Innovation Center for U.S. Dairy Sustainability Commitment Overview

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January 3, 2015

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Alliance Dairies
Clauss Dairy Farms
Fair Oaks Farms
Fiscalini Farms
Foster Brothers Farm
Gar-Lin Dairy Farm
Graywood Farm
Haubenschild 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

Associations/Government

Dairy Processor
Cheese
Transport
Retail & QSR
Community
Crop Production
Coops & Farmers
Suppliers

Sustainability Council

We commit to being leaders in sustainability, ensuring the health and well-being of our planet, communities, consumers and the industry

RUAN

114 companies & 150 professionals in the Sustainability Council

Leading 8 project teams with over 800 industry members contributing over $6M

Current reality

competitors

NGOs

consumers

customers

government

investors

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Customers are setting sustainable sourcing goals

- 2014: 70% of suppliers have an approach
- 2015: 50% of suppliers can provide details

- 2016: Begin purchasing verified sustainable beef

- Shareholder resolution on sustainability reporting and addressing supply chain water

- Commitment to sustainably source dairy using the Guide by 2020

- Unilever commitment to sustainably source by 2020

- Nestle Responsible Sourcing Goals

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Stewardship and Sustainability

Stewardship =
preservation and conservation
"doing good"

Sustainability =
Preservation
+ enhance livelihoods
+ improve profitability
"doing good business"

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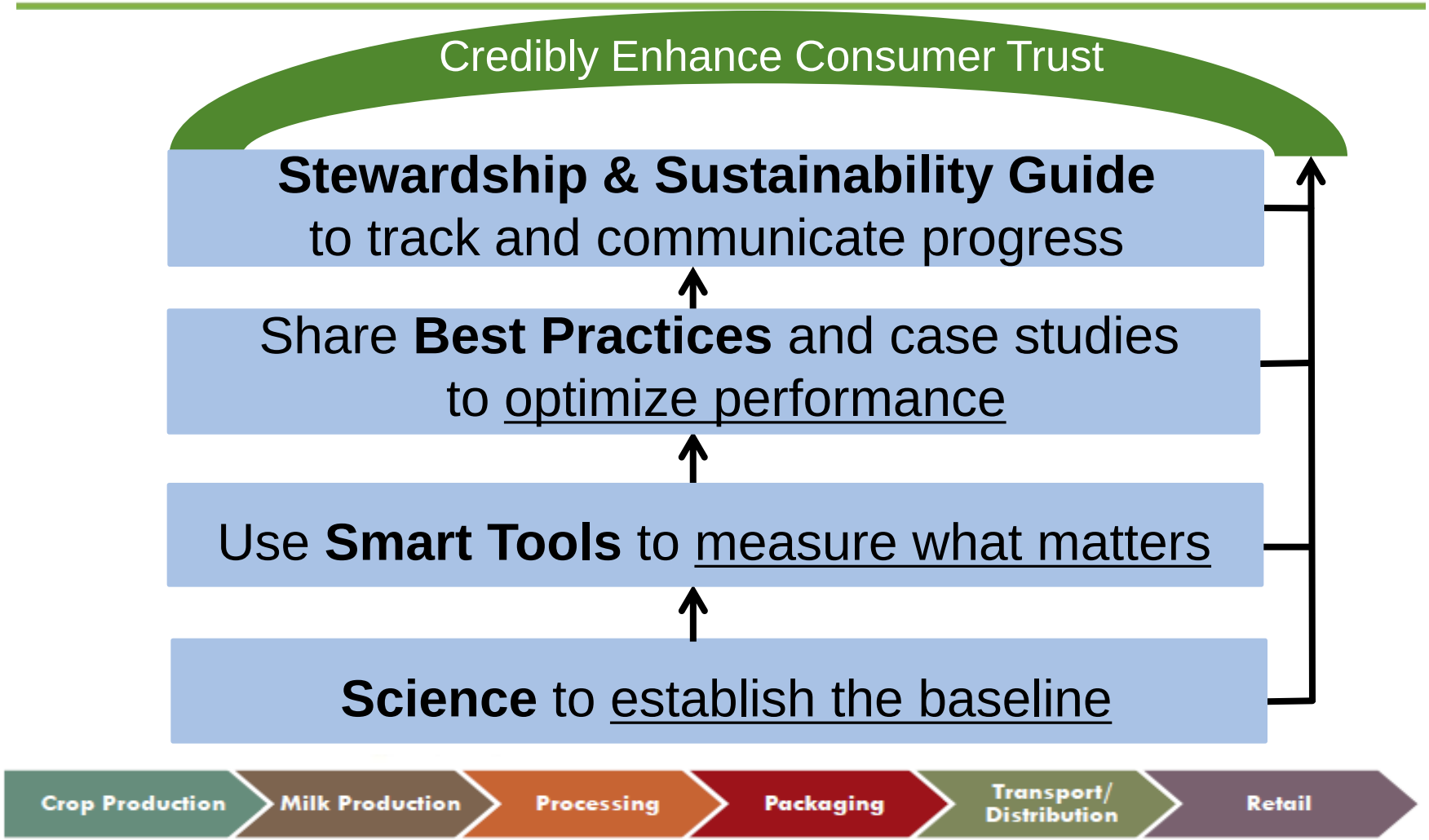
Single approach from “Grass to Glass”

- **Credible, transparent and industry led.** Program that is equal to or exceeds the competition while satisfying the demands of retail customers and dairy consumers.
- **Demonstrate progress.**
  Buyers and sellers seek proof that dairy – “from grass to glass” – uses practices that protect natural resources and promote community well-being and economic vitality.
- **Mission: one approach.**
  Create a voluntary method to track and communicate stewardship and sustainability progress.

