



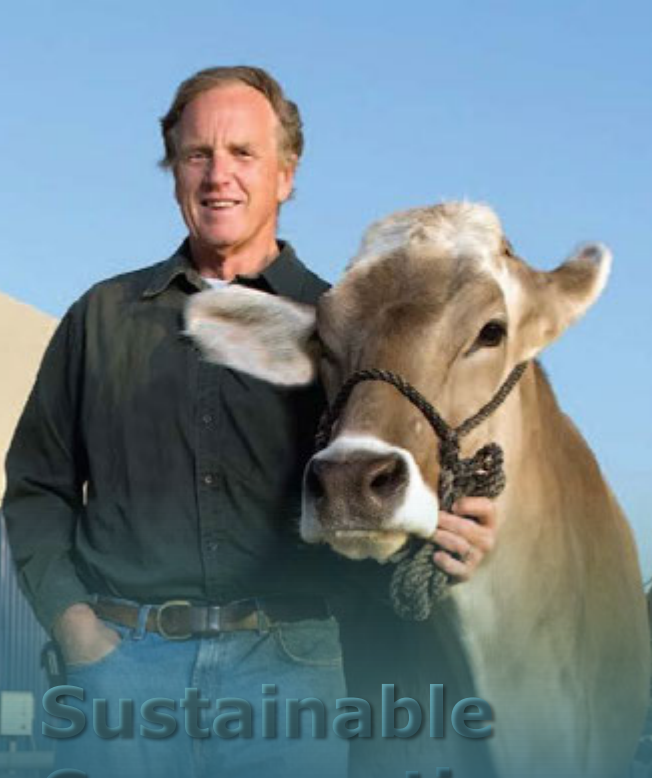
Utilization of Dairy Manure

Assessing potential to improve environmental outcomes in CA

Ryan Flaherty • Director of Business Partnerships



Sustainable Conservation



Sustainable Conservation helps California thrive by uniting people to solve the toughest challenges facing our land, air, and water.



