

# ACCELERATE THE CIRCULAR ECONOMY ALIGNED U.S. DAIRY CIRCULARITY FRAMEWORK



Through the Innovation Center for U.S. Dairy, the dairy community commits to advancing human well-being, ensuring leadership in animal care, supporting communities, and regenerating the environment. A core component of dairy solutions that enhance natural resources and ecosystems is circularity — essentially, the dairy community's ability to generate value through resource efficiency, waste reduction, and renewable resource and energy production.

## Leadership Opportunity

Circularity and the notion of a circular economy have emerged as important sustainability concepts among key stakeholder groups. While the U.S. dairy community has implemented circular practices for decades, there is an opportunity for the industry to speak to those practices in the context of circularity and to further advance the leadership role dairy can play.

## Circularity Framework

The Innovation Center has developed a circularity framework comprised of a definition and associated infographic for the industry. While not exhaustive of every circular system in the industry, this framework provides a unified perspective to communicate U.S. dairy's essential role in the circular economy.

## Foundational Stakeholder Resource

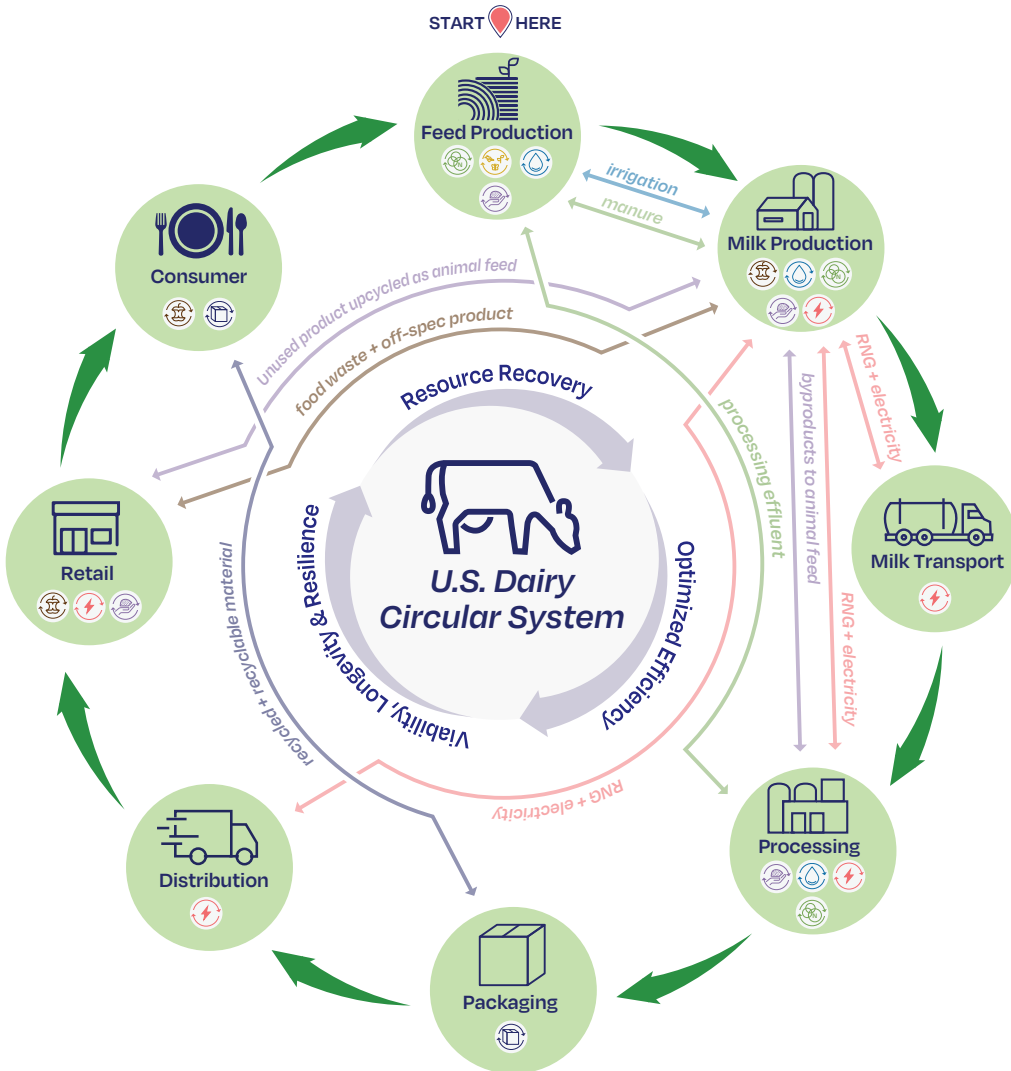
Dairy processors, cooperatives, farmers, and other stakeholders can utilize this framework as a foundation to shape communications around their circularity strategies, actions and impacts. By adopting this broader perspective, the industry has the potential to unlock new collaborations, foster innovation, and drive efficiencies — delivering both economic value and environmental resilience.

## Circularity Defined for U.S. Dairy

U.S. Dairy, from field to farm to processor, seeks to maximize resource efficiency and minimize waste. The industry can achieve a circular system through innovative and impactful collaboration that expands societal benefits. Circularity for U.S. Dairy will:

- Ensure new technologies, processes and assets prioritize and maximize mutually beneficial resource recovery
- Design existing processes and assets to optimize efficiency and upcycling opportunities
- Invest in farm viability, longevity and resilience by bolstering ecosystem services, enhancing biodiversity and generating economic returns

# U.S. DAIRY CIRCULAR SYSTEM



KEY	
	Animal Feed
	Nutrients
	Recycled/Recyclable Packaging
	Regenerative Practices
	Renewable Energy
	Upcycled Food Waste
	Water Reuse

**FEED PRODUCTION**

Nutrients in manure and processing effluent are applied to croplands as a natural fertilizer source.

Regenerative practices foster healthy soils, sequester carbon and support biodiversity.

Nutrient-rich water from on-farm processes is captured and reused to irrigate croplands.

**MILK PRODUCTION**

Manure and food waste are upcycled into anaerobic digestors, generating renewable natural gas and electricity to power farms, fleets and local communities.

Solids separated from manure are treated and used as cow bedding.

Water recycled from refrigerating milk is reused to wash/cool cows and clean barn floors.

**MILK TRANSPORT**

Renewable natural gas and electricity from anaerobic digestors fuel milk transport trucks.

**PROCESSING**

Renewable natural gas and electricity from anaerobic digestors power processing facilities.

Byproducts are upcycled to the farm as animal feed.

Water extracted from milk is treated and reused for facility operations and cleaning. Excess water supplements local watersheds.

**PACKAGING**

Post-consumer recycled and/or compostable materials are integrated into product packaging.

Products are packaged in recyclable and/or compostable containers.

**DISTRIBUTION**

Renewable natural gas and electricity from anaerobic digestors fuel product distribution trucks and refrigeration units.

**RETAIL**

Food waste and off-spec product are upcycled as feedstock for anaerobic digestors to produce renewable natural gas and electricity, which powers farms, fleets and local communities. Off spec, damaged and/or unsold dairy products are upcycled as animal feed.

**CONSUMER**

Following consumption, dairy product packaging is recovered and recycled into new product packaging material.

Certain communities may have access to outlets for upcycling food waste, such as anaerobic digestors and/or compost facilities.