Enhancing Consumer Trust



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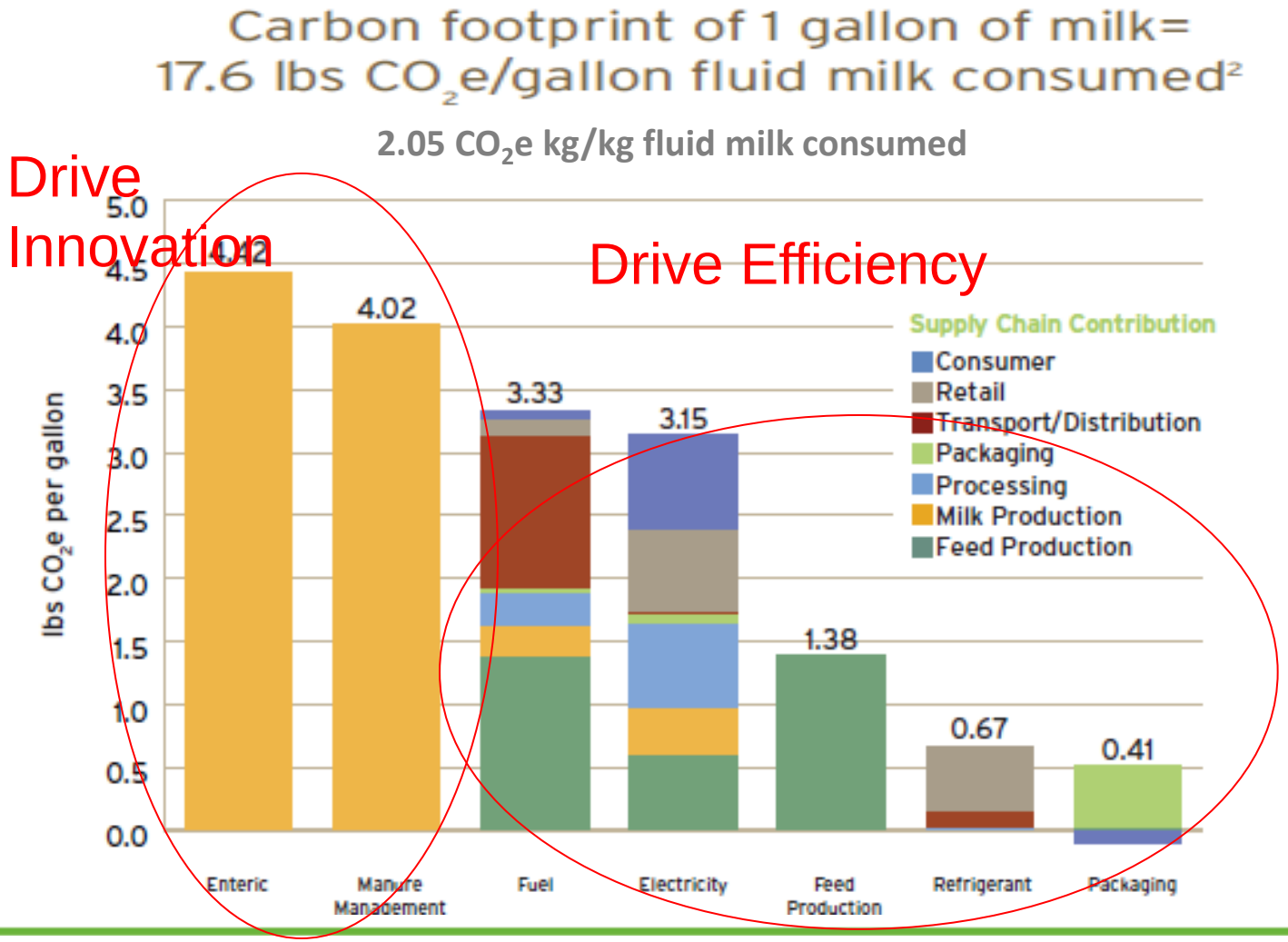
What we learned: opportunities for efficiency and innovation across the value chain



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[1] Does not include sources related to waste.
[2] "Greenhouse Gas Emissions of Fluid Milk in the U.S." University of Arkansas, 2010. Based on environmental and consumption data from 2007-2008. Natural variability in data ranges from 15.3 to 20.7 lbs. CO2e. The total fluid milk carbon footprint is approximately 35 million metric tons, with a 95% confidence range from 30 to 45 million metric tons.

Lead: Combination of top down and bottom up

32 Dairy industry CEOs and chairpersons committed to…

25% by 2020

GHG reduction for fluid milk

$238 million

Estimated business value across industry

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Lead: Be bold and a pilot for changes

USDA Memorandum of Understanding (MOU)

On December 15, 2009, Copenhagen, DK

USDA recognized the work of dairy farmers and the entire industry with a Memorandum of Understanding (MOU)

Renewed April 24, 2013, Washington, DC

"This historic agreement, the first of its kind, will help us achieve the ambitious goal of drastically reducing greenhouse gas emissions while benefiting dairy farmers. "

-- Secretary Tom Vilsack

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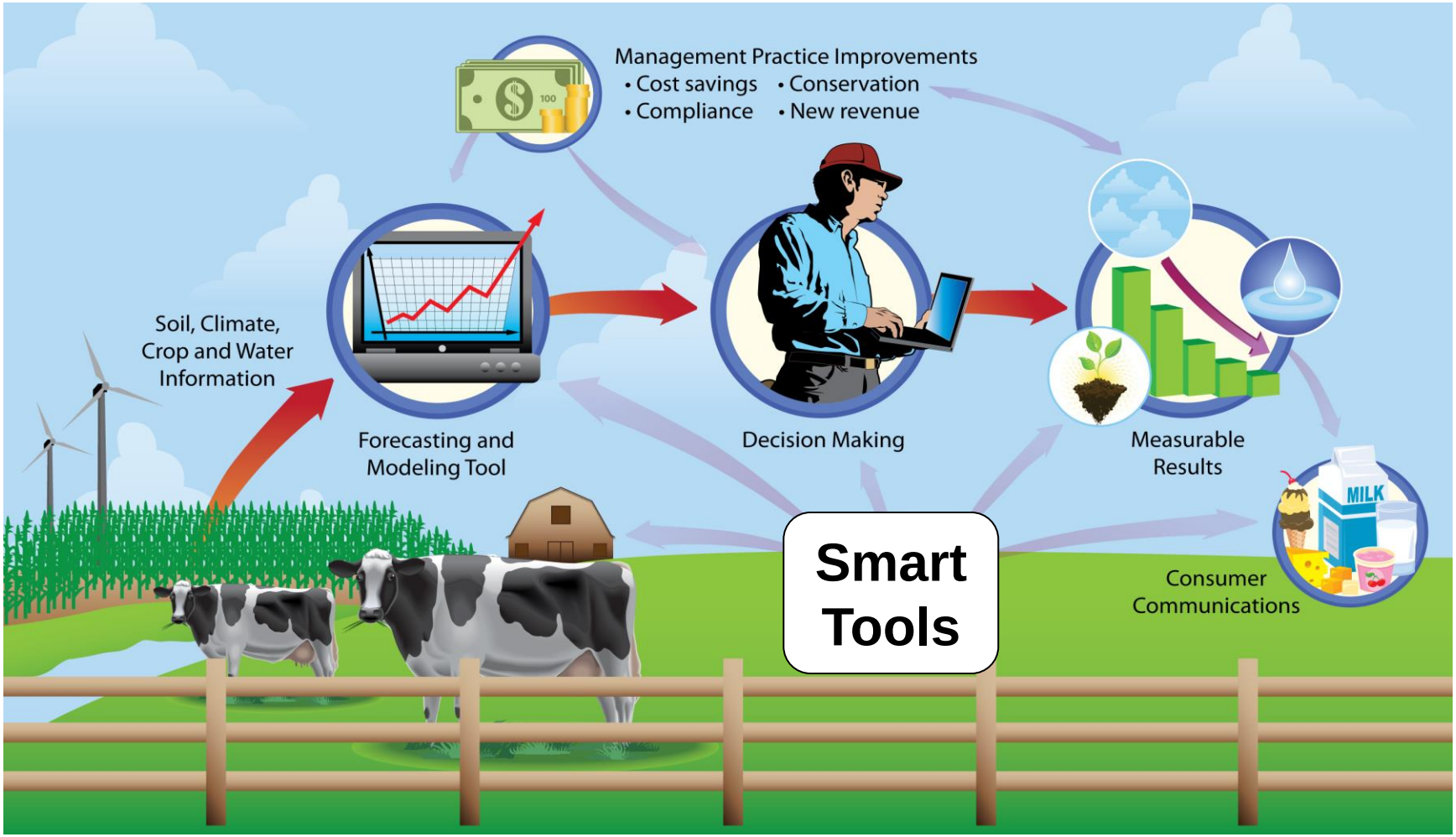
Farm Smart™-helping farmers to measure, mitigate, and communicate sustainable performance



