

The Dairy Outlook 2025 and Beyond

Corey Geiger, Lead Economist, Dairy
Knowledge Exchange Division, CoBank

Six-Generation Farmer

Director, World Dairy Expo, 2020 to present

President, Holstein Association USA, 2019 to 2022

Director, Council on Dairy Cattle Breeding, 2019 to 2022

Editor, *Hoard's Dairyman*, 1995 to 2023

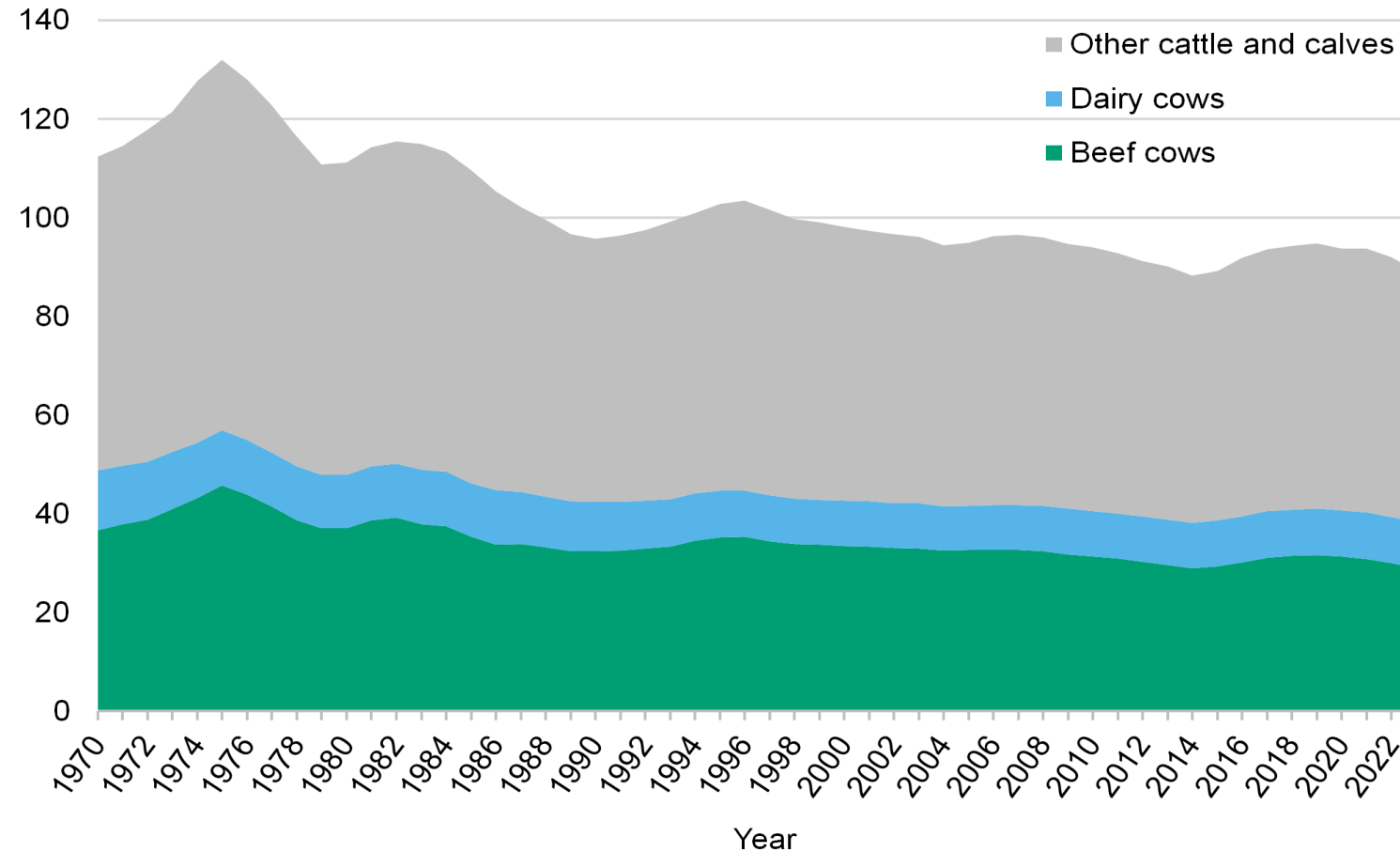
Two-Time Award Winning Published Author



Beef cattle continue downward trend - off 14% since 1997

Figure 1. Cattle and cow inventories, 1970–2023

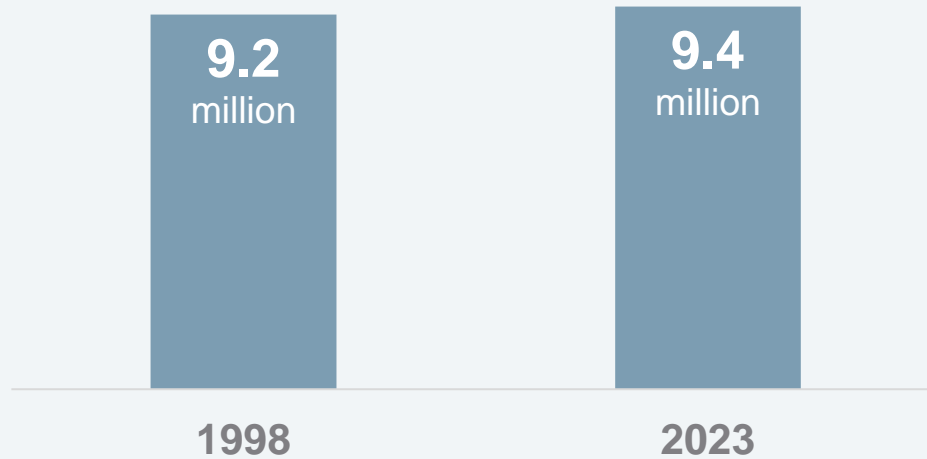
Million head



Milk matters more than cows when measuring growth

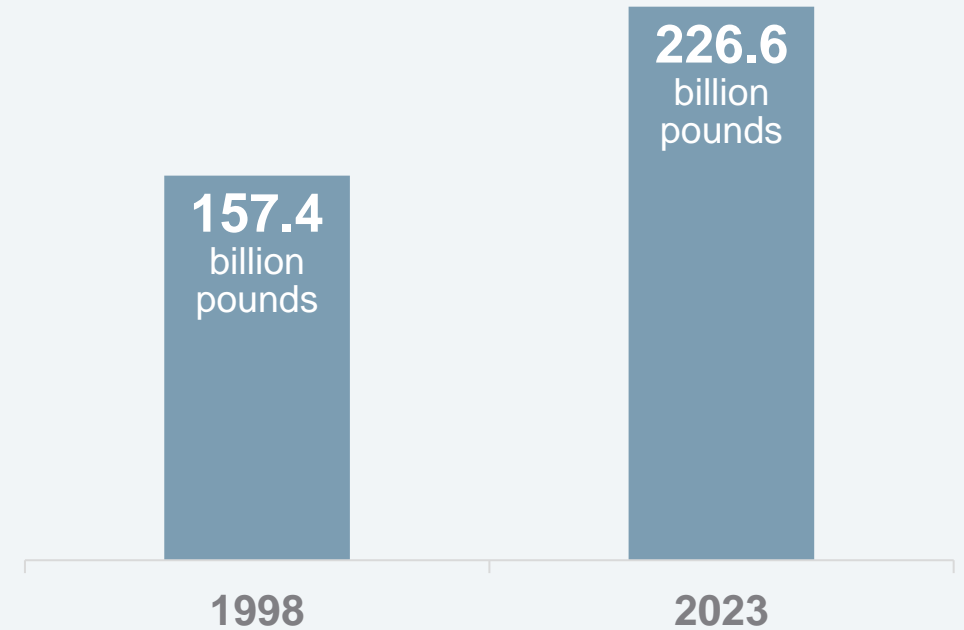
Dairy cows

2.6% growth rate



Milk

44.0% growth rate



Why compare dairy and beef?

Dairy Checkoff Grew by \$105 million

- 15 cents per hundredweight
- 705 million more hundredweights since 1997
- 45% growth in product promotion dollars

Beef Checkoff Shrank by \$12 million

- \$1 per head per transaction
- 12.4 million fewer transactions since 1997 (rough math)
- 14% attrition as measured by livestock numbers via “back of envelope math”

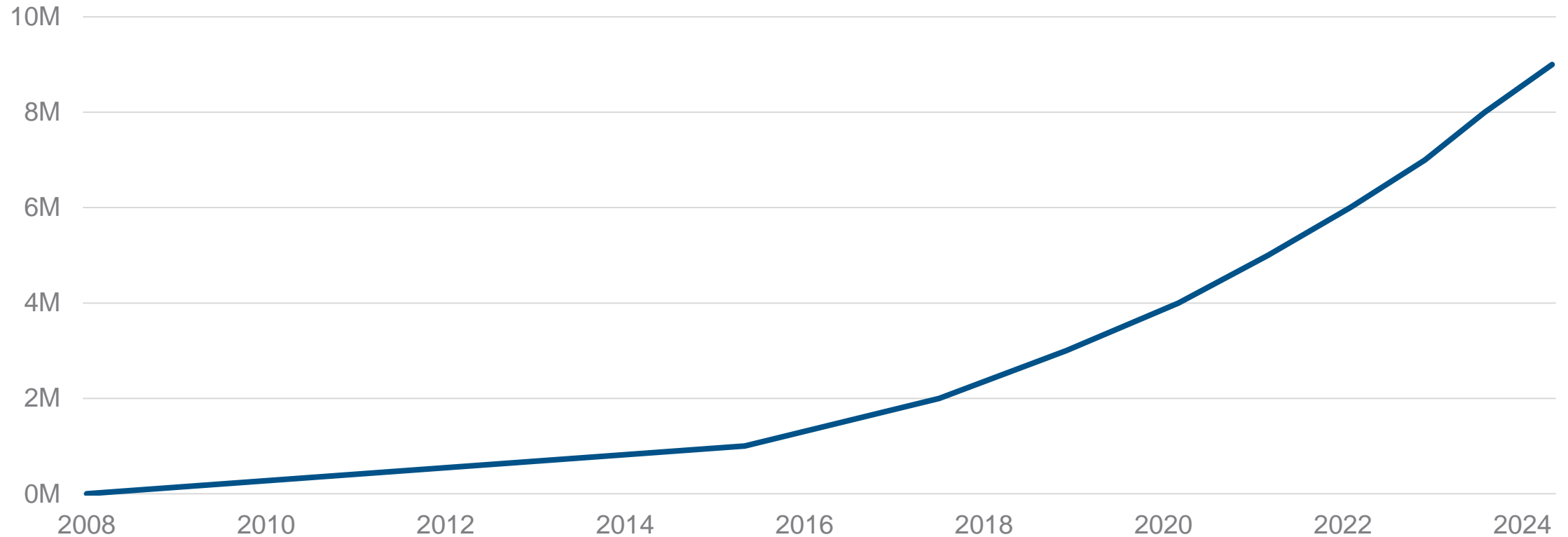
The dairy triple play — Sexed Semen • Genomics • Beef on Dairy

Genomics

Sexed semen

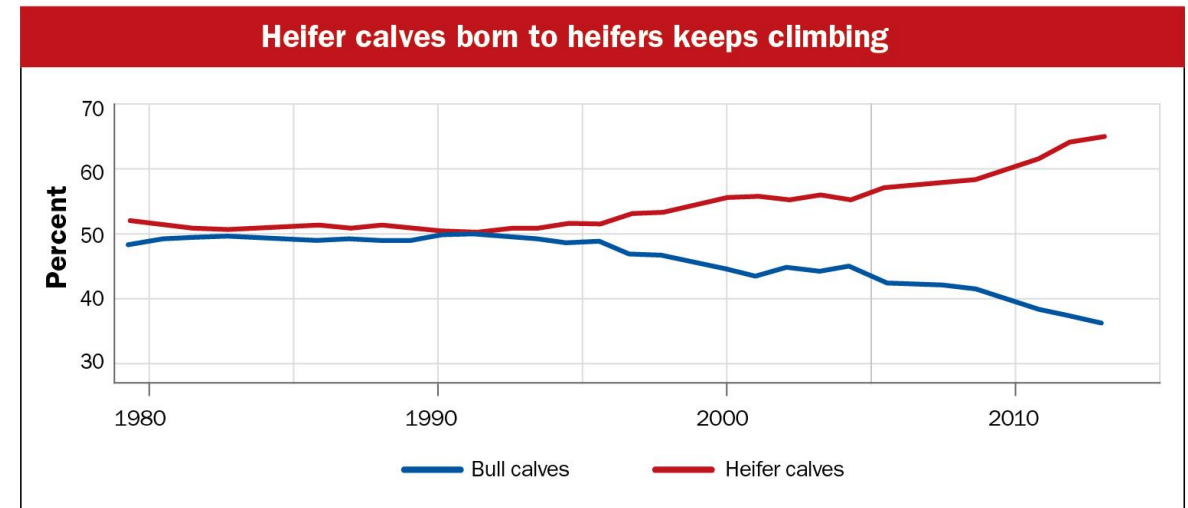
Beef on dairy

Animals genotyped in National Cooperator Database



The dairy triple play — **Sexed Semen** • Genomics • Beef on Dairy

- Sexed semen the start of the triple play
- First introduced in 2003
- Calving ease study (shown to right)
- Moving towards two calves being made:
 - The planned dairy heifer calf
 - The planned beef-on-dairy calf
- Sexed semen sales have grown
 - 54% of all semen sold in 2023
 - 8.4 of the 15.4 million dairy units old in the U.S.
 - More growth projected in 2024 and beyond
 - Conventional dairy semen now in third place
 - 8.4 million units of gender-selected dairy semen
 - 7.9 million units of beef semen on dairy
 - 7.0 million units of conventional dairy semen



27 million births from 1981 – 2014

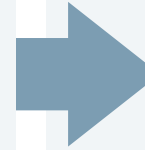
The dairy triple play — Sexed Semen • Genomics • Beef on Dairy

Genomics

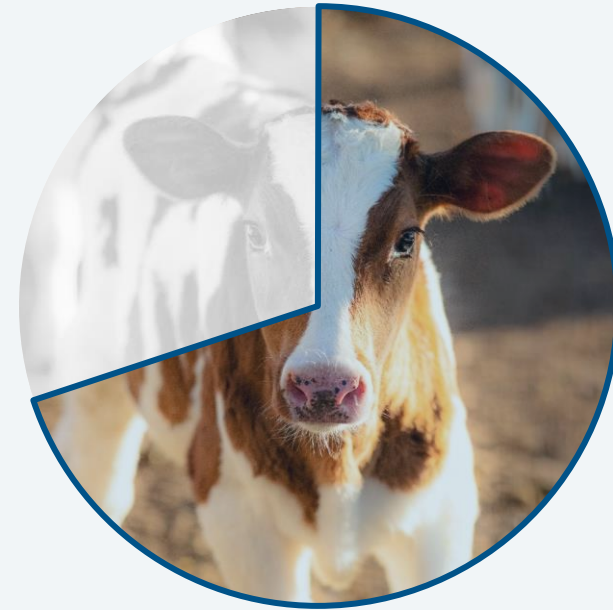
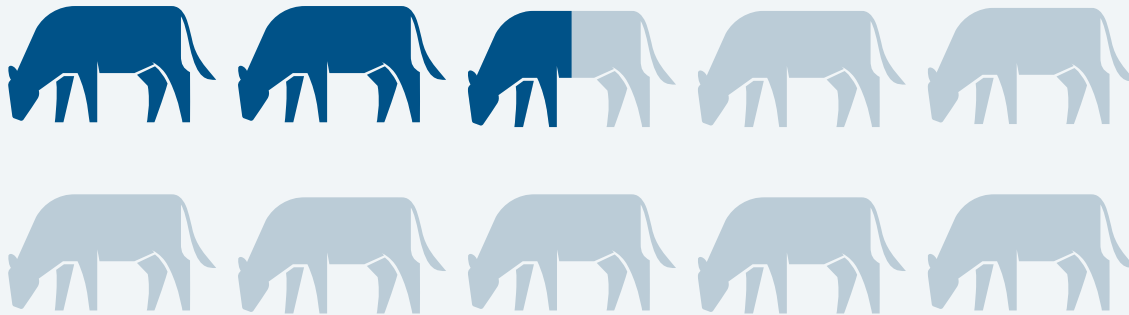
Sexed semen

Beef on dairy

20%-25% of U.S. dairy heifers have genomic tests



Revealing **70%** of genetic ability while still a calf



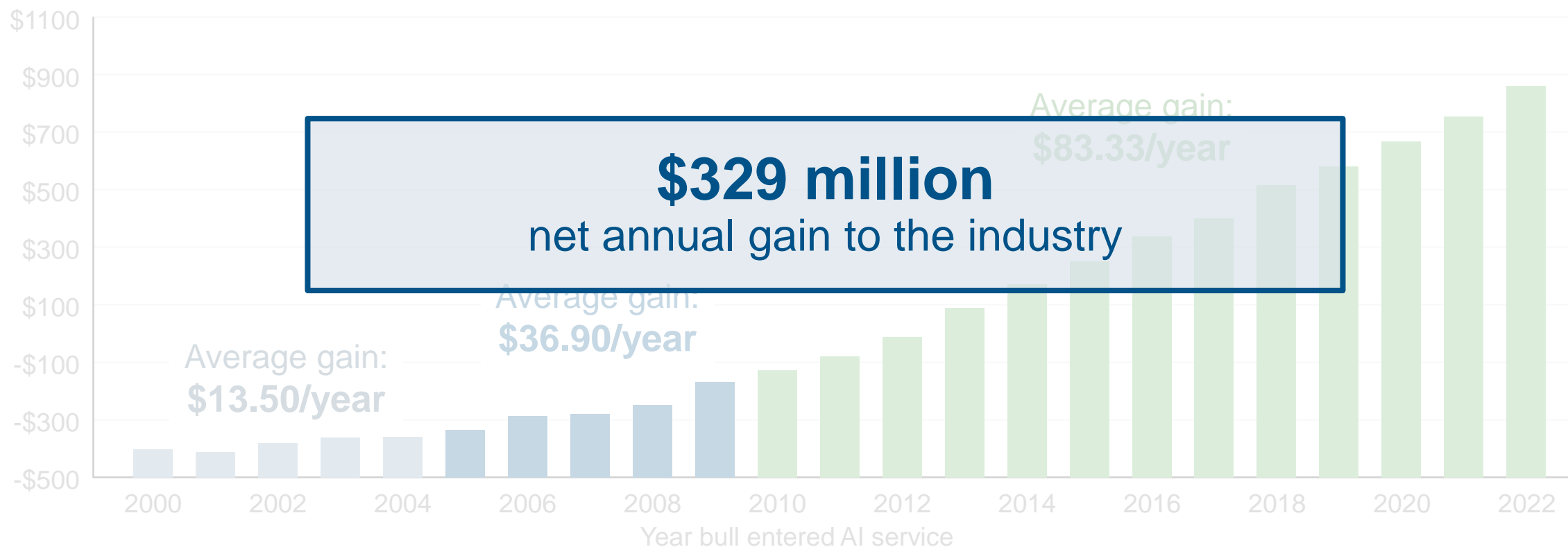
Dairy is doing more with less, due to genetic improvement

