



# Crystal Creamery's Focus on Sustainability





# Crystal Creamery Sustainability Vision

We are committed to sustainable business practices founded on social and ethical responsibility. To this end, we will be good stewards of the environment dedicated to advancing the betterment of all entities we impact: our society, our environment, our farming partners, and our business for generations to come.





# Crystal Creamery Sustainability Structure

**Our sustainability initiative is supported with full-time focus and high-level supervision as well as team participation from all levels:**

- Vice President of Human Resources and Support Services
- Sustainability & Environmental Program Manager
- Energy & Water Conservation Team– Management
- Green Team – Production department associates

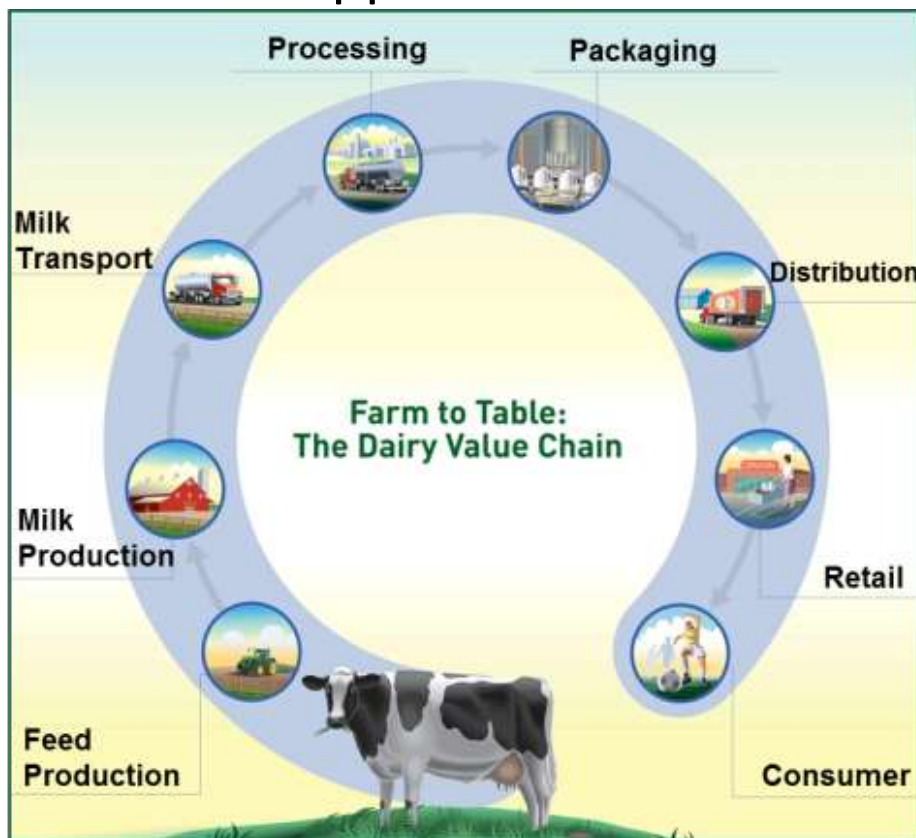
## **Some of External Partners:**

- Innovation Center for U.S. Dairy
- Manufacturer's Council of the Central Valley
- Stanislaus Green Team Council
- PG&E
- Modesto Irrigation District
- EnerNOC
- American Recycling
- Organic Waste Solutions
- Central Valley Ag Coop
- Condor Earth Technologies
- Hydrite Chemical Company



# Crystal Creamery Sustainability Approach

At Crystal Creamery we recognize that our sustainability initiative must reach all aspects of business so we have adopted a **farm to table** approach.



# Crystal Creamery Sustainability Tools

As part of our **farm to table** approach we have 3 tools which we have already implemented for tracking & communicating our progress:



## **Farm Smart™**

Provides our dairy farmers with a robust tool for better environmental farm management.

[www.usdairy.com/farmsmart](http://www.usdairy.com/farmsmart)



## **Dairy Plant Smart™**

Reports, tracks, and communicates our GHG emissions and energy consumption at our two dairy processing plants: Modesto and Fernbridge.

[www.usdairy.com/plantsmart](http://www.usdairy.com/plantsmart)



## **Dairy Fleet Smart™**

A tool to reduce fuel consumption, costs, and GHG emissions in the transport and distribution of our dairy products.

