INNOVATION CENTER FOR U.S. DAIRY
HEALTHY PEOPLE • HEALTHY PRODUCTS • HEALTHY PLANET

Dairy Processor Stewardship Reporting Handbook

A resource for U.S. Dairy Stewardship Commitment adopters and all dairy companies interested in sustainability reporting in line with U.S. dairy best practices.

2025-26

IDFA International Dairy Foods Association

Originally developed in collaboration with leading dairy processors

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NOTE: This document contains numerous hyperlinked tools and resources. It is, therefore, best viewed and used in PDF rather than print format.

About This Resources

This Dairy Processor Stewardship Reporting Handbook (Handbook) is a supplementary resource to the U.S. Dairy Stewardship Commitment (Commitment). It is designed to support dairy cooperatives and processors, including Adopters of the Commitment, that choose to voluntarily work across the industry and transparently report progress on sustainability.

This handbook provides measurement guidance for processors across topics essential to sustainable plant operations including, energy and greenhouse gas intensity, water use and quality, resource recovery (waste management), packaging, workforce development, community contributions and product safety and quality. This Processor Reporting Handbook is a supplementary resource to the Commitment that provides detailed measurement and reporting guidance for processors on each metric, aiding them in credibly and consistently using the Stewardship Commitment to demonstrate their dedication to responsible management practices. As part of the Terms of Adoption within the Commitment, Adopters are expected to report annually leveraging this handbook. Industry-aligned resources and reporting tools are references throughout the Processor Handbook to assist processors.

The Innovation Center for U.S. Dairy® (Innovation Center), in partnership with dairy farmers and businesses across the industry, intends to continually update the Commitment to reflect the latest scientific information and generally accepted best practices. The Handbook will be updated accordingly, and it is the user's responsibility to refer to the most updated version of both the Commitment Handbook and this Processor Reporting Handbook. To learn more about the U.S. Dairy Stewardship Commitment, including the benefits of adopting, opportunities to get engaged, and other available tools and resources, visit usdairy.com/commitment.

About The Stewardship Commitment

Dairy cooperatives and processors that adopt the Stewardship Commitment sign a written affirmation statement and annually affirm that the company meets the rigorous terms outlined below. As of July 2025, companies representing more than 77% of the U.S. milk production have adopted the Stewardship Commitment. Participation is updated regularly at www.usdairy.com/commitment.

Terms of Adoption

Animal Care

Environment

Food Safety & Traceability

Community

Transparency & Communication

Engagement & Strategic Alignment

Dairy cooperatives and processors that, in the exercise of their independent business judgment, decide to adopt the U.S. Dairy Stewardship Commitment agree to the following:

1. Active membership in the Dairy Sustainability Alliance® and agreement to its terms of membership.
2. Enrolled and in good standing with the National Dairy FARM (Farmers Assuring Responsible Management) animal care program and/or sourcing from 100% FARM-enrolled farms.
3. Completion and affirmation of a company materiality assessment within two years of Commitment adoption, OR incorporation of the most recent Innovation Center U.S. Dairy Materiality Assessment into company priorities and strategic considerations.
4. Use of Stewardship Metrics for areas assessed by the company as priorities. At a minimum, this includes:
   - a. Dairy cooperatives and processors use the current version of the FARM program for animal care reporting.
   - b. Dairy cooperatives and proprietary processors (i.e., those with direct-ship contracts) are actively involved in the FARM Environmental Stewardship Program (FARM ES), using it to assess on-farm GHG, energy and nutrient management metrics.
   - c. Dairy processors report annually using measurements consistent with methodologies outlined in the Dairy Processor Handbook (e.g., GHG, water, energy, resource/waste recovery); processors use the Processor Stewardship Reporting Tool to support aggregated U.S. dairy reporting.
   - d. Dairy processors adopt and apply food safety plans which they regularly update and follow the guidance in the Innovation Center's Food Safety and Traceability Guidance documents.
   - e. Dairy cooperatives and processors report community contributions.
5. Engagement in Innovation Center volunteer and partnership opportunities to discuss and inform future indicators, metrics and reporting needs, and active stakeholder communication aimed at telling U.S. dairy's social responsibility story.
6. Recognition of U.S. Dairy Stewardship Commitment adoption in dairy company's sustainability messaging, customer outreach and on their website.
7. Affirmation of U.S. Dairy Stewardship Commitment adoption and agreement with terms through an annual verification questionnaire.

Note: The Innovation Center for U.S. Dairy follows all applicable antitrust regulations. Each company is encouraged to exercise its own independent business judgment regarding whether or not to participate in this initiative and if so how. None of the suggested activities will take any action toward antitrust-prohibited subject matters such as pricing, allocation of customers or markets, boycotts, refusals to deal, or any other matter that could be construed as a combination in restraint of trade.

Active involvement in FARM ES is defined as meeting one (or both) of the following levels of enrollment in each FARM ES version cycle: Evaluations must be completed on member or direct-ship farms selected using the FARM ES Sampling Protocol, which is representative of the entire organization's farmgate milk supply, - OR - Evaluations must be completed at 100% of member or direct-ship farms. For organizations currently not meeting the active involvement definition, definition must be fully met within the FARM ES v.3 cycle (2024-27).

Processor Stewardship Reporting Tool

Commitment Metrics – Company and Aggregate Reporting

When the Stewardship Commitment was launched in 2018, no mechanism existed for dairy processors to report metrics defined in the Commitment in an efficient, secure and confidential way. To facilitate aggregated reporting of annual progress on behalf of U.S. dairy, the Innovation Center partnered with Harbor, a Terracon company, an environmental consulting firm with expertise in refining accepted reporting programs, to develop a processor reporting tool based on the Intelex Platform. Intelex is a cloud-based environmental, health, safety and quality (EHSQ) reporting platform companies worldwide.

Overview

The Processor Stewardship Reporting Tool (PSRT) provides cost-effective way to calculate and report on the processor Stewardship Commitment metrics, while simultaneously supporting U.S. dairy by contributing to aggregate data collection representative of the majority of the industry.

By voluntarily adopting the Stewardship Commitment companies, per the Terms of Adoption, agree to report on Stewardship Commitment metrics through PSRT. The PSRT is credible, as the Stewardship Commitment metrics are aligned to the extent possible with global reporting standards and customer reporting expectations.

PSRT Governance & Funding

The Innovation Center Board of Directors created an independent LLC to financially support the development and maintenance of the Processor Stewardship Reporting Tool. LLC members include processors that voluntarily adopt the Stewardship Commitment and financially contribute to the LLC, which will be referred to as "reporting adopters" throughout this handbook.

There is a one-time introductory fee to join the LLC and undergo onboarding from Harbor ranges from $7,000 - $12,000 based on company size. Subsequent annual fees, which typically are between $7,000 - $9,000, are split evenly across all adopters.

Reporting adopters access and use the PSRT at a discounted rate compared to procuring a license independently. A committee representative of reporting adopters oversee the day-to-day operations, budget, and dues, as well as, contracts.

Processor Stewardship Reporting Tool

Secure and Confidential Data

To maintain a secure and confidential environment, the Innovation Center cannot access processor-specific data, reports or dashboards. Instead, a third-party consulting firm is the sole administrator of the PSRT. The system is structured so that individual users have specific security settings, allowing them to see only their company's data, reports, dashboards and data entry forms. Users cannot see which other companies are using the PSRT, nor data or reports specific to any other reporting adopters. Users are not permitted to add users or change security preferences within the PSRT; these requests must be made to the system administrator. To preserve confidentiality and security, data is aggregated and anonymized before sharing with the Innovation Center.

Location Setup and Onboarding

During the onboarding process, reporting adopters attend virtual training sessions with the system administrator to familiarize themselves with the PSRT. Details on company structure, employee information for PSRT users and roles, and activities at each location are collected by each reporting adopter to appropriately set up their space. While each reporting adopter can choose to report at a company-wide level or at the facility level, all are encouraged to report at the facility level.

User-Friendly SPI Module, Dashboards, and Reports

The PSRT has a Sustainability Performance Indicator (SPI) module, which is uniquely designed for tracking sustainability goals. The system is configured to allow users to input data in a variety of methods, convert all data to a common unit, and apply various factors for aggregation and comparison. The SPI module is ideal for reporting across the industry, as reporting adopters often have different record-keeping methods, data reporting frequency, and data formatting. There are eight indicator sets built within the SPI module that mirror the sustainability areas covered in the Processor Handbook. Each indicator set contains a variety of metrics, including input values, calculated values, factors, drop-down selections, input text fields, and more. Indicator sets can be reported either monthly or annually, and all data is compiled into dashboards and reports.

Reports provide data details based on various criteria that the user tells Intelex to use. For example, users can generate a monthly report that displays how much energy a site consumed compared to the same month last year. Dashboards are graphical representations of built reports. Dashboards allow real-time data visualization via graphs, charts, and other displays. While dashboards display data in real-time, reports display data based on the snapshot at the time that report ran. Reports are stored within Intelex and can be regenerated at any time.

The PSRT was configured with a Member Dashboard and an Aggregate Dashboard. The Member Dashboard displays data specific to the participating processor. Data displayed can be tailored to present company-wide totals or drill down into any facility within the company. The Aggregate Dashboard is developed annually and shared with the Innovation Center. This dashboard displays industry-wide data that is anonymized and not separable or drillable to preserve confidentiality for each participating processor. The Aggregate Dashboard displays sustainability metrics similar to the Member Dashboard, and processors can view and compare industry-wide performance against their own company.

Ongoing Support

In addition to the Processor Handbook, additional support mechanisms are available that make reporting into PSRT user-friendly. An FAQ document is located on the Member Dashboard for all users to access. The system administrator provides a Help Desk function, where system users can submit questions directly, and usually receive a response within 24 hours. Additionally, reporting adopters can work independently with the system administrator (for an additional cost) to expand their company dashboard to measure and report on additional metrics beyond those within Stewardship Commitment.

Metrics to Measure Progress

Scope of the Metrics

The scope of the Stewardship Commitment's processor metrics includes all company-owned facilities. The metrics[1] are intended for use by processors of fluid milk and dairy products (e.g., cheese, yogurt and ice cream). Also, when in an organization's direct operational control, the energy, water and GHG metrics cover the transportation of milk and dairy products from the farm to processing facility to distribution/retail.

Dairy companies should explain the boundaries of the reported information in their sustainability communications. If the scope or boundary of the reported information differs from the scope of Stewardship Commitment metrics, the dairy company should explain the difference and rationale for deviation.

Value of Measurement

Measuring sustainability metrics at the dairy processor level supports identification of business risks, while also providing opportunities for cost reduction and income generation. Processors have opportunities to enhance their leadership in sustainability through the verification and communication of their sustainability performance to stakeholders. This also enhances the broader reputation of the dairy community.

The processor metrics are intended to communicate to a range of stakeholders, such as customers and engaged consumers, for the purposes of:

- Informing stakeholders about the most important aspects of sustainable plant and, where applicable, transportation operations.
- Highlighting responsible management practices in key areas.
- Inviting stakeholders to review, pilot and provide feedback on Commitment metrics so they can be refined or expanded as needed.
- Communicating about the dairy community's dedication to continuous improvement.

When communicating about a processor's sustainability performance, it is important to provide stakeholders with contextual information including, management strategies, priorities and risks, and opportunities related to the environmental, social and economic topics identified in this handbook. This information enables stakeholders and reviewers to more fully understand the company and landscape in which it operates.

Key Reporting Criteria

When reporting on the Commitment's processor metrics, please note the following:

- The metrics, in their current format, should not be used to benchmark dairy companies against each other. The metrics do not include standardized allocations of input, output and processes; therefore, comparisons could lead to false interpretation of company performance.
- Metrics are company-wide and should be used to measure and report by aggregating the totals from all facilities. If any facilities are excluded from a metric, the company should document the boundaries and explain the rationale.
- When comparing the performance of plants within the same company, the methods of measurement used in each plant must be the same.
- Some companies may process or produce non-dairy products. In that case, the company should indicate whether non-dairy products are included in the measurement and reporting (see page 8 for more information).

