Wave 2: Co-man Performance Metrics Overview

Background

- Data & reporting collection and formats are inconsistent across the co-man network, which prevents effective performance comparison, continuous improvement initiatives, and network-wide analysis.
- Wave 2 will focus on the alignment and standardization of reporting methods and frequency with co-man managers and co-mans.

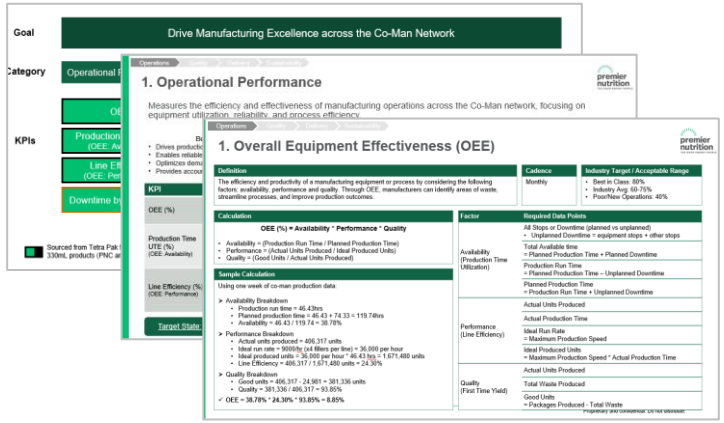
Outputs & Deliverables

- Agreed set of performance KPIs
- Current state assessment, data/reporting gap analysis and required actions
- Standard definitions & calculations appended to Best-in-Class guide

Wave 2 Approach

- Current state assessment: Interviews with co-man managers, data collection, industry best practice research
- Distribute proposed KPI definitions and calculations to co-mans (1-2 sites first)
- Collect & assess KPI data / feedback / challenges from co-mans
- Identify data gaps and required actions
- Finalize on agreed KPIs

Proposed Metrics



Next Steps: Proposed Approach

- Resolve data collection gaps identified in Wave 2
- Standardize current methods across all co-man sites (start with 1-2 sites before roll out)
- KPI dashboard

PNC Co-man KPI Data Reporting Distribution Pack

Content

- Overview of the PNC co-man performance metrics initiative
- KPI framework and definitions
- Instructions on data collection process and agreed timelines
- Appendix: KPI one-pagers

Co-Man Performance Metrics Initiative Overview

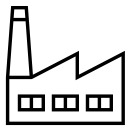
Purpose & Objectives

- Implement standardized KPI framework across network
- Establish baseline performance metrics
- Enable data-driven performance improvements

Engagement Approach

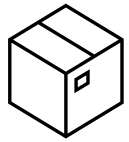
- Define and validate KPI definitions and data extraction methods
- Introduce the KPI framework to begin collecting KPI data
- Review any challenges associated to data collection
- Provide implementation support