[www.usdairy.com/fleetsmart](http://www.usdairy.com/fleetsmart)



# Crystal Creamery Sustainability Initiative

## Milk Suppliers

### **Our cows are recyclers using agricultural by-products as feed**

- Crystal milk supply comes from cows whose feed intake consists of an average 35% of dry matter feed intake that consists of by-products compared to the industry average of 24%.
- Ex: cotton seed, grape hummus, almond hauls, corn gluten pellets, distiller grains, canola pellets, beet pulp, & more.



### **All farms are compliant with their local California Water Quality Control Board and Air Pollution Control District**

- Nitrogen monitoring of soil on every crop, every field, annually.
- Nutrient Management plan on all farms.
- Air emission reduction techniques practiced on all farms.





# Crystal Creamery Sustainability Initiative

## Zero Waste

Crystal Creamery is currently **diverting 98.61% materials from landfill** in our Modesto production facility.

We have several unique partnerships which have allowed us to achieve this:

- **Local food banks** are partnered with for donation for any product that is still in code and we can guarantee as fresh
- **Spoils/returns** sent to a local farmer for animal feed; average 448,000 lbs./month, equiv. to the weight of nearly 300 cows!
- **Cottage cheese by-product, whey** also used for animal feed
- **Wastewater by-product** sent to nearby anaerobic digester to capture methane gas for energy production, with by-products of fertilizer and cow bedding.



# Crystal Creamery Sustainability Initiative

## Continuous Improvement

### Partnership with SFSU's Industrial Assessment Centers (IAC) Program

- Assessment of facilities for new processes and/or technologies to further our efforts in energy and water conservation.