[1]Indicator and metric terms defined in the Stewardship Commitment (http://usdairy.com/commitment)

Processor Metrics at a Glance

Priority	Indicator & Metric
DAIRY PROCESSING	
Activity / Intensity[1]	**Dairy Production**: Lbs. of production output
GHG Emissions & Energy	**Energy Use by Source**: Total energy use (measured by MMBTU and kWh) by source type*
	Renewable Energy: Percentage of grid electricity generated from renewable sources
	Renewable Energy Mechanisms: Percentage of reporting adopters with a power purchasing agreement or renewable energy credit that defines how the electricity purchased is sourced
	GHG Emissions: Total GHG emissions by Scope 1 and 2 and by GHG type*
Water Use & Recycling	**Water Withdrawal**: Gallons of water withdrawn by source of water supply*
	Water Efficiency: Gallons of water withdrawn/lb. of production output
	Water Recycling & Reuse: Gallons of water supplied that are captured for reuse within the facility + milk water captured for use*
	Milk Water Use: Gallons of water captured from milk for use within facility*
	Surplus Water: Discharge volume – water withdrawn*
Water Quality	**Water Discharge & Quality**: Policy, program or monitoring system to ensure routine compliance with industrial or storm water permit parameters (Y/N)
Waste & Resource Recovery	**Waste Diversion**: Percentage of waste stream (lbs.) diverted from landfill or incineration without energy recapture
	Throughput Efficiency: Total waste stream*
	Resource Utilization: Food/organics (a) repurposed to feed hungry people, (b) donated or repurposed as animal feed and non-food recycled or composted (lbs.), (c) repurposed for industrial uses or compost and non-food repurposed for energy recovery (lbs.) and (d) waste sent to landfill or incineration without recapturing energy (lbs.)
Materials & Packaging	**Recycled Content**: Research/investment in use of post-consumer and/or post-industrial recycled content (Y/N)
	Material Optimization: Exploring options to reduce or replace non-recyclable and/or non-compostable packaging (Y/N)
	Material Utilization: Materials used for product packaging by primary, secondary, and tertiary packaging
Workforce Development	**Jobs**: Total number of jobs supplied and full-time employees at the end of year
	Benefits: Indirect and non-monetary benefits available to employees
Worker Health & Safety	**Leading Indicators**: Leading indicators to measure/encourage safe worker behavior (Y/N; Optional description)
	DART Rate: Days of restricted work activity or job transfer (DART) rate
Community Impact (*including Food Security & Accessibility*)	**Volunteering**: Volunteer activities performed by employees
	Donations: Monetary and product donation activities
	Educational Opportunities: Describe community educational events per year
	Product Contributions: Dairy donated or consistently supplied to a non-profit organization to feed food insecure people (Y/N)
Food Safety & Product Quality	**Food Safety Programs**: Validated, verifiable food safety programs and management systems in place (Y/N)
	Food Safety Program Reassessments: Frequent reassessment of food safety programs to ensure efficacy and to reflect new food safety tools/practices and ensure continuous improvement (Y/N)
	Traceability: Commitment to voluntary U.S. Dairy Traceability Guidelines (Y/N)

Production Output

Efficiency Metrics

Many of the processor Stewardship Commitment metrics are efficiency-based metrics, meaning they quantify environmental impact on a per-unit basis (i.e., energy use, MMBTU/lb. of production output). Reporting efficiency-based metrics is advantageous for several reasons:

- It avoids year-over-year differences that result from changes in production levels.
  - For example, a reduction in absolute metrics can be a result of lower production as opposed to a sustainability achievement.
- Efficiency does not penalize companies for economic achievement. Calculating impacts based on efficiency allows companies to celebrate economic success while still setting goals to improve/reduce natural resource use and impacts.

Across all processor efficiency-based metrics, the same denominator applies (production output) to calculate each Commitment metric. Therefore, accounting for a company's total production output for the reporting period will streamline measurement and reporting because the same number may be referred to when calculating efficiency metrics.

Companies should still calculate production output and Commitment metrics at each facility, as this allows plant managers to benchmark performance at a site level to identify opportunities for localized improvement. Then, efficiency metric calculations from all facilities may be aggregated for company-wide reporting.

To normalize various units of production output across dairy products, companies should report in pounds. Pounds of production output can include:

- Pounds of product (e.g., milk, cheese, butter)
- Pounds of representative product mix (can include both dairy and non-dairy products)

To establish the company's total pounds of production output for the reporting period, aggregate pounds of product produced from all processing facilities in the portfolio. Refer to this number when quantifying efficiency-based metrics throughout the Stewardship Commitment.

Double Counting

In some instances, a company may produce products that are sent to: 1) another production line within the facility, or 2) another company-owned facility for further processing. In this scenario, production output is susceptible to double-counting since the same product may cross between intermediary and final production.

For the purposes of calculating total company-wide production, only production mass ready for transfer outside of the company may be counted.

To avoid double counting within the company, each product should be designated as either a "final" or an "intermediate" product when it is transferred outside a facility. All "intermediate" products will be excluded when aggregating total company-wide production.

An example of disaggregating final and intermediary product streams are included in Table 1, page 8. Companies, however, should substitute these values with their individual plants' output values.

Production Output

Dairy Company Production Reporting			
Company	Product	Product Type	Pounds Produced
Facility A	Fluid Milk	Final Product	300,000
Facility A	Fluid Milk	Intermediate Product to Facility B	700,000
Facility A	Fluid Milk	Ingredient	200,000
Facility A	Yogurt	Final Product	190,000
Facility B	Cheese	Final Product	450,000
Facility B	Whey	Final Product	55,000
		Facility A Production	1,000,000 lbs. Milk **+** 190,000 lbs. Yogurt **=** 1,190,000 total lbs.
		Facility B Production	450,000 lbs. Cheese **+** 55,000 lbs. Whey **=** 505,000 total lbs.
		Company Production	300,000 lbs. Fluid Milk **+** 190,000 lbs. Yogurt **+** 450,000 lbs. Cheese **+** 55,000 lbs. Whey **=** 995,000 total lbs.

(Table 1) Product stream accounting table to disaggregate final and intermediary products and avoid double counting.

Allocation of Non-Dairy Products and Non-Dairy Components of Dairy Products

All non-dairy production and associated consumption of water/energy/waste, etc., must be accounted for before aggregation of industry-wide numbers.

In the case that a company processes milk and a non-dairy product in the same building, all metrics reported will be apportioned between dairy and non-dairy production using a straight allocation method. For this reason, reporting adopters are asked to report all non-dairy production that occurs within the facility.

If a processor reports 60 million pounds of milk and 40 million pounds of non-dairy production at the same location, the PSRT will calculate dairy metrics based on the percentage (60% in this example) of dairy production over total consumption.

Certain dairy products may also contain non-dairy components within their final products. For instance, granola may be included in yogurt. Similarly, Oreo® cookie crumbles may be included in ice cream. Processors should report only the weight of the dairy components within a dairy product for production reporting purposes.

Non-dairy components should be reported under non-dairy production only if they impacted sustainability metrics by consuming energy, water, etc., so the allocation method may be applied. For example, a facility that manufactured (mixed, cooked, processed, etc.), the granola added to the yogurt would report all granola made as non-dairy production. If the facility makes 10 million pounds of yogurt cups with granola, but 10 percent of the finished product is granola, the facility will report nine million pounds of yogurt produced and one million pounds of non-dairy production.

Non-dairy components that did not impact sustainability metrics should not be reported under production. For example, Oreo® cookie crumbles made off-site and shipped to the facility for adding to ice cream would not be reported under production. If a facility makes one million pounds of Oreo® ice cream, but five percent of the finished product is Oreo® cookies, the processor would report 950,000 pounds of ice cream produced. The 50,000 pounds of Oreo® cookie crumbles would not be reported under production.

Energy & GHG Emissions

Value of Measurement

Energy is frequently managed as part of a sustainability program due to the environmental impacts such as greenhouse gas (GHG) emissions from the production and use of energy sources. Processing accounts for approximately 20% of U.S. dairy's cradle-to-processing gate GHG footprint.[2] In order to understand the industry's progress towards its goal of achieving GHG neutrality by 2050, emissions from dairy plants should be estimated and reported.

Measuring energy and GHG emissions can support dairy companies in identifying ways to reduce their GHG emissions, improve energy efficiency and meet other environmental sustainability goals. Several benefits can be achieved as a result of measuring and managing energy and GHG emissions, including:

- Lowering operational costs and strengthening the economic sustainability of processing facilities
- Reducing other environmentally related impacts such as air pollution
- Easing vulnerability to energy price volatility
- Enhancing reputation with stakeholders

Intensity metrics should be analyzed within the context of a company's operations and production outputs. An improved intensity ratio is not a direct indication of reduced total GHG emissions and, therefore, should be analyzed with care.[3] The energy and GHG intensity metrics can be used internally by dairy companies to compare ratios over various time intervals. The metrics should be used to measure and report at the company level by aggregating the totals from all their facilities.

Scope of the Metrics

The energy intensity metric measures direct and indirect energy reported as total energy use per pound of production output. **Direct energy** includes fuel combusted on-site to power processing operations, such as natural gas combusted in a boiler or diesel fuel used to power generators. Direct energy also includes electricity generated on-site, such as solar arrays or biogas digesters. If within the organization's direct operational control, energy use during transportation of milk from the farm to the processing plants and from processing plants to retail or service centers are also considered direct energy use. **Indirect energy** is electricity, heating, cooling and steam purchased for consumption, but generated offsite. The most common example is electricity purchased from the power grid.

The GHG intensity metric measures direct and indirect GHG emissions in line with Scope 1 (direct GHG emissions, including from direct energy consumed, fugitive refrigerant leaks and more) and Scope 2 (indirect GHG, including from indirect energy consumption) accounting methodology from the GHG Protocol Corporate Standard. The Innovation Center developed the Scope 1 & 2 GHG Inventory Guidance, which is in line with the GHG Protocol Corporate Standard[4] and specific to U.S. dairy processors to aid in composing a GHG inventory.

Though Scope 3 GHG emissions (arising from supply chain activities) are not covered by the GHG metric for dairy processors, the Innovation Center developed the Scope 3 GHG Inventory Guidance for U.S. Dairy Cooperatives and Processors, which focuses on Scope 3 emissions accounting based on the GHG Protocol Corporate Value Chain Standard.

Indicator	Metric
Energy Intensity	• Total energy use (converted to MMBTU)/lb. of production output
GHG intensity	• Total GHG emissions (tonnes CO_2e, Scope 1 and 2)/lb. of production output

[2] *Innovation Center for U.S. Dairy. (2024). 2023–2024 U.S. Dairy Sustainability Report: Progress update to 2050 goals. U.S. Dairy.*

[3] *Brush, E. Masanet and E. Worrell. "Energy Efficiency Improvement and Cost Saving Opportunities for the Dairy Processing Industry," Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory, sponsored by the U.S. Environmental Protection Agency (2011).*

[4] *http://www.ghgprotocol.org.*

Energy & GHG Emissions

Energy Intensity

1

Measure direct energy use. Total energy use in MMBTUs per reporting year for the company should be calculated and reported using the following equation. Use the conversion factors in Table 2 to calculate MMBTUs.

	Direct Energy Purchased
+	**Direct Energy Produced**
—	**Direct Energy Sold**
Total Direct Energy Consumption	

Electricity Conversion Factors	
Electricity	MMBTU[5]
Kilowatt-hour	0.003412
Megawatt-hour	34.1214
Gigawatt-hour	3412.1

(Table 2) Electricity conversion factors for MMBTUs

NOTE: If a facility consumes electricity that is generated from a non-renewable or renewable fuel source, this consumption is accounted for only once under fuel consumption.[5]

2

Assess the amount of direct energy purchased. Calculate in MMBTUs the amount of direct energy purchased by the dairy company's operation and transportation. This includes non-renewable and renewable energy sources. Energy conversions (Table 3, page 11) are provided to convert energy usage from mass/volume measurements to a common unit – MMBTUs.

- Direct non-renewable energy sources include:
  - Coal
  - Natural gas (including compressed natural gas [CNG], liquefied natural gas [LNG])
  - Fuels from crude oil: gasoline, diesel, liquefied petroleum gas (LPG)
- Direct renewable energy sources include:
  - Biomass-based intermediate energy
  - Biofuels including biodiesel (measure B20 and B100 use separately) and ethanol (measure E85 and E10 use separately)
  - Geothermal
  - Hydrogen-based intermediate energy
  - Hydroelectric energy
  - Biogas digesters
  - Solar
  - Wind

3

Measure indirect energy use. Utility bills commonly use the units of kilowatt-hour (kWh) for electricity. Use the conversion factors in Table 2 to convert energy units to MMBTUs. Facilities consuming other forms of indirect energy (district heating, cooling and steam) must determine the appropriate energy conversion if bills are measured in volume rather than energy.

NOTE: Reporting facilities should take care to report indirect energy consumption in terms of site energy, not source energy. (Site energy does not include the impact of power plant efficiency, transmission losses, etc.).

[5]*GRI Standard 302-1:2.1.1*

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3

Energy Conversion			
Units	MMBTU[6]	Units	MMBTU[6]
Coal		Natural Gas	
Tonne (metric)	17.156	Therm	0.1000
Ton (short)	18.911	Cubic foot	0.001036
Biomass Gas		Biofuel (B10)[7]	
Cubic foot	0.000655	U.S. gallon	0.1273
Gasoline		Biofuel (B100)[7]	
U.S. gallon	0.120333	U.S. gallon	0.128
Diesel		Liquefied Petroleum Gas	
U.S. gallon	0.137381	U.S. gallon	0.092
Fuel Oil		Propane	
U.S. gallon	0.138500	U.S. gallon	0.091
Ethanol (E100)3		Ethanol (E85)[7]	
U.S. gallon	0.084	U.S. gallon	0.0818

[6]All conversion factors are derived from U.S. EIA Energy Conversion Calculations unless otherwise cited.
[7]U.S. EPA, 2018

(Table 3) Energy conversion factors of common fuels

4

Measure total energy used. Measure total energy as the sum of total direct and indirect energy use.

Total Energy Use		
Total Direct Energy Use (MMBTUs)	Total Indirect Energy Use (MMBTUs)	Total Energy Used (Direct + Indirect Energy Use, MMBTUs)

(Table 4) Energy use accounting table

5

Measure total annual production. Assess the total annual dairy production output (lbs. of product).

NOTE: This is the same number calculated in the "Calculating Production Output" section in Table 1, page 8

6

Report the energy intensity. Report the total energy used in MMBTUs per pound of production output. Indicate whether non-dairy products were included in the measurement and reporting.