Genomics

Sexed semen

Beef on dairy

Average net merit

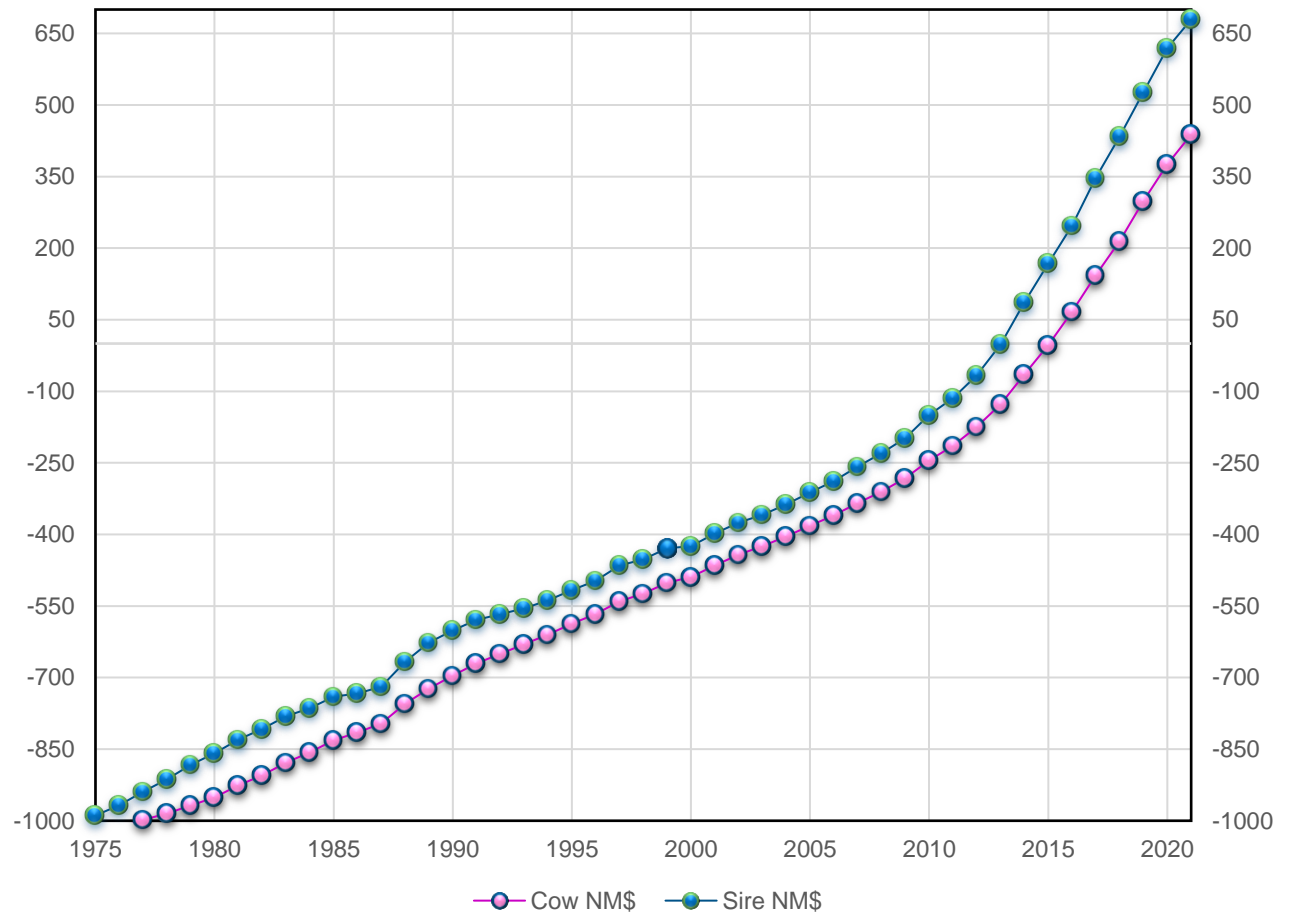


The dairy triple play — Sexed Semen • Genomics • Beef on Dairy

An example:

- Solar panels power:
 - Barns with 480 bulls
 - 72 lasers sexing semen running at 30,000 pulses per second, 24 hours a day
- Solar panels cannot compete with genetics for carbon reduction
 - 10-years of solar panels to have same carbon impact as **1 month** of genetic gains on semen sold from the 480 bulls
- Genetic gains measured by more production, better health, longer cow life

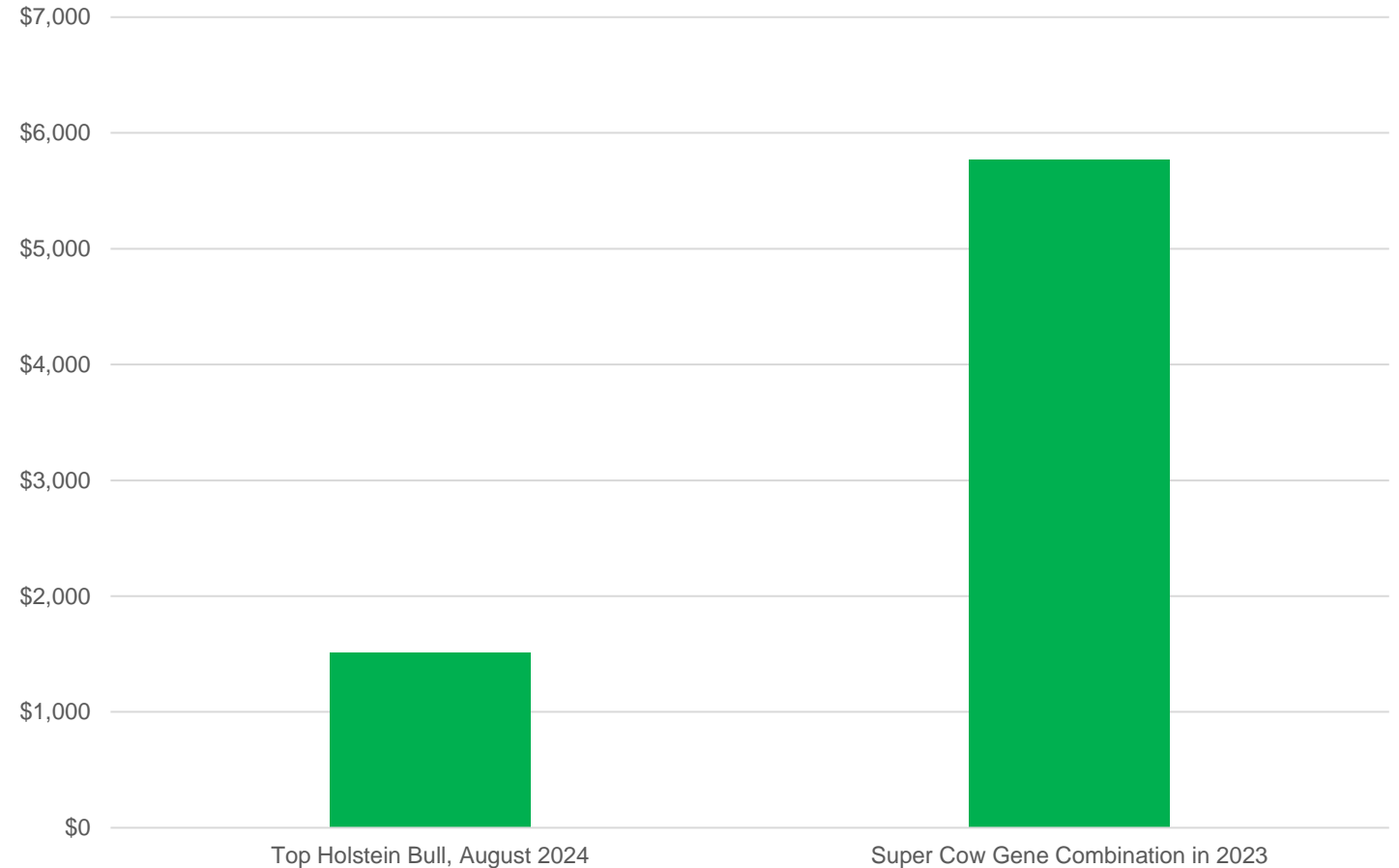
Genetics improve dairy's carbon footprint



The dairy triple play — Sexed Semen • Genomics • Beef on Dairy

- Top Holstein Bull
 - \$1,509 Net Merit Dollars (NM\$)
- Theoretical “Super Cow”
 - \$5,772
- A 300+% topside exists
- Similar potential exists in Jerseys and other dairy breeds

The genetic “super cow” isn’t in sight



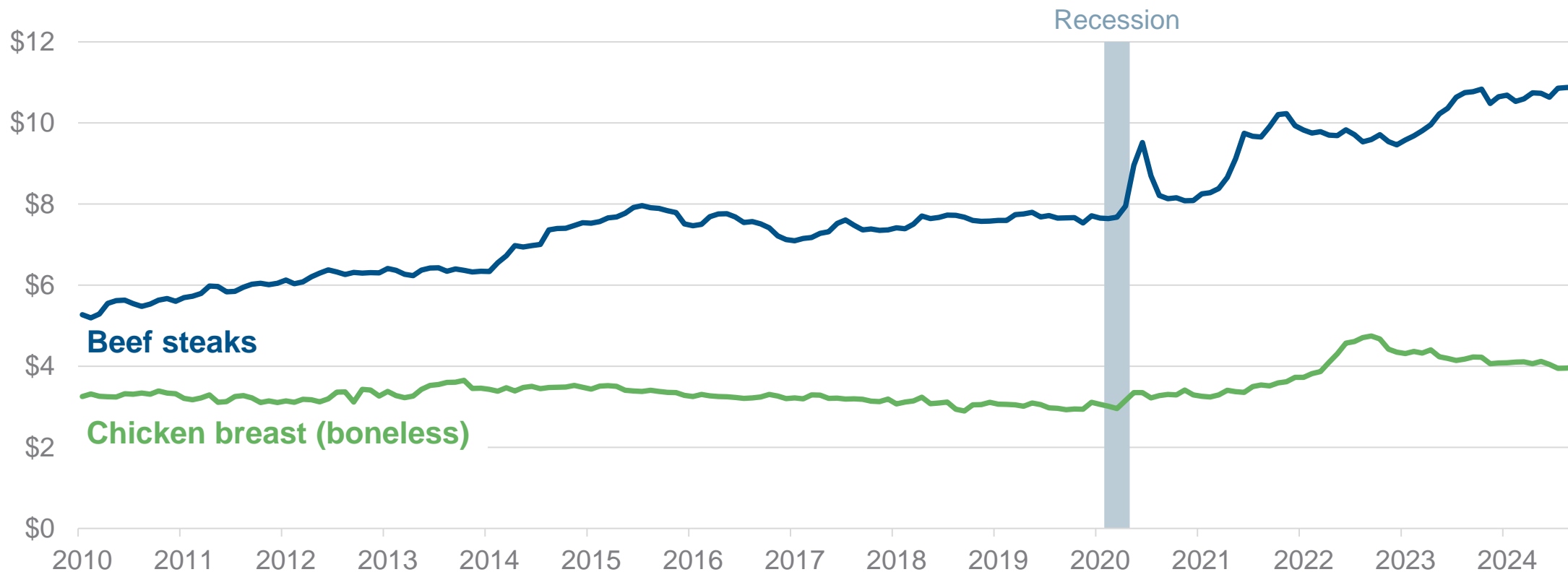
Reasons for unfolding trend: limited supply and price

Genomics

Sexed semen

Beef on dairy

Average U.S. meat prices, per pound



Reasons for unfolding trend: limited supply and price

Genomics

Sexed semen

Beef on dairy

Total cattle inventory lowest since 1951

87.15 million head

Beef cow inventory lowest since 1961

28.2 million head

Feeder supplies lowest since 1972

24.2 million head

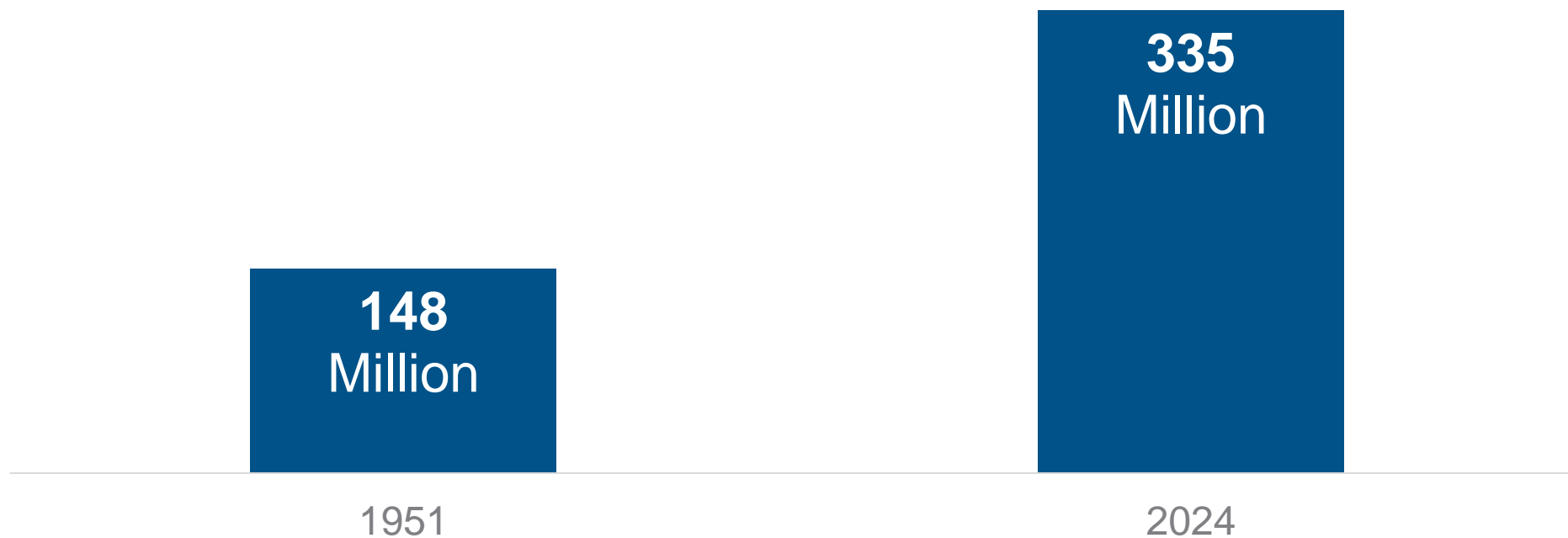
Reasons for unfolding trend: limited supply and price

