SGHG
COMMERCIAL CLEANING

Making Excellence Visible: The SGHG Six Sigma Method™

An Evidence-Based Framework for Commercial Cleaning Operations

Elevated Safety Risks for Workers

Unreliable Hygiene & Chemical Waste

Lack of Standardized Measurement

The Status Quo: Managing High-Risk Operations by Sight

Commercial cleaning is a high-risk, high-variability industry managed with low-rigor, non-standardized methods. This leads to significant, often unmeasured, operational and financial exposure.

- **Elevated Safety Risks:** Janitorial staff experience high rates of slips, trips, falls (STFs), and musculoskeletal injuries. Peer-reviewed studies confirm systemic underreporting of these incidents.

- **Unreliable Hygiene & Chemical Waste:** Visual inspections are inadequate for verifying hygiene. Chemical overuse is common, costly, and environmentally damaging.

- **Lack of Standardized Measurement:** The industry lacks a data-driven framework to control variance, validate performance, and systematically improve outcomes.

The Unseen Costs Are Substantial and Systemic

The financial burden of operational defects and injuries is significant, impacting property owners, facility managers, and service providers through direct and indirect costs.

$42,000
STF Incident Costs

Average per incident, including litigation, insurance, and absenteeism.

12.4 days
MSD-Related Absence

Average per incident, leading to lost productivity and replacement labor costs.

$2,400
Chemical Procurement Waste

Average per facility annually, driven by improper dilution and lack of controls.

>1.15
Insurance Premium Impact

Uncontrolled risk leads to experience modification rates driving up premiums by 15% or more.

Source Note: Cost estimates based on BLS data and industry benchmarks cited in SGHG research (Bitzas et al., 2022; González-Fuentes et al., 2022).

The Solution: A Paradigm Shift from Managing by Sight to Leading by Data

The SGHG Six Sigma Method™ is a proprietary, evidence-based framework that makes excellence visible, measurable, and repeatable. It is organized around four integrated pillars that transform cleaning operations into a controlled, auditable system.

Quantifies and reduces slip hazards (SHI) and ergonomic strain (ELS).

Measures and improves chemical efficiency (CER) to reduce waste and environmental impact.

Tracks hygiene variance (ATP σ) to ensure consistent, verifiable cleanliness.

Builds workforce capability through standardized training and clear performance targets.

Four Core KPIs Form an Auditable Control System

The SGHG Method is built on four lead indicators that were validated through a six-month Measurement System Analysis (MSA) study to ensure statistical reliability.

Slip Hazard Index (SHI)

A composite score of surface moisture, traction, and obstruction that quantifies floor-safety risk in real-time.

Ergonomic Load Score (ELS)

A rubric-based score (Posture × Force × Duration × Repetition) that estimates musculoskeletal burden on workers.

Chemical Efficiency Ratio (CER)

A precise measure of chemical ounces used per 1,000 ft^2, tracking dilution accuracy and identifying waste.

ATP Hygiene Variance (σ)

The standard deviation of luminometer readings at fixed sampling points, measuring the *consistency* and reliability of hygiene outcomes, not just single-point readings.

The Transformation: From an Unstable Process to a Capable System

The SGHG Method™ was implemented across eight commercial buildings. The result was a statistically significant shift from an incapable process (unable to consistently meet specifications) to a capable one, achieving Six Sigma standards for service operations.

Baseline State: Not Capable

Cpk = 0.71

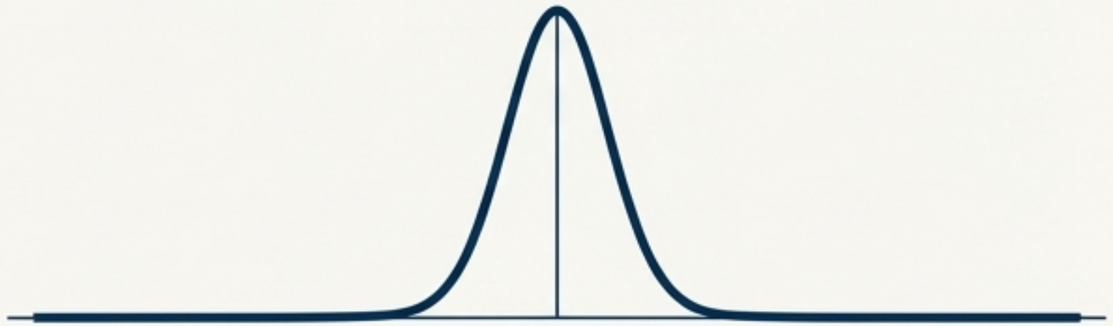
Below the 1.00 capability threshold

High process variation, frequent defects, and unpredictable outcomes.