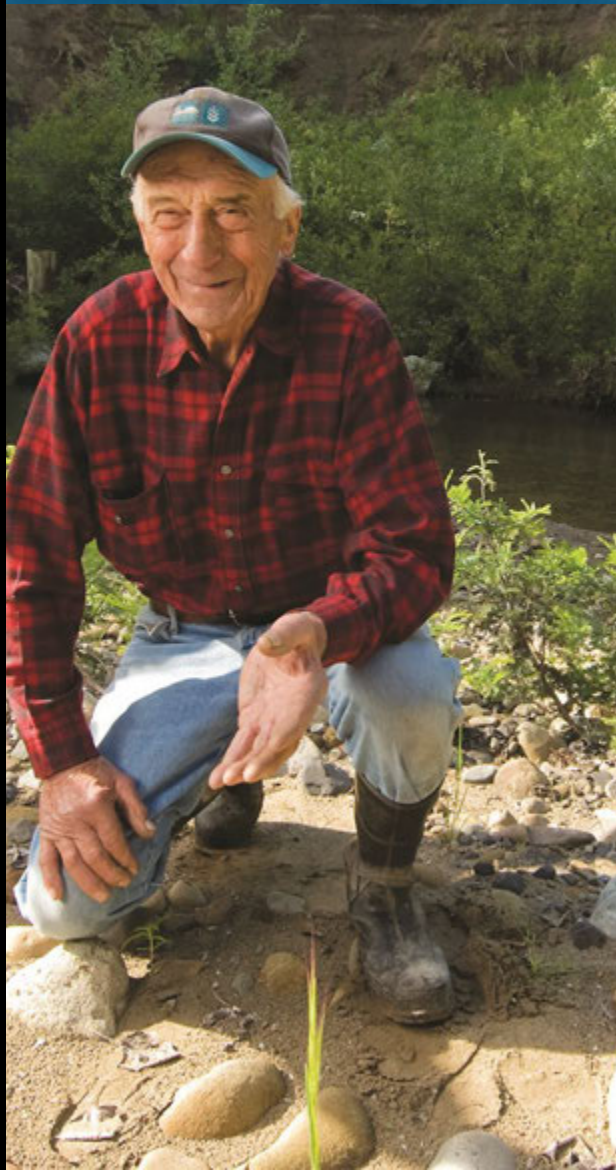
Partnering with Farmers

to Grow a Vibrant Future



Supporting Landowners

to Restore California's Lands and Water



Engaging Business

to Solve Environmental Challenges



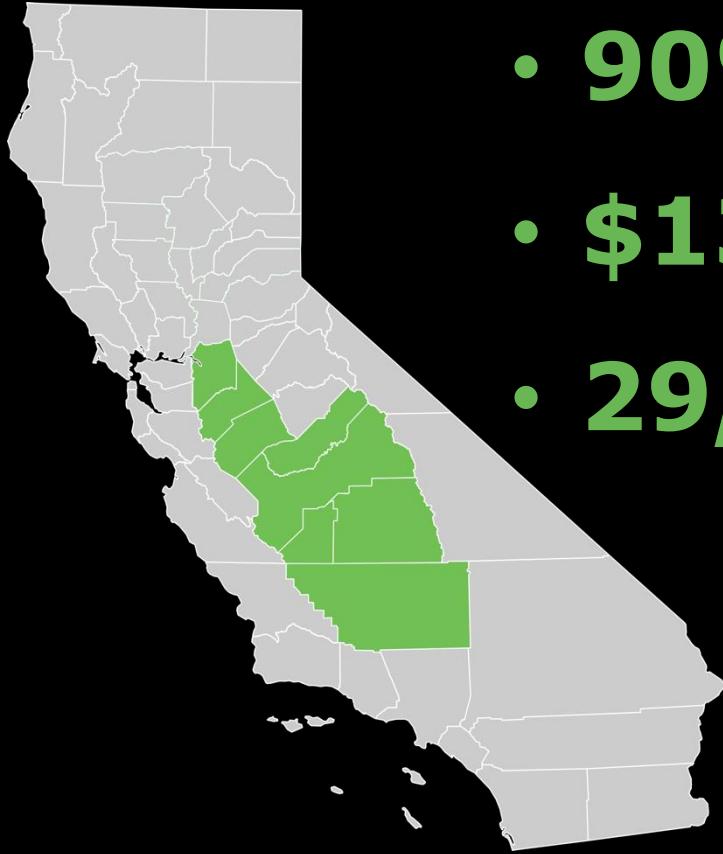
The dairy industry is important *for California and the U.S.*



- **#1** milk-producing state
- **\$34.4B** sales in 2014¹
- **50,000** jobs in 2014¹

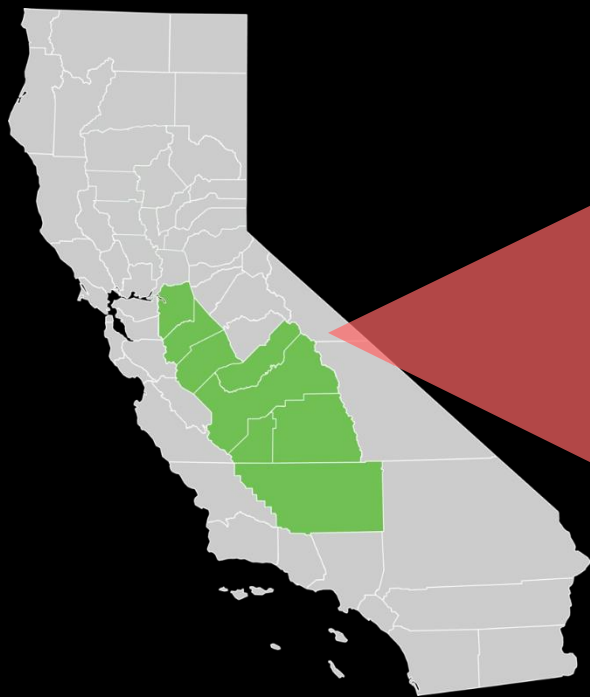
¹ [UC Davis, Contributions of the California Dairy Industry to the California Economy](#)