Genomics

Sexed semen

Beef on dairy

126% growth in U.S. population since 1951



Beef on dairy continues to transform category

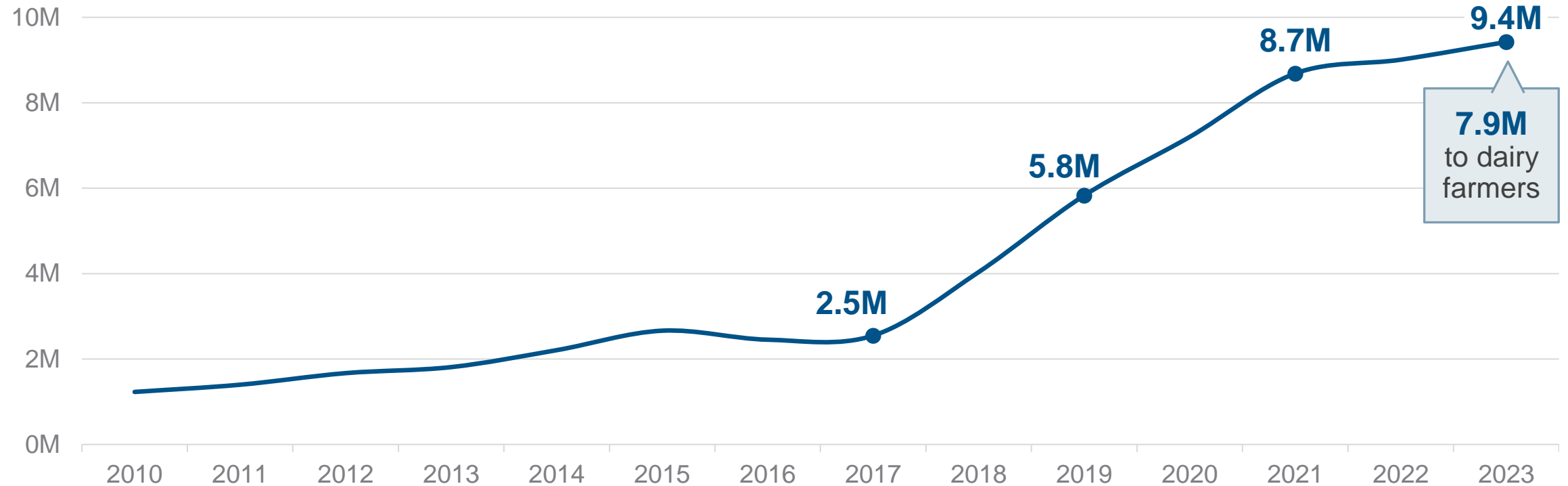
Genomics

Sexed semen

Beef on dairy

Domestic beef semen sales climbed substantially

Units sold



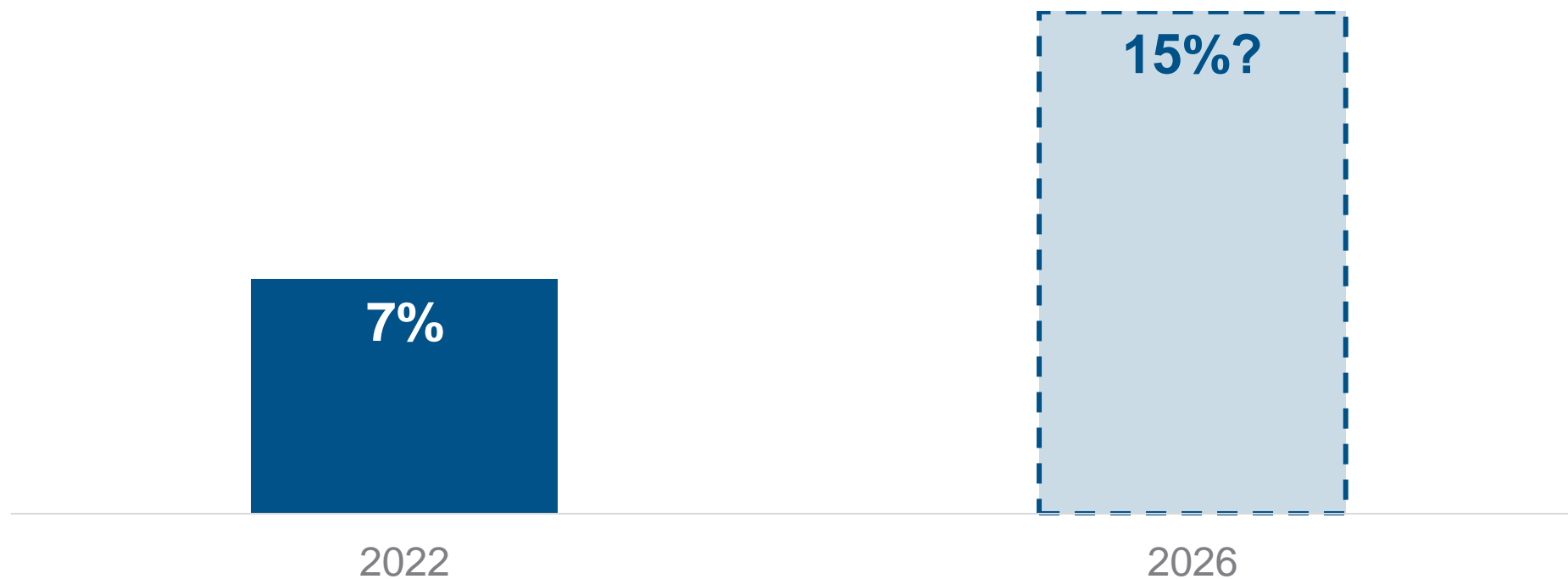
What does this mean for livestock?

Genomics

Sexed semen

Beef on dairy

Fed slaughter



Replacements will limit ability to raise U.S. milk production

Genomics

Sexed semen

Beef on dairy

Dairy semen sales down in past 3 years. Conventional dairy semen now ranks third.

2020

2021

2022

2023

Down
1.2M
units



Down
1.0M
units



Down
800,000
units



Down
740,000
units



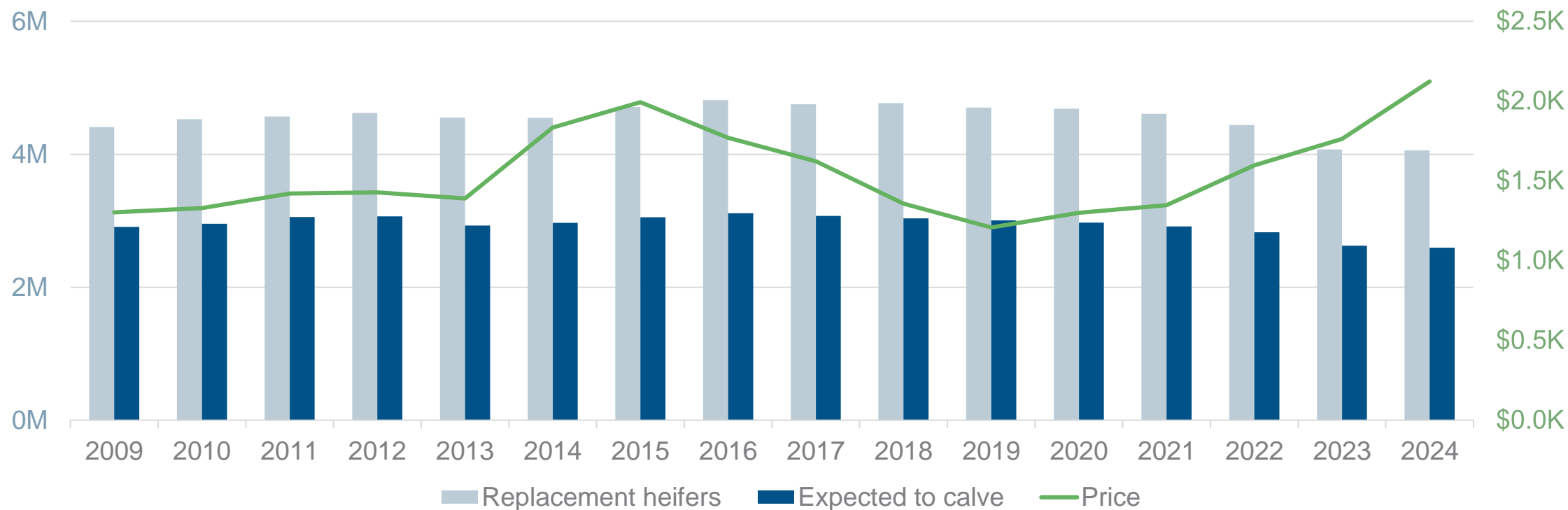
Replacements will limit ability to raise U.S. milk production

Genomics

Sexed semen

Beef on dairy

Dairy cattle replacements now at a 20-year low, causing prices to skyrocket

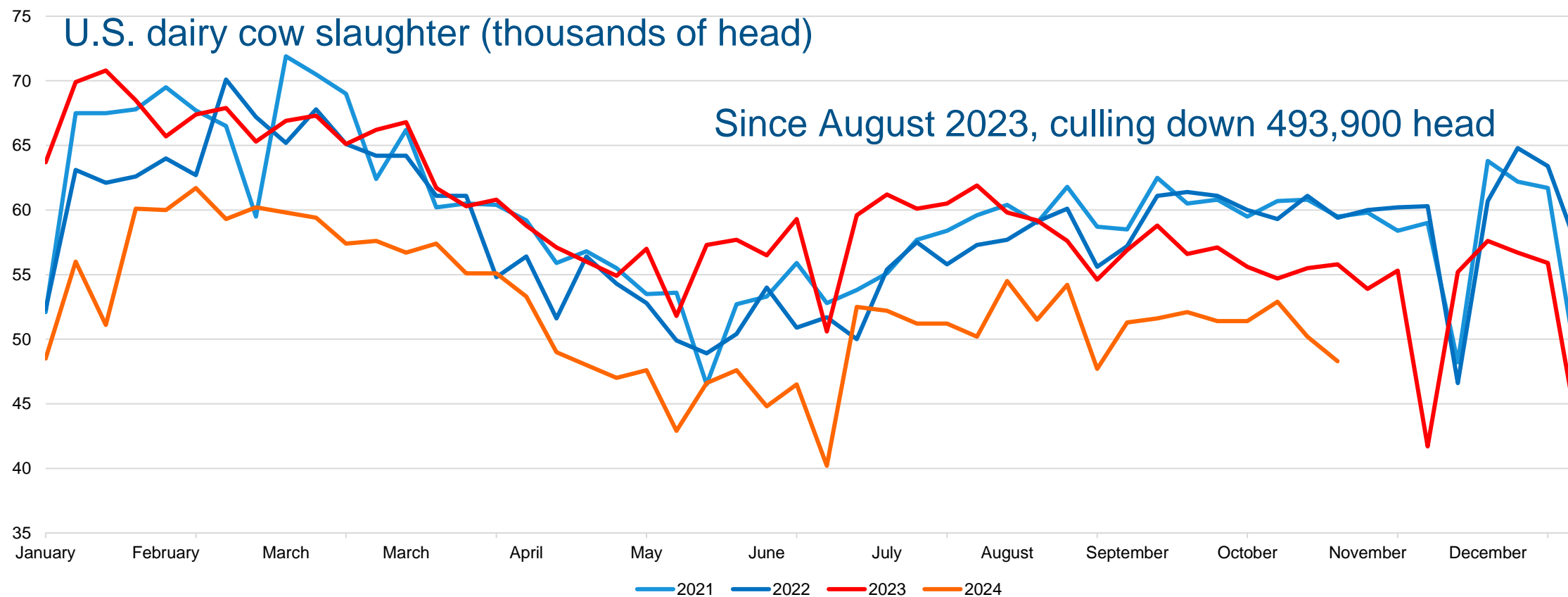


Dairy farmers pull back on culling by 353,500 head in 2024

Genomics

Sexed semen

Beef on dairy



Cattle futures remain near historic highs

Published on TradingView.com, Aug 28, 2024 15:25 UTC-5

Live Cattle Futures (Aug 2024), 1D, CME 183.750 -1.425 (-0.77%)
Vol 286



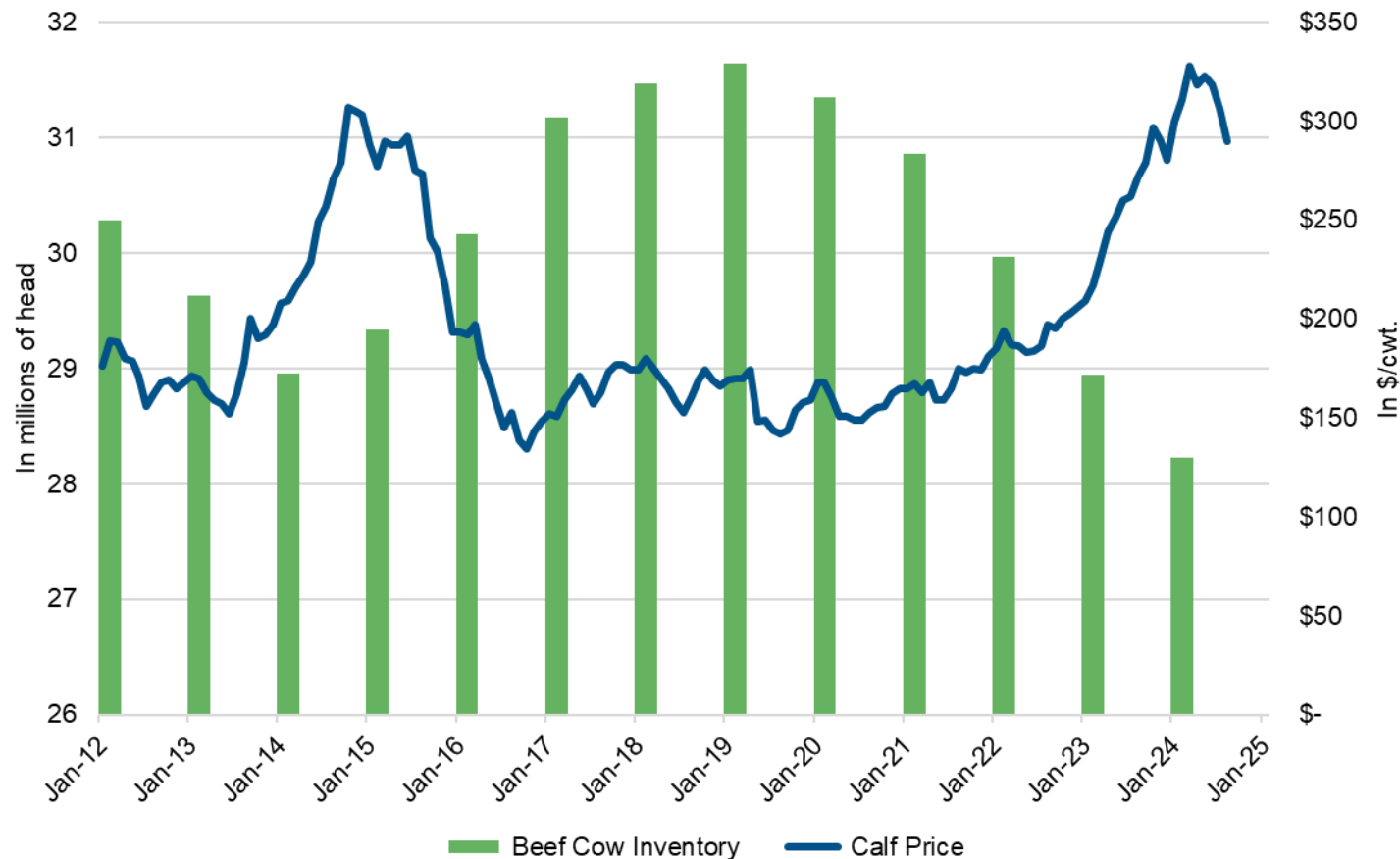
TradingView

Sources: CME Futures. Chart created on Trading View. Presentation by Corey Geiger, CoBank.

Cattle inventory cycle is influenced by calf prices

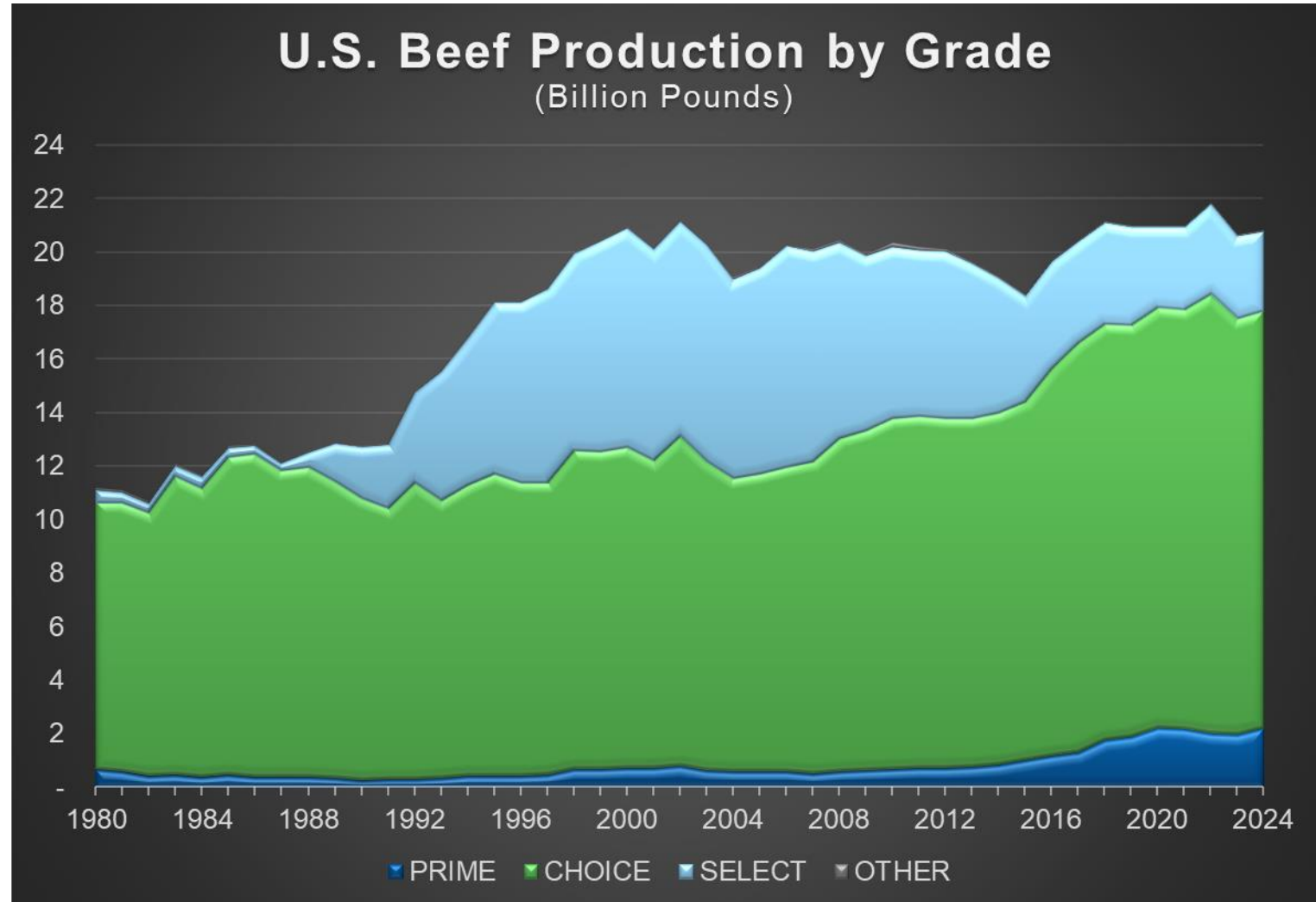
- Beef cow inventory lowest since 1961
 - 28.2 million head
- Most recent cattle cycle ended in 2014
 - Calf prices were already at levels we are seeing in 2024 during 2014-2015 retention
- In 2024, new peak in calf price, but no retention
- Not expected to return to seasonally low fall prices this year
- Beef cow inventories expected to rise in 2026 or 2027