Energy Intensity		
Total Direct Energy Use (MMBTUs)	Production Output (lbs.)	Energy Intensity (MMBTUs/lbs. production output)

(Table 5) Energy intensity accounting table

7

Optional measurement considerations. As another information point for the company, consider reporting energy consumption in MMBTUs both in total and broken down by renewable primary energy source.

8

Documentation. Energy use information can be obtained by reviewing invoices and measuring or calculating heat/fuel accounting or estimations.

- Amounts of MMBTUs can be taken directly from invoices and delivery notes or can be converted using energy units multiplied by values in the table for Energy Conversion Factors for Common Fuels (page 11).
- For a processing plant, annual dairy product production can be calculated from annual sales.

Resources

- EPA's ENERGY STAR® Performance Indicators, http://bit.ly/362JqXk: Provides industry-specific benchmarking tools to score a plant's energy performance and compare it to that of similar plants; includes resources and guidance.
- Energy Insights & Tips: Includes insights on energy-saving tips for employees, executives and building managers.
- EPA Water & Energy Efficiency by Sectors, http://bit.ly/2PcgDJZ: Provides guidance on how both energy and water can be used more efficiently.
- EDF Climate Corps Handbook, http://bit.ly/2PhTs0X: Provides strategic energy management information for organizations.

Energy & GHG Emissions

GHG Intensity

1

Measure GHG emissions. Processors should indicate the method used to estimate GHG emissions from the following choices:

- Direct measurement (e.g., continuous online GHG analyzers)
- Calculation based on site-specific data (e.g., fuel use)
- Calculation based on default data
- Estimations (If estimations are used due to a lack of default figures, indicate which basis figures were obtained.)

Processors may refer to the Innovation Center's Scope 1 & 2 GHG Inventory Guidance to compose a Scope 1 and 2 GHG inventory.

Assess Scope 1 (direct) GHG emissions from all sources owned or controlled by the processor including:

- On-site generation of electricity, heat or steam (e.g., natural gas combustion to fuel a boiler)
- Fugitive refrigerant leaks from plant (not including ammonia)

NOTE: Some refrigerants emit extremely potent GHGs, with global warming potentials thousands of times greater than CO2. As a result, processors should exercise careful and accurate measurement when quantifying fugitive emissions. Processors can utilize the Refrigerant Module of the Processor Stewardship Reporting Tool to estimate and accurate fugitive emissions footprint

- Biogenic methane and nitrous oxide emissions (e.g., from nitrogen-rich wastewater land spreading*)
  - Biogenic CO_2 emissions are reported separately from a Scope 1 and 2 inventory according to the GHG Protocol
- Fugitive refrigerant leaks from distribution fleet (if fleet is owned or controlled by processing company)
- Fuel use from transportation of milk from the farm to the processing facility (if transportation infrastructure is owned or controlled by the processing company)
- Fuel use from transportation of dairy products to distribution or retailer facilities and transportation of materials, supplies and waste related to dairy products (if transportation infrastructure is owned or controlled by the processing company)

Assess Scope 2 (indirect) GHG emissions from all sources, including consumption of purchased electricity, heat or steam.

** Nitrogen-rich wastewater is wastewater containing a total nitrogen concentration of at least 2 mg/L, as defined by the EPA as the minimum acceptable range of nitrogen in wastewater.*

2

Measure total annual production. Assess the total annual volume of fluid milk processed and/or total annual product output.

NOTE: This is the same number calculated in the "Calculating Production Output" section in Table 1, page 8

3

Report GHG intensity. Assess the total annual dairy production output (lbs. of product).

Once all Scope 1 and 2 GHG emission sources from all processing plants and owned or controlled fleets are measured, aggregate these values to calculate the company-wide absolute emission inventory. Then, report the GHG emissions (metric tonnes CO_2e, Scope 1 + Scope 2) per pound of production output.

- Indicate whether non-dairy products were included in the measurement and reporting.

continued on next page

3

Scope 1 & 2 GHG Emissions			
Scope 1 Sources		Scope 2 Sources	
On-site generation of electricity, heat or steam		Purchased electricity	
Fugitive refrigerant leaks from plant			
Fuel use from transportation of milk from farm to processing plant, or product from processing plant to processing plant (if owned/controlled)		Purchased heat	
Fuel use from transportation of dairy products to distribution/retail (if owned/controlled)		Purchased steam	
Fugitive refrigerant leaks from distribution fleet (if owned/controlled)			
Biogenic methane and nitrous oxide			
Total (tonnes CO_2e)		**Total (tonnes CO_2e)**	

(Table 6) Scope 1 & 2 GHG emissions source accounting table. Use to aggregate emissions at each processing plant and from transportation fleets (if applicable).

Company-wide GHG Emission Intensity				
Company-wide Scope 1 Emissions (tonnes CO_2e)	Company-wide Scope 2 Emissions (tonnes CO_2e)	Total Scope 1 & 2 Footprint (Company-wide Scope 1 + Company-wide Scope 2, tonnes CO_2e)	Company-wide Production Output (lbs.)	GHG Emissions/ Production Output (tonnes CO_2e/lbs.)

(Table 7) Emissions intensity calculation table.

Resources

- Scope 1 & 2 GHG Inventory Guidance for U.S. Dairy Processors, https://bit.ly/33UC60F: Industry-specific GHG accounting and reporting guidance based on the GHG Protocol Corporate Standard.
- Scope 3 GHG Inventory Guidance for U.S. Dairy Processors, https://bit.ly/2VSbucl: Industry-specific supply chain GHG accounting and reporting guidance based on the GHG Protocol Corporate Value Chain Standard.
- Dairy Processor GHG Reduction Opportunities Guidance, https://bit.ly/3Zi9A4n: Provides in-depth strategies, technologies, and resources to help dairy processors lower their GHG footprint.
- CDP, https://www.cdp.net/en: Works with some of the largest corporations worldwide to ensure that an effective carbon emissions reduction strategy is made integral to their business.
- EPA Center for Corporate Climate Leadership, http://bit.ly/2oeSRSL: Includes comprehensive sector-specific GHG inventory guidance, emission factors and reporting tools.
- EPA's GHG Equivalencies Calculator, http://bit.ly/3647hGb: Translates energy or GHG emissions data into concrete equivalent impacts.
- The GHG Protocol Corporate Standard, http://bit.ly/2N8VhuA: Provides requirements and guidance for companies and other organizations preparing a corporate-level GHG emissions inventory.
- The GHG Protocol Corporate Value Chain Standard, http://bit.ly/31DIlgZ: Provides requirements and guidance for companies and other organizations preparing a Scope 3 value chain GHG emissions inventory.
- The Climate Registry, https://bit.ly/3rSb21d: Has voluntary and compliance GHG reporting programs and assists organizations in measuring, verifying and reporting emissions.

Energy & GHG Emissions

Definitions

Direct energy	Direct energy includes energy generated on-site through fuel combustion and/or energy collecting/harvesting. It can be purchased, extracted (e.g., coal, natural gas, oil), harvested (e.g., biomass energy), collected (e.g., solar, wind), or brought into the plant's boundaries by other means. (Definition from Global Reporting Initiative [GRI] Guidelines and updated to make relevant to processors). Emissions from direct energy consumption are considered Scope 1 for GHG reporting purposes.
Renewable energy sources	Renewables are energy sources capable of being replenished within a short time through ecological cycles (as opposed to resources such as minerals, metals, oil, gas and coal that do not renew in short time periods). Such energy sources include the sun, wind, moving water, organic plant and waste material (biomass), and the earth's heat (geothermal). (Definition from U.S. EPA 2011)
Indirect energy	Indirect energy is produced outside the company's boundary to supply energy for the organization's intermediate needs (e.g., electricity or heating and cooling). The most common example is fuel consumed outside the company's boundary in order to generate electricity to be used inside the company's boundary. Emissions from indirect energy consumption are considered Scope 2 for GHG reporting purposes.
Energy intensity	Intensity is energy consumption per unit of product. Rather than absolute metrics that report total energy use across operations, intensity metrics provide a normalization factor (e.g., units of milk production) to more accurately track progress over time. By dividing absolute impact by units of production, energy intensity metrics allow the dairy community to measure progress regardless of changes to production volume.

Scope 1 direct emissions	Direct emissions are from sources that are owned or controlled by the dairy processor. For example, direct emissions related to combustion would arise from burning fuel for energy within the processor's operational boundaries.
Scope 2 indirect emissions	Scope 2 indirect emissions result from processor activities but are generated at sources owned or controlled by other businesses. In this context, indirect emissions refer to GHG emissions from the generation of electricity, heat or steam that is imported and consumed by the processor.
Scope 3 indirect emissions	Scope 3 indirect emissions are all other indirect emissions not accounted for in Scope 2. These emissions occur upstream and downstream in processors' supply chains. For example, the Scope 1 and 2 emissions generated from producing a certain quantity of fluid milk on-farm are equivalent to a processor's Scope 3 emissions if it purchases that fluid milk.
Carbon dioxide equivalent (CO_2e)	Carbon dioxide equivalent is the measure used to compare the emissions from various GHGs based on their global warming potential (GWP). CO_2e is derived by multiplying the tons of the gas by the associated GWP, assuming a 100-year time frame. • GWP values from the IPCC Fifth Assessment Report • EPA GWP calculation explanation
GHG intensity	GHG intensity is emissions per unit of product. Rather than absolute metrics that report total GHG emissions across operations, intensity metrics provide a normalization factor (e.g., lbs. of milk production) to more accurately track progress over time. By dividing absolute impact by units of production, GHG intensity metrics allow the dairy community to measure progress regardless of changes to production volume.

Water Use & Recycling/Water Quality

Value of Measurement

Water is a vital resource in dairy processing, essential for sanitation, product formulation, cooling and more. Despite that less than 3% of U.S. dairy's total water use is used for milk production, processing and other purposes, U.S. dairy processors are committed to safeguarding shared water resources, especially in areas with higher water stress and scarcity.

Measuring water efficiency allows for comparison of water use per unit of output over time. It is a key component of a water management plan, as measuring and reporting water efficiency can result in:

- Identifying opportunities for improved production processes and cost savings
- Understanding of the overall scale of avoided impacts, risks and contributions through recycling associated with water use
- Maintaining compliance with water permits
- Understanding water disposal costs and risks
- Improving relations with stakeholders

The metrics should be used to measure and report at the company level, aggregating the totals from all facilities. Water efficiency is one intensity metric that can be used by dairy companies to compare the ratios and demonstrate improvements over time. Due to the breadth of dairy products and manufacturing processes, water metrics should not be used to benchmark one company against another.

Scope of the Metrics

The metrics cover the direct water withdrawal, efficiency and quality impacts of dairy processing plants. More details are provided below.

Priority	Indicator	Metric

Water quantity	Water withdrawal	• Gallons of water withdrawn by source of water supply/lb. of production output. Pounds of production output can include:
		  • Pound of product (e.g., milk, cheese, butter)
		  • Pound of representative product mix (can include both dairy and non-dairy products)

	Water efficiency	• Gallons of water withdrawn/lb. of production output
	Water recycling and reuse	• [Gallons of water supplied that are captured for reuse within the facility + milk water captured for use]/lb. of production output
	Milk water use	• Gallons of water captured from milk for use within facility/lb. of production output
	Surplus water	• [Discharge volume – water withdrawn]/lb. of production output
Water quality	Water discharge and quality	• Do you have a policy, program or monitoring system that ensures routine compliance with industrial or stormwater permit parameters? (Y/N)

Water Withdrawal

1

Measure water withdrawal. Assess the total volume (in gallons) of water withdrawn from each water source that was either withdrawn directly or provided through intermediaries such as water utilities. This quantity includes the abstraction of cooling water.

- Total water withdrawn is the sum of all water withdrawal within the boundaries of the reporting organization from all sources (including surface water, groundwater, collected rainwater and municipal water supply) for any application over the course of the reporting period.

NOTE: According to the Global Reporting Initiative (GRI), milk water is considered a source of water withdrawal. Therefore, processors reporting water data in compliance with GRI standards should include milk water in their total water withdrawal calculation. However, for the purposes of Stewardship Commitment reporting, milk water is omitted from overall water withdrawal. The Processor Stewardship Reporting Tool is equipped to calculate both aggregate withdrawal metrics should the GRI-aligned metrics need to be calculated.

- If a municipality is involved, information about the supply source will need to be collected and included in the water accounting. Water provided by a municipality, but not listed elsewhere in the reported water withdrawal as being derived from a specific source, remains classified as the municipal water supply.

2

Report water withdrawal. Report the total volume of water withdrawal in gallons/lb. of production output for each of the company's sources. Pounds of production output can include:

- Pounds of product (e.g., milk, cheese, butter)
- Pounds of representative product mix (can include both dairy and non-dairy products)

Gallons of water withdrawn is measured as the volume of water brought into the plant's boundaries and excludes recycled water within the system. Indicate whether non-dairy products were included in the measurement and reporting. For each facility, aggregate water withdrawal from each source and divide this total by production output. Then, aggregate water withdrawal by source across all facilities. Refer to the Water Withdrawal Table 8 below.

Water Withdrawal			
Water Source	Gallons of water withdrawn	Lb. of production output	Water withdrawal by source (gallons/lbs.)
Surface water, including water from wetlands, rivers, lakes and oceans			
Groundwater			
Rainwater collected directly and stored by the reporting organization (includes snow and ice melt water)			
Wastewater from another organization			
Municipal water supplies or other water utilities (and source)			
Totals			

(Table 8) Water withdrawal based on source to be reported in gallons extracted/lbs. of production output. Divide gallons of water from each source by lbs. of production output to calculate water withdrawal by source.