The San Joaquin Valley is critical *for the California dairy industry.*



- **90%** of CA milk production
- **\$13.9B** sales in 2012¹
- **29,900** jobs in 2012¹

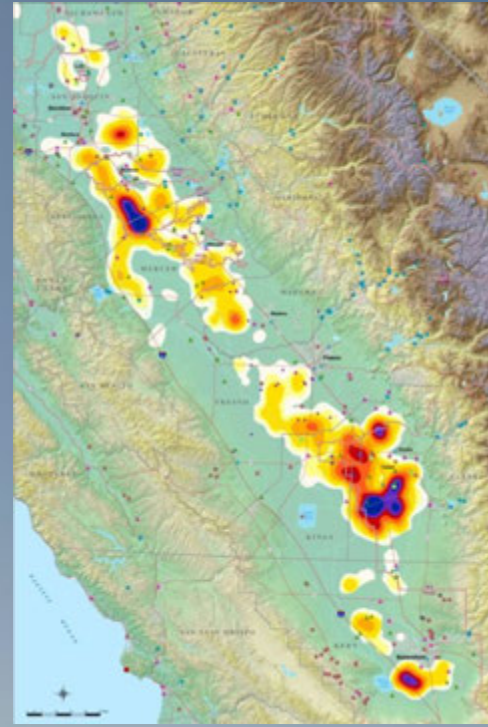
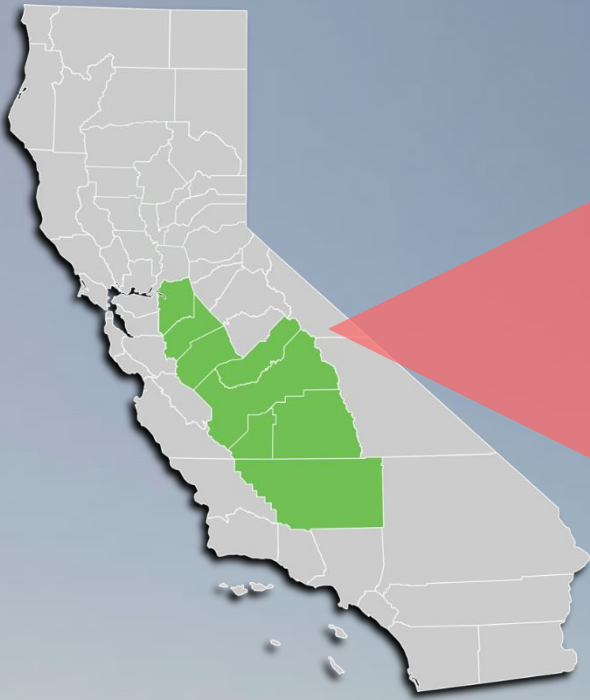
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**WATER
QUALITY**