U.S. Beef Herd Rebuild is Not Following History



The current cycle is different – haven't sacrificed quality

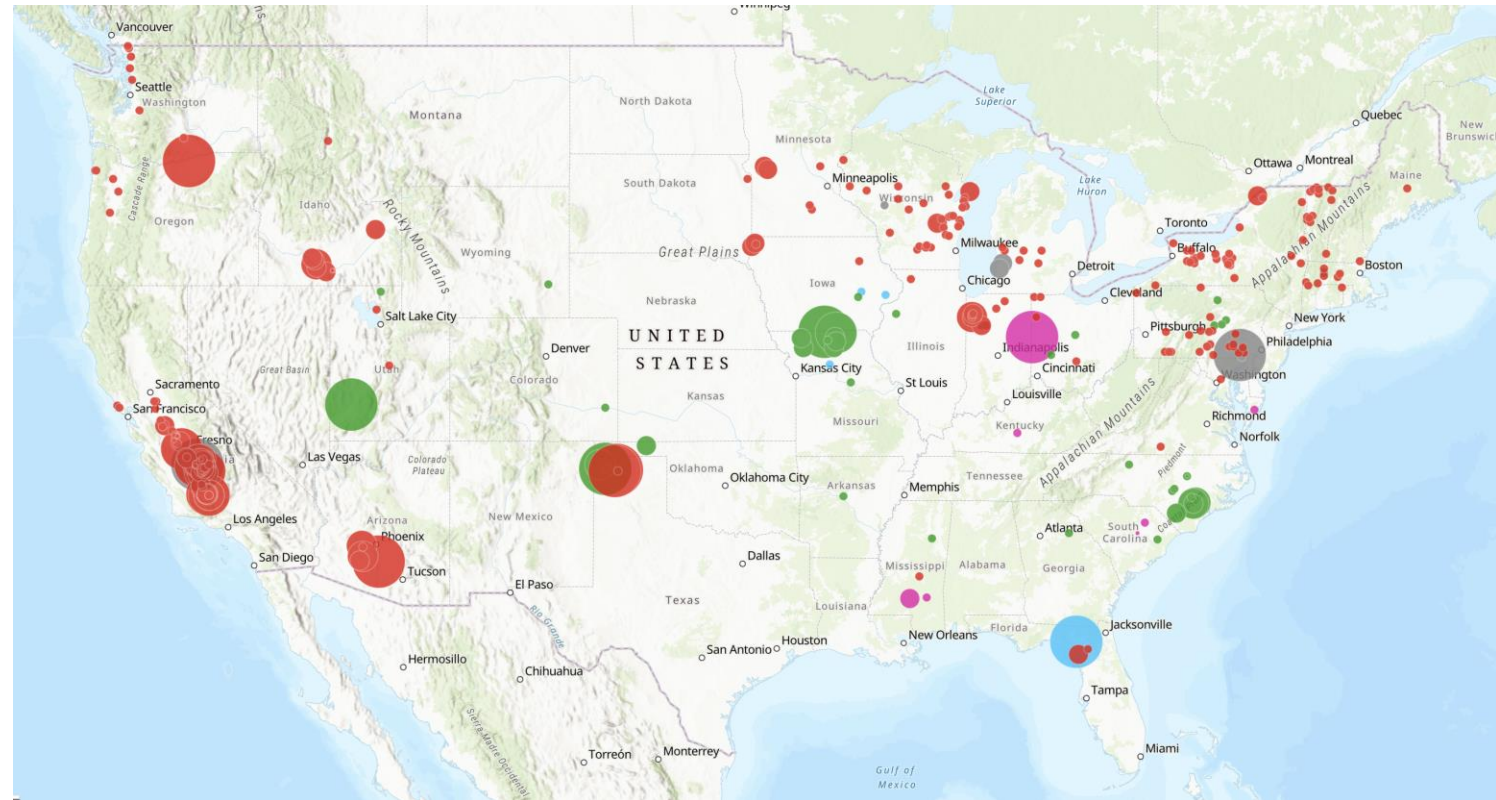
- In 2021, U.S. produced a record amount of Choice/ Prime beef-
- Consumers expect high quality at relatively low price
- CAB increased hot carcass wt. acceptance to 1100 lbs. this year.



Agriculture will continue to innovate on energy

- 343 on-farm digesters
- Dairy leads all ag (red)
 - 82% of active digesters
 - Hogs a distant second - 13%
- Compressed natural gas (CNG) is most popular
 - CNG captures carbon credits in California - Low Carbon Fuel Standard Program
- 20% of U.S. dairy cows support methane digesters
 - At \$100/cow, 40 cents per cwt. added

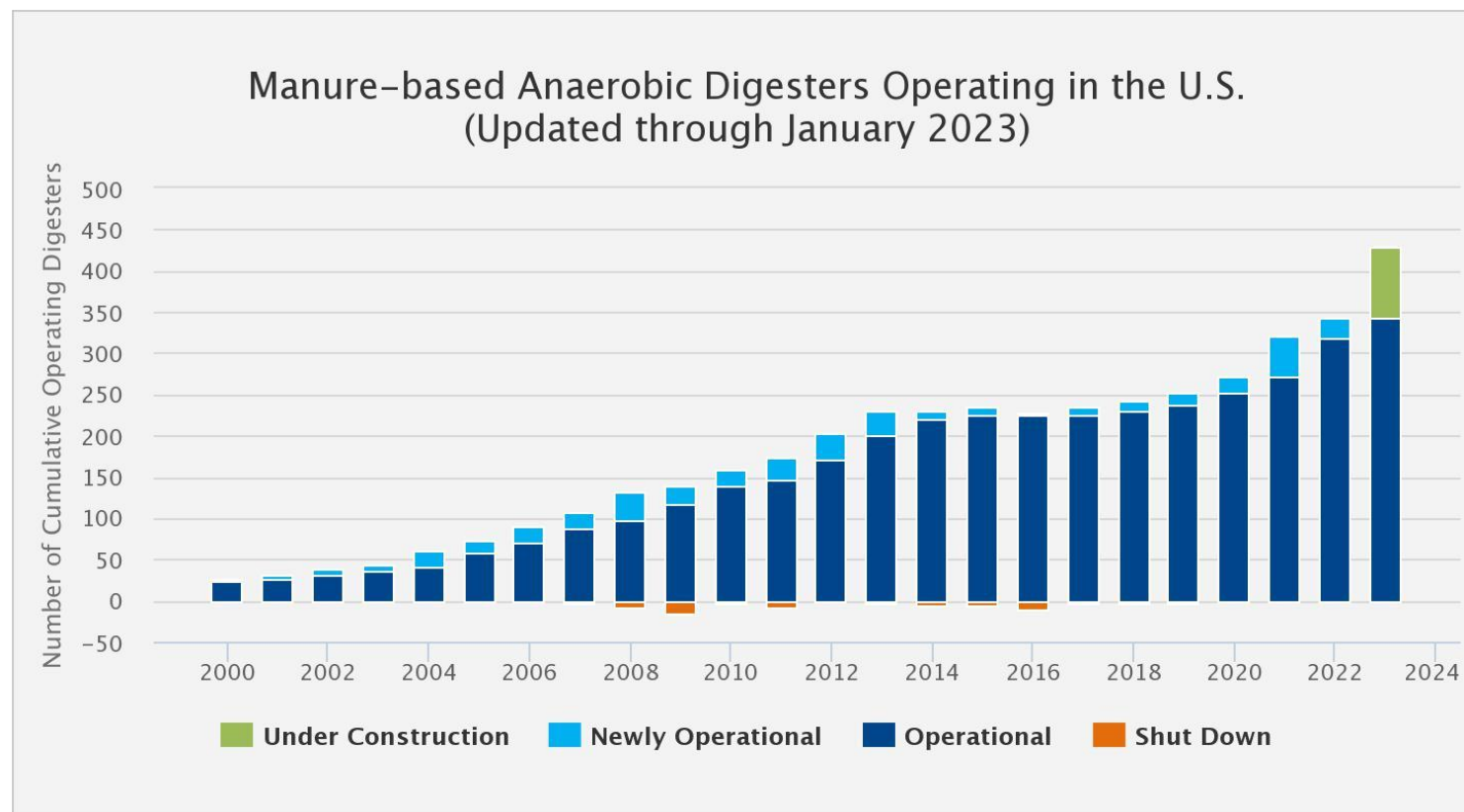
Dairy leads the green energy movement



Dairy poised to grow green footprint

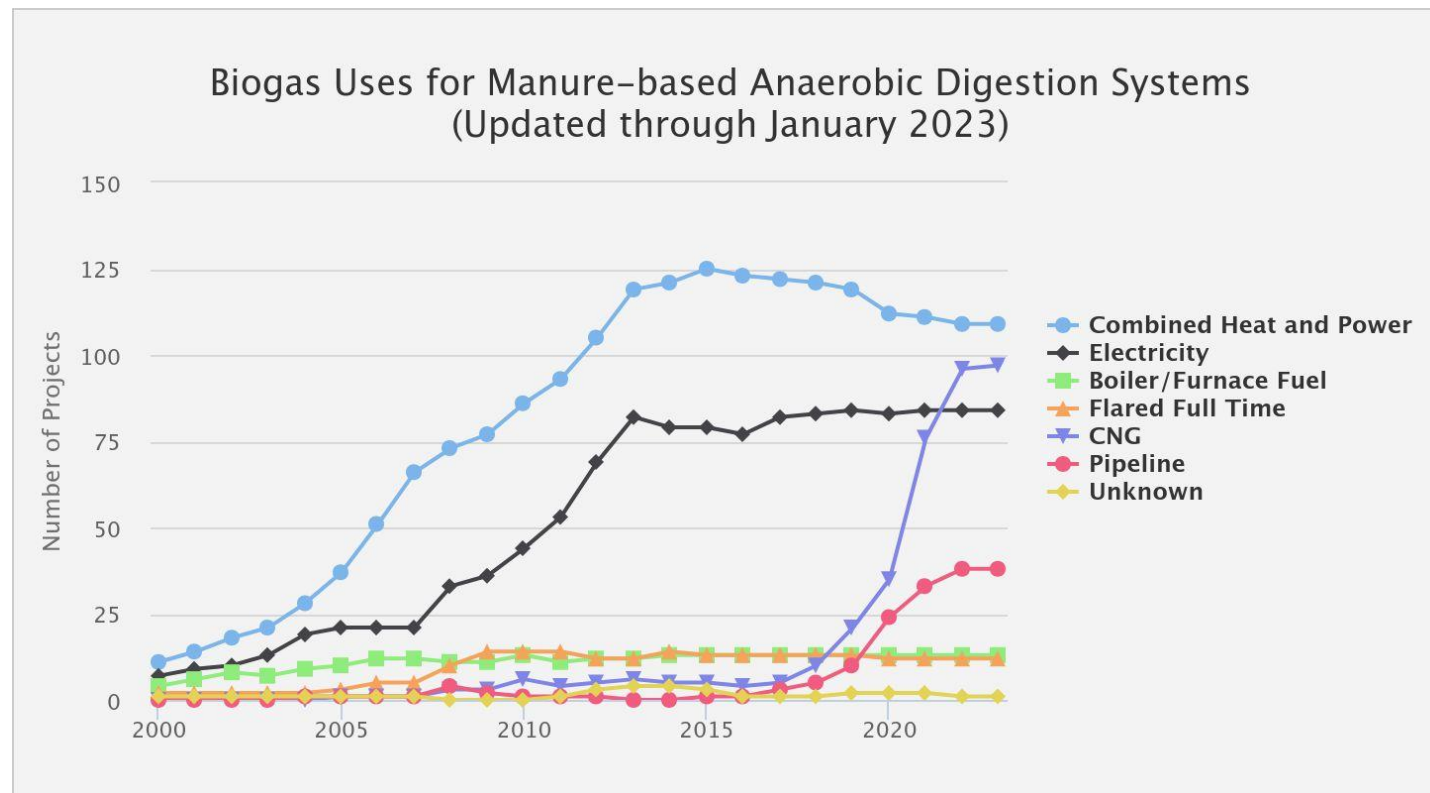
- Green energy is core to California dairy farms
- California accounts for 18.1% of U.S. milk
- 343 U.S. digesters
 - 120 in California
 - 105 more under construction
- California's dairy digester program delivers 22% of state's GHG reduction
- Dairy only received 1.6% of the total fund awards

Dairy leads the green energy movement



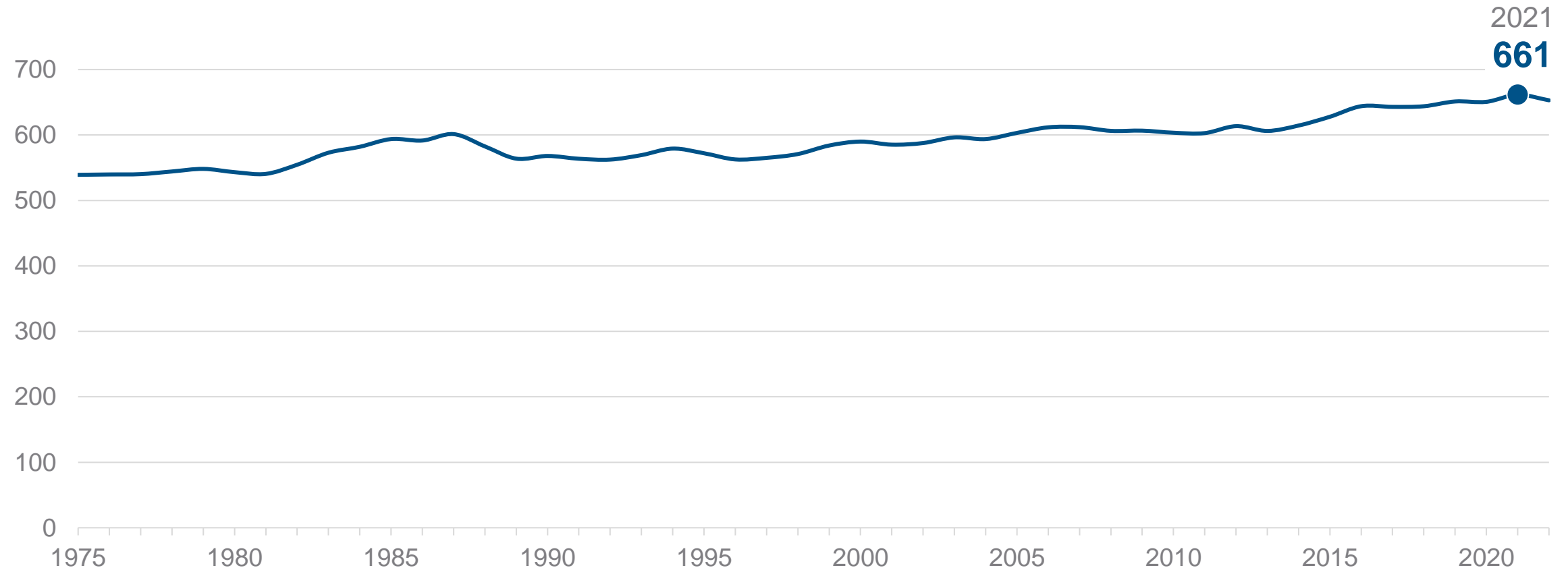
Compressed Natural Gas Gaining in Popularity

- Biogas plants are either being built or modified to make renewal natural gas (RNG)
- RNG, once processed to purity standards, can be sold as compressed natural gas (CNG)
- RNG projects, including pipeline injection and CNG for vehicle fuel or other uses, has risen significantly since 2017