Water Use & Recycling/Water Quality

Water Efficiency

1

Measure water efficiency. Assess the total gallons of water withdrawn for each facility by referring to the bottom row of the second column of the Water Withdrawal Table 8, page 18. Aggregating this value across facilities yields all water withdrawn by the company during the reporting period.

2

Report water efficiency. Report water efficiency in gallons (aggregate total of all sources) per lbs. of production output. Pounds of production output can include:

- Pounds of product (e.g., milk, cheese, butter)
- Pounds of representative product mix (can include both dairy and non-dairy products)

Gallons of water withdrawn is measured as the volume of water brought into the plant's boundaries and excludes recycled water within the system. Indicate whether non-dairy products were included in the measurement and reporting.

Water Efficiency		
Gallons of Water Withdrawn	Lbs. of Production Output	Water Efficiency (gallons consumed/lbs. production output)

(Table 9) Water efficiency to be reported in total gallons of water withdrawn per lbs. of production output.

Water Recycling and Reuse

1

Measure water recycling and reuse. Recycling/reuse is the act of processing used water/wastewater through another cycle before discharge to final treatment and/or discharge to the environment.

2

Calculate the volume. Calculate the volume (in gallons) of water supplied that is captured for reuse within the facility.

- For example, if the company has a production cycle that requires 200 gallons of water per cycle, the company withdraws 200 gallons of water for one production process cycle and then reuses it for an additional three cycles. The total volume of water recycled/reused for that process is 600 gallons.
- This indicator measures both water that was treated prior to reuse and water that was not treated prior to reuse. Gray water (i.e., collected rainwater and wastewater generated by non-septic water collection) is included.

Next, if applicable, calculate the volume (in gallons) of water extracted from evaporative/condensing processes (condensate of whey) that was reused or recycled during the reporting period. Guidance on calculating this value is included in the 'Milk Water' section (page 21).

3

Report water recycling and reuse. Processors can report this indicator to convey their water conservation and efficiency management practices. Report the total volume of water recycled/reused within each facility. Then, sum the total water recycled across all facilities and divide by the total production output for the company in pounds (Table 10 below).

Water Recycling and Reuse			
Water Recycling Category	Water Recycled (gallons)	Lbs. of Production Output	Water Recycling Ratio (total water recycled/ lbs. of production output)
Water supplied that is captured for reuse within the facility			
Milk water (condensate of whey) extracted for reuse/recycling in the same facility			
Total water recycled (water captured for reuse + milk water)			
Totals			

(Table 10) Report water recycling and reuse in gallons per facility divided by pounds of production output.

4

Optional measurement considerations. Certain organizations may find reporting water recycling and reuse as a percentage of total water consumption as valuable to their internal business and sustainability operations. Therefore, organizations have the option to report this metric in the following format as well.

Calculating Percentage of Water Recycled/Reused		
Total Water Recycled/ Reused (gal.)	Total Water Withdrawn (gal.)	Percent Water Recycled/Reused (recycled water/total water withdrawal)

(Table 11) Values needed to calculate total recycled/reused water as a percentage. Divide gallons of water recycled/reused by gallons of total water consumed to yield percentage.

5

Documentation. Information can be obtained from regulatory permits as well as water meters and bills. If water meters, bills or reference data do not exist, use the company's own estimate based on an audit or inventory.

Water Use & Recycling/Water Quality

Milk Water Use

1

Measure milk water use. Milk water, sometimes referred to as "cow water," is the remaining water after milk has evaporated or concentrated through multi-effect evaporation or process reverse osmosis.[8] This water can be recovered, cleaned and reused within a processing plant.

Processors have several methods by which measuring milk water retention and reuse is possible:

- Mathematical estimation based on total volume of milk processed
- Meters on condensers and/or evaporators
- Separate milk water tanks

This guidance recommends measuring milk water use with either a segregated holding tank or volumetric meters installed on condensers/evaporators (these methods yield the most accurate and granular measurements). If an organization lacks the physical or financial resources to implement this infrastructure, estimate milk water by using Table 12 (below).

Milk Water Recovery Estimation		
Volume of Milk Processed (gal.)	Milk Water Recovery Factor	Estimated Milk Water Recovered in Gal. (processed milk volume x recovery factor)
	0.87	

(Table 12) Activity data needed to calculate an estimate of milk water recovery if the processing plant lacks sufficient measurement infrastructure.

The residual water from condensing/evaporating milk represents approximately 87 percent of the total volume of milk processed, as defined by the International Dairy Federation (IDF). Therefore, 0.87 can be used as a coefficient to estimate the volume of milk water extracted, assuming that all of it is used within the same facility. Although a significant quantity of milk water can be recovered for reuse, the dairy industry must abide by the Federal Grade A Pasteurized Milk Ordinance as a guideline to determine how this water can be reused. Reusing cow water for potable purposes is difficult because complying with the standards necessary to achieve this stringent water quality criteria is not easy. Also, the financial investment necessary to meet the criteria is significant.

However, milk water can be reused for non-potable processes in the plant, such as boiler feedwater, cooling water makeup, CIP pre-rinse, cleaning solutions makeup water, case washing and pump seals.9

2

Report milk water use. Report how much milk water the organization recovered, treated and reused within the reporting period. It is important to note there are restrictions on where and how milk water can be used based on characteristics such as turbidity, chemical oxygen demand and biological content. Therefore, if a portion of milk water is recovered but not fit for internal process use, it should not be disclosed in this indicator.

Once milk water use is calculated for each processing plant, aggregate values for all plants.

Milk Water Use		
Water Captured from Milk for Use Within Facility (gallon)	Production Output (lbs.)	Milk Water Use (gallon/lbs.)

(Table 13) Activity data needed to report milk water use in reporting period sufficient measurement infrastructure.

[8] *Recycle Cow Water Best Practices. Ecolab, 2018.*

Surplus Water

1

Assess surplus water. Dairy processors may often have excess water after processing operations are conducted. As a result, this water can be recovered, treated and discharged beneficially.

The term "discharged beneficially" is susceptible to many interpretations depending on local watershed geography and state laws. However, the EPA's National Pollutant Discharge Elimination System (NPDES)[9] dictates water treatment regulations for discharged water based on a permit system. Therefore, so long as a company has the appropriate discharge permits, discharging water into local surface waterways and groundwater wells is considered beneficial since it contributes to numerous environmental benefits.

- It is important to note that discharging excess water for land or surface water application is regulated by state and regional EPA offices.
- These agencies set specific agronomic rates by which wastewater discharge must abide, and the rates vary by region, watershed and industry.
- Therefore, it is important to check the permitted effluent discharge guidelines at your organization's facilities to ensure compliance.
- Watershed-based NPDES discharge permits specify what the water quality limits are.
  - Dairy processing effluent guidelines can be found in the EPA Dairy Products Processing Effluent Guidelines.
  - Watershed-based discharge permit guidelines can be found on the EPA Watershed-based Permitting webpage.

Furthermore, the EPA defines other non-environmental beneficial uses of discharged water in addition to surface water discharge and groundwater recharge. Specifically, applications of recycled discharge water include:[10]

- Agriculture
- Public parks
- Golf course irrigation
- Processing water for mills, plants
- Landscape
- Toilet flushing
- Publicly owned treatment works
- Dust control
- Construction activities
- Concrete mixing
- Artificial lakes
- Cooling water for power plants and oil refineries

Surplus water is similar to milk water. However, the key difference originates at the point at which the water volume is measured. Milk water is measured after it has been separated from milk solids, but before it is used for internal processes such as boiler feedwater or cooling.

Some milk water is lost as evaporation or condensation when it is used in internal operations, so the quantity of resulting water after these operations is likely less. Surplus water is measured after it has been used in internal plant operations and treated, but before it is discharged into the environment. This is done to avoid accounting for water that is likely lost in dairy processing.

NOTE: Deep well injection and evaporation basins are not considered beneficial uses of discharge water. These methods do not directly contribute to water recovered into the local water supply.

[9] *EPA – Summary of the Clean Water Act*
[10] *EPA - Water Reuse and Recycling: Community and Environmental Benefits*

2

Report surplus water. To accurately quantify the excess water discharged to beneficial use, facility-level activity data must first be collected:

- Volume of water discharged to each source
- Volume of water withdrawn for facility processing

Excess Water Discharge Volume		
Volume of Water Withdrawn in Facility (gal.):	Processing Facility Location:	
	Volume of water discharged to agriculture	
	Volume of water discharged to landscape	
	Volume of water discharged to public parks	
	Volume of water discharged to golf course irrigation	
	Volume of water discharged to cooling	
	Volume of water discharged to processing	
	Volume of water discharged to municipal toilet water supply	
	Volume of water discharged to dust control	
	Volume of water discharged to construction activities	
	Volume of water discharged to concrete mixing	
	Volume of water discharged to artificial lakes	
	Volume of water discharged to surface water bodies	
	Volume of water discharged to replenish groundwater aquifers	
	Volume of water discharged to publicly owned treatment works	
	Total discharge volume (gallons)	

Once these values are obtained for every facility, aggregate the volume of water withdrawn for all facilities. Then, aggregate the total discharge volume across all facilities. Finally, take the difference between total water discharged and total water withdrawn.

Total Discharge Volume Across all Facilities
Σ Facility Total Discharge Volume — Σ Facility Total Water Volume Withdrawn

(Table 14) Wastewater discharge accounting table for each processing facility in an organization's portfolio.

Surplus Water Calculation				
Company-wide Total Discharge Volume (gal.)	Company-wide Total Water Withdrawal (gal.)	Difference	Production Output (lbs.)	Surplus Water (gal./lbs. production output)

(Table 15) Calculation table for quantifying surplus water during reporting period.

Water Use & Recycling/Water Quality

Water Discharge and Quality

1

Determine all industrial or stormwater permits relevant to your facility. Verify all permits have an associated policy, program or monitoring system to manage compliance.

2

Report. Report whether your organization has a monitoring system to manage compliance.

Resource

- National Standards for Wastewater Discharges to Surface Waters and Publicly Owned Treatment Works for Dairy Products Processing, http://bit.ly/2dugHQg: Many states and localities require processors to comply with a permitting process.
- The Water Footprint Network, http://waterfootprint.org: Works across sectors to share knowledge and insights for water stewardship and resource efficiency.
- ISO 14046, http://bit.ly/2eH2HpB: An international standard that helps organizations identify and define their water footprint.
- The World Resources Institute Aqueduct Measuring and Mapping Water Risk Tool, http://bit.ly/1XLTIE9: Provides comprehensive global mapping to understand water risks and opportunities worldwide.
- Recycling Cow Water Best Practices, https://bit.ly/36YO6hw: Ecolab resource document outlining best uses and practices for recycled milk water.
- EPA – About NPDES, https://bit.ly/2KmfAUx: General information on the National Pollutant Discharge Elimination System created under the Clean Water Act.
- EPA - Watershed-based Permitting, https://bit.ly/2NNRlkw: Information and agronomic limits for wastewater discharging based on the watershed.
- EPA – Industrial Wastewater, https://bit.ly/2Kohc0h: Information on wastewater discharging for industrial processes.
- EPA – Dairy Processing Effluent Guidelines, https://bit.ly/2Kmofqa: Industry-specific discharge guidelines for wastewater.
- Dairy Processing Water Definitions and Reuse Opportunities, https://bit.ly/3IiolOb: Common definitions and guidance for water reuse and recycling in dairy processing operations.
- Ecolab Smart Water Navigator: Online tool that helps organizations assess water risks, set informed, context-based water goals and develop a plan to achieve them.

Waste & Resource Recovery

Value of Measurement

Optimizing resource recovery and deploying circular practices are a business imperative. Waste can have impacts on the environment and communities, which can extend beyond the locations where waste is generated and discarded. Within direct operational boundaries, U.S. dairy is reducing waste and improving resource recovery by using byproducts from food processing as animal feed and implementing waste management plans at processing plants.

These practices reduce the volume of materials consumed and increases efficiencies directly related to lower operational costs. Measuring, managing and reporting on waste and resource recovery can also support with:

- Reducing risks from environmental regulations, fines and fees
- Improving reputation among stakeholders
- Adding a source of revenue from repurposed materials
- Generating societal and environmental benefits essential to a sustainable food system
- Reducing GHG emissions[11]

Scope of the Metrics

The scope of resource recovery includes all waste or byproducts produced from a processing facility during normal manufacturing processes (except for "out of scope" topics). A facility includes the manufacturing building and any office space that is located within the building footprint. The facility will communicate progress for the manufacturing of any product (not just dairy).

Materials in scope include (but are not limited to), paper, plastics, organic/food waste, cardboard, used oil, metals, hazardous waste, wood, biogas and electronics. Sludge is within the scope of resource recovery metrics and is defined as liquid waste that cannot be discharged as wastewater and must be transported off-site for further treatment and processing. Wastewater is otherwise out of scope, as this topic is addressed separately within the processor water metrics (page 17).