**AIR
QUALITY**

**GREENHOUSE
GASES**



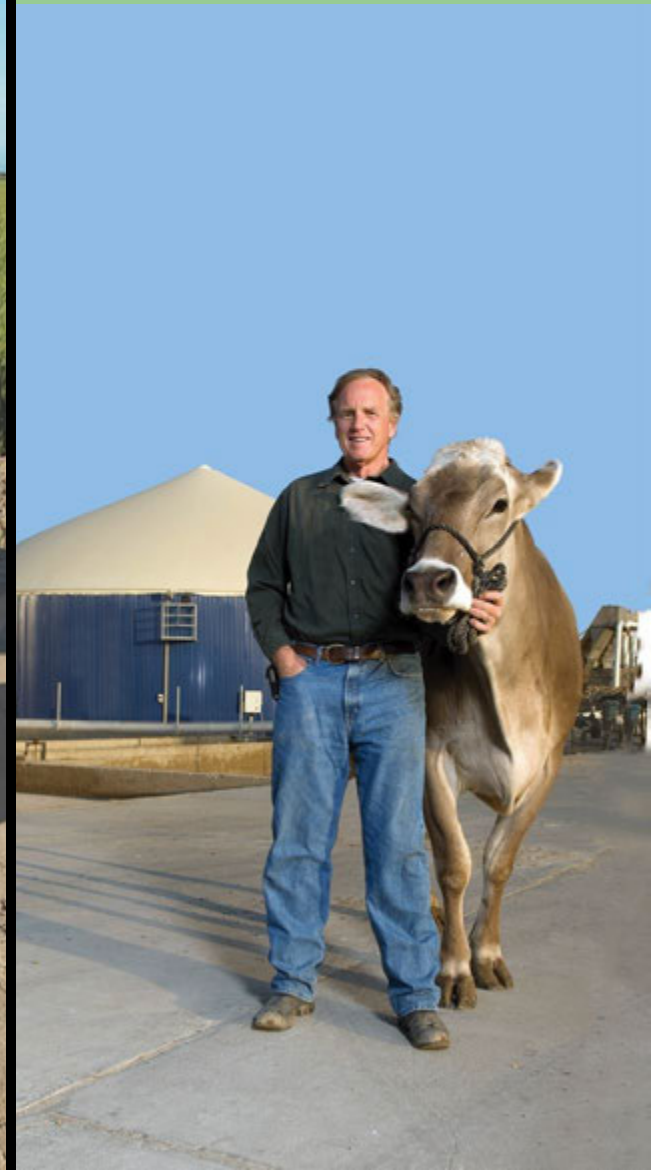
WATER QUALITY



AIR QUALITY