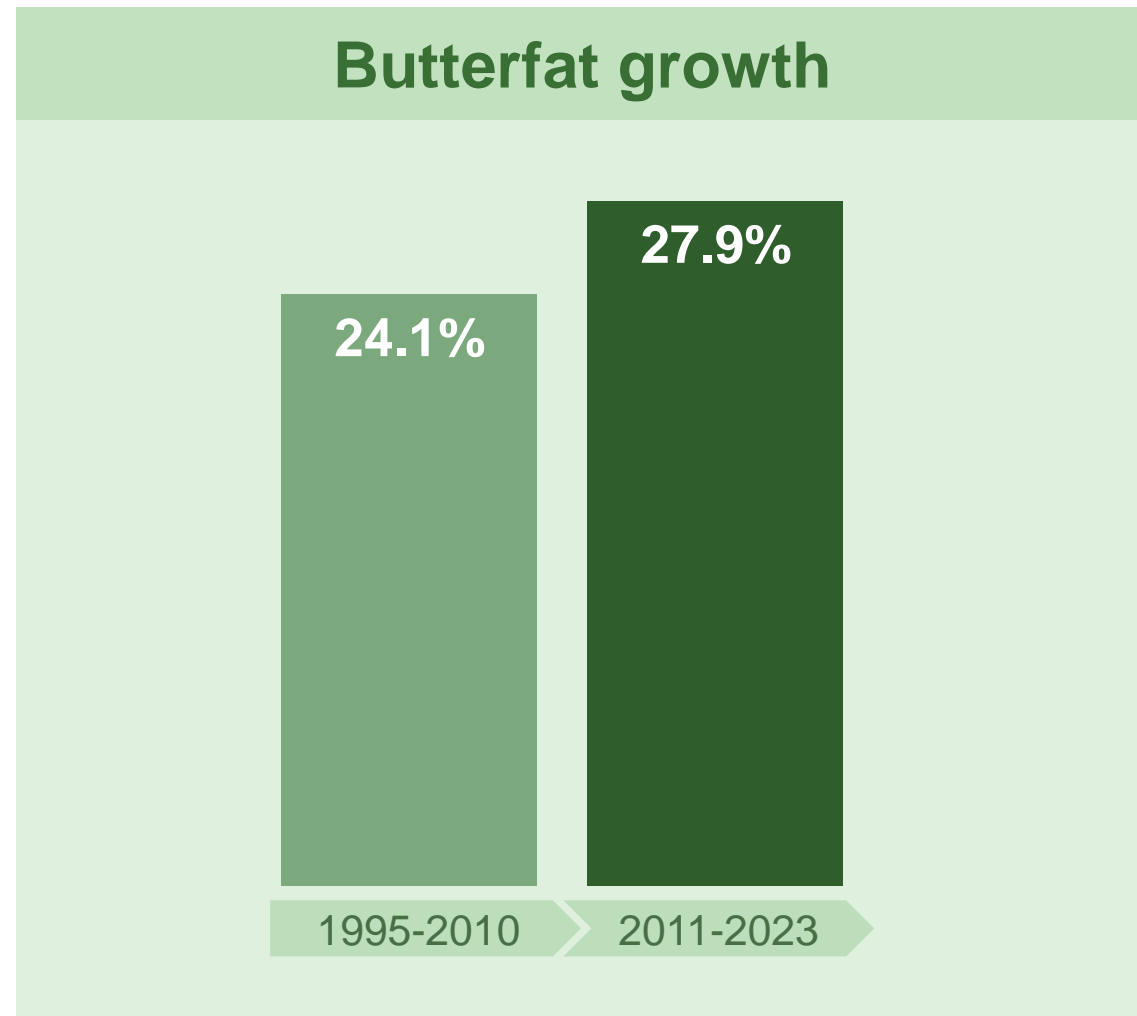
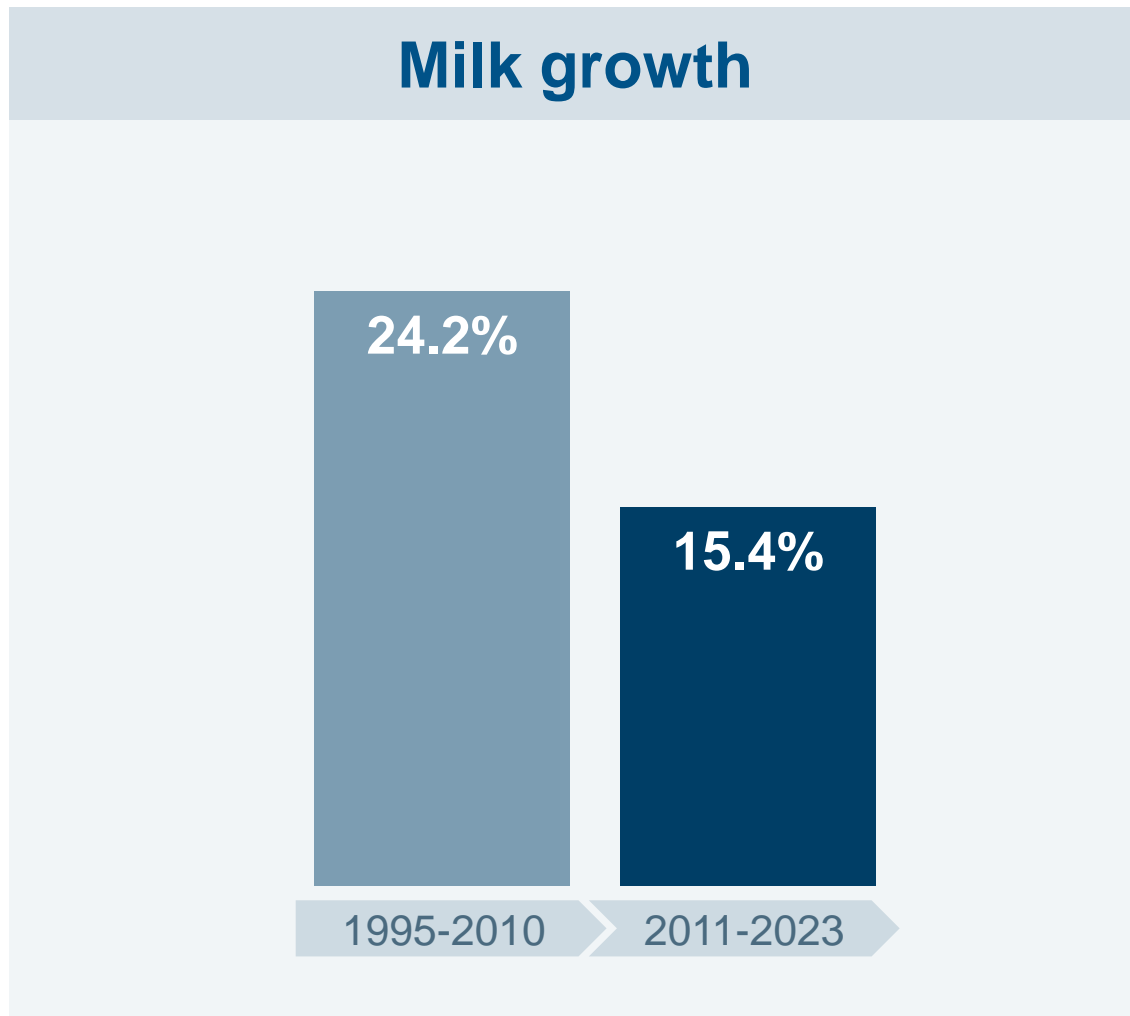


Dairy is the largest category in the supermarket at \$76 billion

21% growth in domestic consumption since 1975

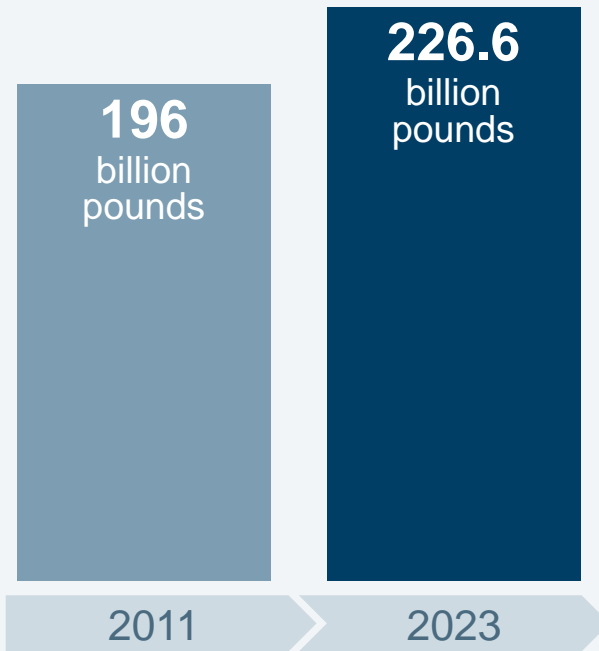


Butterfat outpaced milk production by over 12.5%

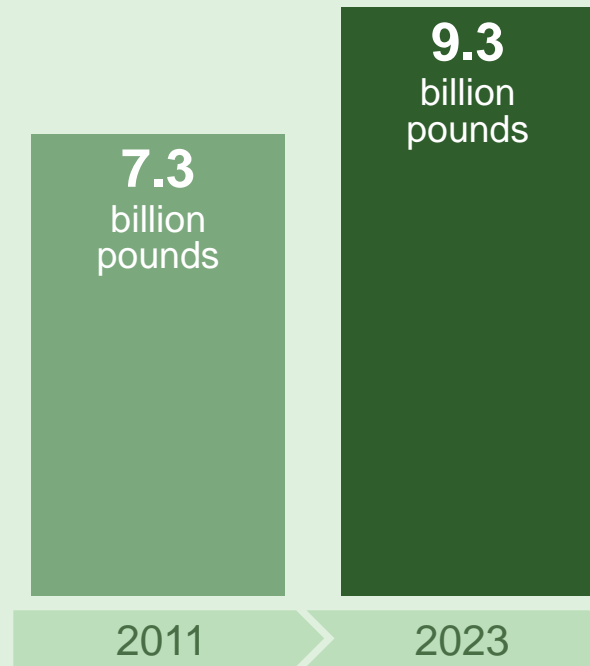


Track milk or component production?

Total U.S. **milk** output grew **15.4%**

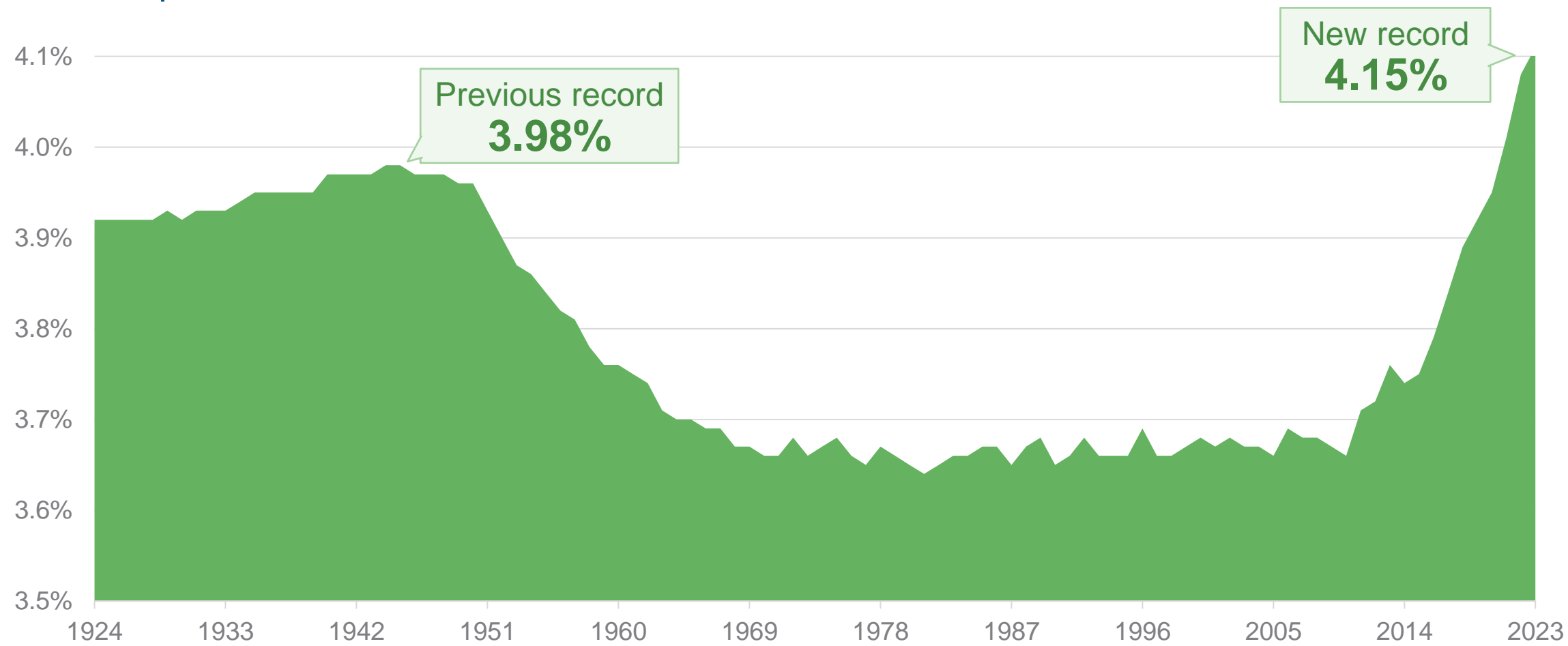


Total U.S. **butterfat** output grew **27.9%**



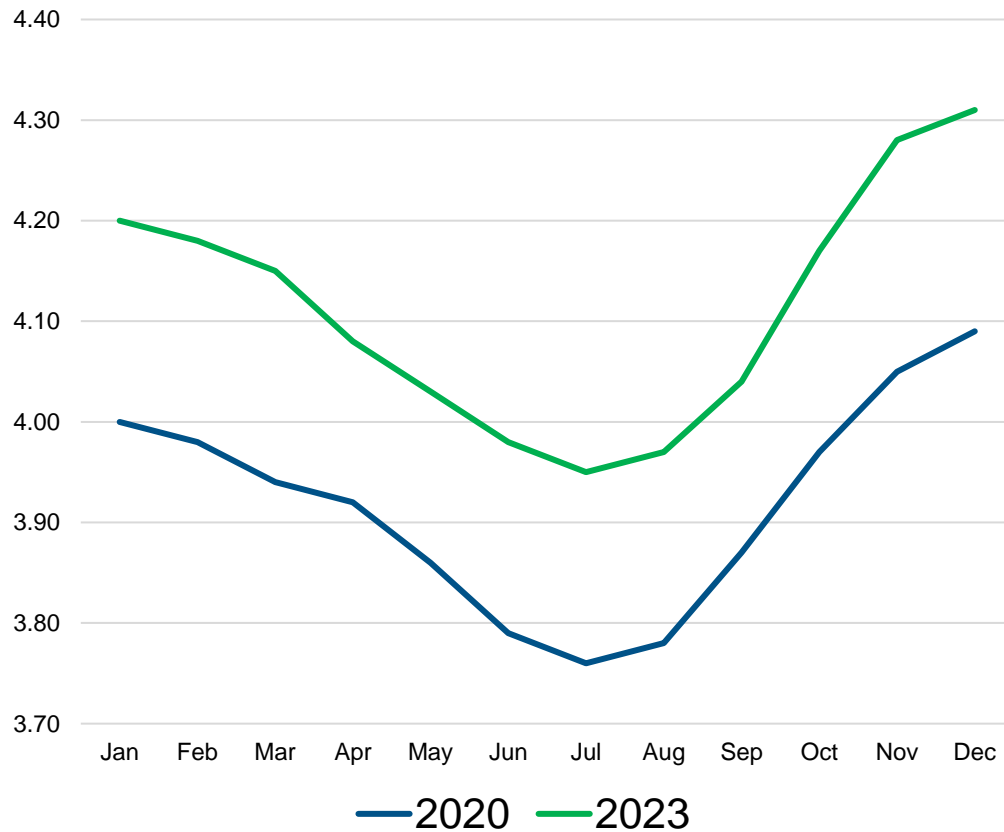
Milk is a dynamic, nutritionally improving food