Out-of-scope issues include:

- Consumer and customer packaging waste outside of the manufacturing process
- Wastewater (i.e., treated or untreated water that can be discharged on-site)
- Transportation waste (e.g., tires from fleet trucks)
- Construction and demolition waste
- One-time incidents such as natural disasters and other emergency situations

The boundaries of the metrics are the point where a recycling, treatment or disposal facility accepts the facility's waste. For example, that waste generated/landfilled by the recycling process for cardboard and plastic, or the ash from incineration facilities, is not considered to be within the scope of a facility's waste. This is a globally accepted approach, and if not followed, it would be virtually impossible to ever achieve zero manufacturing waste to landfill. The metrics do not cover food donations as a standalone metric. This metric is linked to two other metrics: monetary and product donations and product contributions (page 46).

[11] *NRDC Food Waste, http://on.nrdc.org/2dJD6g9*

Waste & Resource Recovery

Indicator	Metric
Waste diversion	• Percent by weight of total waste stream (lbs.) diverted from landfill or incineration without recapturing energy
Throughput efficiency	• Total waste stream/lbs. of production output
Resource utilization	• Food/organics repurposed to feed hungry people • Food/organics donated or repurposed as animal feed and non-food recycled or composted (lbs.)/total waste stream (lbs.) • Food/organics repurposed for industrial uses or compost and non-food repurposed for energy recovery (lbs.)/total waste stream (lbs.) • Waste sent to landfill or incineration without recapturing energy (lbs.)/total waste steam (lbs.)

Waste Diversion

1

Measure waste streams using established hierarchies. The first step to reducing waste is to measure and track the amount, type and reason for its generation. A variety of tools exist to conduct waste audits, from simple waste logs to commercial measurement and tracking software and equipment. Knowing how much and why waste is generated helps a business create targeted waste prevention strategies. This baseline also serves as a marker for measuring diversion rates and changes in spending. The Innovation Center published industry guidance for dairy processors on how to conduct a facility waste audit to better prioritize, manage and mitigate waste streams (see resources section).

The EPA's widely adopted Waste Management and Food Recovery Hierarchies provide guidance to prioritize actions to prevent and reduce waste. Each tier of these hierarchies focuses on different waste management strategies.

- The Food Recovery Hierarchy (Figure 1, page 27) refers to organic materials, such as whey solids, from the dairy processing stream that have the potential to be fed to either humans or animals, whether they are actually used for such purposes.
- The Waste Management Hierarchy (Figure 2, page 27) refers to waste that cannot be fed to either humans or animals.

The top levels of the hierarchy are the best ways to prevent and divert waste because they create the most benefits for the environment, society and the economy. The EPA hierarchies define source reduction, or preventing waste before it is ever created, as the most desirable approach. Benefits include reducing disposal costs, over-purchasing and resources associated with food and raw material production.

While preventing waste generation is preferred, the EPA Food Recovery and Waste Management Hierarchies provide guidance on how best to repurpose the inevitable waste that does occur. Feeding hungry people is the best use of surplus food. Dairy processors can play leadership roles in this area by donating safe, wholesome and edible dairy products.

continued on next page

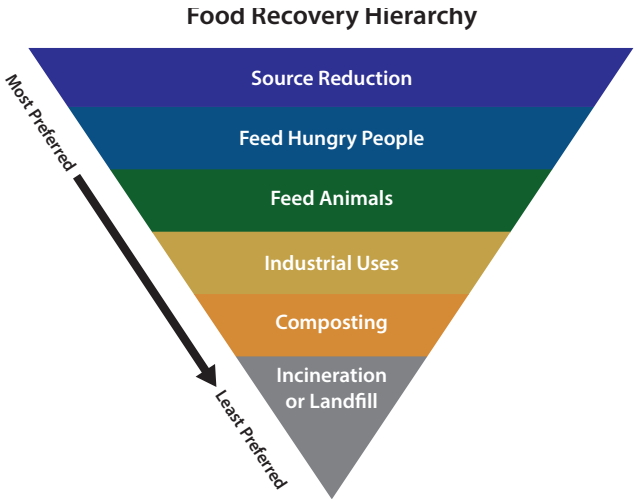
1

Should surplus food or organic material be unsuitable for human consumption, feeding animals is the next best diversion strategy. For dairy processors, sending organic waste back to farms as animal feed helps close the loop for sustainable food systems and nutrient cycling. Also, this approach can reduce disposal costs. Federal laws and regulations, however, govern the use of dairy products for livestock feed. State-by-state regulations also vary in the type of foods that can be used as livestock feed or feed supplements.

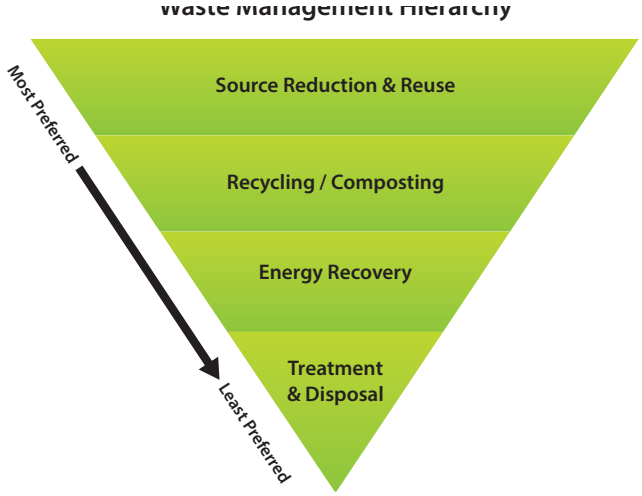
Industrial uses are next in the Food Recovery Hierarchy. This includes rendering fats, oils and greases and converting organic waste into biofuel. Recovering food scraps for anaerobic digestion is also considered an industrial use.

Should more desirable re-purposing alternatives be unavailable, composting organic material as a soil amendment remains a preferred approach to the landfill. Benefits of composting include reducing the need for chemical fertilizers, opportunities to turn waste into a marketable commodity and the avoidance of methane and leachate formulation in landfills. However, there are regulations for composting facilities, and the feasibility of composting at a commercial level will vary state-by-state. Land application of food waste as a soil amendment is also applicable when responsibly managed in compliance with applicable laws and regulations.

The Waste Management Hierarchy (Figure 2) provides similar guidance for prioritization of non-food waste. Recycling is the process of collecting waste items, sorting and processing them into raw materials and, finally, remanufacturing them into new products. Energy recovery is the conversion of waste into usable heat, electricity or fuel.



(Figure 1) Food Recovery Hierarchy in order of most preferred (top) to least preferred (bottom).



(Figure 2) Waste Management Hierarchy in order of most preferred (top) to least preferred (bottom).

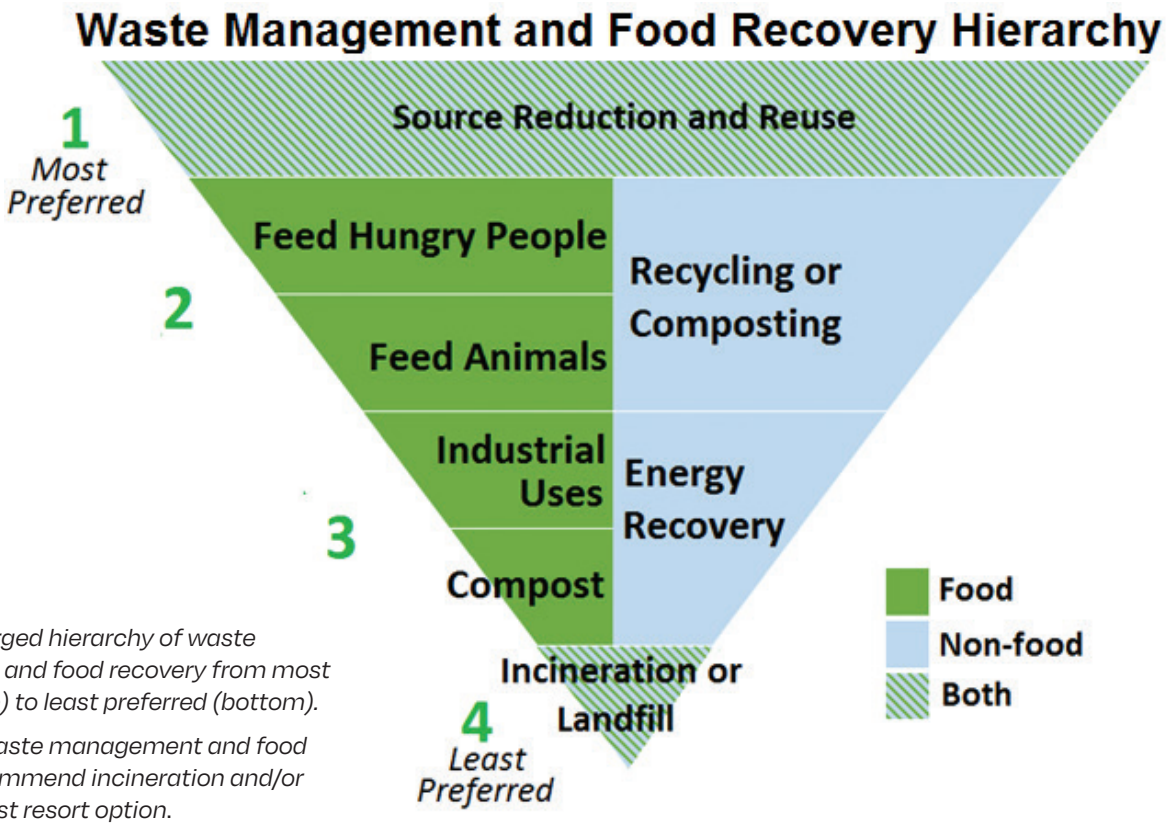
NOTE: REGARDING WASTEWATER SLUDGE: Wastewater sludge generated from dairy processing operations is considered non-food waste since it is inedible organic material. Therefore, processors should follow the EPA Waste Management Hierarchy (Figure 2) when accounting for wastewater sludge applications in waste diversion reporting. Various applications of wastewater sludge are classified into the following categories:

- Land application – Non-food waste that is recycled or composted (Category 2)
- Use for industrial purposes (e.g., further processing for fertilizer use) – Non-food waste that is recycled or composted (Category 2)
- Use in an anaerobic digester – Non-food waste used for energy recovery (Category 3)

Both hierarchies consider landfill and incineration as a last resort. This alternative should only be considered when no other economically viable approach is available. A merged hierarchy (Figure 3, page 28) can aid processors in waste stream accounting and metric calculations.

continued on next page

1



(Figure 3) Merged hierarchy of waste management and food recovery from most preferred (top) to least preferred (bottom).

NOTE: Both waste management and food recovery recommend incineration and/or landfill as a last resort option.

2

Track waste streams. Assess the total weight of waste in each category of the hierarchy. Use the Waste by Category table (Table 16) to track waste streams by weight.

**NOTE: Source reduction (Category 1) is not included in resource recovery metrics, as it is not part of existing waste streams. However, having no waste to begin with is the most preferred method of waste reduction. Processors are encouraged to communicate their source reduction efforts. Source reduction is also fundamental to improving throughput efficiency in the throughput efficiency indicator.*

Waste by Category*	Weight in Lbs.
Food/organics repurposed to feed hungry people	
Food/organics repurposed to feed animals	
Non-food waste that is recycled or composted	
Category 2 Total	
Food/organics repurposed for industrial uses	
Food/organics sent to compost	
Non-food repurposed for energy recovery	
Category 3 Total	
Waste sent to incineration without energy recovery	
Waste sent to landfill	
Category 4 Total	
Grand Total – Categories 2+3+4	

(Table 16) Track waste streams by weight.

Waste & Resource Recovery

3

Report the waste diversion metric. Report the percent of waste diverted from Category 4 (landfill or incineration without energy recovery):

$$\text{\% Waste Diverted} = \frac{\text{(Category 2 Total + Category 3 Total)}}{\text{(Grand Total Categories 2 + 3 + 4)}}$$

- This metric is essential to measure a processor's progress to zero waste. (See the definitions on page 30 to learn more.)

Throughput Efficiency

1

Measure total annual production. Assess the total annual volume of fluid milk processed and/or total annual dairy product output in pounds.

2

Report the throughput efficiency metric. Due to the breadth of dairy products and manufacturing processes across plants, throughput cannot be used for benchmarking or comparison. This is intended for use by processors as an internal operational indicator only.

$$\text{Throughput Efficiency} = \frac{\text{(Grand Total Categories 2+3+4)}}{\text{Lbs. of Production Output}}$$

Resource Utilization

1

Measure the resource utilization metric. Report the percent by weight in each category of the hierarchy (Figure 3, page 28):

- Category 2 Total/(Grand Total Categories 2+3+4)
- Category 3 Total/(Grand Total Categories 2+3+4)
- Category 4 Total/(Grand Total Categories 2+3+4)

Resource utilization is an aspirational indicator that tracks efforts to move beyond zero waste and repurpose resources to their highest possible use.

Food donations are not specifically reported in this metric. They are captured in the dairy processor indicators as monetary and product donations (page 46).

2

Documentation. Information on waste streams can be obtained from trash collection bills, recycling collection bills, calculations derived from other available waste data or (if neither bills nor reference data exist) the company's own estimates.