GREENHOUSE GASES



POLICY

- *regulations*
- *permitting*

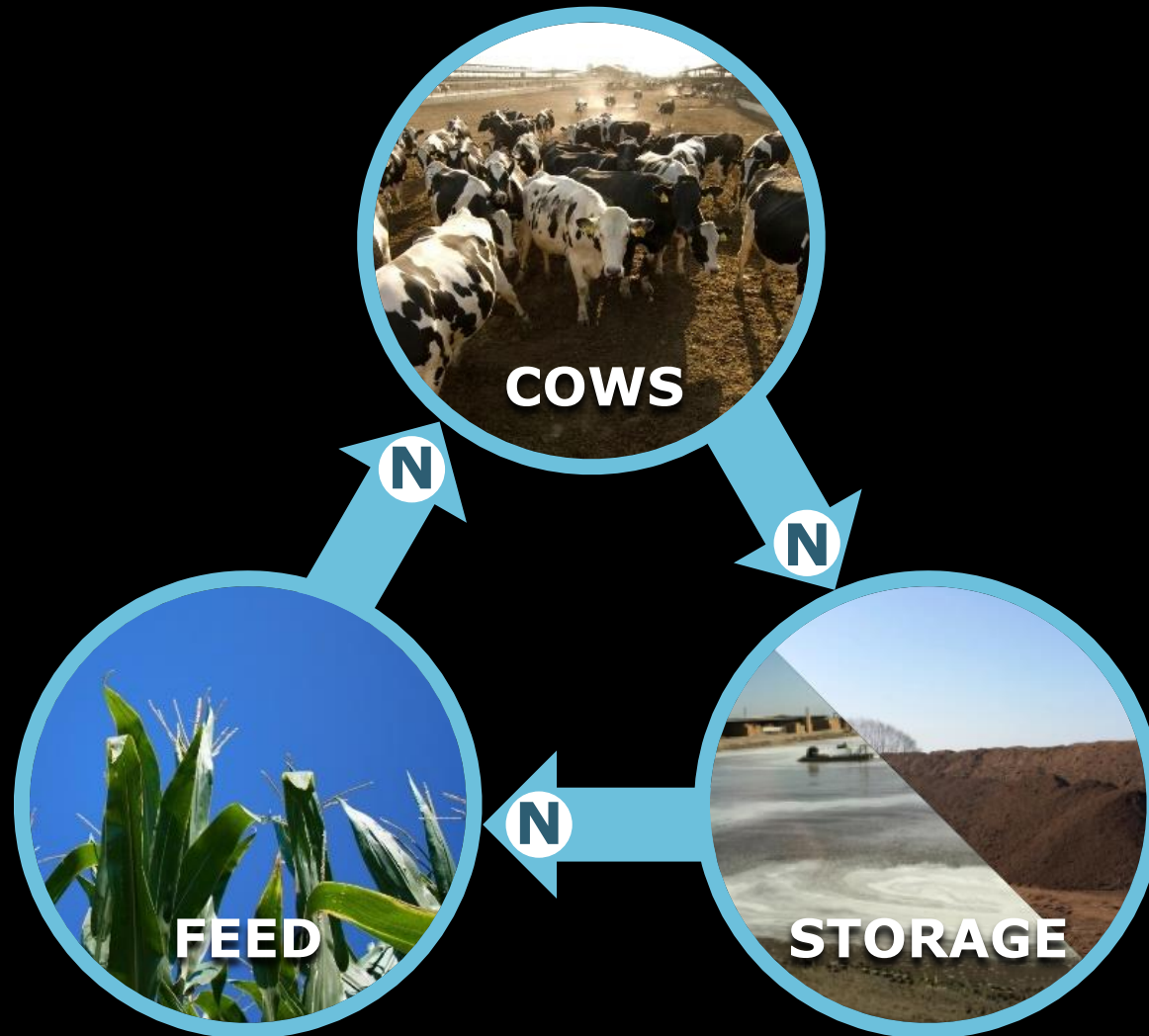