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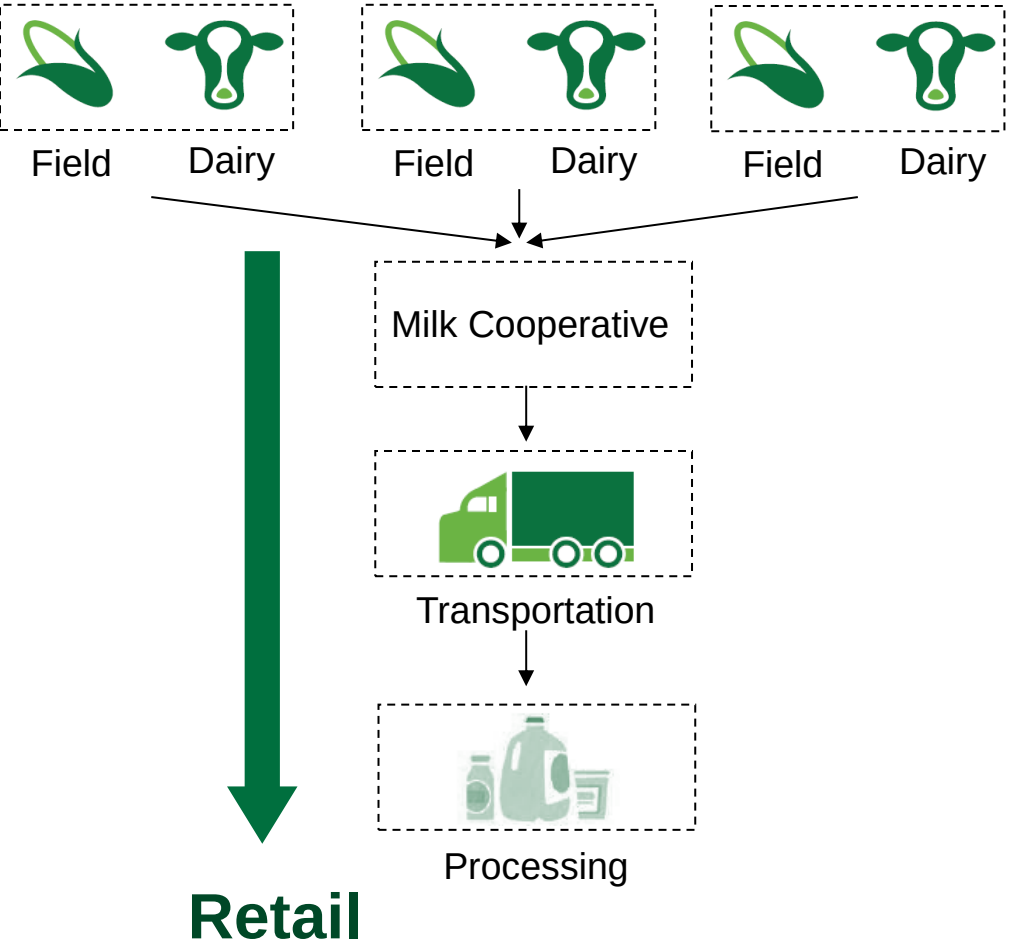
Measure and communicate sustainability through the value chain



The Innovation Center and Industry have tested the tools on 1.6% of total U.S. milk production and 1.4% of cows!
This is one of the largest tests that has occurred within the agriculture standards

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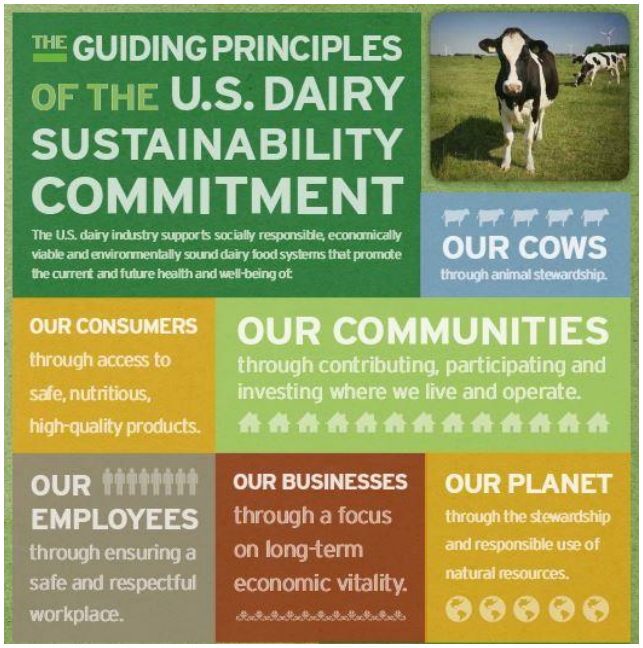
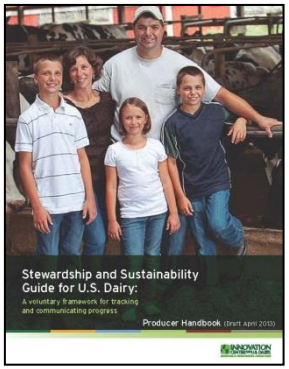
Communicate progress to stakeholders

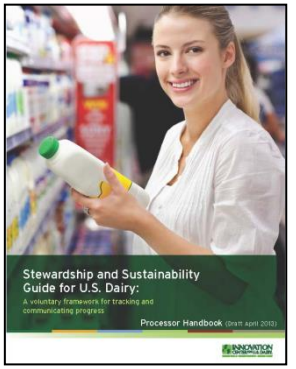


U.S. Dairy Sustainability Awards
Innovation Center for U.S. Dairy®

Outstanding Dairy Farm Sustainability

Prairieland Dairy
Firth, Neb.