Butterfat percent, 1924-2023

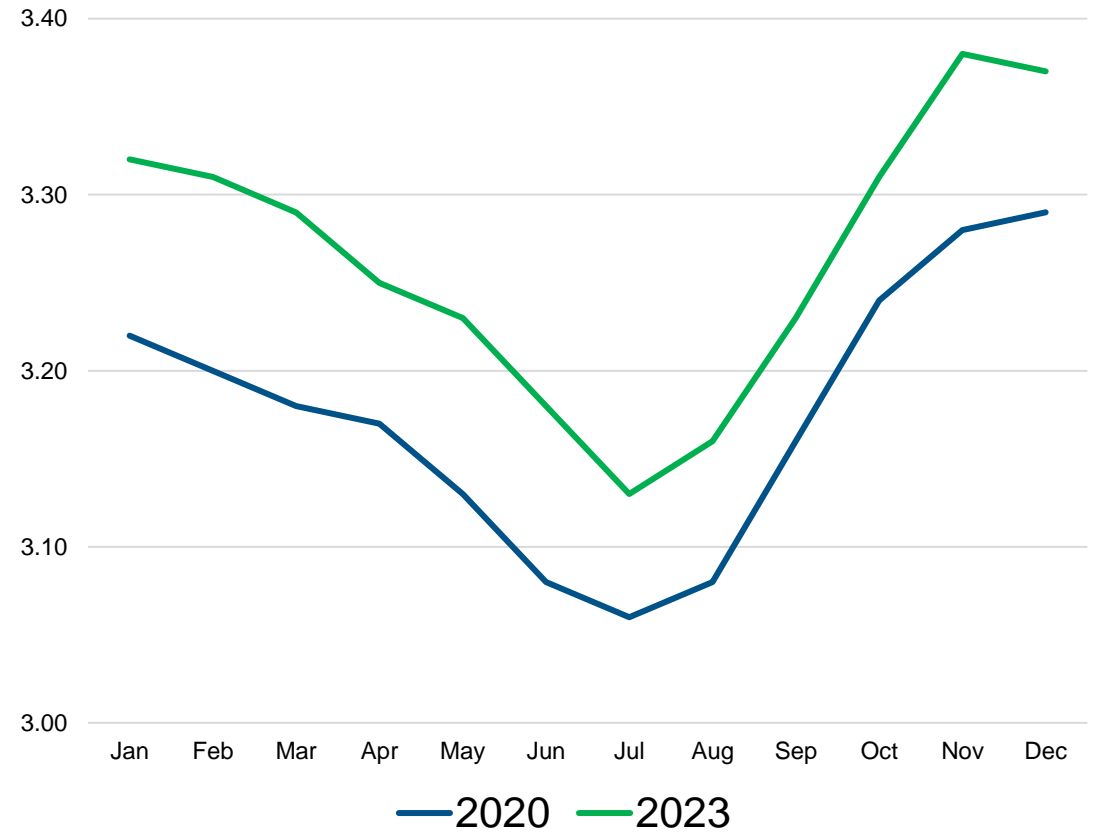


Big Shift in Butterfat and Protein Levels

FMMO butterfat 2020 to 2023



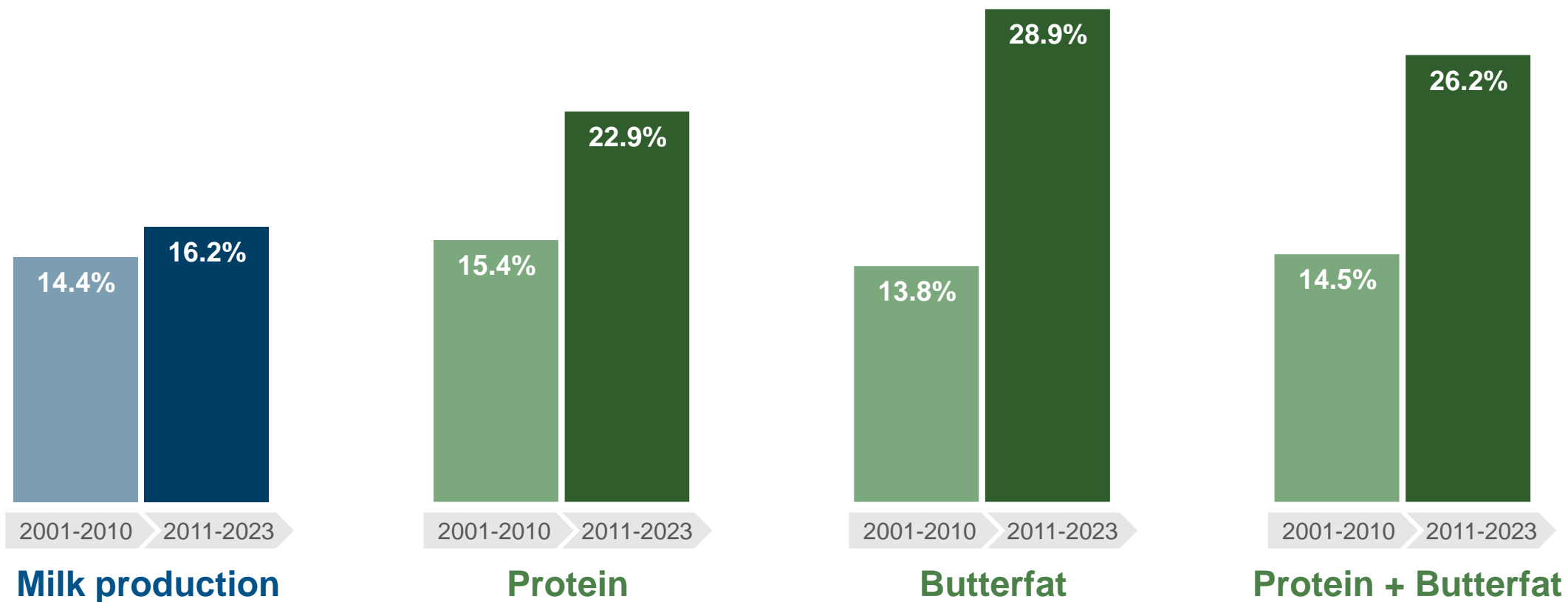
FMMO protein 2020 to 2023



Milk components matter more than milk production

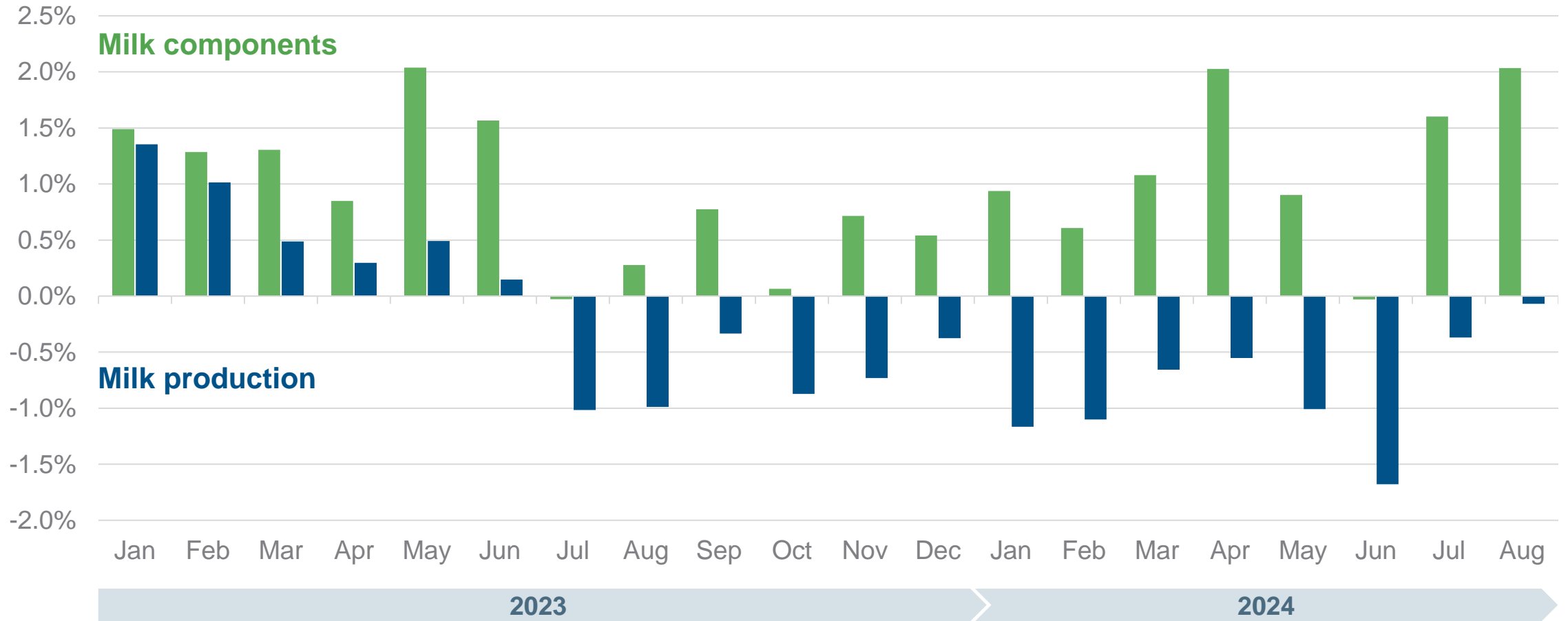
Butterfat and protein are pivotal to dairy's production growth

Percent change



Milk down but components up 12 of last 14 months

Milk component and milk production year-over-year change

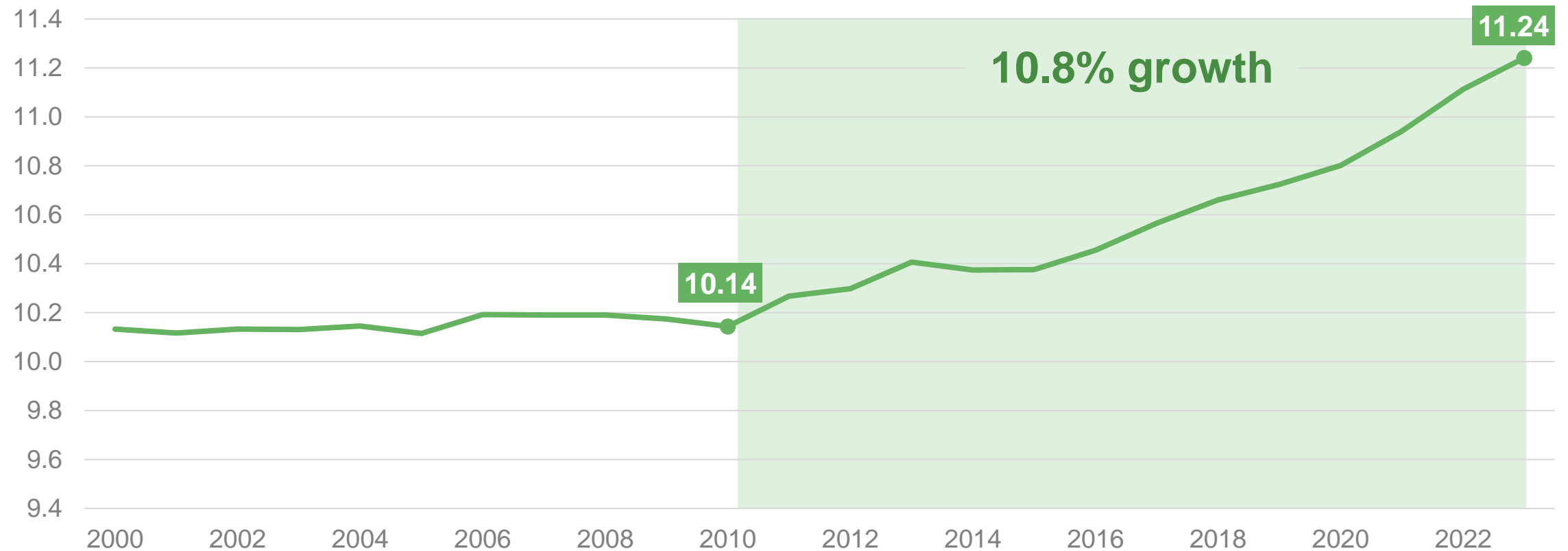


Sources: USDA National Agricultural Statistics Service and Federal Milk Marketing Order data. Presentation by Corey Geiger, CoBank.

Farmgate milk yields more dairy products pound for pound

Higher components have created higher cheese yield for every hundredweight of milk

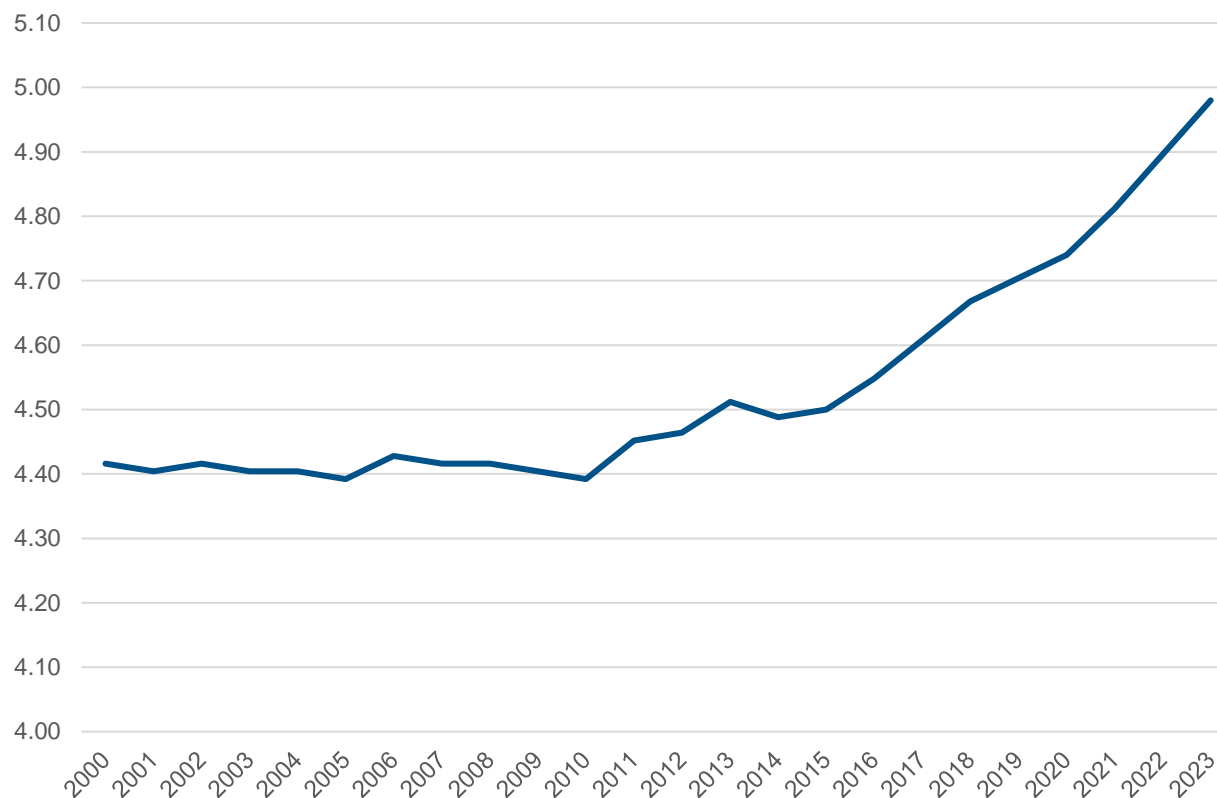
Yield per hundredweight



Farmgate Milk Yields More Dairy Products Pound for Pound

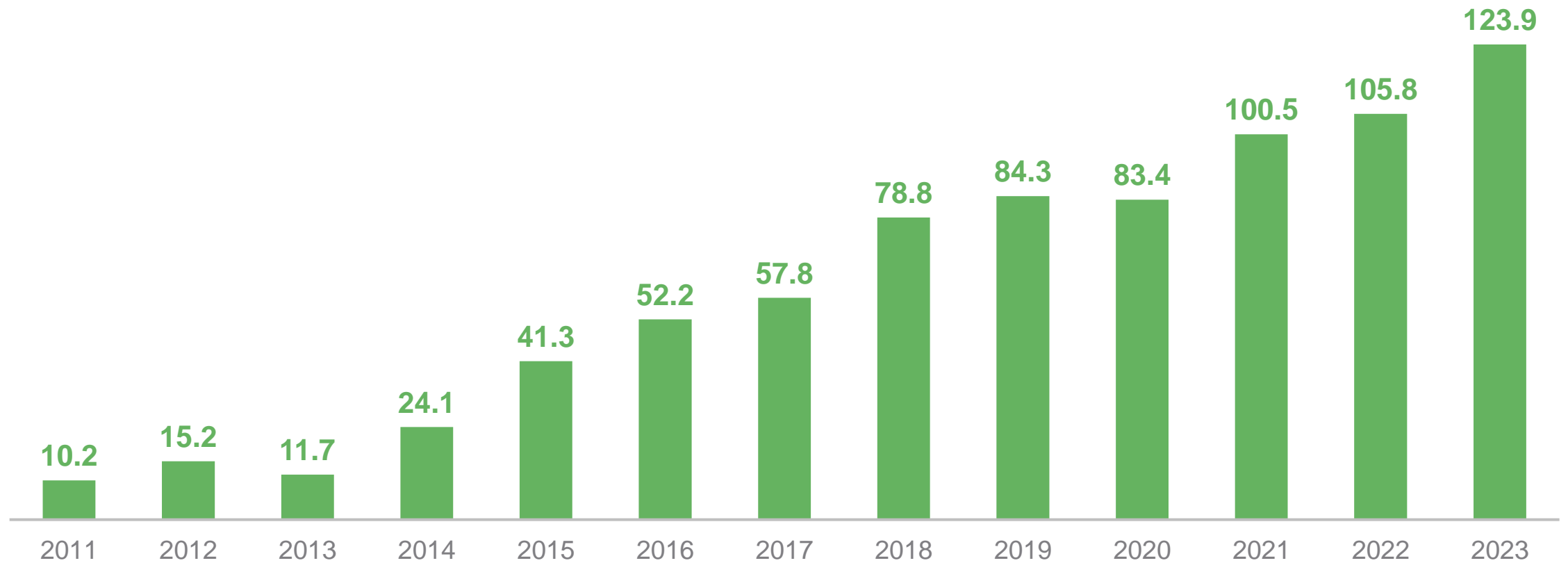
- From 2010 to 2023 ...
- Butter yield for 80% butter moved from 4.39 to 4.98 pounds for every cwt.
- That's a 13.4% improvement
- 18% of farmgate milk, on a milk solids basis, moves to butter
- That's up from 16.3% in 2000
- Overall, 80% of farmgate milk moves into manufacturing

Record Butterfat Levels Are Fueling Higher Butterfat Yields From Each Hundredweight



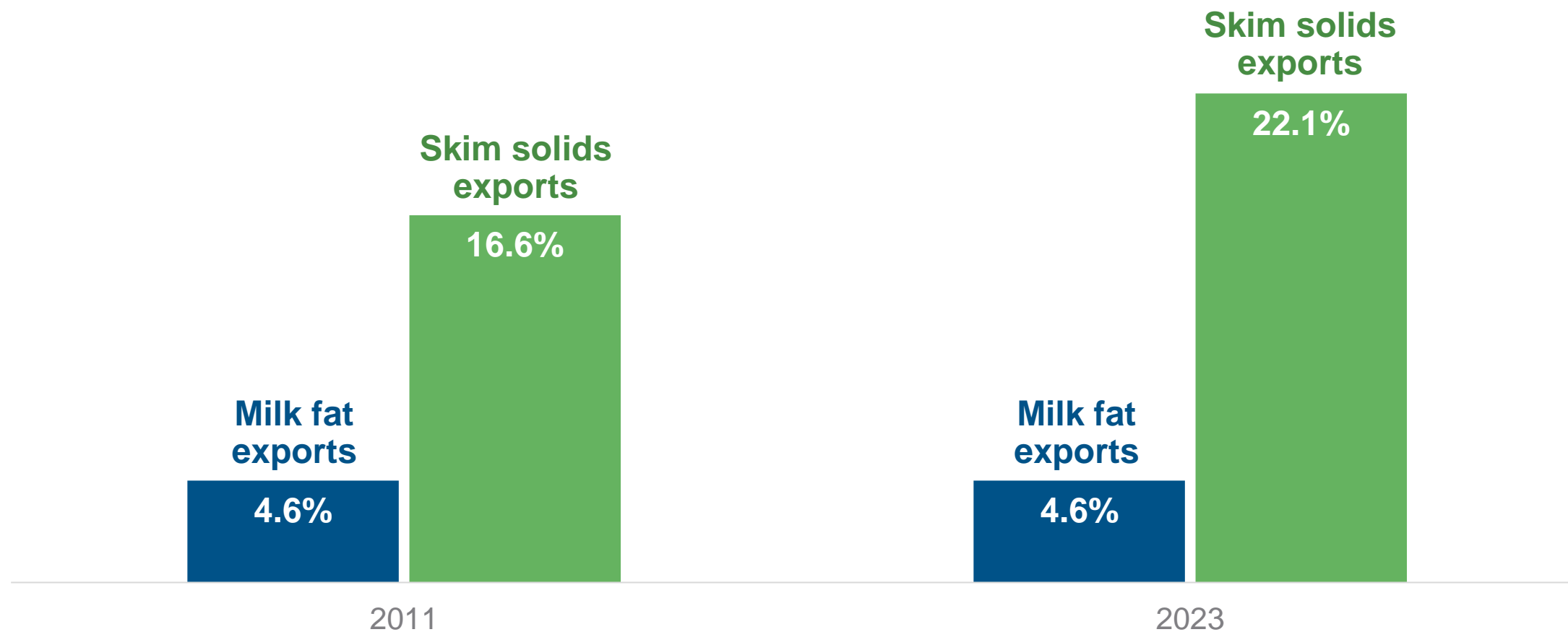
U.S. butterfat markets remain underserved