Waste & Resource Recovery

Resource

- Resources for Repurposing Food, https://bit.ly/33OeXuQ: Includes training materials, guidance documents and assessment tools.
- EPA's Food Recovery Hierarchy, http://bit.ly/2dCAltP: Includes definitions for each tier of the hierarchy.
- EPA's Waste Management Hierarchy, http://bit.ly/29PfUWP: Used to inform indicators for non-food products, includes definitions for each tier of the hierarchy.
- Comprehensive Guidance for Sustainable Materials Management, www.epa.gov/smm: Promotes a system approach to reducing materials use and the associated environmental impacts over the materials' entire life cycle.
- Dairy Processor Waste Audit Guidance, https://bit.ly/3WQs75E: Industry guidance for dairy processors on how to conduct a waste audit in their facilities to identify, prioritize, and mitigate waste streams, and work towards zero waste to landfill.

Definitions

Resource recovery	Resource recovery is the selective extraction of disposed materials (waste) for a specific next use, such as recycling, composting or energy generation. The aim is to extract the maximum practical benefits from products, delay the consumption of virgin natural resources and generate the minimum amount of waste. Additionally, dairy processing plants can implement waste management plans, which help to reduce waste before it is ever created (avoided waste).
Zero waste	Zero waste is a philosophy that encourages the redesign of resource life cycles so that all products are reused. As in nature, a zero waste system is cyclical and does two fundamental things: 1) it redesigns resource use "from product design to disposal" to prevent wasteful and polluting practices, and 2) it then captures, discards and uses recycled materials, rather than natural resources, to make new products. This creates far less pollution and feeds the local economy. Zero waste suggests that the entire concept of waste should be eliminated. Instead, waste should be thought of as a potential resource to counter the basic acceptance of waste as a normal course of events. To meet zero waste goals within food processing, programs typically include the following strategies: • Reduce consumption • Reuse discards • Implement comprehensive recycling • Donate and implement comprehensive composting or bio-digestion of organic materials • Develop policies, regulations, incentives and financing structures to support these systems While zero waste implies that no waste goes to landfills and incinerators, the Environmental Protection Agency defines zero waste as reaching a minimum 90 percent diversion rate. This means that 90 percent of all disposed materials must be diverted from landfills and incinerators. However, many industry leaders are exceeding the 90 percent threshold and moving beyond zero waste to ensure the best possible use of manufacturing waste and byproducts.

Materials & Packaging

Value of Measurement

Factors such as new and emerging state legislation, dairy customer packaging requirements, consumer expectations, and investment partnerships are putting increased pressure on dairy companies to measure and report their sustainability performance related to packaging. Measuring and reporting on packaging performance introduces numerous benefits, such as:

- Assisting the industry to leverage recycling markets and incentivizing recycling facilities to invest in the necessary infrastructure and technology to recycle more dairy product packaging
- Informing a range of critical stakeholders about U.S. dairy's status relative to sustainable packaging
- Helping companies discover where their packaging challenges overlap and identifying where collective solutions can be advanced and scaled
- Supporting companies in establishing a baseline to transparently demonstrate improvement, and proactively work towards complying with potential regulations

Scope of the Metrics

The scope of the packaging metrics includes all packaging material utilized for protecting and maintaining the safety and quality of manufactured dairy products, and distributing them for further processing and/or retail. This includes primary, secondary, and tertiary packaging (see definitions below on page 36.

Additionally, a wide variety of materials are utilized throughout dairy processing, as various material attributes and characteristics are required depending on the packaging needs of the dairy product being manufactured. For example, many types of cheese have a relatively short shelf life, require oxygen barriers, and need to be refrigerated, which limits the materials that can be successfully used to package it.

Therefore, the scope of the packaging metrics applies to all the major material families often utilized in food and beverage processing and manufacturing, including plastics, metals, glass, and paper.

The scope of the metrics does not apply to incoming packaging on products that processors may receive to conduct operations in the processing facility (e.g., corrugated boxes containing chemicals for cleaning plant machinery, as this falls within the Resource Recovery scope.

Materials & Packaging

Indicator	Metric
Recycled Content	• Is your company researching and/or investing in the use of post-consumer recycled (PCR) and/or post-industrial recycled (PIR) content for primary and/or secondary product packaging? (Y/N) a. If yes, is your company commercially utilizing PCR content? (Y/N) b. If yes, is your company commercially utilizing PIR content? (Y/N) c. If no, does your company have plans to research and/or invest in PCR content? (Y/N) d. If no, does your company have plans to research and/or invest in PIR content? (Y/N)
Material Optimization	• Is your company exploring strategies to reduce or replace non-recyclable and/or non-compostable components within its packaging? (Y/N) a. If yes, please identify how far along your company is in the process (select all that apply): • Research and development • Supplier engagement • Pilots • Cost evaluation • Operationalized
Material Utilization	• Materials your company is using for its product packaging, differentiated by primary, secondary, and tertiary packaging. a. Materials used in primary packaging b. Materials used in secondary packaging c. Materials used in tertiary packaging

Recycled Content

1

Determine the scope of recycled content in packaging. Investigate if your organization is planning to or is already researching and/or investing in the inclusion of recycled material in its product packaging. This can include both post-consumer recycled and post-industrial recycled content.

- Post-consumer recycled content: Refers to finished goods that are used and then recycled into a source material for product packaging
  - Example: Empty plastic yogurt containers disposed of by consumers for recycling
- Post-industrial recycled content: Refers to material generated from the purchasing and/or manufacturing process that can be recycled into a source material for creation of product packaging
  - Example: Leftover plastic scrap from blow molding of gallon milk jugs (often referred to as "pinch-off")

Implementing recycled content into product packaging may occur across the entirety of the organization in all processing facilities, or at a select number of facilities to begin with. Information on this metric can likely be obtained from a company's material sourcing and purchasing department.

2

Report. Report if your organization is researching and/or investing in recycled content for product packaging.

Recycled Content	
Recycled Content Questions	Yes/No
Is your company commercially utilizing PCR content?	
Is your company commercially utilizing PIR content?	
If the answer to the first question is "no," does your company have plans to research and/or invest in PCR content?	
If the answer to the second question is "no," does your company have plans to research and/or invest in PIR content?	

(Table 17) Product packaging recycled content reporting table

Material Optimization

1

Determine actions to phase out non-recyclable/non-compostable packaging. Investigate if your organization is exploring opportunities to reduce or replace components in product packaging that cannot be recycled or composted. If it is exploring such opportunities, report the progress made thus far.

Processors may be at various stages of the journey necessary to successfully phase out non-recyclable and/or non-compostable materials in product packaging due to a variety of factors such as customer preferences, food safety and quality needs, and material availability. Therefore, this metric attempts to capture progress at all phases of this process. Similar to the Recycled Content metric, material optimization may take place across the entirety of the organization at all processing facilities, or at a select number. Information on this metric can also likely be obtained from a company's material sourcing and purchasing, and research and development departments.

2

Report. Report if your organization is exploring strategies to reduce or replace non-recyclable and/or non-compostable components within product packaging.

Material Optimization	
Material Reduction/Replacement Progress Stage	Achieved? (Yes/No)
Research and development	
Supplier engagement	
Pilots	
Cost evaluation	
Operationalized	

(Table 18) Material optimization process tracking table

Material Utilization

1

Identify materials used in product packaging. Develop an inventory of all the materials that your organization uses to package the products within its product portfolio, including primary, secondary, and tertiary product packaging.

Identifying all the materials used throughout product packaging can unearth potential opportunities to focus improvement efforts. Certain materials may be easier to reduce/replace than others, depending on product type and specifications. Like the Recycled Content and Material Optimization metrics, information on a company's packaging material use can likely be obtained from the material sourcing and purchasing department or directly from suppliers.

2

Report. Report all the materials your organization is using for product packaging across its entire product portfolio, differentiated by primary, secondary, and tertiary packaging.

NOTE: Processors that utilize the Processor Stewardship Reporting Tool will have access to a drop-down menu of material options to select from when reporting on this metric. Utilize the tables below to identify all materials used for primary, secondary, and tertiary packaging.

Packaging Material	
Packaging Type	Materials Used
Primary	
Glass	
Metal	
Multi-type/other	
Paper/Fiber	
Plastic	
Secondary	
Glass	
Metal	
Multi-type/other	
Paper/Fiber	
Plastic	
Tertiary	
Glass	
Metal	
Multi-type/other	
Paper/Fiber	
Plastic	

(Table 19) Packaging material inventory table

continued on next page

2

Commonly Used Materials	
Material Family	Material Type
Glass	Glass
Metal	Aluminum
	Tin-free steel
	Tinplated steel
	Other/miscellaneous
Multi-type/Other	Label (paper/adhesive)
	Label (plastic/adhesive)
	Multi-layer/multi-type
	Polybag (paper/plastic)
	Other/miscellaneous
Paper/Fiber	Cellophane
	Coated paperboard
	Corrugate
	Multi-layer paperboard
	Non-coated paperboard
	Other/miscellaneous
Plastic	Bioplastic
	High-density polyethylene (HDPE) #2
	Low-density polyethylene (LDPE) #4
	Multi-layer film
	Polyethylene terephthalate (PET) #1
	Polypropylene (PP) #5
	Polystyrene (PS) #6
	Polyvinyl chloride (PVC) #3
	Rubber
	Silicone
	Other/miscellaneous

(Table 20) Commonly used materials in food and beverage manufacturing packaging.

Materials & Packaging

Resource

- Closed Loop Partners, https://bit.ly/3JkighO: Investment firm that provides equity and project finance to scale products, services and infrastructure at the forefront of the development of the circular economy
- Sustainable Packaging Coalition, http://bit.ly/3szlqXY: Membership-based collaborative that believes in the power of industry to make packaging more sustainable
- How2Recycle, https://bit.ly/3uM5Qv7: Standardized labeling system that clearly communicates recycling instructions to the public.
- The Recycling Partnership, https://bit.ly/3HLXF5u: NGO focused on solving for circularity and committed to advancing a circular economy by building a better recycling system.
- U.S. Plastics Pact, http://bit.ly/3InEItb: Solutions-driven consortium founded by The Recycling Partnership and World Wildlife Fund, which connects diverse stakeholders across the plastics value chain to rethink the design, use, and reuse of plastics to create a circular economy for plastic in the U.S.

Definitions

Post-consumer recycled content	Refers to finished goods that are used and then recycled into a source material for product packaging • Example: Empty plastic yogurt containers disposed of by consumers for recycling
Post-industrial recycled content	Post-industrial recycled content: Refers to material generated from the purchasing and/or manufacturing process that can be a recycled source material for creation of product packaging • Example: Leftover plastic scrap from blow molding of gallon milk jugs (often referred to as "pinch-off")
Primary packaging	Packaging that is in direct contact with the product itself (e.g., an HDPE jug containing a gallon of fluid milk)
Secondary packaging	Packaging that is used outside of primary packaging to group a certain number of individual dairy products (e.g., a corrugated box that contains many HDPE gallon jugs of fluid milk)
Tertiary packaging	Packaging that is used to group large quantities of products, often used when transporting dairy products from the processing facility to a warehouse, or grocery store (e.g., a distribution unit containing many corrugated boxes of HDPE fluid milk jugs wrapped in plastic shrink wrap and loaded onto a wooden pallet)

Workforce Development

Value of Measurement

Attracting, developing and retaining talent is foundational to the industry's long-term economic viability and social responsibility. Dairy organizations actively manage their human capital strategies, with many aiming to be employers of choice. Workforce-related practices are subject to federal and state regulations and are sometimes evaluated through customer supplier management programs.

The sustainability of the dairy industry depends upon the availability, safety and retention of quality dairy plant employees. Measuring and reporting workforce development can result in:

- Demonstrating role and impact to community development
- Educating stakeholders on the industry's impact related to economic prosperity, job creation and community support
- Strengthening practices that result in attraction and retainment of talent

Scope of the Metrics

The scope of the workforce development metrics for processors includes employment opportunities, employee benefits (such as housing and health care), and worker safety. Worker safety is evaluated by establishing and tracking leading indicators for a safe work environment and by annually tracking the Days of Restricted Work Activity or Job Transfer (DART) metric for processors with 11 or more employees.

Indicator	Metric
Human resources	• Total number of jobs supplied and full-time employees at the end of year • Indirect and non-monetary benefits available to employees
Worker safety	• Do you have leading indicators to measure/encourage safe worker behavior? Describe measurement systems employed and how this has led to a safer workforce. • Days of restricted work activity or job transfer (DART) rate • Explain why this has changed over time.

Workforce Development

Human Resources

1

Measure the number of jobs supplied. Identify the number of jobs supplied using the employees hired table (Table 21).

- An employee is defined as any one person of legal working age who receives a salary or wages directly from the employer. Supply chain workers are not included in this metric (e.g., third-party transportation providers).
- The Fair Labor Standards Act does not define full-time or part-time employment. Employment status is a matter that is generally determined by the employer. To apply a consistent definition for measurement, a full-time employee is anyone who works 40 hours a week or more. A part-time employee is anyone who works less than 40 hours a week.
- Information on employee numbers and salary can typically be obtained from a processor's human resources department and payroll.

Employees Hired	
	Number
Number of Full-Time Employees	
Total Number of Employees (include both full- and part-time employees) at the end of year	

(Table 21) Number of full-time employees hired in the reporting period.

2

Report the number of jobs supplied. Report the numbers per category by using the employees hired table (Table 21).

3

Measure employee benefits. Identify and report benefits offered to all employees (even if employees choose not to enroll in benefits).