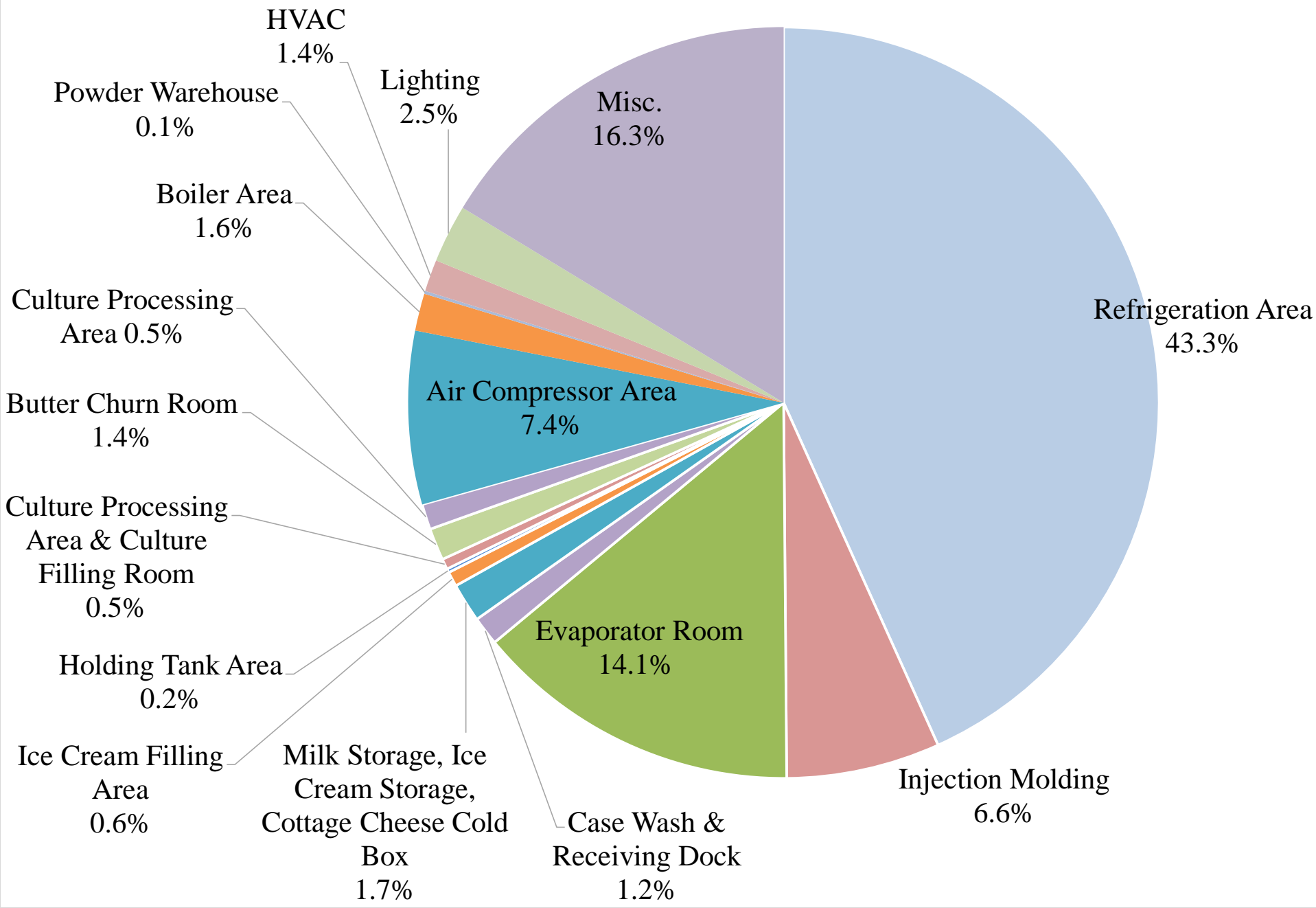


### Team focus:

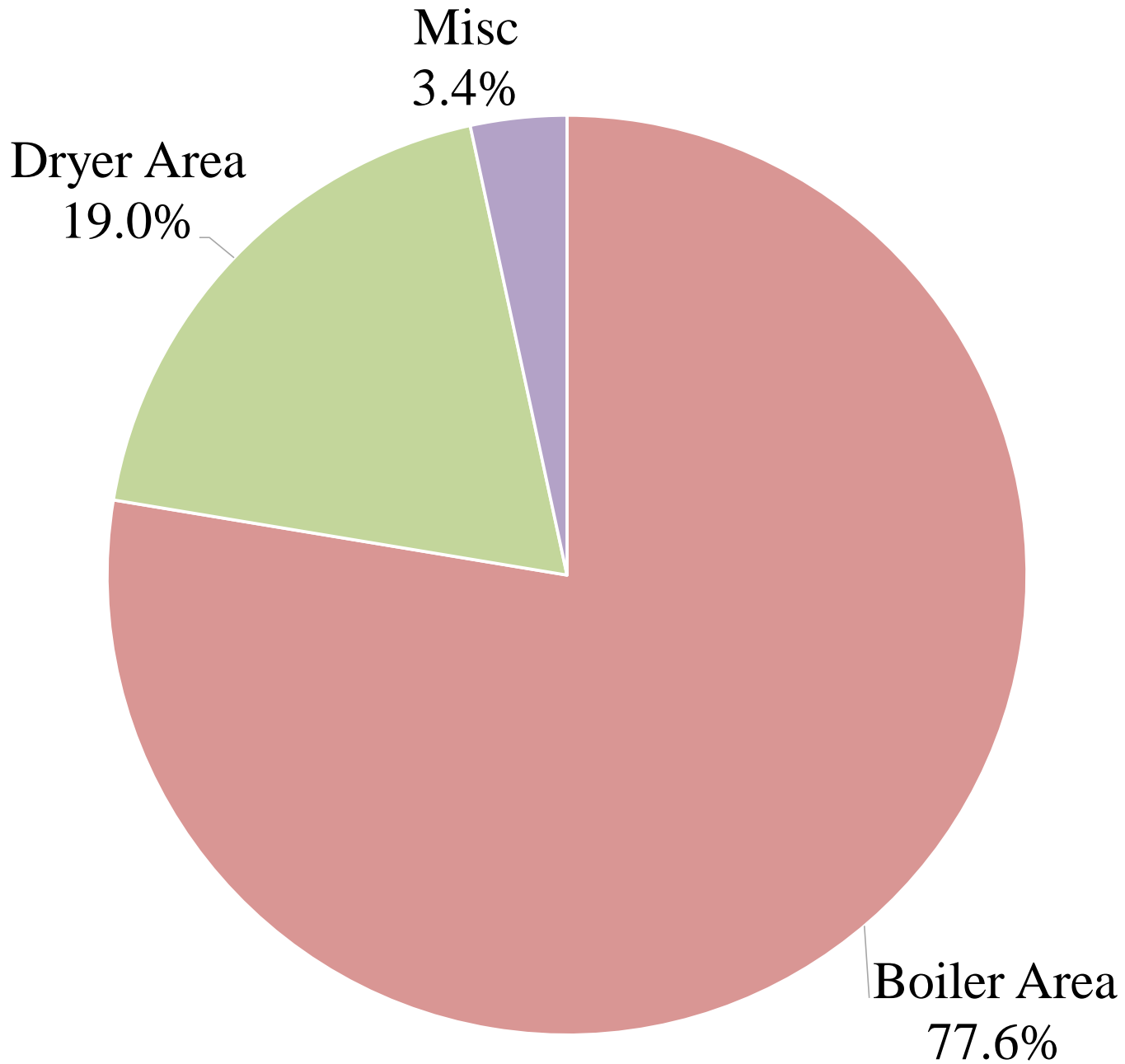
- Bi-monthly meetings with plant management to focus on water and energy conservation.
- Quarterly huddles held with green team members with all plant employees to educate on best sustainability practices.



