O elimination, reusable masks
TOTAL	**$250K–$588K/yr**	**—**	**Per 10-OR facility**

Capital costs, where they exist, are structured to be substantially offset through utility incentive programs, health system internal energy funds, and federal tax deductions for energy-efficient commercial building improvements. The largest capital item—OR-level HVAC control—typically qualifies for multiple stacked funding sources.

Greenhouse Gas Reductions

Estimated annual carbon reduction at the pilot facility ranged from 20–40 metric tons CO_2e on a renewable-adjusted basis. More important than the total is **where the reductions come from**—which matters for systems reporting under SBTi, voluntary carbon disclosure, or supply chain net-zero commitments.

Emissions Category	Share of Footprint	Where Reductions Come From
Supply chain (embodied carbon in purchased products)	60–75%	Pack optimization, reprocessing, EPP, rigid containers

Direct facility emissions (anesthetic gases, gas heating)	20–30%	N_2O elimination (GWP 265× CO_2), low-flow protocols
Electricity (after renewable adjustment)	5–10%	OR-level HVAC control, equipment shutdown

At a facility with substantial renewable electricity procurement, electricity efficiency measures produce a smaller carbon return than at a grid-average facility. The largest reductions come from **supply chain interventions** and **direct anesthetic gas elimination**—notably N_2O, whose continuous fugitive emissions from centralized piping have a global warming potential 265× that of CO_2. For a health system's climate reporting, supply chain and anesthetic gas together account for the majority of the avoidable surgical footprint.

How the Savings Are Captured

A few interventions drive the majority of the financial and carbon impact:

- **Surgical pack optimization ($60K–$120K/yr).** Published studies consistently show $5–$10 per-case savings from removing outdated or unused items from custom packs. Zero capital, captured through a pack audit and vendor conversation.
- **Device reprocessing capture rate improvement ($50K–$150K/yr).** Most facilities with existing reprocessing programs leave significant savings on the table through incomplete collection. A compliance audit and activation of under-utilized device categories closes the gap.
- **RMW reclassification ($20K–$50K/yr).** Regulated medical waste costs 5–10× general trash to dispose. Over-classification is near-universal and correctable through staff education and visual sorting guides—at zero capital cost.
- **OR-level demand-based HVAC control ($50K–$100K/yr).** Most facilities run all ORs on a blanket ventilation schedule even when half are idle after hours. Individual OR controls with sleep mode capture the single largest energy opportunity, typically with heavy incentive offset on capital.
- **N_2O elimination.** Centralized N_2O piping leaks continuously. Removing N_2O from formulary eliminates all associated infrastructure, procurement, and fugitive emission costs, with case-by-case E-cylinder availability preserved if clinically needed.

Why This Work Fits

- **Financial and sustainability goals aligned, not competing.** Every intervention reduces operating cost. There is no margin tradeoff in the core program.
- **Validation before implementation.** Projected savings are paired with the specific audit that will confirm them. No commitment is made on unvalidated numbers.
- **Publishable outcomes.** The data generated supports scholarly output, if interested.
- **Optional certification pathway.** Findings map cleanly to the GreenCare ASC sustainability certification framework (developed through the Harvard Medical School Climate Health Organizing Fellowship, currently under evaluation by ASC accreditation bodies) if external validation is desired. The financial and carbon case stands on its own.

Proposed Engagement and Next Steps

A typical engagement begins with an on-site assessment paired with a facility-specific roadmap that identifies interventions, projects savings against conservative benchmarks, and sequences implementation in phases. Phase 1 (Months 1–2) captures zero-capital wins and begins baseline tracking. Phase 2 (Months 3–4) initiates vendor engagement. Phase 3 (Months 5–8) executes pilots and phased deployments. Phase 4 (Months 9–12) expands successful pilots. Most facilities see first measurable savings within 60–90 days.

Next step: A 30-minute introductory call cost savings goals and current sustainability priorities and timeline

Project Leadership

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