SGHG Controlled State: Capable

Cpk = 1.19

Exceeds the 1.00 capability threshold



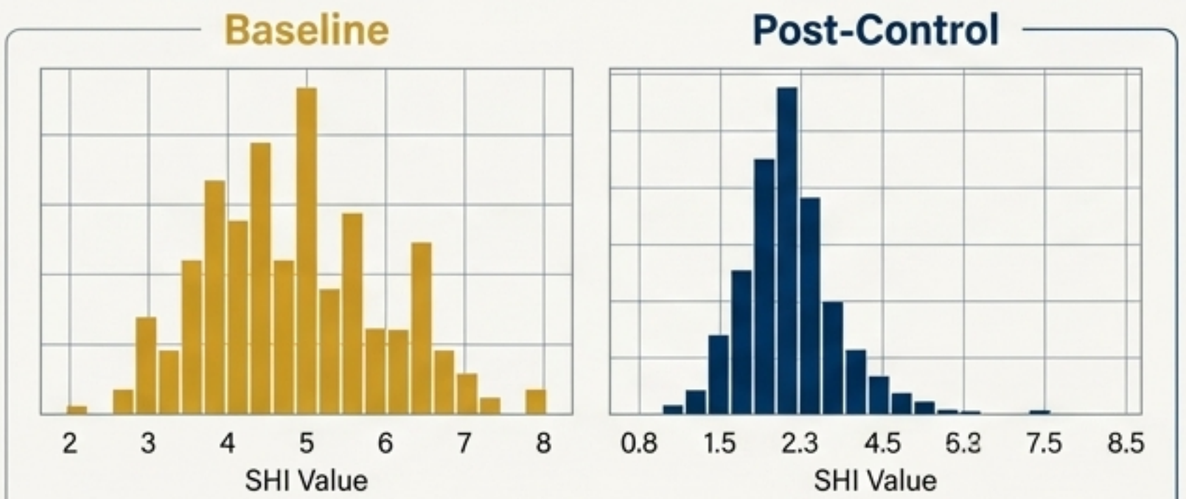
Variation reduced, process centered, and outcomes are predictable and reliable.

67.6% Improvement in Process Capability

Proving the Impact (1/2): Dramatically Reducing Safety & Ergonomic Risk

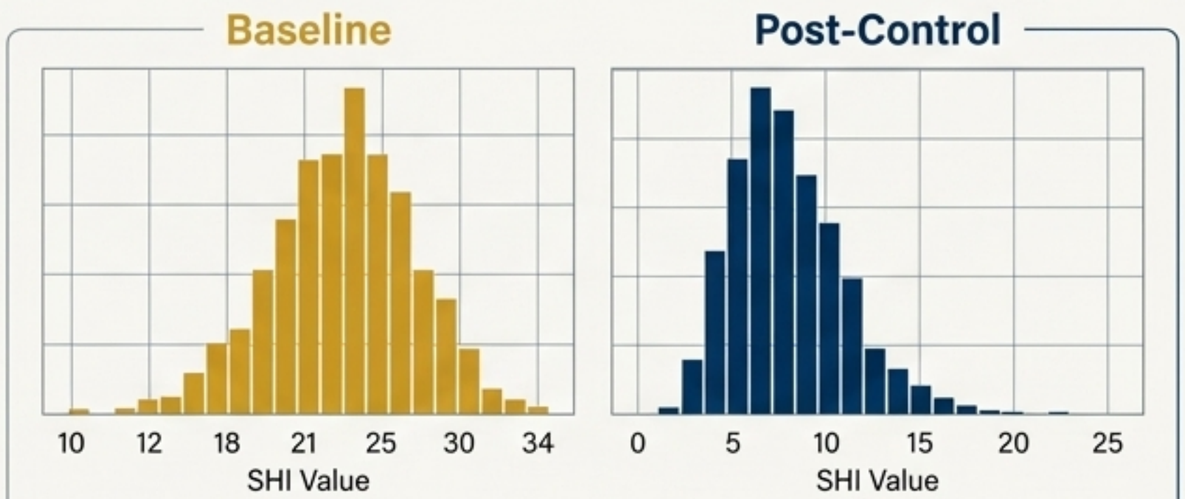
By implementing standardized work, ergonomic coaching, and moisture controls, SGHG demonstrably reduced the two greatest sources of physical risk to frontline staff.