- Employee benefits can be both indirect and non-monetary compensation and include health insurance, retirement plans, housing, processed products, use of company vehicles, employee discounts, etc.
- Indirect compensation has a cash cost to the employer, but the employee may not realize or know the cash value. Some indirect compensation is mandated, such as social security contributions. Other indirect compensation includes benefits like health insurance, retirement program contributions, moving allowances, auto and travel allowances, professional or association memberships, etc. These items are highly variable.
- Non-monetary compensation includes items that reduce an employee's cost of living but are difficult to assign a dollar value. Examples include the use of a farm vehicle and tools, continuing education opportunities or products from the processing facility.
- Potential sources of information include benefit summaries, employee orientation materials and employee contracts.

4

Report employee benefits. Report benefits offered to full-time and part-time employees by using the employee benefits table (Table 22).

Employee Benefits		
	Full-Time Employees Eligible for this Benefit? (Y/N)	Part-Time Employees Eligible for this Benefit? (Y/N)
Health insurance without employer contribution		
Health insurance with employer contribution		
401k (or comparable retirement plan)		
Produced/processed products (milk/produce)		
Other types (please list)* **Other benefits include tuition/education reimbursement, company-provided vehicles, life insurance, wellness program/incentives, financial advisory services, and company-provided housing.*		

(Table 22) Indirect and non-monetary benefits accounting for full- and part-time employees.

Worker Safety

1

Leading indicators in dairy processing. OSHA defines leading indicators as "proactive, preventative and predictive measures that provide information about the effective performance of your safety and health activities."[12] In their simplest form, proactive programs focus on actions people can take to prevent injuries vs. reacting after one has happened. For example, putting a hose away and getting it off the floor before someone trips and falls is a simple but powerful example of being proactive. Furthermore, leading indicators can vary significantly based on company makeup, so engaging employees to identify which leading indicators will yield the most impactful safety outcomes is paramount.

Ideally, leading indicators are created and decided upon through true employee involvement. Engage workers to identify meaningful and monitorable metrics that lead to positive safety contributions.

Contrarily, lagging indicators measure work-related injuries, illnesses and accidents that have already occurred and can be used to measure the effectiveness of leading indicators. Hence, leading indicators are instrumental in preventing hazards from even occurring in the first place, ensuring a safer, more productive and happier workplace.

- There is a huge variety of leading indicators that organizations employ, depending on their industry, workplace processes and internal policies and culture.
- The dairy processing industry is in the process of adopting leading indicators like many other industries. However, keep in mind that certain processors with fewer or smaller plants may be early on in their journey towards establishing worker safety protocols, while other more tenured or larger processors may have an established, well-documented culture that demands more robust and advanced leading indicators.
- Processors may have the capacity to implement more advanced indicators as their company grows and matures.
- Merging what the rules say dairy processing companies must do to comply with a simple list of behavior-based actions done routinely will go a long way in establishing the foundation of a true, proactive safety program that will evolve into a world-class operation.

2

Characteristics and examples of leading indicators. At a minimum, leading indicators should include characteristics identified in Table 23 to ensure they contribute to continuous improvement of worker safety.

Characteristics of Effective Leading Indicators	
Specific	Leading indicator provides specifics for the action that the company will take to minimize risk from a hazard or improve a program area
Measurable	Leading indicator is presented as a number, rate or percentage that allows a company to track and evaluate clear trends over time
Accountable	Leading indicator tracks an item that is relevant to the goal
Reasonable	Leading indicator reasonably achieves the established goal
Timely	Leading indicator is being tracked regularly enough to spot meaningful trends from data within the desired timeframe

(Table 23) Characteristics of effective leading indicators according to OSHA.

[12] *OSHA, Using Leading Indicators to Improve Safety and Health Outcomes*

continued on next page

2

In addition, below are several examples of leading indicators that dairy processors may consider adopting. Each indicator tracks the following characteristics:

- **Measurement difficulty** – How difficult the leading indicator is for a processor to measure
- **Reporting protocol** – How frequently and through what channel the leading indicator is reported
- **Span of involvement** – The number of employees that can participate in the leading indicator measurement
- **Verification method** – How the leading indicator and measurement methodology is vetted for credibility and robustness
- **Manipulation risk** – How susceptible the leading indicator is to manipulation and/or improper measurement
  - Low manipulation risk: Indicator is very unlikely to be susceptible to measuring skewed performance results.
    - Example: Accurately accounting for monthly training attendees is unlikely to be misconstrued.
  - Moderate manipulation risk: Indicator is susceptible to some skewed performance results.
    - Example: Employees changing behavior because they know they are being observed during an inspection.
  - High manipulation risk: Indicator is susceptible to many skewed performance results.
    - Example: Unsupervised employees racing through an online training module and retaking a knowledge-check quiz repeatedly until they pass, having not read or retained any relevant training information.
- **Safety culture/risk impact** – The strength of culture necessary to implement the leading indicator and the risk to the culture associated with the indicator

Example 1: Monthly Awareness Training. Relevant awareness training is given to the full staff from the office, whey, cheese, processing, milk, receiving, maintenance and warehouse departments. Department managers must attend.

- **Goal:** Employees are trained on 90 percent of annual training subject matter
  - As culture improves, it is recommended that the goal be increased over time.
- **Scoring:** One point per employee per training is awarded for attendance; 12 points possible

NOTE: Monthly awareness training should not be confused with compliance training since compliance training must be administered at 100 percent of the frequency set forth by OSHA regulations. It is recommended that each location train on two awareness topics per month, which are designed to keep safety at the forefront of each employee's mind. Examples of ways this type of training can be accomplished are in a classroom, at a shift pass-down/change meeting, or via computer.

Monthly Awareness Training

Measurement Difficulty	Reporting Protocol	Span of Involvement	Verification Method	Manipulation Risk	Safety Culture/ Risk Impact
Low	Monthly, formal/ informal	High	Annual audits / monthly scoring	Low	Culture: moderate risk: low

continued on next page

2

Example 2: Department Safety Inspections. Minimum of one inspection from the department manager and supervisor in tandem for the whey, cheese, processing, milk, receiving, maintenance and warehouse departments. In addition, one employee from each department conducts an inspection with the department manager and obtains endorsement sign-off. Processing facilities may use corporate inspection sheets or internal inspection sheets that meet relevant legal requirements.

- **Goal:** Full inspections conducted for 90 percent of the annual cycle
- **Scoring:** One point per full inspection; 12 points possible

Department Safety Inspections					
Measurement Difficulty	Reporting Protocol	Span of Involvement	Verification Method	Manipulation Risk	Safety Culture/ Risk Impact
Moderate	Monthly, formal	Low	Annual audits, management review	Moderate	Culture: moderate risk: moderate

Example 3: Senior Management Safety Meetings/Action Items. Senior management team hosts meetings with detailed minutes, action items and deadlines documented. Meetings must have all plant management staff present and can include other employees if necessary.

- **Goal:** Meetings with fully detailed minutes, action items and deadlines for 100 percent of the annual cycle
- **Scoring:** One point per meeting; 12 points possible

Senior Management Safety Meetings/Action Items					
Measurement Difficulty	Reporting Protocol	Span of Involvement	Verification Method	Manipulation Risk	Safety Culture/ Risk Impact
Low	Monthly, formal	Low	Email	Moderate	Culture: high risk: moderate

Example 4: Culture Index/Safety Engagement Activities. Develop a list of voluntary safety culture indexes or engagement activities that employees can conduct that will raise the safety IQ throughout each location. Examples of activities include, but are not limited to:

- Leading training
- Reviewing safety programs or procedures
- Conducting a behavior observation
- Conducting a safety inspection
- Participating in a safety committee

It is recommended that the organization starts with a list of six to eight safety culture indexes or engagement activities, encouraging employees to choose and conduct a minimum of one per month.

- **Goal:** Participate in or complete one engagement activity per month
- **Scoring:** One point per month (regardless of total engagement activities conducted); 12 points possible

Department Safety Inspections					
Measurement Difficulty	Reporting Protocol	Span of Involvement	Verification Method	Manipulation Risk	Safety Culture/ Risk Impact
Moderate	Monthly, formal/informal	High	Email, document review, monthly scoring	Moderate	Culture: high risk: moderate

3

Establish leading indicators. This guidance does not define nor recommend that dairy processors adopt specific leading indicator metrics. Rather, processors should conduct an internal analysis of plant operations, processes and culture to determine which leading indicators are most valuable to ensuring worker safety. This includes close consultation with line workers and supervisors to establish indicators that will have the most influence on safety outcomes. Indicators may vary between processing plants.

Analyze data from the organization's last one to three years on near misses and recorded incidents (i.e., slips, trips and falls). Consistently occurring events at the facility or organization level can reveal where leading indicators may be most impactful. Implementing leading indicators in these areas can quickly influence the safety culture and bottom line.[13]

Furthermore, many datasets exist for companies from which to build. Almost every factory-based operation accounts for common indicators such as slips, trips and falls, securing machine guards, de-energizing machines to work on them, and preventing chemical exposure. From this known data, dairy companies can engage with employees to create a tailored series of proactive behaviors that fit the specific needs at their respective plants. Organizations with publicly available data on workplace safety indicators include:

- OSHA
- NSC
- ANSI
- ISO

For additional guidance on incorporating leading indicators, companies may refer to *An Implementation Guide to Leading Indicators and Beyond Safety: Leading Indicators for Health & Wellbeing*, two research papers published by The Campbell Institute at the National Safety Council.

4

Measure and report days of restricted work activity or job transfer (DART) rate. Use Occupational Safety and Health Administration (OSHA) Form 300, which is included in OSHA Forms for Recording Work-Related Injuries and Illnesses, to calculate the DART rate. Companies with 11 or more employees will have completed this form and only need to complete the following calculations:

- If a plant is not required to report a DART rate, consider completing the worksheet in Form 300.
- Employee records, employee contracts, attendance records and accident records will provide relevant data for this indicator.

DART Incidence Rate
[(Number of entries in Column H + Column I) X 200,000] ⁄ Number of hours worked by all employees = DART incidence rate

[13] *EHS, Don't Follow the Pack, Lead the Way with Leading Indicators*

5

Report leading indicators. Account for leading indicators employed by the organization. Describe how the organization measures each indicator and how they have contributed to a safer workforce.

Examples are provided in the table below. Substitute your organization's leading indicators in the table for reporting purposes.

Leading Indicator Inventory		
Indicator	Measurement System	Impact on Workforce
Monthly awareness training	On a monthly basis, locations report the number of employees that have earned a point for participating in assigned awareness trainings (12 points possible per year).	Facilities have increased their focus on safety and for locations meeting all leading indicator targets. A decrease in recordable injuries has occurred since implementing awareness training one year ago.
Department safety inspections	On a monthly basis, department managers and supervisors conduct inspections in tandem through their respective departments, using an internal checklist. For every inspection conducted, a point is earned (12 points possible per year).	Plant floor accident rate has decreased by 10 percent since implementing the indicator six months ago.
Senior management safety meetings/ action items	On a monthly basis, the senior management team hosts safety meetings with detailed minutes, action items and documented deadlines. All plant managers must be present. For every meeting with full participation and required documentation, a point is earned (12 points possible per year).	All deadlines at all facilities have been met since senior management began detailed recording in monthly safety meetings one year ago.
Culture indexes/ EHS engagement activities	On a monthly basis, locations report the number of employees who have earned a point for completing at least one culture index or engagement activity (12 points possible per year).	The percentage of employees participating in culture index/engagement activities has gradually risen to 75 percent across the entire company since implementing the indicator six months ago.

(Table 24) Accounting table for measuring and reporting leading indicator success at the plant level.

Workforce Development

Resource

- The Bureau of Labor Statistics, http://bit.ly/2JjicCl: Find the National Industry-Specific Occupational Employment and Wage estimates for the dairy product manufacturing industry provided by the Bureau of Labor Statistics.
- OSHA 2012, Form 300A, http://bit.ly/32JSK0i: Get forms for recording work-related injuries and illnesses.
- International Dairy Foods Association Worker Safety Awards, https://www.idfa.org/safety-recognition-awards: Honors facilities for outstanding worker safety performance.
- International Dairy Foods Association Worker Safety, https://bit.ly/46yA8RQ: Provides general information on worker safety for dairy processing plants.
- OSHA Guidance – Using Leading Indicators to Improve Safety and Health Outcomes, https://bit.ly/3mBVeaS: Background on leading indicators and guidance on how to use them in your organization.
- Campbell Institute – Transforming EHS Performance Measurement Through Leading Indicators, http://bit.ly/37ZTdR5: Research project report describing research done to advance the state of knowledge and practice on using leading indicators to measure EHS performance in organizations.
- EHS Daily Advisor – Don't Follow the Pack, Lead the Way with Leading Indicators, http://bit.ly/32MjSfe: Article providing background on leading indicators and how leading indicators can manage risk.
- Ebook – Leverage Organizational Data to Measure and Improve Safety Performance, http://bit.ly/2p84QBX: Provides information on the key metrics to collect and report data on to mitigate incidents and improve safety culture.
- Campbell Institute – An Implementation Guide to Leading Indicators, http://bit.ly/2pSNRU3: Describes the chronological process associated with developing leading indicators tailored to your organization.
- Campbell Institute – Beyond Safety, http://bit.ly/32GjcrG: Leading Indicators for Health and Well-being: Describes five categories of leading indicators that best measure employee health and well-being.