KPI Framework Summary



Operational Performance

Quality



Delivery

Sustainability

KPI Framework

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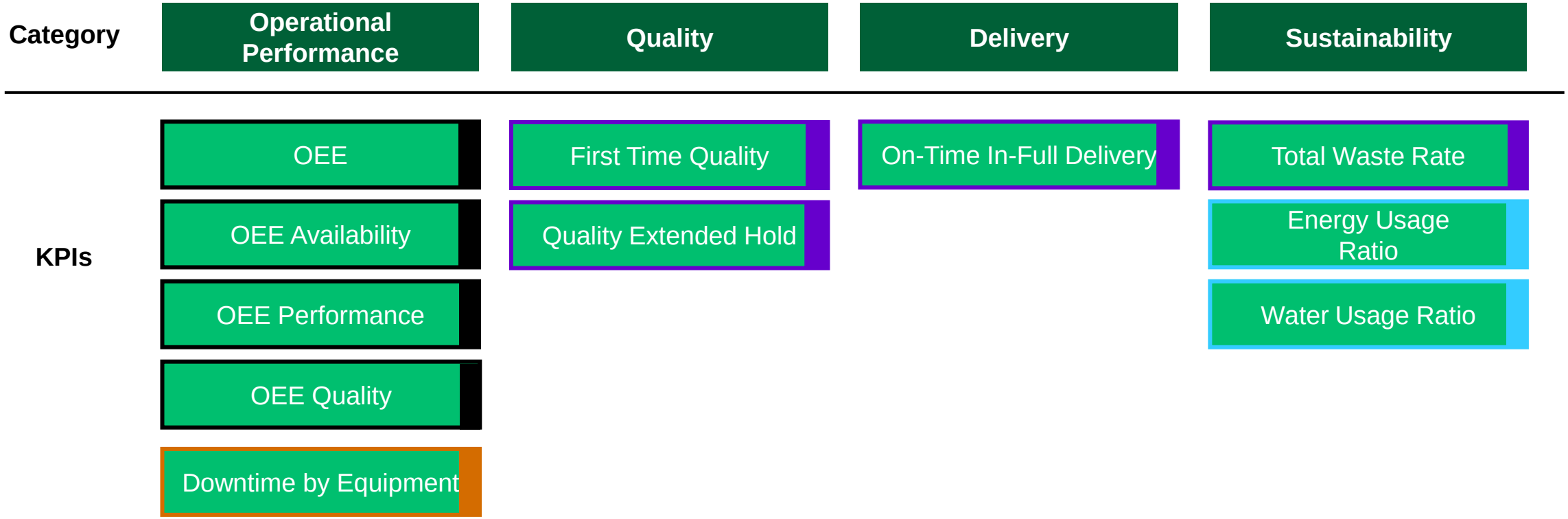
A framework of 11 KPIs across 4 strategic categories

- This framework has been designed to use existing data sources and reports to easily extract KPI data from for frequent reporting. This was intended to be as least burdensome as possible.
- These indicators help measure current performance and provide data-driven insights to identify improvements that could boost your manufacturing efficiency.



Detail of definitions, reporting cadence and data sources

Category	KPI	What it measures	Calculation	Cadence	Data Source
Operational Performance	OEE (%)	Overall equipment effectiveness combining availability, performance, and quality	Availability * Performance * Quality	Monthly	Tetra Pak filler
	OEE Availability (%)	Percentage of production run time compared to available production time	Production Run Time / Planned Production Time	Monthly	Tetra Pak filler
	OEE Performance (%)	How well the equipment is running compared to its designed speed	Actual Units Produced / Ideal Produced Units	Monthly	Tetra Pak filler
	OEE Quality (%)	Percentage of units that meet specifications at the filler without any defects/reprocessing, indicating initial production quality	Good Units at Filler / Actual Units at Filler	Monthly	Tetra Pak filler
	Downtime by Equipment (%)	Percentage contribution of each equipment's stop time to total downtime, showing impact of individual machines on overall line stoppages	Sum of Stop Times by Equipment / Total Downtime	As requested[1]	Filler, capper, sleever, packaging, palletizing equipment
Quality	First Time Quality (%)	Percentage of units that meet all specifications first time without any rework/reprocessing	Units Meeting All Specs First Time / Total Production Units	Monthly	Quality Team
	Quality Extended Hold (%)	Percentage of production placed on extended hold for longer than 15 days from production date	Products on Extended Hold / Total Production Units	Monthly	Quality Hold Report
Delivery	On-Time In-Full (OTIF) (%)	Orders delivered completely and on schedule to co-man warehouses (excluding 3PL logistics)	Total Orders Made On-Time & In-Full / Total Orders	Monthly	Internal system / manual tracking
Sustainability	Total Waste Rate (%)	Combined waste as % of production, which includes product and packaging wastes	Waste Generated / Total Production Units	Monthly	ERP system
	Water Usage Ratio (gal/gal)	Total water used per gallon produced, which includes process water, CIP/sanitation, cleaning, utilities	Total Water Used / Total Gallons Produced	Annual	Plant Controller
	Energy Usage Ratio (kWh/1000gal)	Total energy consumed per 1000 gallons, which includes processing, HVAC, refrigeration, compressed air, utilities	Total Energy Consumed in kWh / Total Production Volume in thousands of gallons	Annual	Plant Controller

1. Monthly data, last 12-month period to support initial baseline

Alignment on the Data Collection Process

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Data collection process

- **Request:** Share monthly data from the previous 12-month period for all KPIs
  - Excluding water and energy usage ratios
  - Provide KPI data in the cadence shown in this table going forward
- **Reporting format:** Excel (template shared)
- **Send via email to:** PNC Relationship Manager

Please reach out to your PNC relationship manager if you have any questions.