Slip Hazard Index (SHI) Improvement



53.2% Reduction
in Slip Hazard Index
(from 0.62 to 0.29).

Ergonomic Load Score (ELS) Improvement

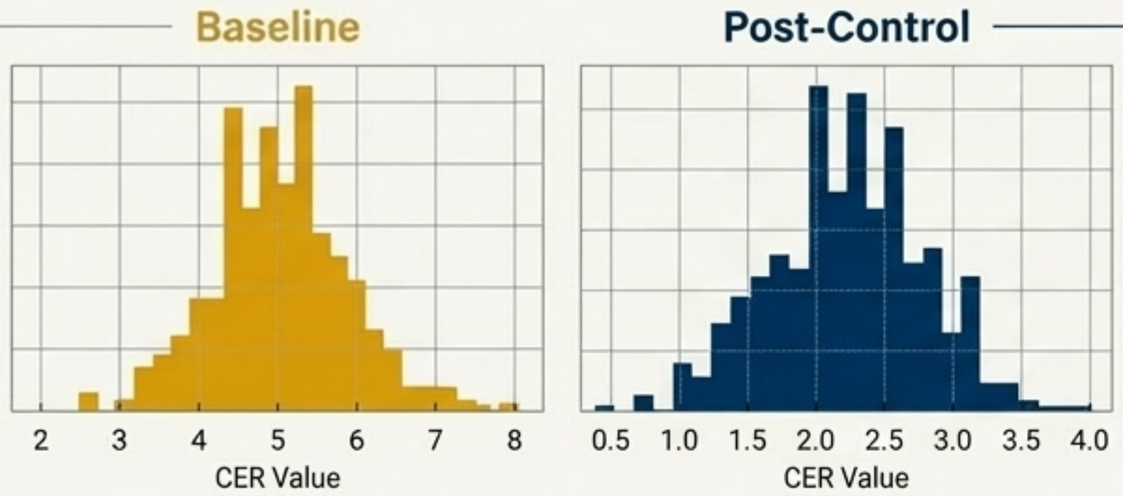


44.6% Reduction
in Ergonomic Load Score
(from 7.4 to 4.1).

Proving the Impact (2/2): Driving Chemical Efficiency and Hygiene Consistency

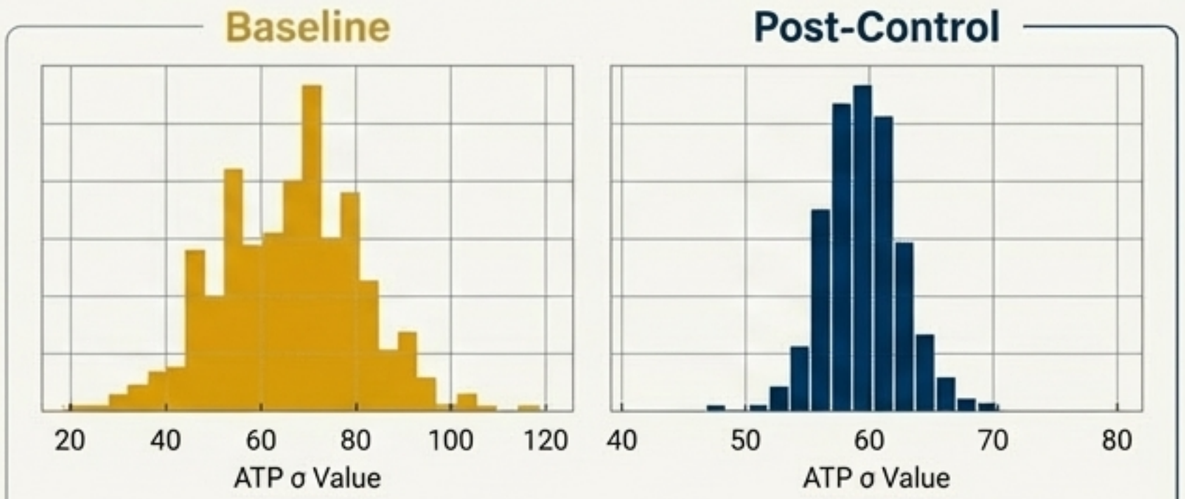
Through pre-measured chemistry, fixed sampling maps, and validated SOPs, the SGHG Method delivered unprecedented control over material use and microbial stability.