Community Contributions

Value of Measurement

The benefit of measuring community contributions is vital to the sustainability story. Dairy processors contribute to their local communities, economies and regions in a number of ways, such as direct economic support, local taxes paid and a source for local employment opportunities. Beyond this, dairy processors — and their employees — play crucial community leadership roles and often give back through engagement and service, charitable contributions and other contributions such as product donations. Reporting on community contributions can result in:

- Strengthening ties to local community
- Promoting of dairy industry and products
- Enhancing public understanding of agriculture and processing

Scope of the Metrics

The metrics focus on the impacts dairy processors have on sustaining socially vibrant communities. They include time and financial contributions such as volunteering and donations, as well as educational opportunities provided in the form of tours and informational events.

Indicator	Metric
Community volunteering	• Volunteer activities performed by all paid employees
Monetary and product donations	• Monetary and product donation activities (including college scholarships)
Educational opportunities	• Describe educational events per year and the total number of participants
Product contributions	• Servings of dairy donated or consistently supplied to a non-profit organization to feed food-insecure people

Community Volunteering

1

Describe volunteer activities. Provide a narrative description of volunteer activities for all employees (including manager/owner) sponsored by the organization during the past year. Volunteering is defined as the donation of time or service to an outside organization without the expectation of pay to advance humanitarian objectives.[14]

Volunteer Activities for All Employees	
Volunteer Activity	Description

(Table 25) Volunteer activities accounting table for all employees during the reporting period.

[14]*DOL. 2012. FLSA Advisor: Volunteers, https://webapps.dol.gov/elaws/whd/flsa/docs/volunteers.asp*

Community Contributions

2

Optional measurement considerations. Report the total number of hours volunteered by all employees (including manager/owner) in company-sponsored volunteer activities for the reporting year. The Optional Measurement Considerations - Volunteer Hours table (Table 26) provides a template for optional reporting.

Optional Measurement Considerations - Volunteer Hours	
Type of Service	Hours Volunteered
Civic organizations	
Emergency services (e.g., ambulance, fire department)	
Industry organizations	
Local government	
Non-profit	
Religious	
School	
Youth group	
Other	
Total Hours Volunteered	

(Table 26) Optional measurement considerations for community volunteering in addition to qualitative narrative of volunteer activities.

Monetary and Product Donations

1

Describe monetary and product donation activities. Monetary donations are financial contributions to outside organizations. These can include sports and event sponsorships, scholarships and awards, non-profit donations, etc.

- Monetary efforts help to support local initiatives and generate a strong relationship between dairy processors and their communities. Company product donations are also a large component of supporting philanthropic efforts.
- Product donations include donations of cheese, yogurt, ice cream, butter and other finished products to fundraising events, soup kitchens and other local and national causes. Donations are defined as products provided to outside organizations without remuneration.

> NOTE: Product donations differ from the food/organics repurposed to feed hungry people metric in the Resource Recovery indicator in that donations are prearranged, agreed-upon scenarios where a determined amount of product is donated. Food/organics repurposed to feed hungry people is intended to measure would-be waste that is instead diverted to nourish people. For example, if a processor hosts a community event with prepared food, and leftover food at the conclusion of the event can be safely diverted to a local soup kitchen, this is an example of food/organics used to feed hungry people. In other words, the processor did not establish a predetermined quantity of product to donate prior to the event.

- Information on monetary donations can be found in financial records. Product donations can be found in product inventories.

2

Optional measurement consideration. Report the total monetary and product donation dollar value for all donation activities during the past reporting year. Detailing these numbers as a total figure or broken out by donation recipient is at the respondent's discretion (Table 27).

Optional Measurement Consideration - Monetary and Product Donations			
Organization, Event, Sponsorship	Monetary Donation or Type of Product	Amount Donated / Product Donated	Market Value of Product (optional)
Total Amount Donated		**Total Value of Products Donated**	

(Table 27) Optional measurement considerations for monetary and product donations in addition to qualitative narrative of donations.

3

Report educational opportunities. Educational opportunities may include factory tours, demonstrations and informational events. Report and describe educational events held on or off-site and the number of times the event occurred in the past year in the Education Opportunity table (Table 28). Example values are included in the table. Replace these values with your organization's values.

Educational Opportunity			
Opportunity (includes tours, demonstrations and informational events)	Average Number of Participants	No. of Times Held (if applicable)	Total Participation
Tour	15	53	795
Booth at fair	1000	1	1000

(Table 28) Educational opportunity accounting table to track various educational activities throughout the reporting period.

Product Contributions

1

Measure and report product contributions. Provide the total quantity (in lbs.) of dairy (milk, cheese, yogurt, etc.) donated or consistently supplied to a non-profit organization to feed food-insecure people.

- Dairy Nourishes America is one example of a non-profit organization where product contributions can be made. It is a joint initiative between the Innovation Center for U.S. Dairy and Feeding America that provides opportunities to supply dairy foods to hungry people in the United States via four donation models:
  - Milk Purchase Model – The consistent purchase of a supply of milk by a local food bank
  - Cheese Purchase Model – The consistent purchase of a supply of cheese by a local food bank
  - Guaranteed Donation Model – Processor commitment to consistently donate dairy foods to food banks
  - Consumer Donation Model – Consumer donations and retail activations generate funds that are used to purchase milk for food bank clients

continued on next page

Community Contributions

1

- More information on the donation models and their associated benefits can be found in the Dairy Nourishes America Toolkit and/or by emailing DairyNourishesAmerica@dairy.org
- Processors should also measure and report applicable product contributions that are not associated with Dairy Nourishes America.

Product Contributions		
Product Contributions	Quantity Contributed (lbs.)	Non-Profit Recipient
Total Quantity of Contributions		

(Table 29) Product contributions accounting table to track quantities of dairy donated to various organizations.

Common Units Converted into Pounds	
Gallon	8.6 pounds
Fluid Ounce	0.0625 pounds
Quart	2.15 pounds
Pint	1 pound

(Table 30) Common volumetric units of dairy converted into pounds for the purposes of reporting.

Pounds to Servings of Dairy Conversion Factors	
1 Pound Fluid Milk	2 Servings Dairy
1 Pound Yogurt	2 Servings Dairy
1 Pound Cheese	10 Servings Dairy

(Table 31) Conversion factors to report pounds of dairy in servings if necessary.

If a processor wishes to calculate the number of servings of dairy provided to food-insecure people, the USDA Choose My Plate conversion factors are provided in (Table 31) for each product type.

Resources

- The U.S. Department of Labor Fair Labor Standards Act, DOL 2012, https://bit.ly/35KUMQD: Provides clarification on what is meant by volunteer activities.
- Examples of community contributions by dairy companies:
  - Cabot Cheese Community Programs, http://bit.ly/1ZEDQke
  - Hilmar Cheese Company Sustainability
  - Northern Illinois Food Bank and Prairie Farms Dairy, http://bit.ly/3ZeDA0J
- Dairy Nourishes America Toolkit, https://bit.ly/3gn8EFs: Describes four donation models to provide hungry people with nutritious dairy products.
- Feeding America's Map the Meal Gap Tool, https://map.feedingamerica.org/: Provides a map of food insecurity by county across the U.S. to identify where donating dairy products is the most impactful.

Product Safety & Quality

Value of Measurement

Dairy products have been a safe, healthy and important part of the U.S. diet for generations. Upholding and enhancing a reputation for quality requires that the industry maintains and continuously improves the highest food safety standards. Dairy processors can reinforce their rigorous food safety standards by following accepted practices and continuously updating systems with the latest validated food safety tools, templates and techniques.

Ensuring the safety of dairy products from grass to-glass is foundational and an ongoing priority for the industry. Mitigating food safety risks and safeguarding consumer confidence in dairy products requires ongoing diligence and frequent reassessment of food safety management programs to ensure continuous improvement.

Reporting on food safety and product quality, as well as following the guidance materials developed by the Innovation Center can support in:

- Strengthening manufacturing practices in dairy processing facilities
- Diminishing food safety risks and helping assure dairy products are safe across all facets of dairy manufacturing
- Communicating the industry's commitment to follow and continuously improve food safety programs and management systems
- Safeguarding against a potential food safety crisis
- Distinguishing U.S. dairy products in the global marketplace, meeting customer demands and enhancing consumer confidence

Scope of the Metrics

The metrics focus on strong, validated food safety management programs within a company's operations with regular reassessments to ensure continuous improvement. In addition, measuring a company's commitment to the U.S. Dairy Traceability Guidelines ensures robust traceability accounting.

Indicator	Metric
Food Safety	• Do you have validated, verifiable food safety programs and management systems in place? (Y/N) • Do you frequently reassess your food safety programs to ensure efficacy and to reflect new food safety tools/practices and ensure continuous improvement? (Y/N)
Traceability	• Commitment to voluntary U.S. Dairy Traceability Guidelines (Y/N)

Product Safety & Quality

Food Safety

1

Account for food safety programs and management systems. Food safety programs include practices, conditions and procedures needed prior to and during the production of safe food. These programs are essential for food safety and provide a foundation for an effective system.

Specifically, implementing food safety programs and management systems that are both validated and verifiable ensures maintaining the highest standards for food safety across the industry. According to Quality Assurance & Food Safety Magazine[15], validation and verification are defined as:

- **Validation** – A preemptive scientific evaluation that provides documented evidence that a particular process is capable of consistently delivering a product that meets predetermined specifications. In other words, it is a collection of scientific proof that a particular process involving chemical, physical and biological inputs is consistently delivering a desired effect to ensure the destruction of pathogenic microorganisms.
- **Verification** – The activity or activities conducted to ensure that the implemented processes are effectively and consistently carried out. In other words, it is the confirmation that you are doing what you intended or planned to do and that it is effective.

Food Safety Programs and Management Systems		
Critical programs and management systems (add specific programs for your company)	Validated? (Y/N)	Verifiable? (Y/N)

(Table 32) Food safety program and management system validation and verification accounting table.

2

Account for food safety program reassessment frequency. Processors are encouraged to reassess their food safety programs to ensure efficacy, reflect new food safety tools/practices and ensure continuous improvement.

This guidance does not specify how often processors should reassess their programs, however, a common periodic assessment is once per year. This ensures that processors stay up-to-date with new tools, information and resources related to food safety protocols.

Food Safety Reassessment Frequency	
Food safety programs reassessed frequently?	(Y/N)

(Table 33) Food safety program reassessment accounting table.

Traceability

1

Commit to voluntary U.S. Dairy Traceability Guidelines. The Innovation Center developed robust, industry-wide guidance for processors to implement traceability protocols and compare current practices to a set of minimum standards for traceability. This helps to identify improvement areas.

[15]*Quality Assurance & Food Safety Magazine. 2015. Validation and Verification of Food Safety Control Measures*

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Updated in 2020, the Traceability Guidelines are part of the U.S. Dairy Stewardship Commitment, a voluntary pledge through which the U.S. dairy community can document and demonstrate its progress to consumers, customers and other stakeholders. Companies that adopt the U.S. Dairy Stewardship Commitment meet defined criteria for important areas like animal care, the environment, food safety and traceability and other important initiatives to report on impact in a transparent and meaningful way.

U.S. Dairy Traceability Commitment Status	
Is your organization committed to following the U.S. Dairy Traceability Guidelines?	(Y/N)

(Table 34) Traceability Guidelines commitment status

If your company is ready to make the commitment, or simply has questions, contact innovationcenter@usdairy.com. Your company will be listed in future updates, and you can promote your U.S. Dairy Traceability Commitment in your marketing materials.

Resource

- Quality Assurance & Food Safety Magazine, http://bit.ly/3ZeEiuV: News and resources on food safety and quality best practices and tactics.
- Innovation Center Food Safety Website, http://bit.ly/2BG171b: Hub for Innovation Center workshops, tools, checklists and guidance documents.
- U.S. Dairy Traceability Guidance Homepage, http://bit.ly/2W7Xs5C: Hub for U.S. dairy traceability guidance, resources and industry trends.
- U.S. Dairy Traceability Guidance Document, http://bit.ly/2HyVMyR: In-depth guidance document detailing how to adopt the Traceability Guidance practices and protocols.
- 21 Point Enhanced Dairy Traceability Checklist, http://bit.ly/31HGTif: Streamlined checklist that summarizes all 21 key procedures to successfully implement the U.S. Dairy Traceability Guidelines.

About the Innovation Center for U.S. Dairy®

The Innovation Center for U.S. Dairy® is a forum that brings together the dairy community to address the changing needs and expectations of consumers through a framework of shared best practices and accountability. Initiated in 2008 by dairy farmers through the dairy checkoff, we collaborate on efforts that are important both to us and our valued customers — in areas like animal care, food safety, nutrition and health, the environment and community contributions.

Visit USDairy.com for more information about the Innovation Center for U.S. Dairy.

www.USDairy.com • InnovationCenter@USDairy.com

About the International Dairy Foods Association®

IDFA represents the nation's dairy manufacturing and marketing industry, which supports more than 3 million jobs that generate $159 billion in wages and $620 billion in overall economic impact. IDFA's diverse membership ranges from multinational organizations to single-plant companies, from dairy companies and cooperatives to food retailers and suppliers, all on the cutting edge of innovation and sustainable business practices. Together, they represent 90 percent of the milk, cheese, ice cream, yogurt and cultured products, and dairy ingredients produced and marketed in the United States and sold throughout the world. Delicious, safe and nutritious dairy foods offer unparalleled health and consumer benefits to people of all ages. To learn more, go to www.IDFA.org.

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