Appendix

KPI definition and calculation one-pagers

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1. Operational Performance

Measures the efficiency and effectiveness of manufacturing operations, focusing on equipment utilization, reliability, and process efficiency.

Business Impact

- Drives production capacity and cost efficiency
- Enables reliable customer service
- Optimizes demand planning
- Provides accountability to equipment OEMs

Success Factors

- Tailored equipment maintenance programs
- Skilled operator availability
- Standard operating procedures
- Clear and data driven escalation paths

KPI	What it measures	Why it matters
OEE (%)	Overall equipment effectiveness at the filler, combining availability, performance, and quality	• Universal metric for manufacturing efficiency • Helps identify benchmarks and outlier facilities • Drives improvement discussions with data
OEE Availability (%)	Percentage of production run time compared to available production time at the filler	• Proxy for OEE Availability rate at Tetra Pak's filler • Direct measure of operational reliability • Indicates maintenance effectiveness
OEE Performance (%)	Percentage of units that meet specifications at the filler without any defects/reprocessing, indicating initial production quality	• Proxy for OEE Quality rate at Tetra Pak's filler • Direct measurement of filler performance and stability • Indicator for equipment optimization • Enable real-time monitoring / immediate corrective actions
OEE Quality (%)	Actual production rate compared to designed rate at the filler	• Proxy for OEE Performance rate at Tetra Pak's filler • Indicates true line capability • Identifies speed losses for optimization
Downtime by Equipment (%)	Percentage contribution of each equipment's stop time to total downtime	• Indicates impact of individual machines on overall line stoppages

Target State: Achieve consistent, reliable, and efficient operations across all co-man facilities

1. Overall Equipment Effectiveness (OEE)

Definition	Cadence	Data Source
The efficiency and productivity of a manufacturing equipment or process by considering the following factors: availability, performance and quality. Through OEE, manufacturers can identify areas of waste, streamline processes, and improve production outcomes.	Monthly	Tetra Pak filler

Calculation

OEE (%) = Availability * Performance * Quality

- Availability = (Production Run Time / Planned Production Time)
- Performance = (Actual Units Produced / Ideal Produced Units)
- Quality = (Good Units / Actual Units Produced)

Sample Calculation

Using one week of co-man production data:

- Availability Breakdown
  - Production run time = 46.43hrs
  - Planned production time = 46.43 + 74.33 = 119.74hrs
  - Availability = 46.43 / 119.74 = 38.78%
- Performance Breakdown
  - Actual units produced = 406,317 units
  - Ideal run rate = 9000/hr (x4 fillers per line) = 36,000 per hour
  - Ideal produced units = 36,000 per hour * 46.43 hrs = 1,671,480 units
  - Line Efficiency = 406,317 / 1,671,480 units = 24.30%
- Quality Breakdown
  - Good units = 406,317 - 24,981 = 381,336 units
  - Quality = 381,336 / 406,317 = 93.85%
- ✓ **OEE = 38.78% * 24.30% * 93.85% = 8.85%**

Factor	Required Data Points
Availability (Production Time Utilization)	All Stops or Downtime (planned vs unplanned) • Unplanned Downtime = equipment stops + other stops
	Total Available time = Planned Production Time + Planned Downtime
	Production Run Time = Planned Production Time – Unplanned Downtime
	Planned Production Time = Production Run Time + Unplanned Downtime
Performance (Line Efficiency)	Actual Units Produced
	Actual Production Time
	Ideal Run Rate = Maximum Production Speed
	Ideal Produced Units = Maximum Production Speed * Actual Production Time
Quality (First Time Yield)	Actual Units Produced
	Total Waste Produced
	Good Units = Packages Produced - Total Waste

1. OEE Availability

Definition

The actual time equipment is available for production compared to the planned production time, accounting for all planned and unplanned downtimes in the manufacturing lines. Direct component of OEE. Sourced from Tetra Pak filler.