TEST

- *technologies*
- *practices*

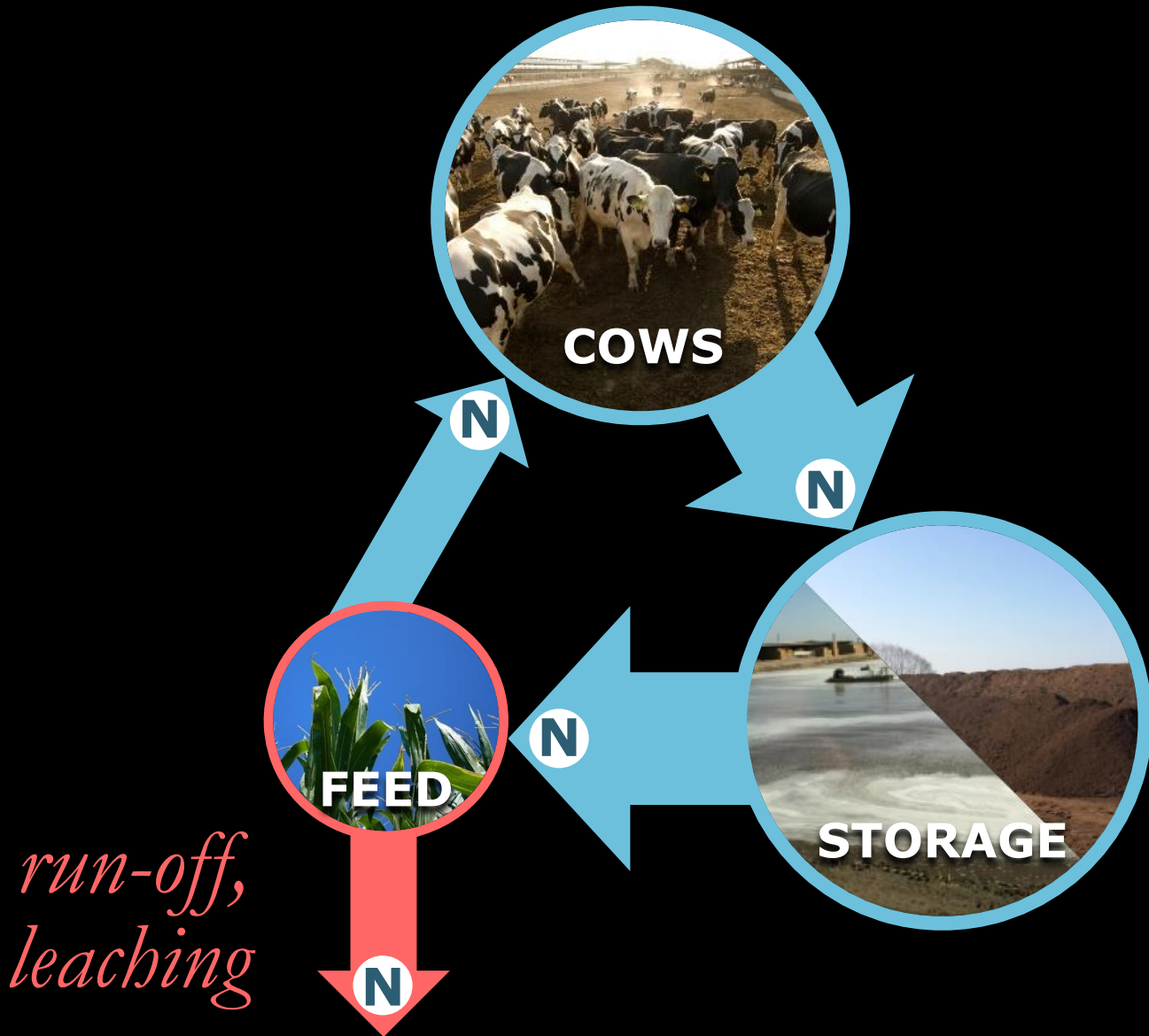
IMPLEMENT

- *assist*