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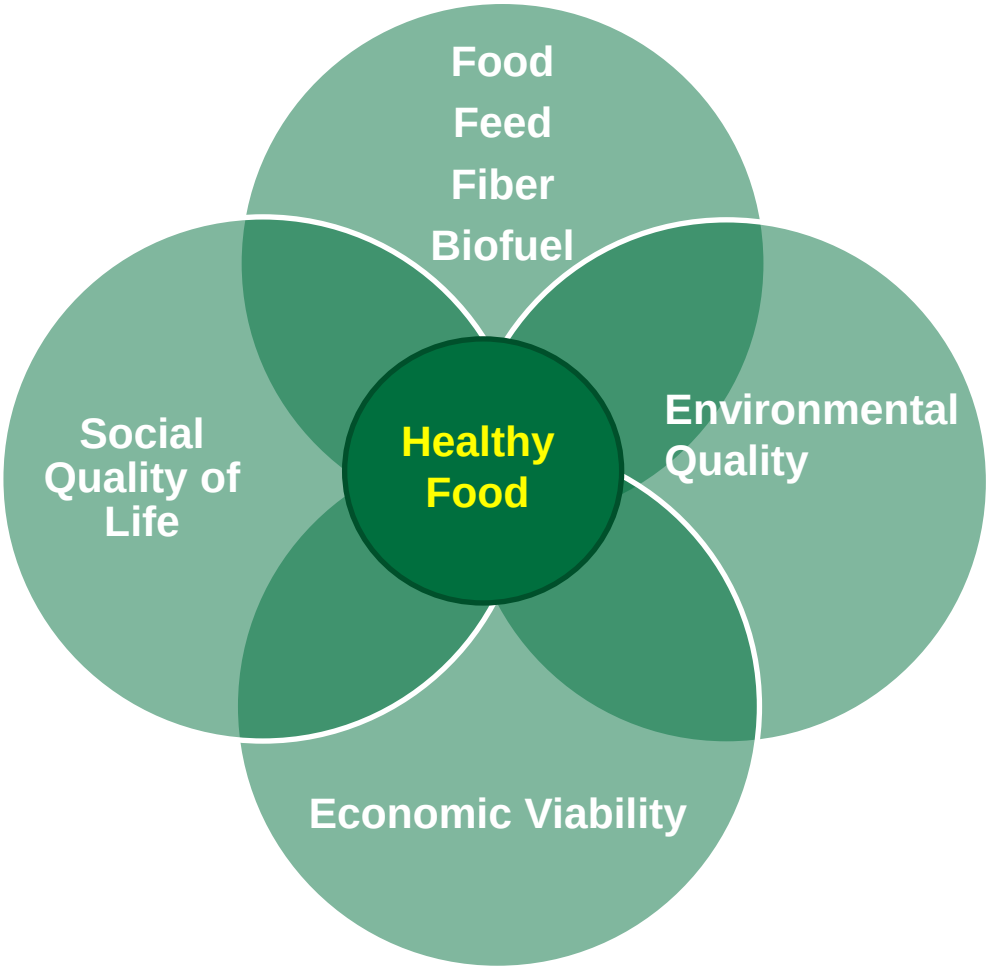
View all of the 2013 winner videos at
www.worldwildlifefund.org/sustainabledairy

APPENDIX

The need for a sustainable food system

- Satisfy human food, feed and fiber needs, and contribute to biofuel needs
- Enhance quality of life for farmers, farm workers and society as a whole
- Sustain economic viability of agriculture
- Enhance environmental quality and the **resource base (nutrients such as nitrogen and phosphorus)**



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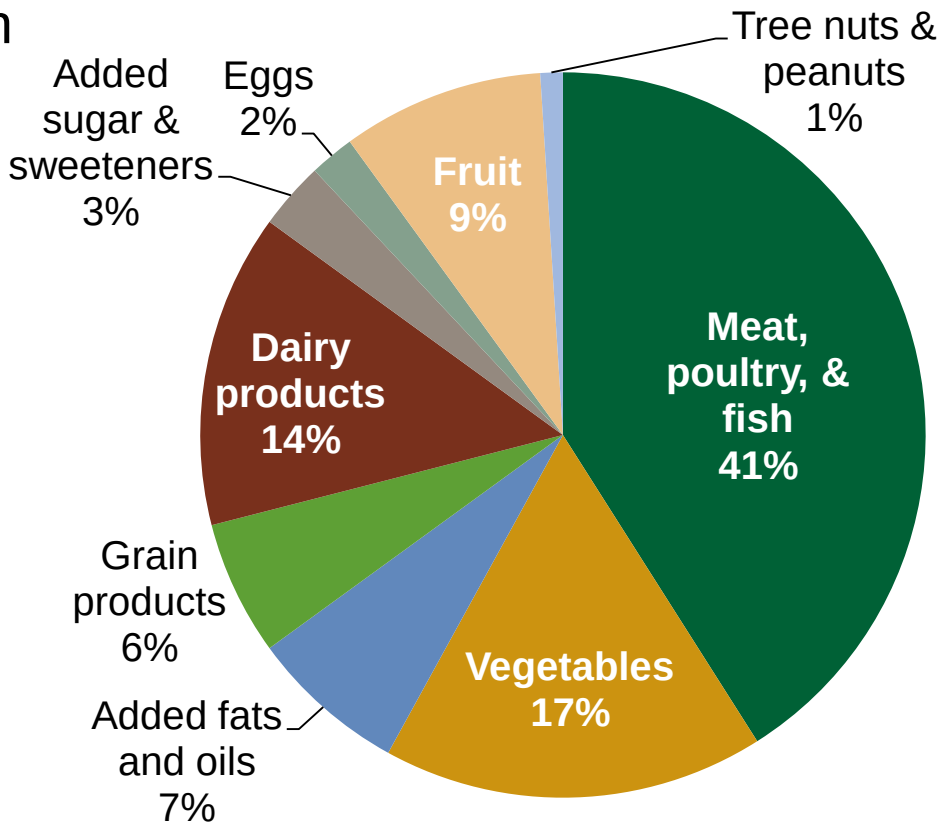
Toward Sustainable Agricultural Systems in the 21st Century, 2010
National Research Council, National Academies Press, Washington, D.C.

One out of three food calories is wasted

- 29% of America's food supply was lost from human consumption
- Estimated total value at retail and consumer levels was $165.6 billion
- 273 pounds of food per person
- Disposal costs add one billion dollars in local taxes annually

Food waste by retail value ($165.6B total)



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Source: J. Buzby, and J. Hyman. "Total and per capita value of food loss in the United States", Food Policy, 37(2012):561-570.

What if 2 tons/wk of food waste were repurposed?

2 tons/week

Nutrients (N & P)

- 17 tons Nitrogen
- 1.3 tons Phosphorus

(Annual Values)

What if 2 tons/wk food waste added to manure digester?