Cadence

Monthly

Data Source

Tetra Pak filler

Calculation

OEE Availability (%) = Production Run Time / Planned Production Time

Sample Calculation

Using one week of co-man production data:

- Production run time = 46.43hrs
- Planned production time = 46.43 + 27.90 + 45.41 = 119.74hrs

✓ **Availability = 46.43 / 119.74 = 38.78%**

Required Data Points

All Stops or Downtime (planned vs unplanned):

- Planned = Outside Production Time
  - CIP / sanitation
  - Planned maintenance
  - Changeovers
  - Scheduled breaks
- Unplanned = Equipment Stop + Other Stop
  - Equipment failures
  - Unscheduled maintenance
  - Process related

Total Available Time
= Planned Production Time + Planned Downtime
= (Production Run Time + Equipment Stop + Other Stop) + Outside Production Time

Production Run Time
= Planned Production Time – Unplanned Downtime
= Planned Production Time – (Equipment Stops + Other Stops)

Planned Production Time
= Production Run Time + Unplanned Downtime
= Production Run Time + (Equipment Stops + Other Stops)

1. OEE Performance

Definition	Cadence	Data Source
How efficiently the protein shake filling line is running compared to its designed maximum speed, considering actual output versus theoretical maximum output. Direct component of OEE. Sourced from Tetra Pak filler.	Monthly	Tetra Pak filler

Calculation

OEE Performance (%) = Actual Output / Ideal Output

Sample Calculation

Using one week of co-man production data:

- Actual units produced = 406,317 units
- Actual production time = 46.43 hrs
- Ideal run rate = 9000/hr (x4 fillers per line) = 36,000 per hour
- Ideal output = 36,000 per hour * 46.43 hrs = 1,671,480 units

✓ **Performance = 406,317 / 1,671,480 units = 24.30%**

Required Data Points

Actual Units Produced
Actual Production Time
Actual Output Rate = Actual Units Produced / Actual Production Time
Ideal Run Rate = Maximum Production Speed

1. OEE Quality

Definition

The percentage of good units produced at the filler without requiring rework or rejection within the production hall. This metric measures immediate production quality and indicates the line's capability to produce within specs during the filling process. Direct component of OEE. Sourced from Tetra Pak filler.

Cadence

Monthly

Data Source

Tetra Pak filler

Calculation

OEE Quality (%) = Good Units at the Filler / Actual Units at the Filler

Sample Calculation

- Actual Output = 100,000 units
- In-production waste = 3,000 units
  - Underfills = 1,500
  - Package integrity = 1,000
  - Quality sampling = 500

✓ **Quality = 97,000 / 100,000 = 97%**

Required Data Points

Total units produced include:
- Total units through filler
- Good units
- In-production waste
- Quality samples at filler

Good units produced at the filler include:
- Fill volume within specification
- Package integrity passed
- In-line quality checks passed
- No immediate rework needed

Note: Excludes downstream quality checks, holds, and post-production testing

Types of waste include:
- Fill volume deviations
- Package integrity issues
- In-line quality samples
- Immediate rejects

1. Downtime by Equipment

Definition

The proportion of each equipment's stop time relative to total downtime, identifying which machines are the largest contributors to line stoppages. This metric enables targeted improvement efforts by highlighting critical equipment bottlenecks. Sourced from filler, capper, sleever, packaging, palletizing equipment.

Cadence

As requested[1]

Data Source

Filler, capper, sleever, packaging, palletizing equipment

Calculation

Downtime by Equipment (%) = Sum of Stop Times by Equipment / Total Downtime

Sample Calculation

Sum of stop times by equipment:
- Filler = 20 hours
- Capper = 30 hours
- Sleever = 15 hours
- Case Packer = 25 hours
- Palletizer = 10 hours

Total line downtime: 100hrs

✓ **Downtime by equipment:**
- Filler = 20/100 = 20%
- Capper = 30/100 = 30%
- Sleever = 15/100 = 15%
- Case Packer = 25/100 = 25%
- Palletizer = 10/100 = 10%

Required Data Points

Equipment stop times include:
- Mechanical failures
- Adjustments/Setup time
- Minor stops
- Changeover time

Equipment categories include:
- Filler
- Capper
- Sleever
- Case Packer
- Palletizer

Total Downtime:
- Sum of all equipment stops
- Excludes planned downtime

1. Monthly data, last 12-month period to support initial baseline

2. Quality

Measures the consistency and reliability of product quality, ensuring all products meet specifications and food safety requirements with minimal quality holds.