# Distribution of Electrical Energy by Process



# Natural Gas Distribution



# Summary of Savings and Incentives

Electrical Energy Savings:	5 Million kWh/yr
Natural Gas Savings:	13,000 MMBtu/yr
Water/Wastewater Savings	25 Million gal/yr
<b>Total Cost Savings:</b>	<b>\$675,000/yr</b>
Potential Incentives & Rebates:	\$210,000
Net Implementation Costs:	\$500,000
Simple Payback:	0.7 years



# Crystal Creamery Sustainability Initiative

## Continuous Improvement

Project	Location	Annual Environmental Savings	Progress
Economizer on Boiler #2	Modesto	44,346 therms	Completed 2014
Refrigeration Controls	Humboldt	4,044,627 kWh	Completed 2015
Lighting Upgrade	Humboldt	258,129 kWh	Completed 2015
Lighting Upgrade	Stockton	66,378 kWh	Completed 2015
Lighting Retrofit	Modesto	156,128 kWh	Completed, Rebate in process
Steam Trap replace	Modesto	29,234 therms	Completed, Rebate in process
VFD Plant Water Pressure Pump	Humboldt	15,892 kWh	Completed, Rebate in Process
Ammonia Compressor Sequencing	Modesto	595,834 kWh	In progress





# Crystal Creamery Sustainability Initiative

## Energy Conservation

5 Year Goal	
<b>Goal:</b>	<b>20% Reduction Intensity in Energy*</b>
Baseline Year:	2012
2016 Q1 Achievement:	20.10% Reduction in Intensity

### Renewable Energy

- Modesto production facility installed 1 MW Solar System in 2011
- Generation to power 98 homes in 2015

### Peak Energy

- Load shifting when possible



### Energy Conservation

- Lighting, Humboldt facility approved for all new lighting 2016
- Economizer on boiler installed 44 thousand therms/year savings
- Night mode on spiral freezer when not in use
- Sequencing the operations of ammonia compressors (expected savings 500 thousand therms/year)
- In general, more automation controls (lighting, refrigeration, etc.,)





# Crystal Creamery Sustainability Initiative

## Water Conservation

5 Year Goal	
<b>Goal:</b>	<b>20% Reduction Intensity in Water</b>
Baseline Year:	2012
2016 Q1 Achievement:	26.98% Reduction in Intensity

### Water Reuse (Cow water)

- During processing, water is taken out of the milk in order to convert it to powder or condensed; instead of sending this water down the drain, a portion is now reused to wash milk cases 32 Million gallons used in 2015. Also capturing for reuse in cooling towers.



### Water Conservation

- Semi-annual internal water assessment completed by plant management
- Elimination of triple rinsing for chemical drums
- Installed new solenoid technology on silos and pump equipment.
- Installed Smart-valve retrofits for urinals