2 tons/week

Dairy digester
(1,000 cows)

- 226 tons Nitrogen
- 28 tons Phosphorus
- Green Power for 3 homes

(Annual Values)

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Source: Frear et al, 2011 Clean – Soil, Air, water 2011, 39 (7), 697-704

Manure & Food Waste: 2,700 deployed digesters with food waste could reduce overall U.S. Dairy footprint by 25% and generate eco system benefits from repurposing food waste

Reduces total landfill by **8%**

15 M tons commercial & retail food waste 70% of retail waste

4.8 M tons food processing waste

109 M tons dairy cow manure

813 M bags of nutrient rich potting fiber

3.2 M cars off the road Or 25% of total dairy footprint

Electricity for 1 M homes

Nitrogen fertilizer for 5% of corn production

Phosphorus for more than all U.S. tomato production

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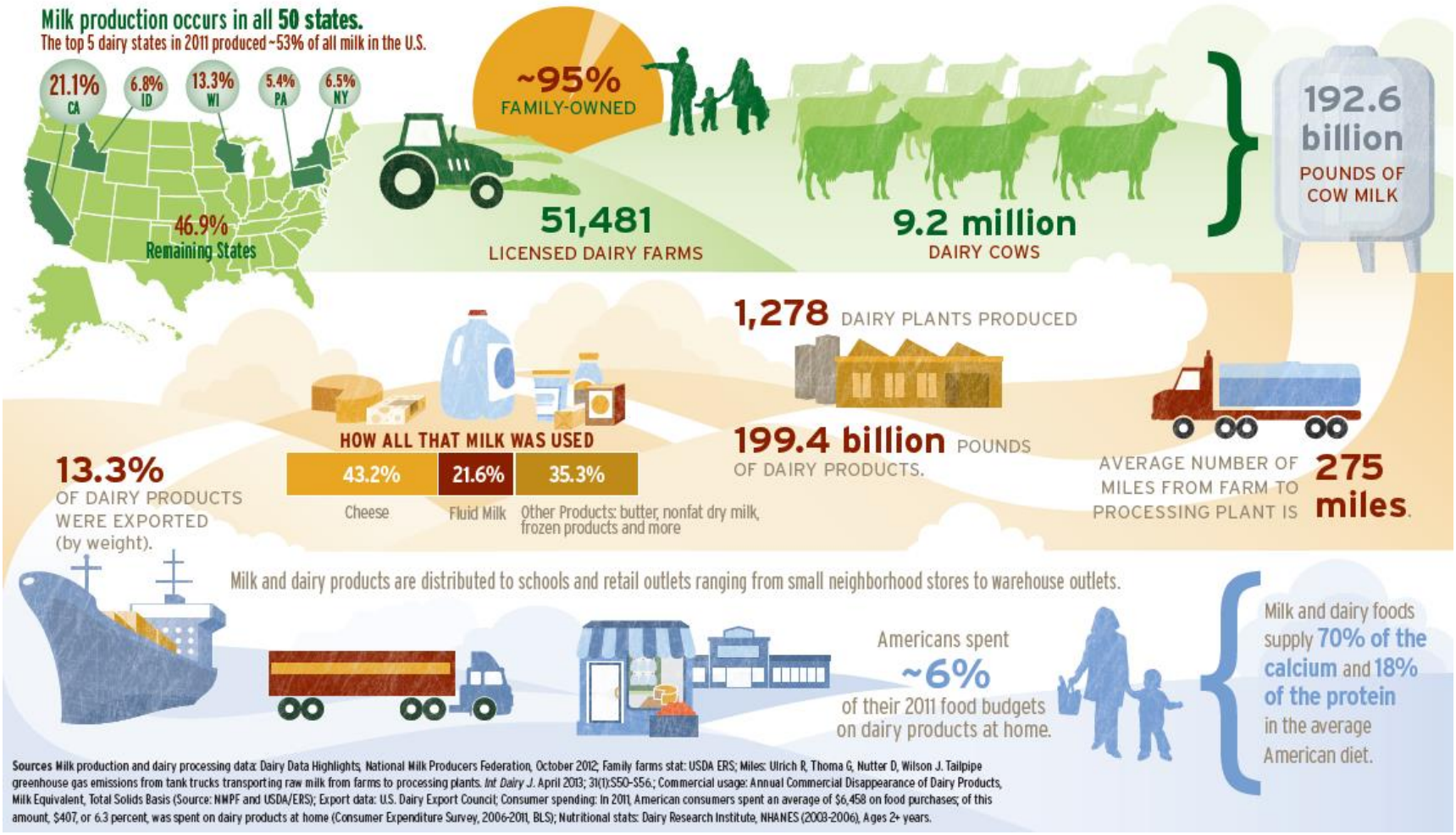
Guiding Principles align on a vision for the industry

- **The U.S. Dairy Industry supports socially responsible, economically viable and environmentally sound dairy food systems that promote the current and future health and well being of:**

- **We commit to these principles through our shared values of honesty, integrity, inclusiveness, and transparency**

- **Our consumers** – through access to safe, nutritious, high-quality products.
- **Our communities** – through contributing, participating, and investing where we live and operate.
- **Our cows** – through animal stewardship.
- **Our employees** – through ensuring a safe and respectful workplace.
- **Our planet** – through the stewardship and responsible use of natural resources.
- **Our businesses** – through a focus on long-term economic vitality.

About the Dairy Industry



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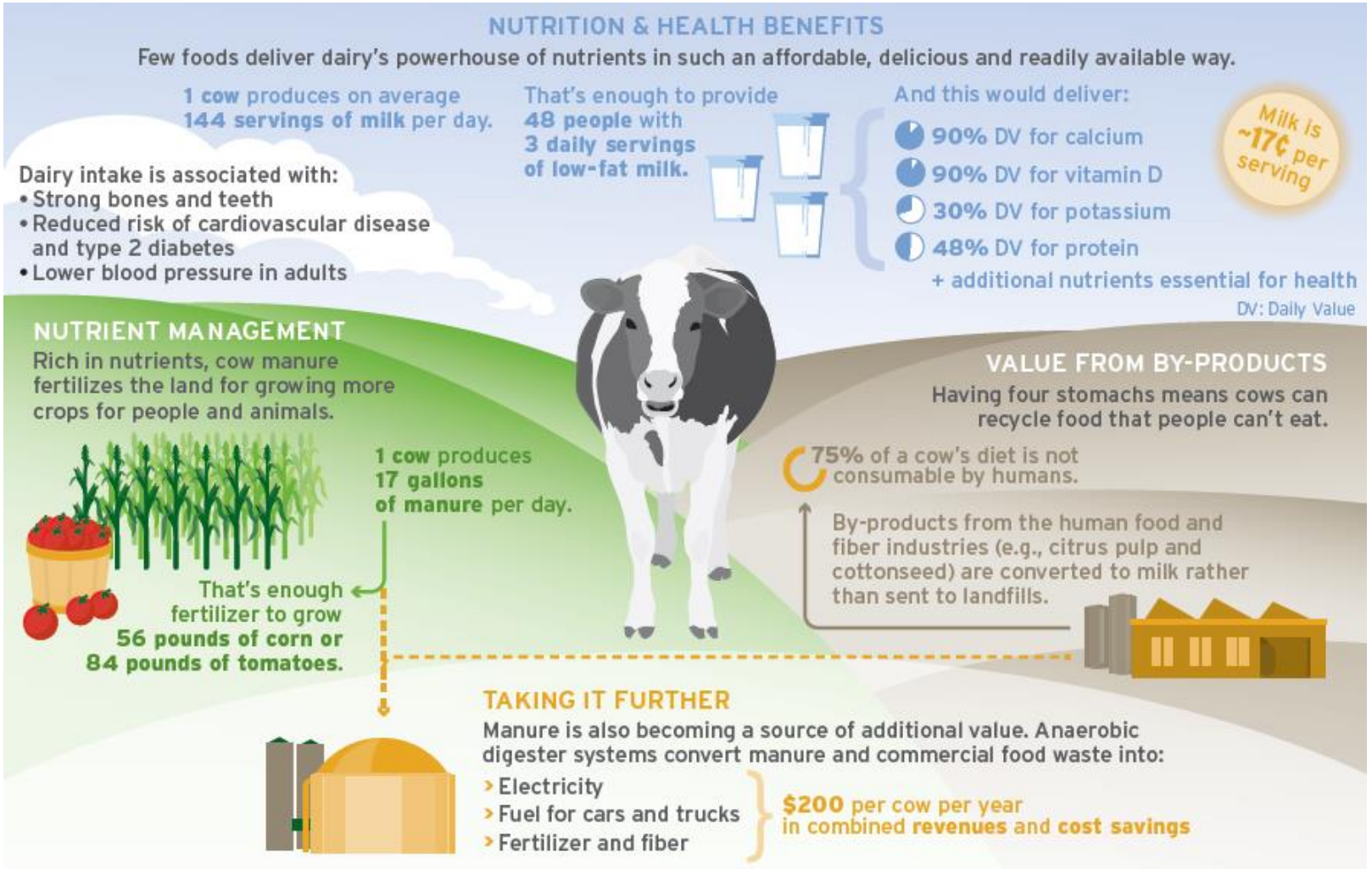
How one cow contributes to a sustainable food system