Business Impact

- Ensures product safety and brand protection
- Minimizes waste and rework costs
- Determines inventory availability
- Affects customer satisfaction and trust

Success Factors

- Robust quality management systems and specs
- Trained quality personnel and testing capabilities
- Preventive maintenance and equipment reliability
- Supplier quality management and material control

KPI	What it measures	Why it matters
First Time Quality (%)	Percentage of units that meet all specifications first time without any rework	• Direct quality indicator of end-to-end process capability • Includes downstream checks • Direct impact on production costs and efficiency • Comparable across products / facilities
Quality Extended Hold Rate (%)	Percentage of production placed on extended hold for longer than 15 days from production date	• Early warning indicator for quality issues • Critical for managing micro incubation period • Direct impact on available inventory • Critical for production planning flexibility

Target State: Consistent quality across facilities with minimal extended holds and quality-related customer complaints.

2. First Time Quality (FTQ)

Definition

The percentage of units meeting all quality specifications on first inspection without requiring any quality holds. Measures the process's ability to produce good quality product right the first time. Sourced from co-man reporting / internal tracking systems.

Cadence

Monthly

Data Source

Quality Team

Calculation

FTQ (%) = Units Meeting All Specs First Time / Total Production Units

Sample Calculation

- Total units produced = 400,000 units
- Quality intervention units = 50,000 units
  - Eventually released = 30,000 units
  - Final rejects = 20,000 units
- First time pass units = 350,000 units

✓ **FTQ = 350,000 / 400,000 = 77.8%**

Required Data Points

Total units produced include:
- Good units
- Quality holds
- Failed units

Units passing all specs include:
- Total Solids within range
- pH within limits
- Fill volume/weight accurate
- Package integrity good
- Label/coding correct

Units with Quality Intervention include:
- Eventually released
  - Units retested and released
  - Quality hold & released
- Final rejects
  - Failed specs (pH, micro, TS)
  - Package integrity
  - Fill volume
  - Label/coding

2. Quality Extended Hold

Definition

The percentage of production placed on quality extended hold that are longer than 15 days from production date, indicating process control and quality assurance effectiveness. Sourced from co-man reporting / internal tracking systems.

Cadence

Monthly

Data Source

Quality Hold Report (focus on extended hold data)

Calculation

Quality Extended Hold Rate (%) = Products on Extended Hold / Total Production Units

Sample Calculation

- Total units produced = 400,000 units
- Units on hold = 15,000 units

✓ **Extended Hold = 15,000 / 400,000 = 3.8%**

Required Data Points

Total production units

Units placed on hold for longer than 15 days from production date due to:

- Product quality (micro, pH, Total Solids)
- Fill volume/weight
- Package integrity
- Label/coding

3. Delivery

Measures the reliability and effectiveness of production execution and order fulfillment, ensuring customer demand is met as planned.

Business impact

- Determines customer satisfaction
- Affects inventory levels and working capital
- Influences supply chain and logistics costs
- Impacts network capacity utilization

Success Factors

- Accurate demand forecasting and production planning
- Reliable equipment and consistent processes
- Clear communication channels and escalation paths
- Robust contingency and recovery plans

KPI	What it measures	Why it matters
On-Time In-Full (OTIF) (%)	Orders delivered completely and on schedule to co-man warehouses (excluding 3PL logistics)	• Measures reliability and planning effectiveness • Combines on-time and complete order fulfillment • Critical for supply chain performance • Critical for customer satisfaction

Target State: Reliable and predictable supply network delivering the right product, at the right time, in the right quantity.

3. On-Time In-Full (OTIF)

Definition

The percentage of orders completed through production and available in warehouse storage both On-Time (meeting scheduled completion date) and In-Full (complete quantity ordered), measured against total orders. Both conditions must be met for success. Measurement ends at finished goods availability, excluding 3PL activities. Sourced from co-man reporting / internal tracking systems.