- *incentivize*

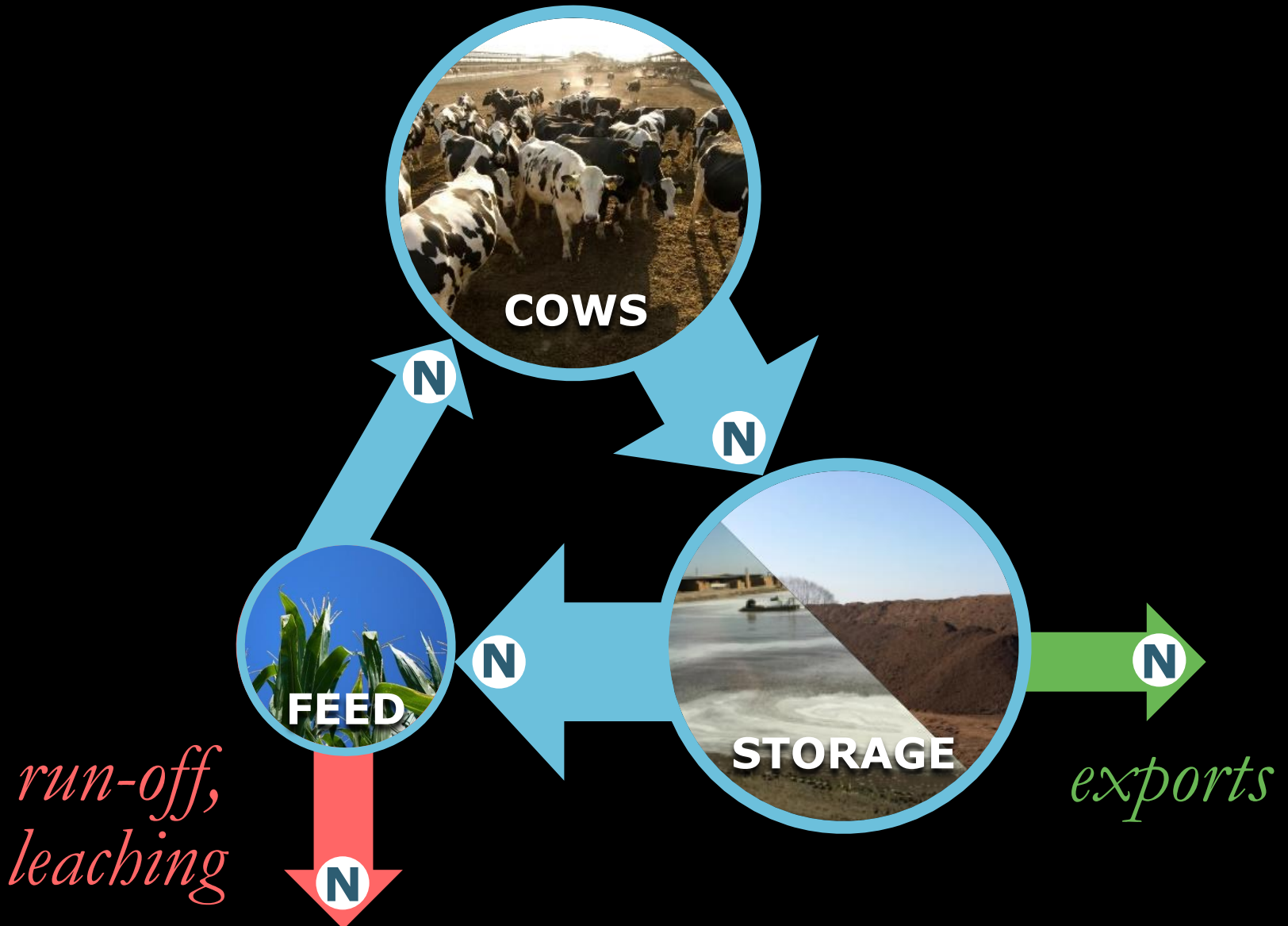
The ideal dairy *recycles most of its nutrients.*