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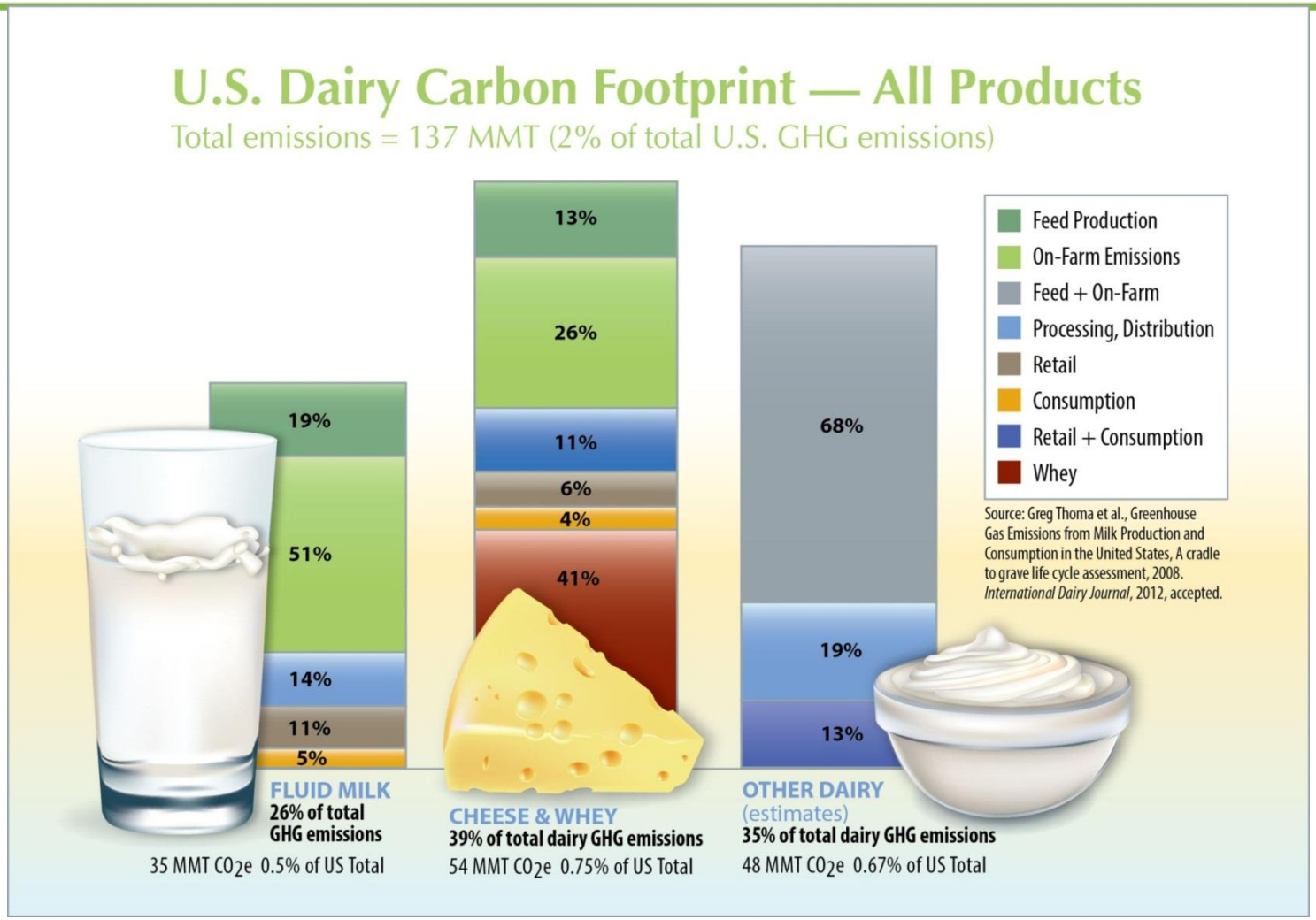
Review case study of supply chain trying out the guide and tools

