METHANE METRICS

MARKET POWER AND FARM DATA RIGHTS IN U.S. DAIRY SUSTAINABILITY PROGRAMS

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VALUE & CONTROL ARE SHIFTING AWAY FROM FARMS

U.S. dairy farmers are generating real environmental benefits while producing nutrient-dense food for America.

But flawed metrics, opaque data use, and market pressure are transferring value away from the farm gate.

Sustainability requirements are increasingly driven by international frameworks and global supply chain pressure—not U.S. policy or trade negotiations.

THE ISSUE

Sustainability participation is required in practice for many dairy farmers.

Farm-level data is increasingly collected and used in supply chains, while methane is measured using a framework that overstates warming impact.

Emissions reductions achieved on farms are increasingly claimed upstream in Scope 3 reporting, without farmer control or compensation.

Participation is embedded in procurement expectations. For a perishable product like milk, this effectively makes participation a condition of market access.

77%
of farmers say participation is required in practice.

32%
were explicitly told it is necessary to maintain a milk market.

THE HIDDEN RISK:

De facto regulation of U.S. farms by international climate policy and transfer of data, and its asset value, to global frameworks and foreign entities.

Carbon markets require verified emissions reductions and exclusive ownership. What will next be required of farmers, and who will own the value created?

When farm-level reductions are used in upstream Scope 3 reporting, those same reductions may become ineligible for farmer monetization.

This creates an uncompensated transfer of value, not through contract, but through data use and reporting frameworks.

HOW MARKET ACCESS EXPECTATIONS ARE CHANGING

Milk buyers make **Net Zero** claims and implement **FARM ES** and other programs for international **ESG / Scope 3** demands.

→ Requirements flow down through cooperatives and supply chains.

→ Farmers are told participation is necessary to maintain market access.

→ Data becomes a condition of selling milk, not a negotiated asset.

THE SCIENCE GAP

- Methane is short-lived, approximately 12 years, and part of a natural cycle.
- Stable herds do not add warming.
- GWP* measures real impact over time. GWP100 misapplies fossil carbon logic.

THE MARKET REALITY

- Dairy operates under limited buyers, perishable product, and regional constraints.
- Sustainability requirements become non-negotiable.
- This is market-enforced compliance, not policy-driven.

THE BIGGER PICTURE

- This is not just a climate issue.
- It is a property rights issue.
- It is a market fairness issue.
- It is a food security issue.
- It is a sovereignty issue.

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A POLICY PATH FORWARD

Policy actions to protect farmers, strengthen markets, and ensure data is used fairly.

1 INCORPORATE GWP* (STAR)

Declare **GWP*** the metric **recognized in the U.S.** to describe enteric livestock methane. Require inclusion of this metric alongside the international metric in research, reporting, and tools to **reflect the real warming impact of methane over time**—recognizing that stable, efficient U.S. herds recycle natural, existing carbon rather than adding new, accumulating carbon in nutrient-dense food production.

2 ESTABLISH FARM DATA RIGHTS FRAMEWORK

Define baseline standards for **ownership**, **control**, and **use** of farm data. Ensure participation is **voluntary** and that data is used in **aggregated** ways to **protect individual operations**—while requiring that any value derived from this data is **shared with participating farmers** not captured and retained elsewhere in the supply chain.

3 REQUIRE DATA USE AND VALUE DISCLOSURE

Mandate disclosure of **who** accesses farm data, **how** it is used, how it is **shared**, and whether **value** is derived from it.

Require disclosure when farm-level data is used in supply chain claims and evaluate mechanisms to **prevent uncompensated value transfer**.

4 REVIEW MARKET POWER IMPACTS

Assess how buyer concentration influences participation requirements and ensure participation is truly **voluntary** and data is **aggregated** to protect individual operations.

5 REVIEW CHECKOFF ALIGNMENT

Ensure farmer-funds are not being used against **farmer interests**.

These are not theoretical policy discussions. They are practical frameworks that will determine whether farmers remain passive data providers for others' gain or active participants in a system that recognizes and returns the value they create—while ensuring participation is **voluntary** and data is used in **aggregated** ways to **protect individual operations**, not to establish individual baselines or enable punitive action.