# Crystal Creamery Sustainability Recognition



National EPA Food Recovery Challenge Innovation category award winner

Crystal Creamery earns Stanislaus Green Certification



**Business Recycling Award  
2013 & 2014**  
Awarded by the City of Modesto



Thank you





# Appendix



# Crystal Creamery is Working with Industry Leaders in Sustainability



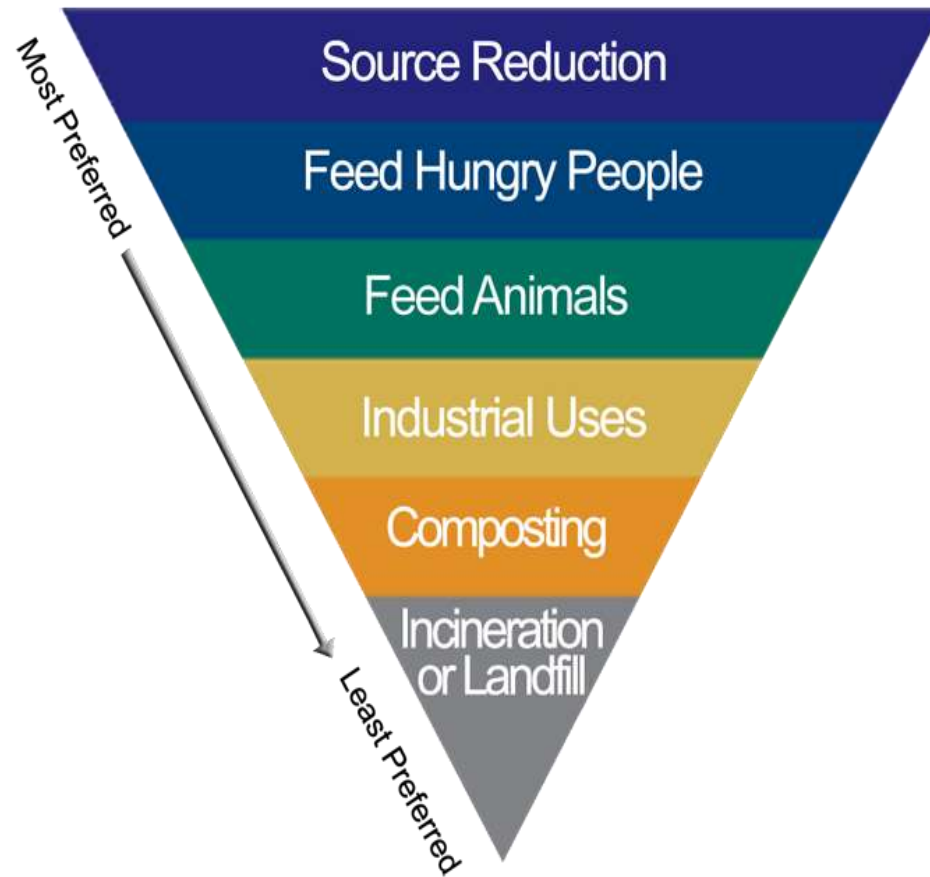
Alliance Dairies  
Fair Oaks Farms  
Fiscalini Farms  
Foster Brothers Farm  
Gar-Lin Dairy Farm  
Graywood Farm  
Haubenschield Farms Inc.  
Holsum Dairies  
Kooistra Farms  
Maddox Dairy  
MarBec Dairy  
Medeiros & Sons Dairy  
McCarty Family Farms  
Mystic Valley Dairy  
Nobis Dairy  
Prairieland Dairy  
Rovey Dairy  
Simonson Dairy  
Spruce Haven Farm  
Triple A Farms  
Werkhoven Dairy



# Crystal Creamery Sustainability Initiative

## Zero Waste

### EPA Food Recovery Hierarchy



# Crystal Creamery Sustainability Initiative

## Zero Waste

Tools used to track this initiative:



Food Recovery Challenge



CHANGING HOW WE THINK ABOUT OUR RESOURCES FOR A BETTER TOMORROW



These nationally recognized programs give us a way to benchmark, measure and communicate our efforts in a more consistent and cohesive way. It allows us to track individual waste streams and track our progress over time.





# Crystal Creamery Sustainability Initiative

## Animal Welfare

Crystal Creamery supports and actively encourages sourcing partners in the adoption of the National Dairy FARM (Farmers Assuring Responsible Management) Program™. The program includes independent third-party verification managed by The National Milk Producers Federation.

**Goal: 100% Closed milk supply certified by y/e 2015.**

**(Represents 88%+ supply of all milk)**

**Goal: All of milk supply by y/e 2016.**

The FARM™ guidelines require focus on the following areas:

- Humane animal handling and management
- Herd health procedures and care
- Food and water quality standards
- Housing that promotes animal comfort & cleanliness
- Proper management of special needs animals





# Crystal Creamery Employee Engagement

## Bike to work day

- Encourage employees to use alternative transportation to work, reducing emissions.
- Active, healthy lifestyles.



**All CRV Recycling to the Madera Ronald McDonald House, in addition to Food donation to serve hungry families in need.**