https://image-base.wistia.com/projects/05jj1lu1t3

Key findings: carbon footprint, all products



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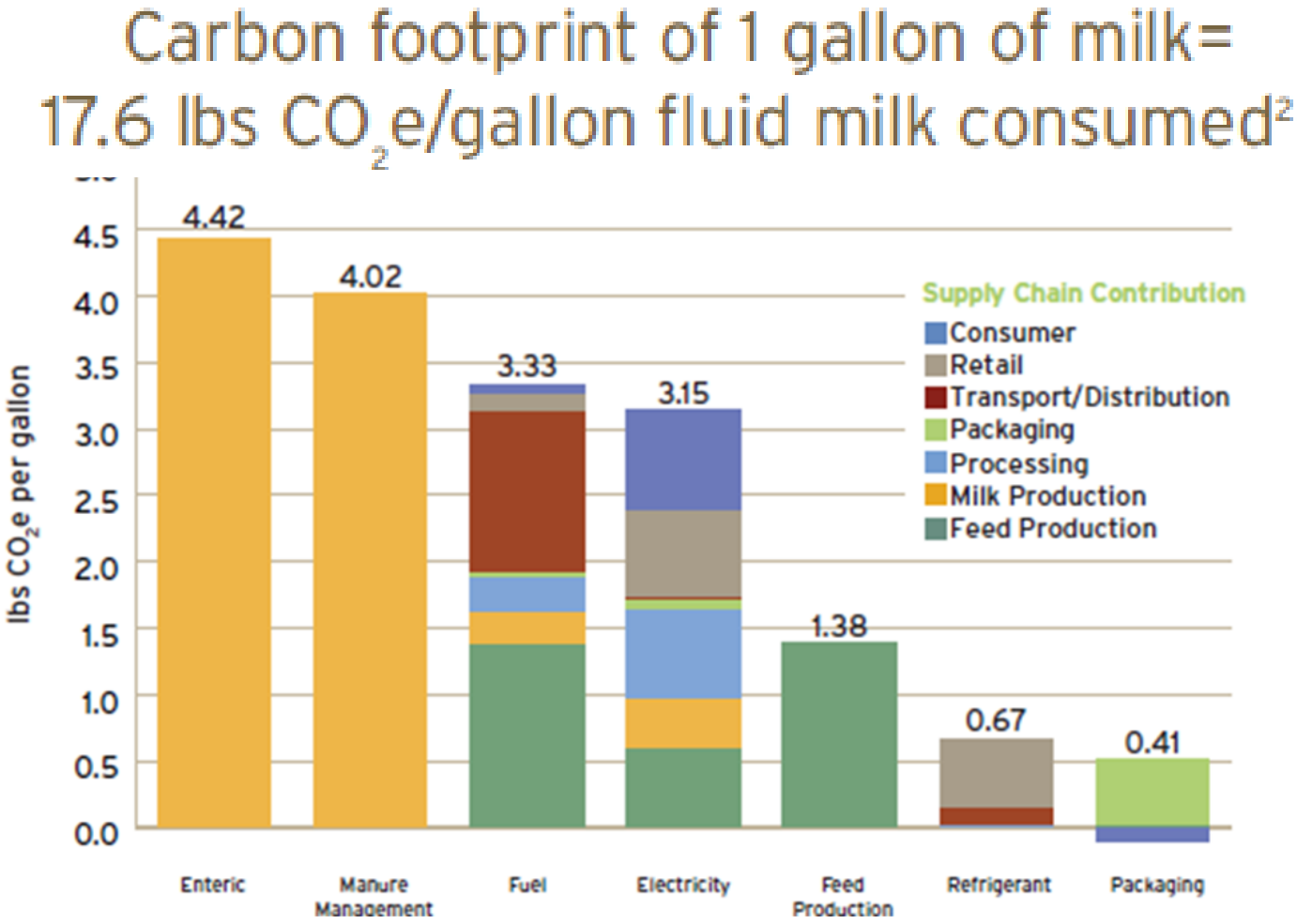
Measurement: Understand business drivers



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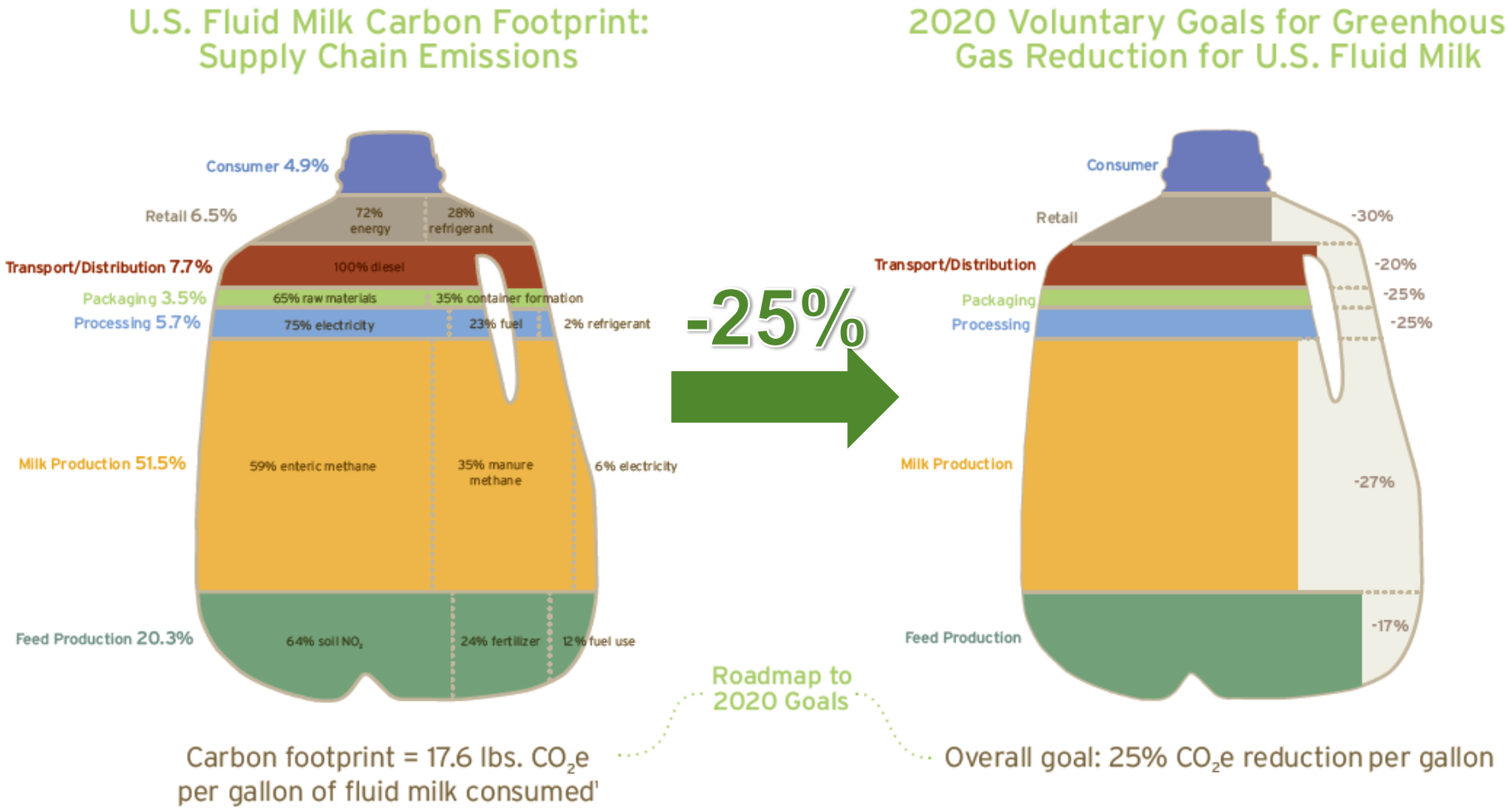
Lead: Industrywide leadership from farm to table



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Phase II farm indicator development

- Phase II development in 2014 by national and regional taskforce teams
- National Teams: Review and refine previous work to develop indicators and aggregate regional team recommendations. Topics covered:

Work Force

Resource Recovery

Soil Health

Community Engagement

Water

Biodiversity

- Regional Teams: 6 Regional Teams to develop indicators and metrics that will cover water, resource recovery, and soil health
- **January 2015 -** Present to Innovation Center Board