U.S. butter imports, million pounds

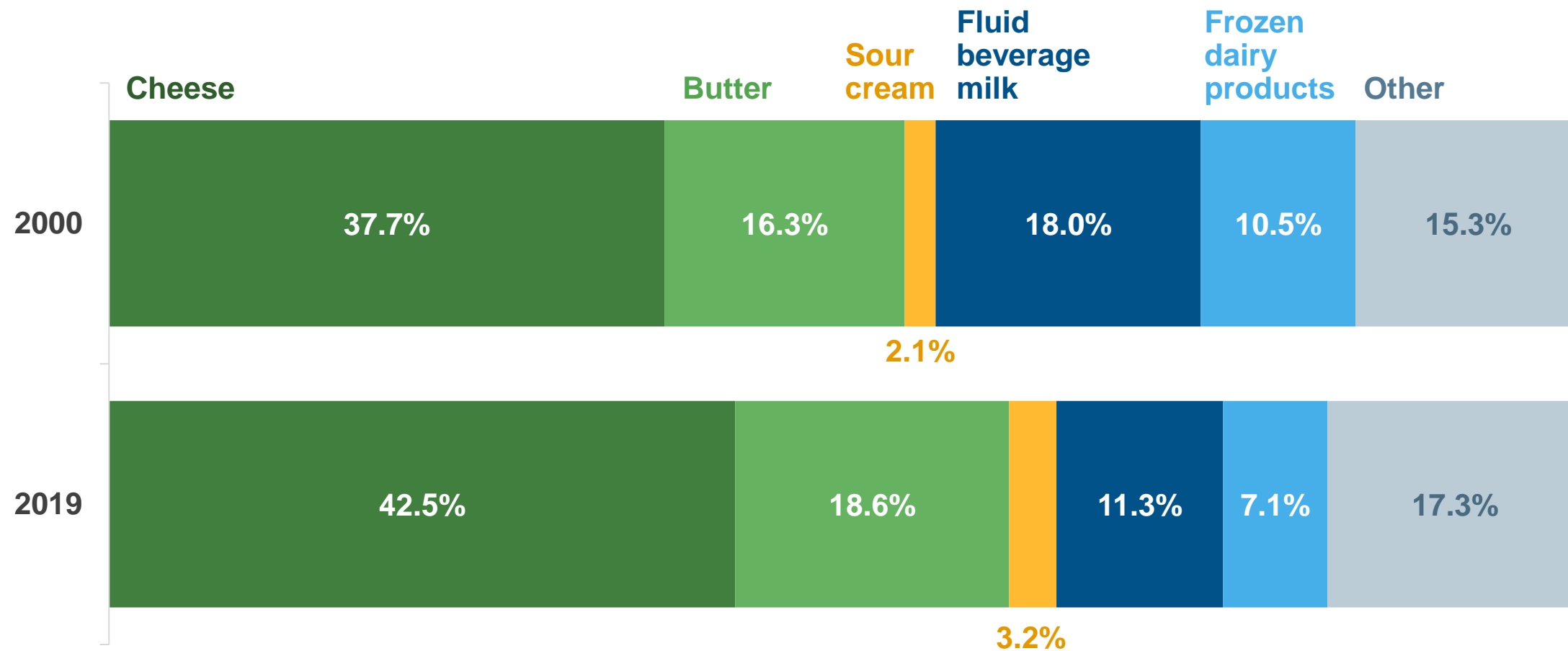


U.S. butterfat markets remain underserved

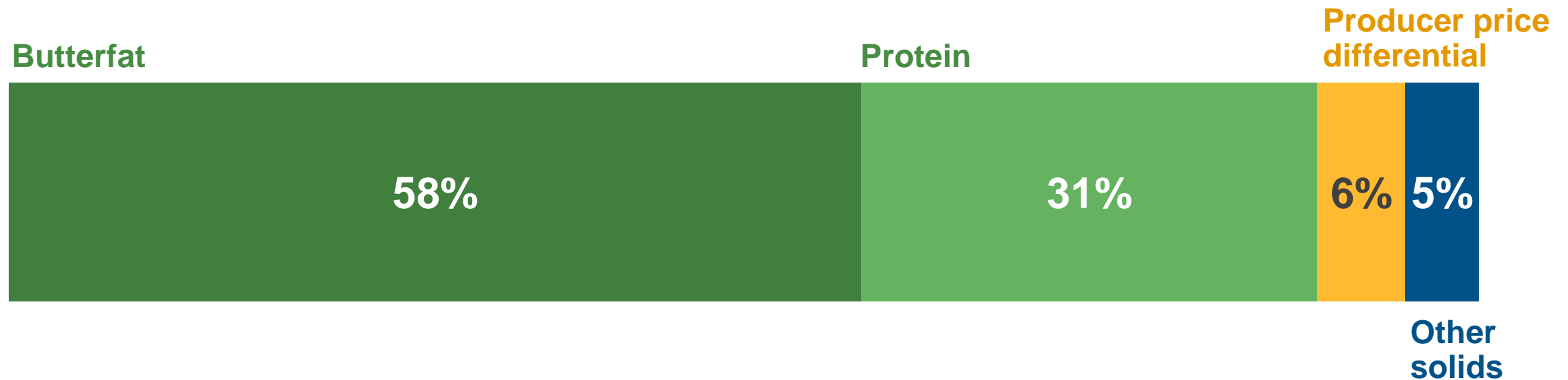
Skim solids, low-milkfat products dominate dairy exports



Cheese and butter absorb more farmgate milk each year



Milk checks in 2023 for Multiple Component Pricing (MCP)



How can we boost butterfat production?

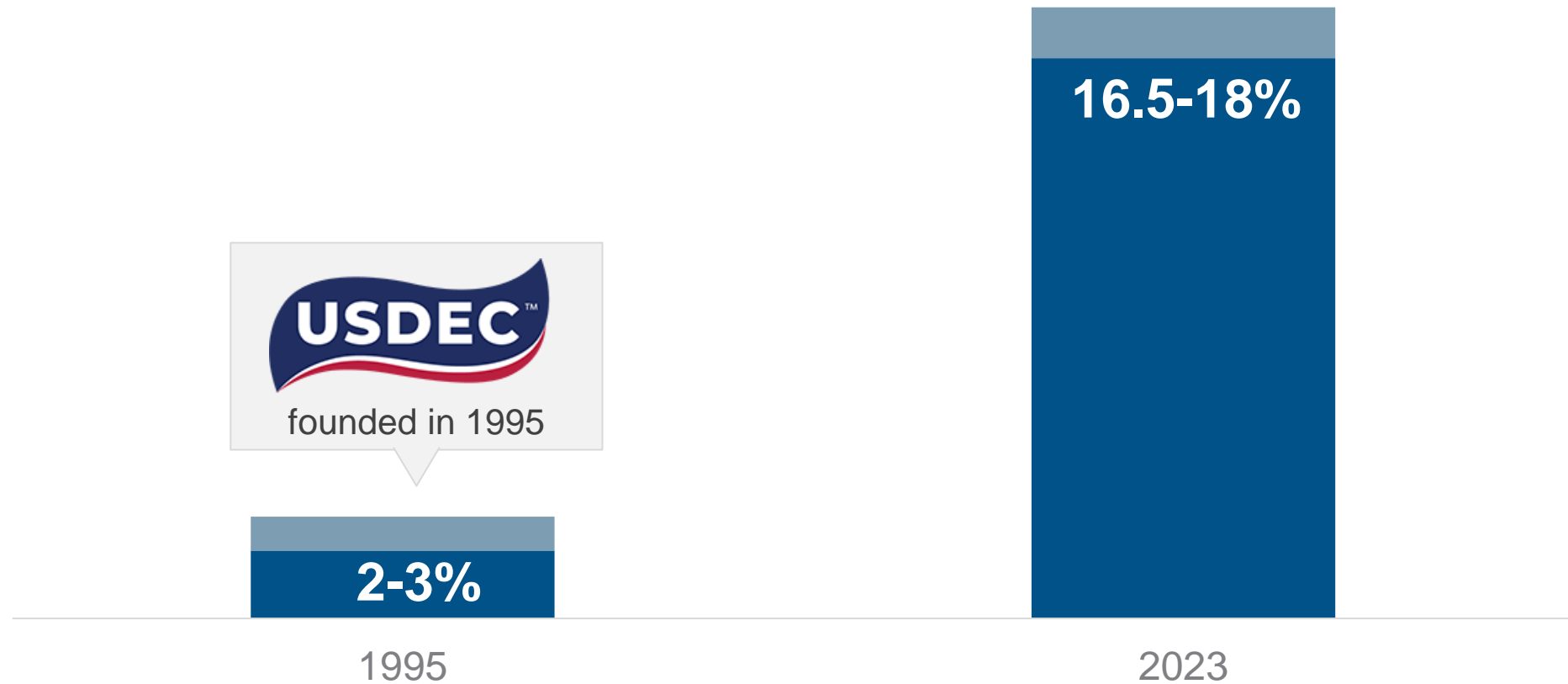
- **50% of milkfat is synthesized by the mammary gland via de novo synthesis from two volatile fatty acids (VFAs)**
 - **Acetic Acid and Butyeric Acid**
- **The remaining 50% of milkfat is from preformed fatty acids**
 - **To optimize VFAs, optimize dry matter intake from fermentable carbohydrates or by product feeds**
 - **Raise starch levels**
 - **Raise sugar levels**
 - **Add fat sources such as oil seeds or animal fat sources**

How can we boost butterfat production?

- **Cow considerations to maximize de novo fat**
 - **Less than 18 inches of bunk space per cow reduces butterfat**
 - **Stocking density over 110% or 1.1 cows per stall reduces butterfat**

U.S. is realizing its dairy export potential

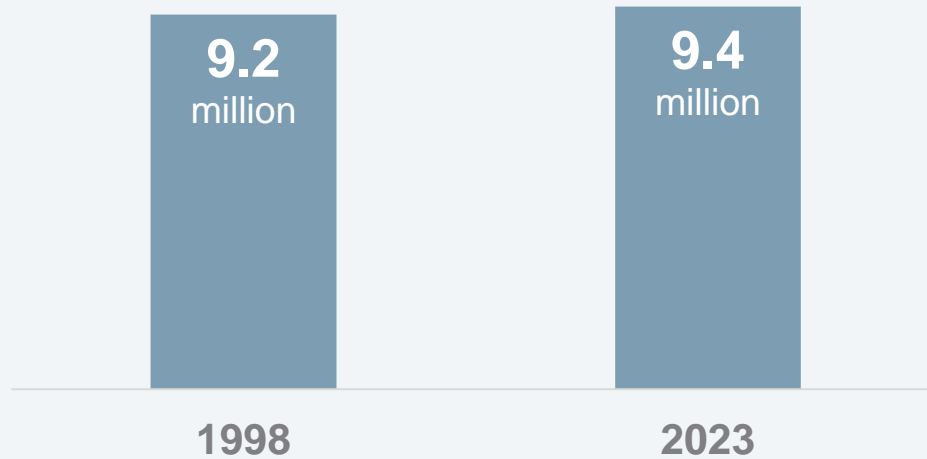
Percentage of U.S. milk supply exported



Milk matters more than cows when measuring growth

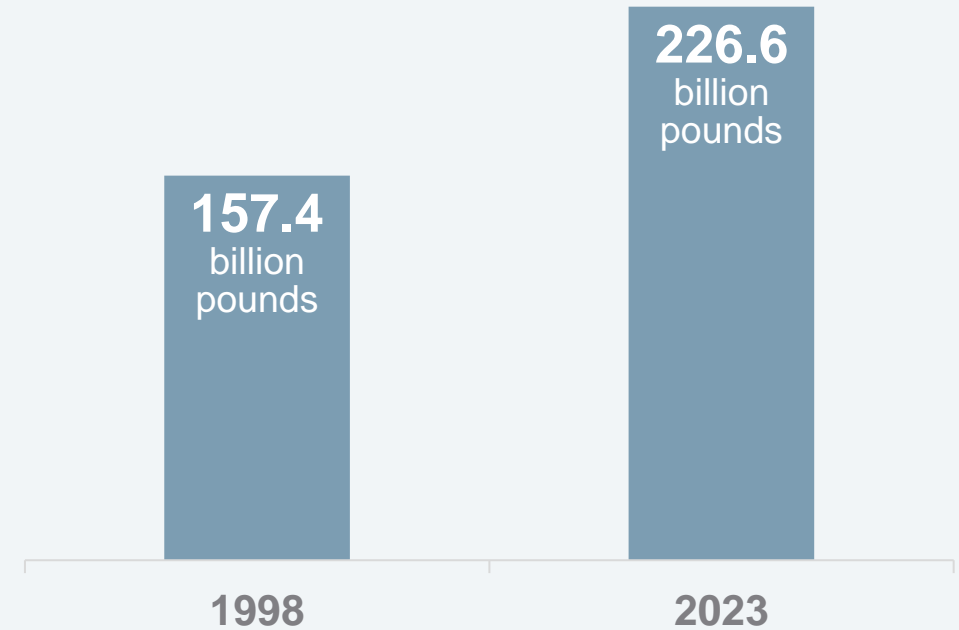
Dairy cows

2.6% growth rate



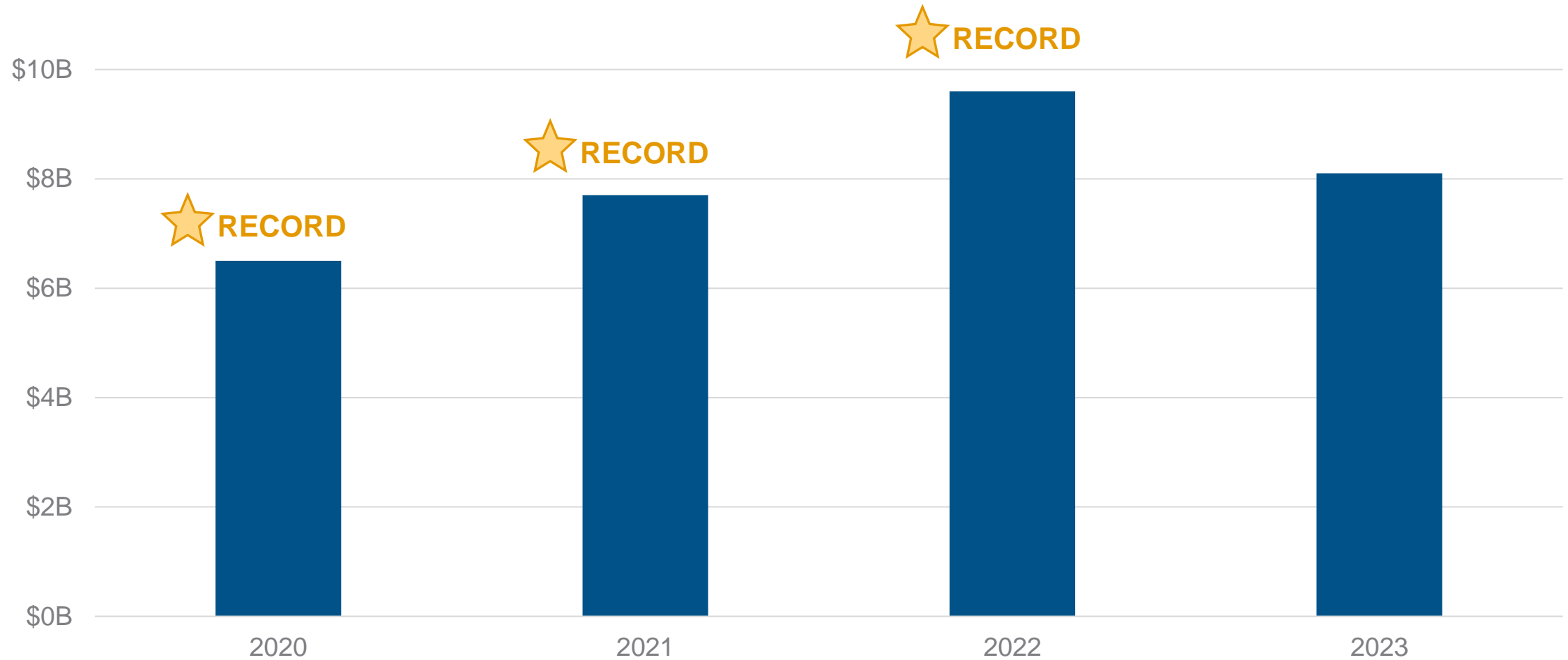
Milk

44.0% growth rate



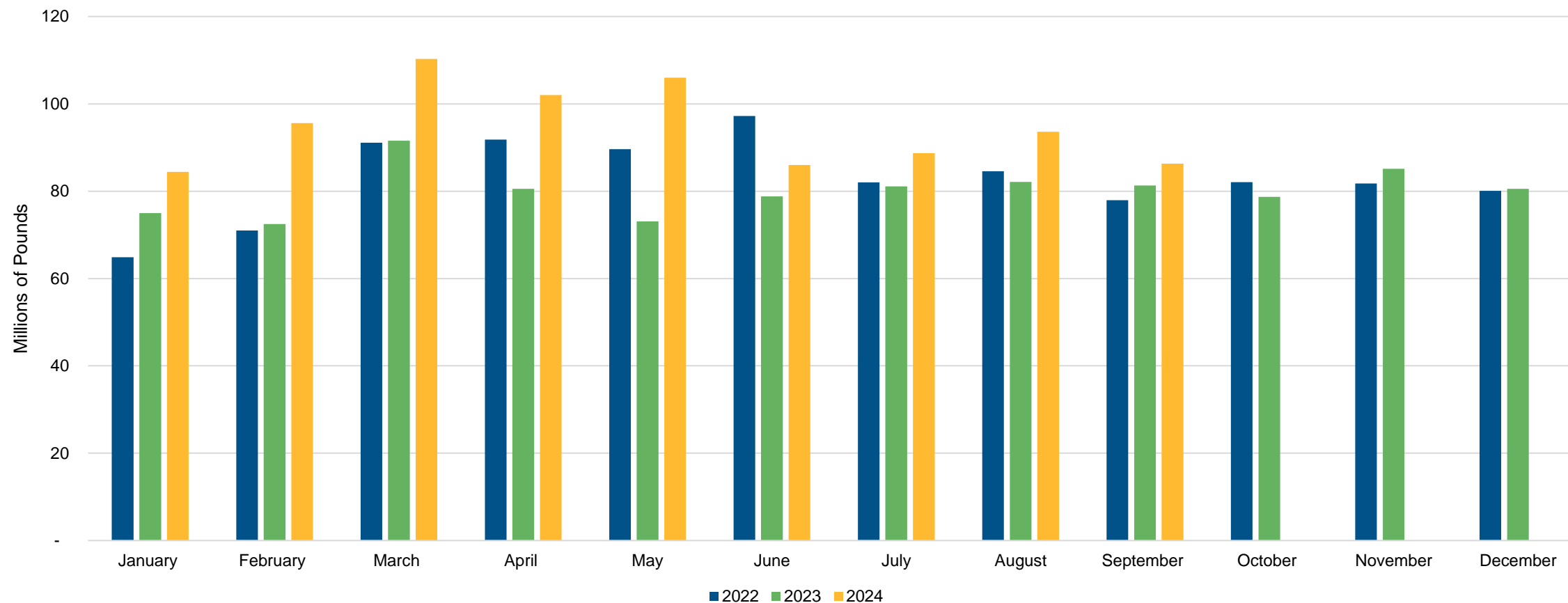
The Dairy Export Factor - U.S. milk grew 45.9% since 1995