- On-Time: Delivered on or before required delivery date
- In-Full: Complete quantity as ordered

Cadence

Monthly

Data Source

Internal system / manual tracking

Calculation

OTIF (%) = (Total Orders Meeting Both Criteria / Total Orders)

- On-Time % = Orders Delivered on Request Date / Total Orders
- In-Full % = Orders Delivered Complete / Total Orders

Sample Calculation

- Total number of orders = 200 orders
- Orders delivered OTIF = 188

✓ **OTIF = 188/200 = 94%**

Required Data Points

Total number of orders

Delivery schedule adherence

Orders delivered:
- On schedule
- Complete quantity
- Correct product mix
- Required documentation

4. Sustainability

Measures the environmental impact and resource efficiency of manufacturing operations, ensuring responsible production practices.

Business Impact

- Meets corporate sustainability goals
- Reduces operational costs through efficiency
- Ensures regulatory compliance
- Enhances brand reputation

Success Factors

- Resource monitoring and measurement systems
- Clear sustainability targets and programs
- Employee engagement and training
- Technology and efficiency investments

KPI	What it measures	Why it matters
Total Waste Rate (%)	Combined waste as % of production (product and packaging)	• Environmental impact indicator • Complete waste visibility • Direct cost impact • Resource & equipment efficiency
Water Usage Ratio (gal/gal)	Total water used per gallon produced, which includes process water, CIP/sanitation, cleaning, utilities	• Process efficiency indicator • Critical resource for beverage • Cost component
Energy Usage Ratio (kWh/1000gal)	Total energy consumed per 1000 gallons, which includes processing, HVAC, refrigeration, compressed air, utilities	• Carbon footprint indicator • Major cost driver

Target State: Industry-leading sustainable manufacturing practices with continuous reduction in environmental impact across all facilities.

4. Total Waste Rate

Definition	Cadence	Data Source
Total production waste as a percentage of production, encompassing all losses from raw materials, product, and packaging throughout the manufacturing & positive quality release process. Sourced from co-man reporting / internal tracking systems.	Monthly	ERP system

Calculation

Total Waste Rate (%) = Waste Generated / Total Production Units

Sample Calculation

Using one week of co-man production data:

- Total waste generated = 24,981 units
- Total units produced = 406,317 units

✓ **Total Waste = 24,981 / 406,317 = 6.1%**

Required Data Points

Waste include:
- Raw material waste
- Packaging waste
- Finished product waste
- Off-spec products / quality rejects
- Production scraps

Total Production Units

4. Water Usage Ratio

Definition	Cadence	Data Source
The efficiency of water usage in protein shake production, including process water, CIP, sanitation, and utilities. Sourced from PNC ESG Survey / co-man Finance.	Annual	Plant Controller

Calculation

Water Usage Ratio (gal/gal) = Total Water Used / Total Gallons Produced

Sample Calculation

Monthly water usage:

- Total water consumed = 2,800,000 gallons
- Total gallons produced = 2,250,000 gallons

✓ **Water Usage Ratio = 24,981 / 406,317 = 6.1%**

Required Data Points

Total water consumed include:
- Process water
- CIP/sanitation
- Cleaning
- Utilities

Production volume in gallons

4. Energy Usage Ratio

Definition	Cadence	Data Source
the energy efficiency of protein shake production operations, including all processing, HVAC, refrigeration, and utility systems. Sourced from PNC ESG Survey / co-man Finance.	Annual	Plant Controller

Calculation

Energy Usage Ratio (kWh/1000gal) = Total Energy Consumed in kWh / Total Production Volume in thousands of gallons

Sample Calculation

Monthly energy usage:

- Total energy used = 125,000 kWh
- Total gallons produced = 2,250,000 gallons

✓ **Energy Usage Ratio = 125,000 / (2,250,000 / 1000) = 55kWh / 1000gal**

Required Data Points

Total energy consumed include:

- Processing equipment
- HVAC systems
- Refrigeration
- Compressed air
- Utilities

Production volume