Key findings: dairy uses ~5.1% of U.S. water withdrawal

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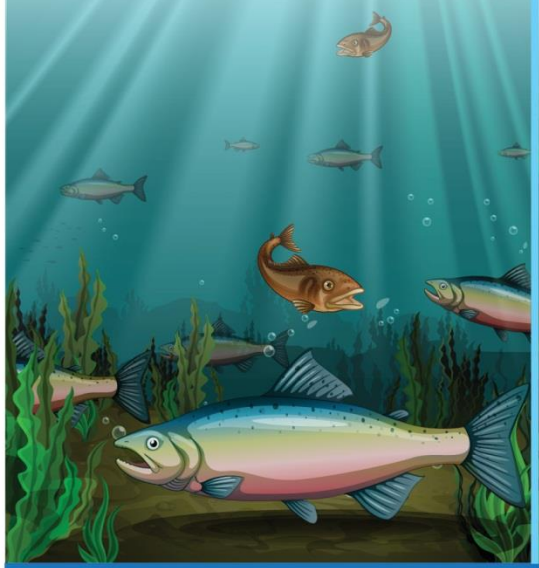
Water quality terminology

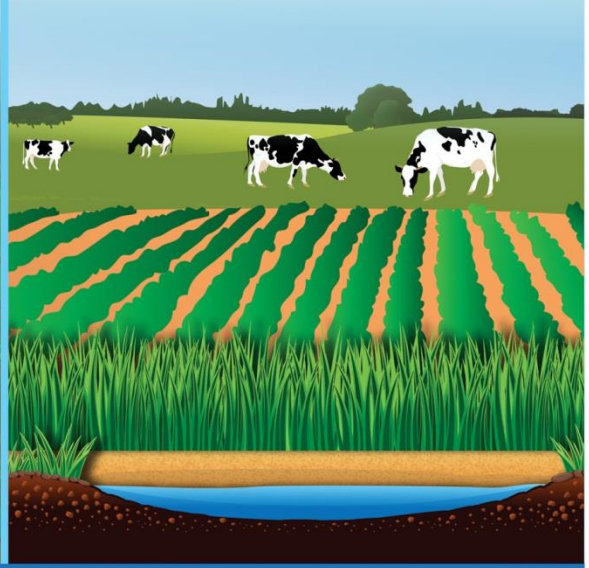
Eutrophication: The process by which a body of water becomes enriched by inorganic plant nutrients, especially phosphates and nitrates



Eutrophication is an important consideration for the dairy industry: Eutrophication can lead to ecosystem damage and shortened life span due to oxygen depleted conditions, rapid sedimentation, accumulation of biotoxins, and loss of biodiversity

Phosphorus is the growth-limiting nutrient in freshwater bodies; **nitrogen** is limiting in marine systems

Nutrient sources: Crop fertilizer field runoff



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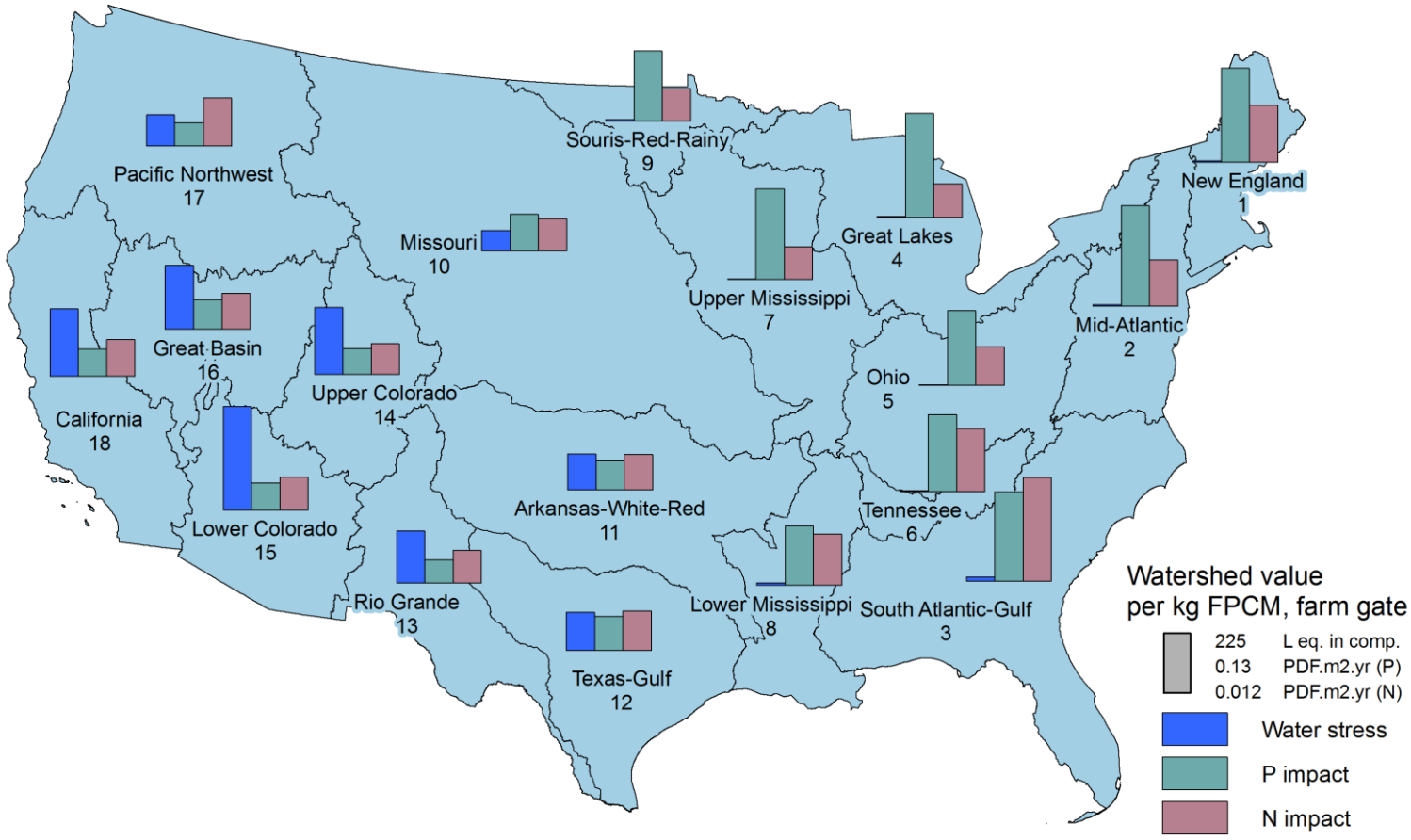
Key finding: water is a local issue impacted by both water supply and watershed characteristics



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FPCM: fat and protein corrected milk
Water stress index: liter in competition
P impact: Phosphate eutrophication impact
N impact: Nitrate eutrophication impact

Dairy Water Impacts: Know Your Operation

- Water issues are largely dependent on local or regional conditions
- Consequently, some operations will be more significantly affected by quality issues than quantity issues, and vise versa
- Producers should be aware of their major impacts and risks and pay particular attention to the practices that will mitigate those risks

What we learned: management practices matter

Increasing feed efficiency

Reducing enteric methane

Improving manure management

Reducing electricity usage

Consolidating distribution network

Considering alternative packaging materials

Good truck maintenance

Better route design

Reducing long distance milk hauling

The basis for differences is best management practices – not size, region or age.

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Dairy LCA key implications to the industry

Variability means opportunity

Focus on what matters

BMPs can improve environmental footprint of virtually all farms and businesses