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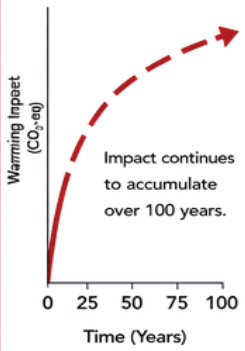
METHANE METRICS

GWP100
(Current Standard)

Assumes methane behaves like long-lived carbon.

- Converts methane to CO_2-equivalent over a 100-year time horizon
- Treats emissions as both "new" and accumulating as long-term atmospheric inventory
- Does not reflect how methane behaves across different herd conditions and production systems over time
- Counts the same methane year after year as ongoing warming

STABLE EMISSIONS UNDER GWP100



RESULT:
Overstates warming impact and misrepresents how methane behaves in real-world systems.

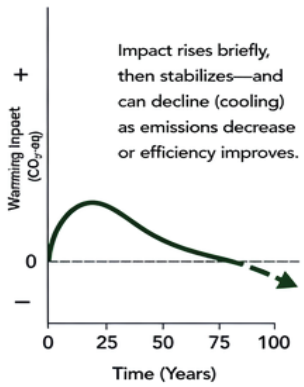
VS.

GWP*
(Warming-Based Metric)

Measures actual temperature impact over time.

- Accounts for methane's short-lived nature (~12 years)
- Reflects changes in emissions, not just total emissions
- Provides a more accurate representation of how methane behaves across real-world production systems
- Methane's impact rises briefly, then stabilizes over time—and can decline as emissions decrease or production becomes more efficient.
- With correct measurement, the improvements farmers have already made in soil, water, and air quality are more accurately reflected.

STABLE EMISSIONS UNDER GWP*



RESULT:
More accurately reflects how methane behaves in real-world systems and policy-relevant outcomes.

WHY THIS MATTERS FOR U.S. DAIRY—OVER TIME

Long-Term Perspective
U.S. dairy and beef systems operate over multi-decade cycles, not single-year snapshots.

Today's Context
There are far fewer ruminant animals on the planet today (wild and domestic) than in the past, and we produce far more food per bovine.

Long-Term Efficiency Gains
Over 50–100 years, U.S. dairy has produced more nutrient-dense food with fewer animals per unit of output.

Carbon is Recycled
Cattle recycle natural, existing carbon in a biological cycle—not new fossil carbon added to the atmosphere.

Metric Choice Changes Outcomes
Using a static metric like GWP100 misrepresents long-term biological reality and production efficiency.

WHERE DOES PLANT CARBON GO WITHOUT CATTLE?

Plant Material is Produced
Grass, crop residues, and food industry **byproducts** (hulls, pulp, distillers grains, citrus pulp, cottonseed, etc.)

→

Microbial Decomposition Would Still Occur
Most carbon returns to the atmosphere.
- Aerobic conditions = CO_2
- Anaerobic conditions = CH_4

→

Outcome
Carbon still cycles back to the atmosphere—through decomposition rather than through ruminants.

→

Ruminants Redirect This Natural Cycle
Converting inedible plant matter into nutrient-dense food—and returning nutrients to the soil.

If cattle aren't recycling plant carbon, microbes will—most of it still returns to the atmosphere, just through a different pathway.

KEY TAKEAWAY:
GWP* shows that methane doesn't accumulate like fossil carbon and when systems are stable and more efficient, the impact can level off or even decline.

* GWP* (GWP-star) developed by researchers at the University of Oxford to better reflect the warming impact of short-lived climate pollutants such as methane.

† See, e.g., Allen, M. et al. (2018). A solution to the misrepresentations of CO_2-equivalent emissions of short-lived climate pollutants under ambitious mitigation. *Global Change Biology, 24*, 287–300.

‡ Additional research and public commentary from U.S. scientists including Dr. Frank Mitloehner[1] and Dr. Sara Place[2] supports distinguishing biogenic methane from fossil carbon in climate accounting.

§ Global scientific initiatives and open letters[3] have called for improved methane metrics that reflect real warming outcomes rather than cumulative CO_2-equivalent assumptions.

1 University of California, Davis

2 American Farm Bureau Federation

3 Including scientists signatories to the "Global Warming Potential* Open Letter" and other international scientific statements.

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