Chemical Efficiency Ratio (CER) Improvement



47.3% Improvement
in Chemical Efficiency
(from 1.48 to 0.78 oz/1k ft²).

ATP Hygiene Variance (σ) Improvement



48.2% Reduction
in ATP Hygiene Variance
(from 112 RLU to 58 RLU).

A Summary of Significant, Measurable Improvements

All improvements are statistically significant at $p < .01$ with large practical effect sizes (Cohen's $d > 1.6$).

KPI Metric	Baseline	Target	Achieved	Improvement
Slip Hazard Index (SHI)	0.62	≤ 0.35	**0.29**	**53.2%**
Ergonomic Load Score (ELS)	7.4	≤ 4.5	**4.1**	**44.6%**
ATP Hygiene Variance (SD)	112 RLU	≤ 65 RLU	**58 RLU**	**48.2%**
Chemical Efficiency Ratio	1.48 oz/1k ft²	≤ 0.85 oz	**0.78 oz**	**47.3%**
Process Capability (Cpk)	0.71	≥ 1.00	**1.19**	**67.6%**

The Bottom Line: 127% First-Year ROI and a 5.3-Month Payback

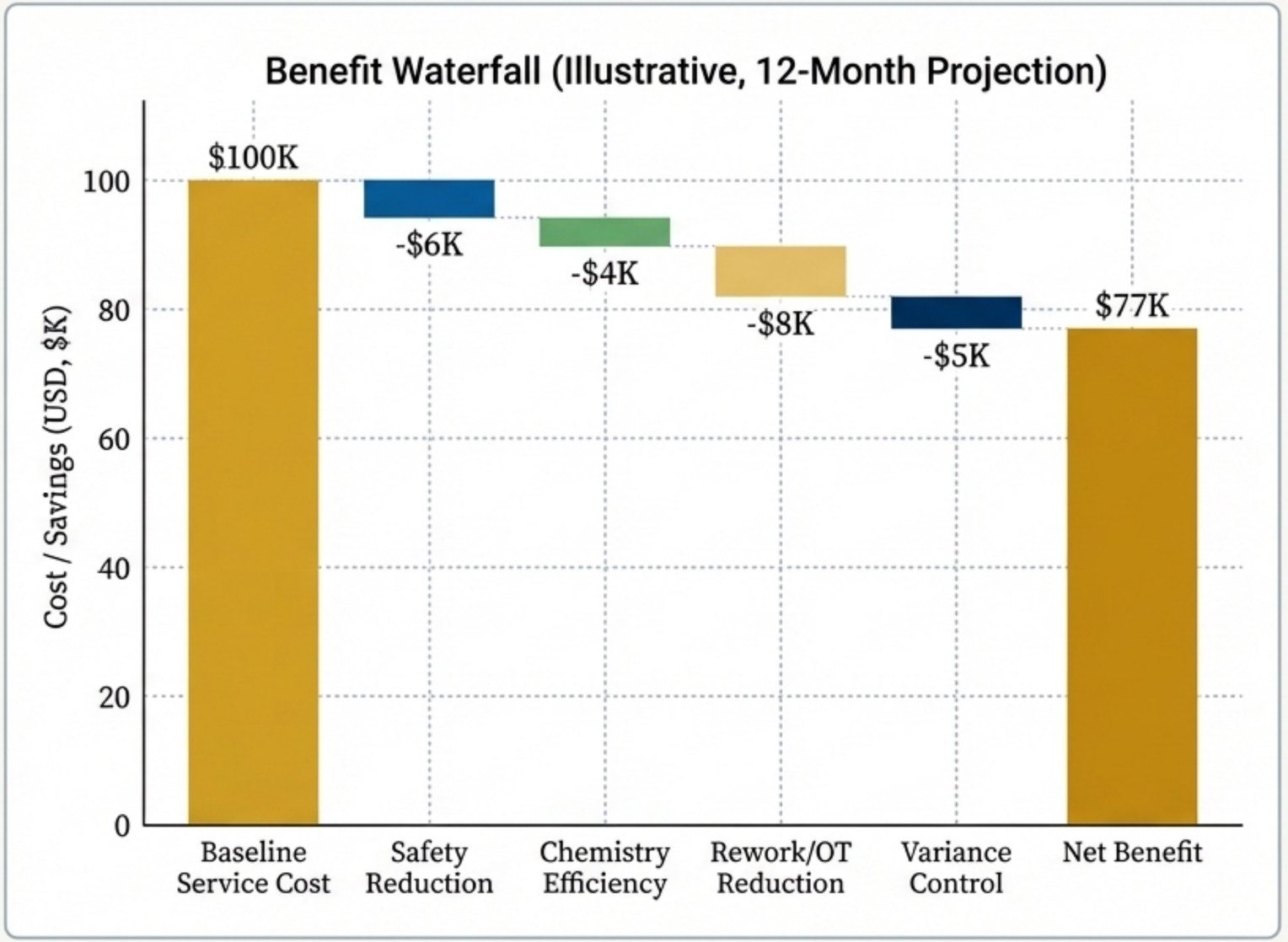
For a typical 50,000 sq. ft. facility, the SGHG Method delivers a compelling return by converting operational stability into direct and risk-adjusted savings.