Nutrient imbalance *threatens water quality.*

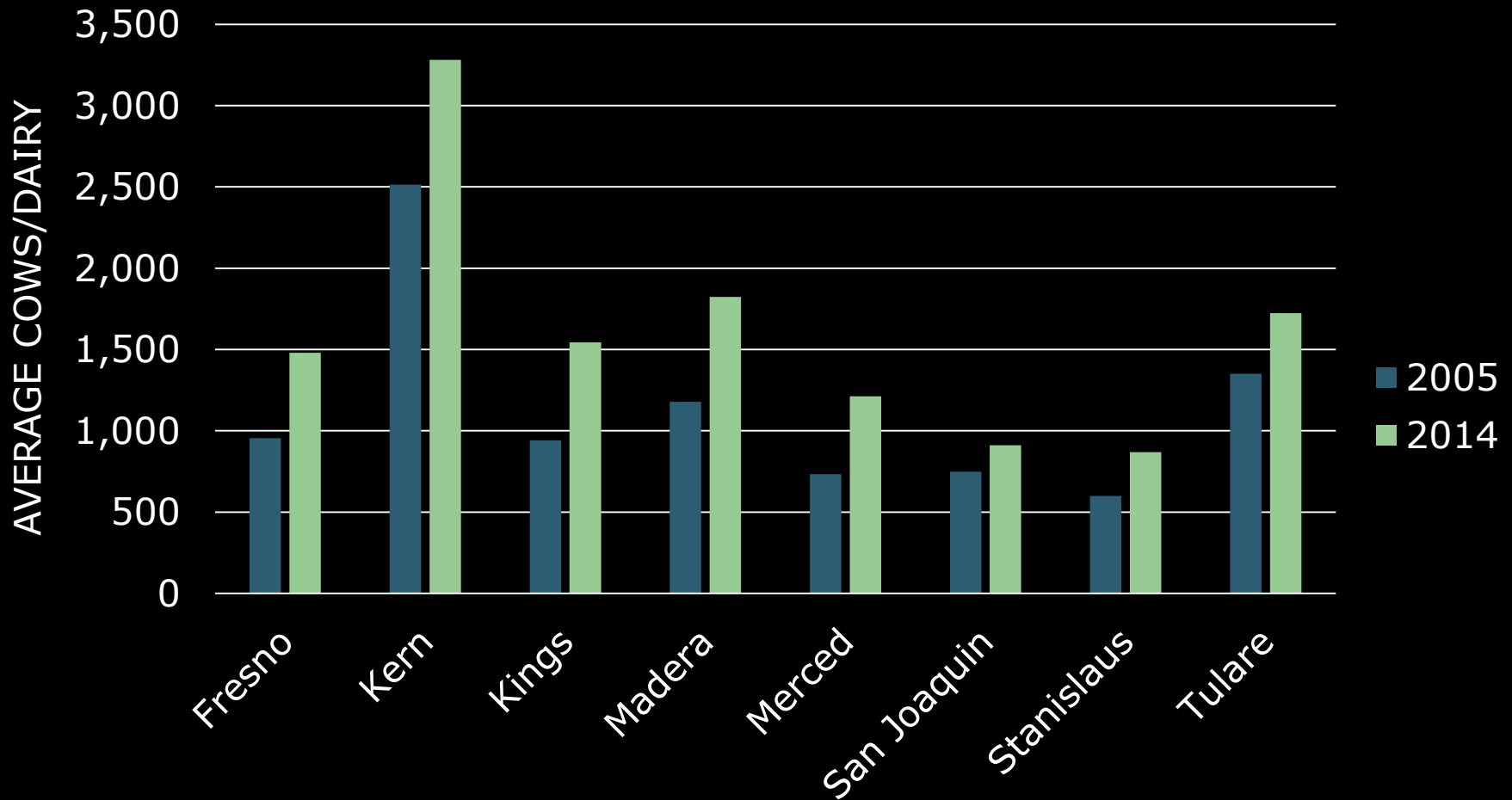


With excess, *nutrient exports are critical.*



Industry Consolidation

will exacerbate problem of “excess” manure



How do we reduce the **overall** environmental footprint of manure generated by CA dairies?

To what extent could increasing the production and use of **manure compost** lead to better environmental outcomes in California?

- Environmental (cross-media)
- Market
- Policy / Regulatory

Challenges: Environmental

- Lack of good science:
 - on manure in CA
 - compost vs. status quo
 - across environmental media

Challenges: Market

- Supply
 - Fragmentation
 - Quality control
 - Profit model
- Demand
 - Buyer restrictions
 - Nutrient management plans
 - Non-ag unclear

Challenges: Regulatory

- Within (introspection)
 - Clarity
 - (Seeming) conflicts
- Between
 - Measurements
 - Thresholds
- Focus on outcomes
 - Flows vs. impact
 - Cross media

Opportunities: Market

- Significant & consistent supply
- Significant potential demand nearby
- Centralized and decentralized
- Higher value/revenue, if QC
- Utilize other ag waste

Opportunities: Environmental

Improved:

- Methane
- Water quality
- Sequestration
- Air quality (?)
- Resilience
- Soil health
- Water use

Opportunities: Regs & Policy

Water Quality



Air Quality



Short-Lived Climate Pollutants



Compost



Healthy Soils Initiative



We need more manure
composted and distributed

Path Forward

- Comprehensive, field-based research
- Pathogens & buyer requirements
- Guidance for inclusion in NMPs
- Clear & streamlined inter-agency permitting
- Inclusion in SB 1383, HSI, and AB 1045

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