127%

First-Year ROI

5.3 Months

Payback Period



What Changes on the Floor: A System Designed for the Frontline

The SGHG Method™ translates complex data principles into simple, effective tools and routines for cleaning crews and supervisors.

Standard Work

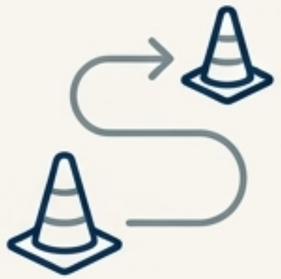
One-page SOPs and visual job aids are implemented by zone, eliminating guesswork and variability.

Right-Sized Chemistry

Pre-measured dilution packs and countersigned logs ensure accuracy, reduce waste, and improve safety.

Hygiene Visibility

Fixed ATP sampling points and **weekly control charts** make hygiene performance visible and trackable, moving beyond subjective visual checks.

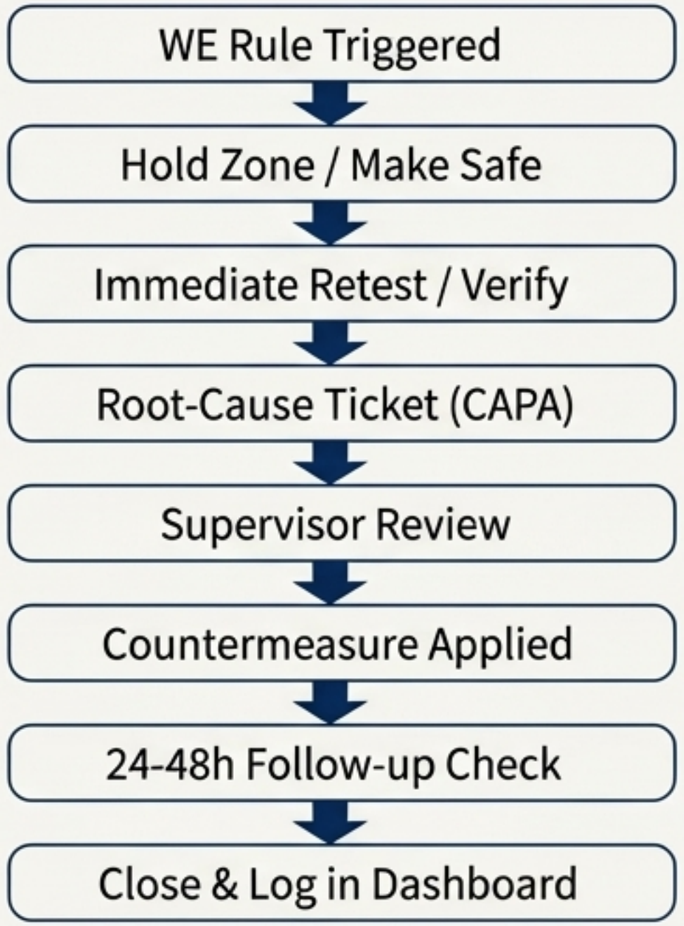


Safer Routes & Tasks

Simple interventions like drying fans at entries, correct tool handle heights, and short micro-training huddles directly reduce SHI and ELS scores.

Built for Sustainable Control: A Clear Governance and Escalation Protocol

The SGHG framework includes a robust control plan to sustain gains. Statistical Process Control (SPC) rules automatically flag deviations from the standard, triggering a clear, blame-free response plan.

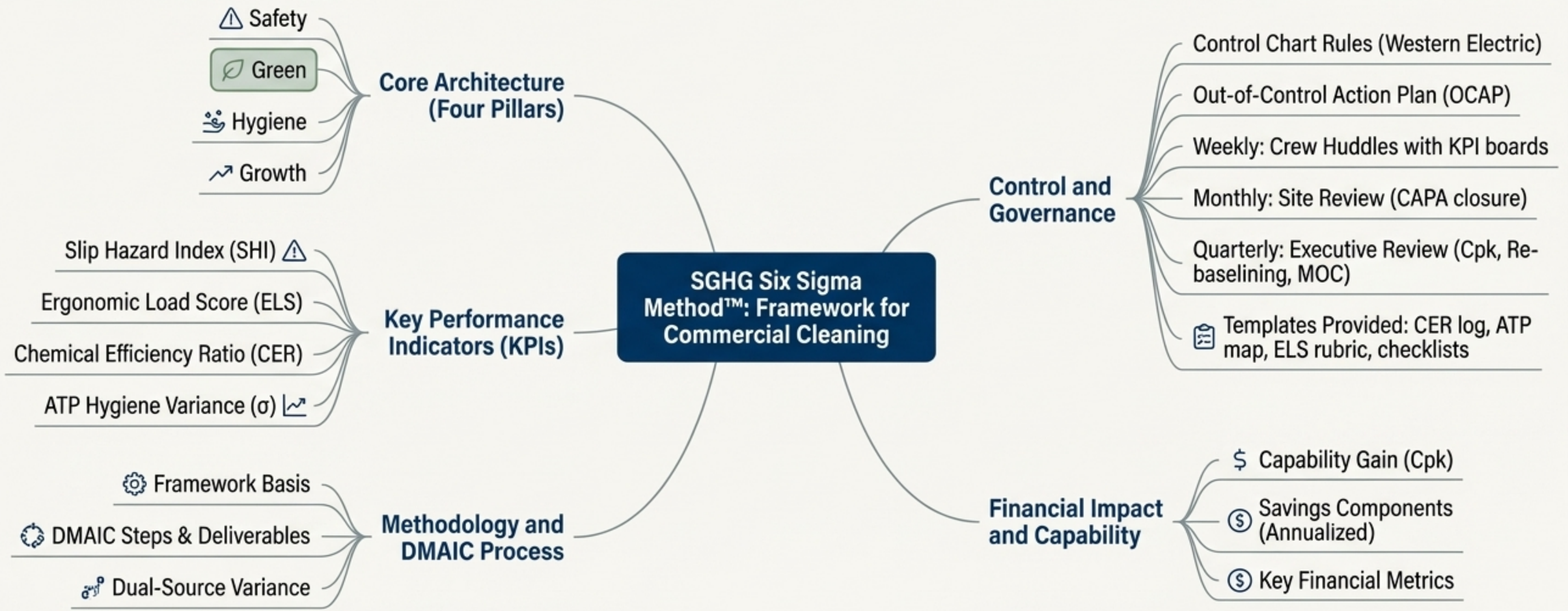


Supporting Governance Cadence

- **Weekly:** Crew huddles with KPI boards.
- **Monthly:** Site review with CAPA closure.
- **Quarterly:** Executive review to confirm capability (Cpk) and business impact.

An Integrated Architecture for Operational Excellence

Every component of the SGHG Six Sigma Method™—from the core pillars and KPIs to the financial model and governance routines—is interconnected to create a complete, data-driven operating system for commercial cleaning.



A Rigorously Developed and Validated Framework

The SGHG Six Sigma Method™ was created by Jermaine E. Whiteside, a Lean Six Sigma Black Belt (CSSC), and developed as part of a Master Black Belt project.

Rigorous Validation: Based on a six-month Measurement System Analysis (MSA) to ensure all KPIs are statistically reliable (Gage R&R < 10%).

Evidence-Based: Cites only peer-reviewed sources from safety science, ergonomics, and indoor environmental health.

Field-Tested: Validated through implementation across eight heterogeneous commercial facilities, proving its effectiveness in real-world environments.

Author: Jermaine E. Whiteside, Founder of SGHG Cleaning LLC and Doctoral Candidate. ORCID: 0009-0004-7136-6859.

The New Standard: Defensible Evidence of Risk in Control

The SGHG Six Sigma Method™ moves commercial cleaning from a subjective, high-variance service to a controlled process that delivers predictable, verifiable results. It provides a single pane of glass for all stakeholders.

For Owners & Executives

Clear visibility into capability, incident trends, and financial ROI.

For Supervisors & Crews

Unambiguous targets, effective tools, and rapid feedback loops.

For Clients & Insurers

Defensible evidence that risk is being systematically identified, measurably reduced, and kept in statistical control.