Sales



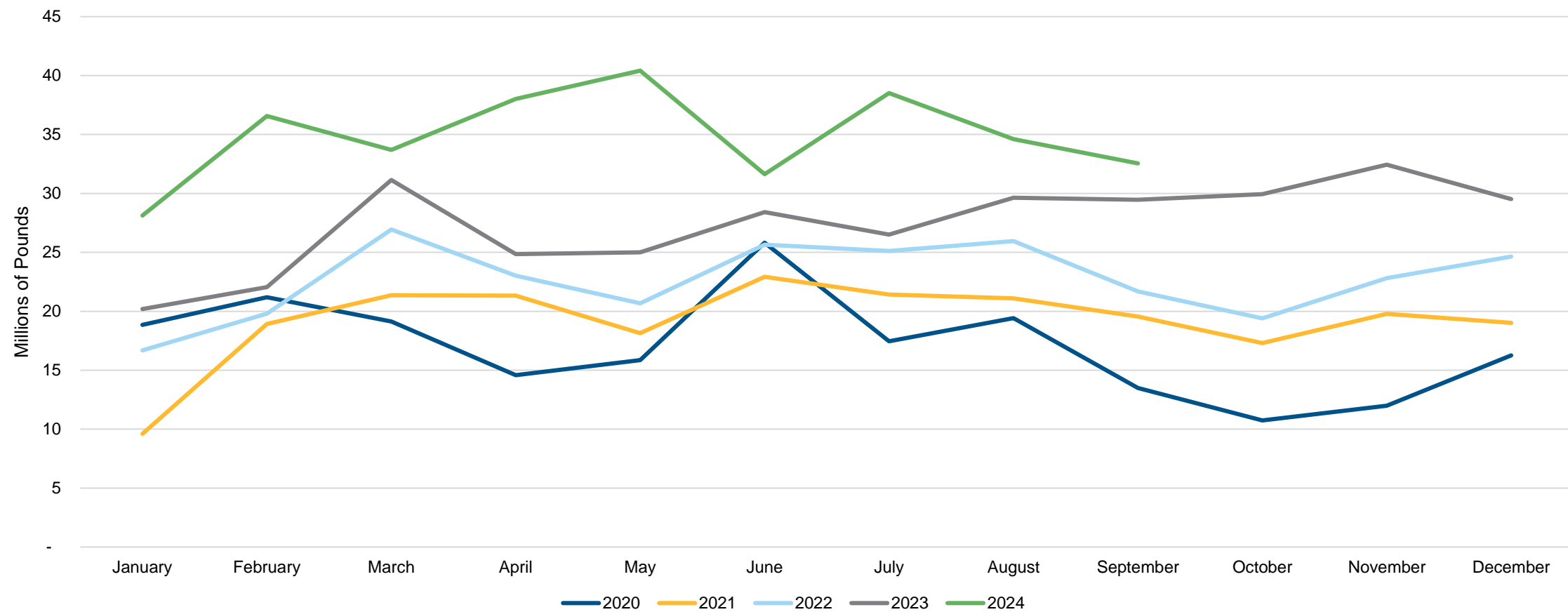
U.S. cheese exports on record pace

U.S. cheese exports (pounds)



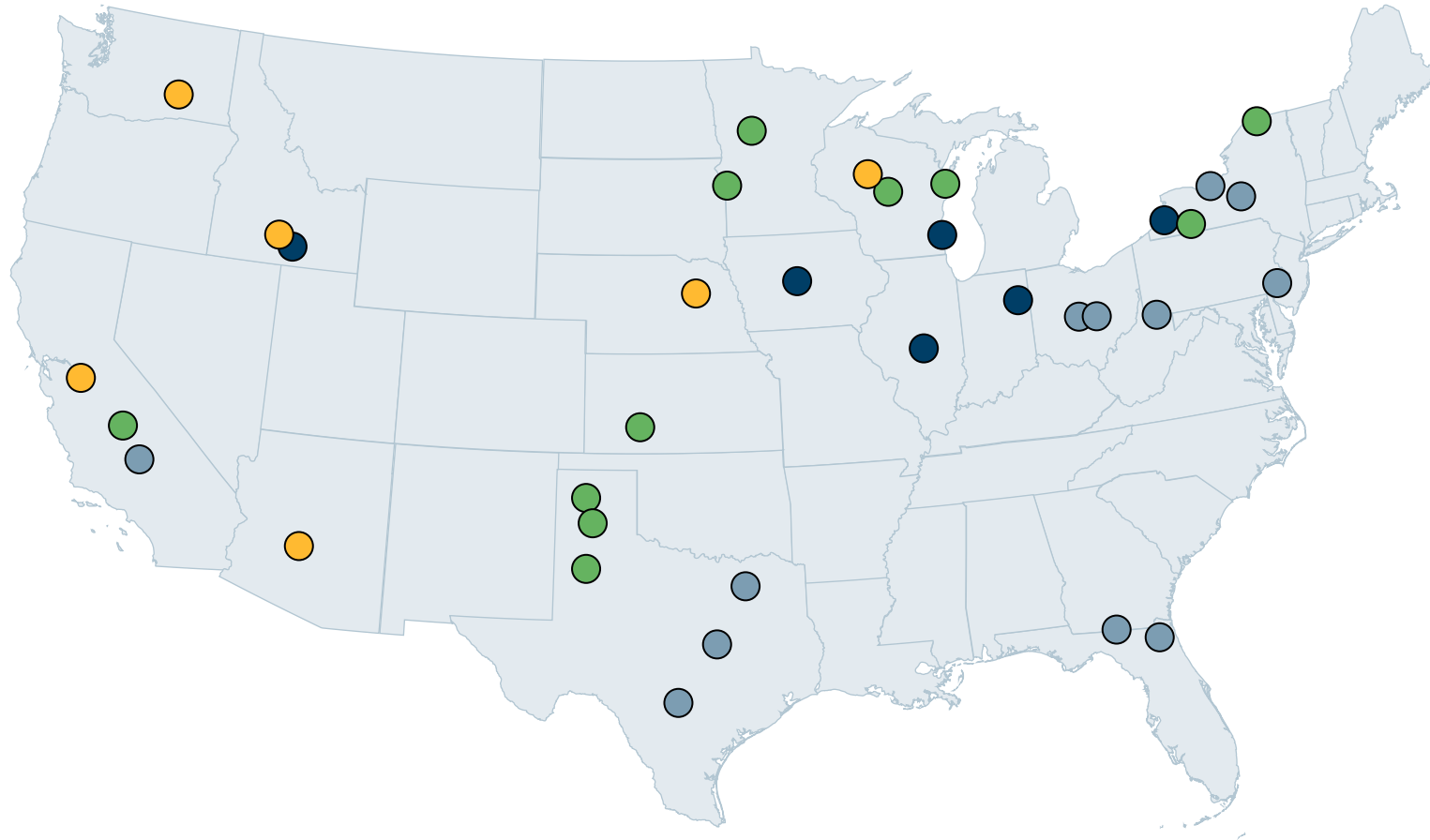
Mexico Cheese Imports are up 32% through September

U.S. cheese exports (pounds)



What's the future for U.S. cheese consumption?

New or recently completed plants through 2026 – approaching \$8 billion

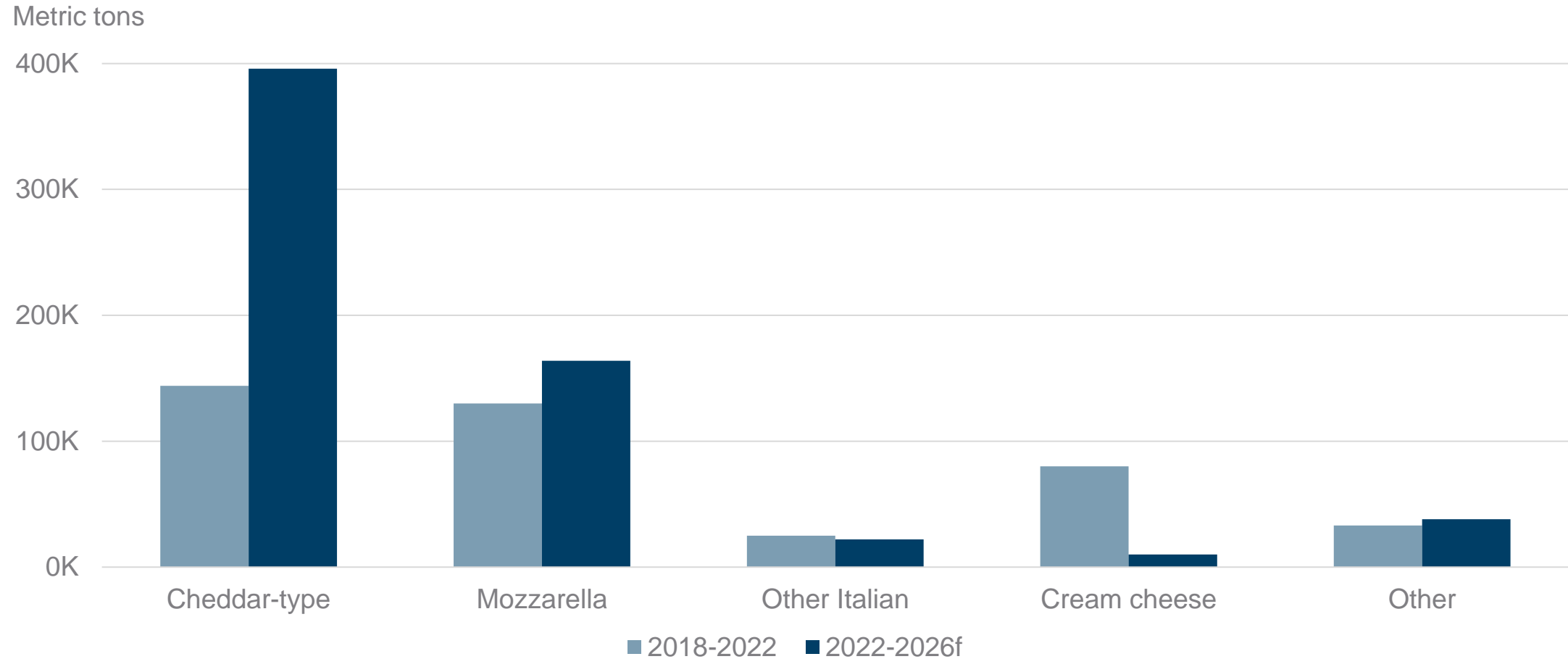


Milk class

- I-Beverage milk
- II-Soft products
- III-Cheese & whey
- IV-Butter & powder

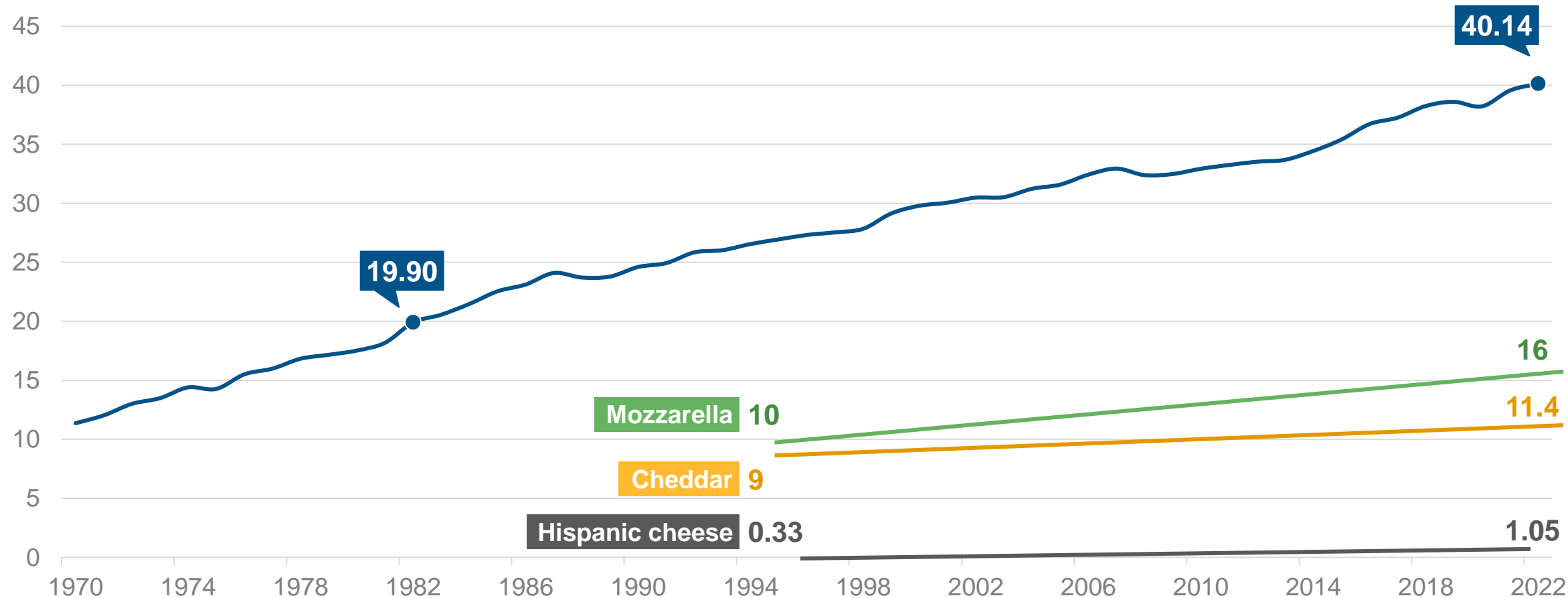
U.S. cheese production to grow by 1.15 billion pounds

Growth in U.S. cheese production by variety (last 4 years vs next 4 years)



U.S. per capita cheese consumption pushes past 40 pounds

U.S. per capita cheese consumption (pounds)



What's the future for U.S. cheese consumption?

Countries above **50** pounds



Austria



Finland



Germany



Greece



Netherlands



Switzerland

Countries above **60** pounds



Denmark



France

Snacking cheese is an expanding category



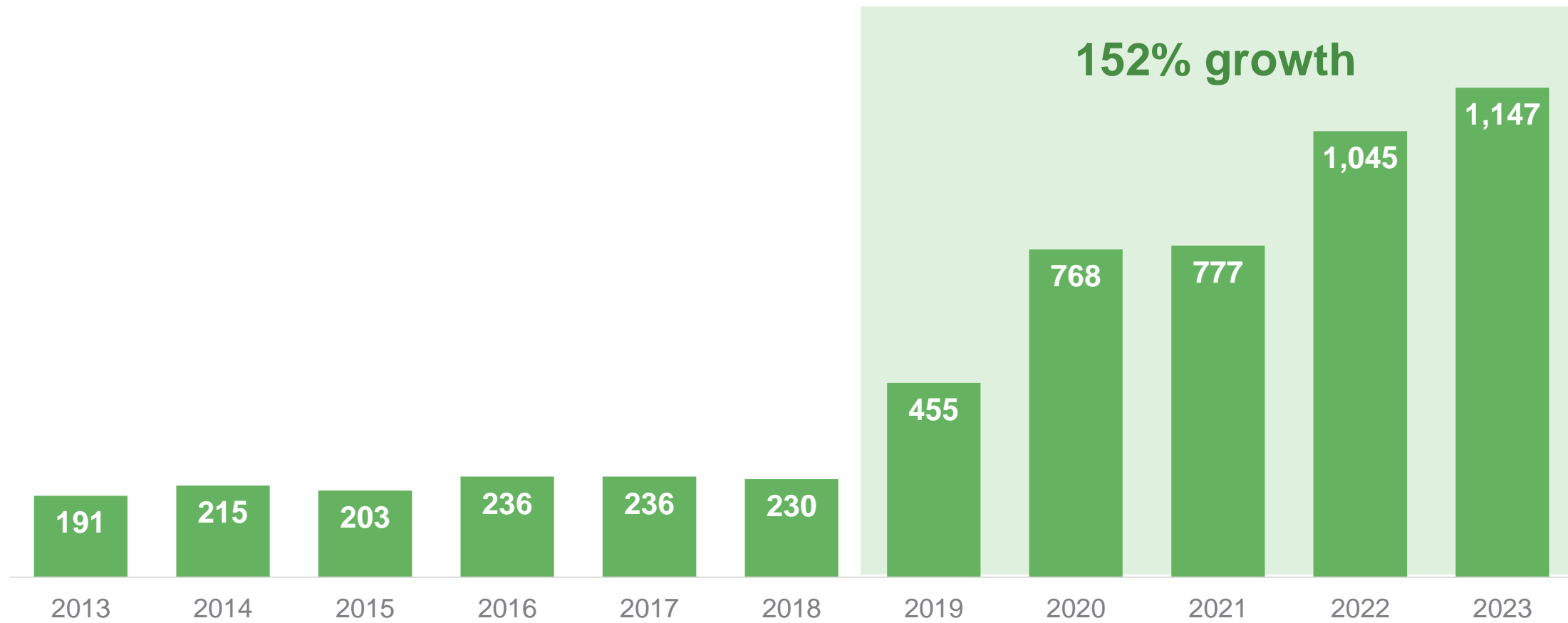
Snacking cheese projected to be **\$75.1B** category in 2024

Compound annual growth rate of **6.5%** through 2034

Americans snack **1-3** times per day

Snacking cheese is an expanding category

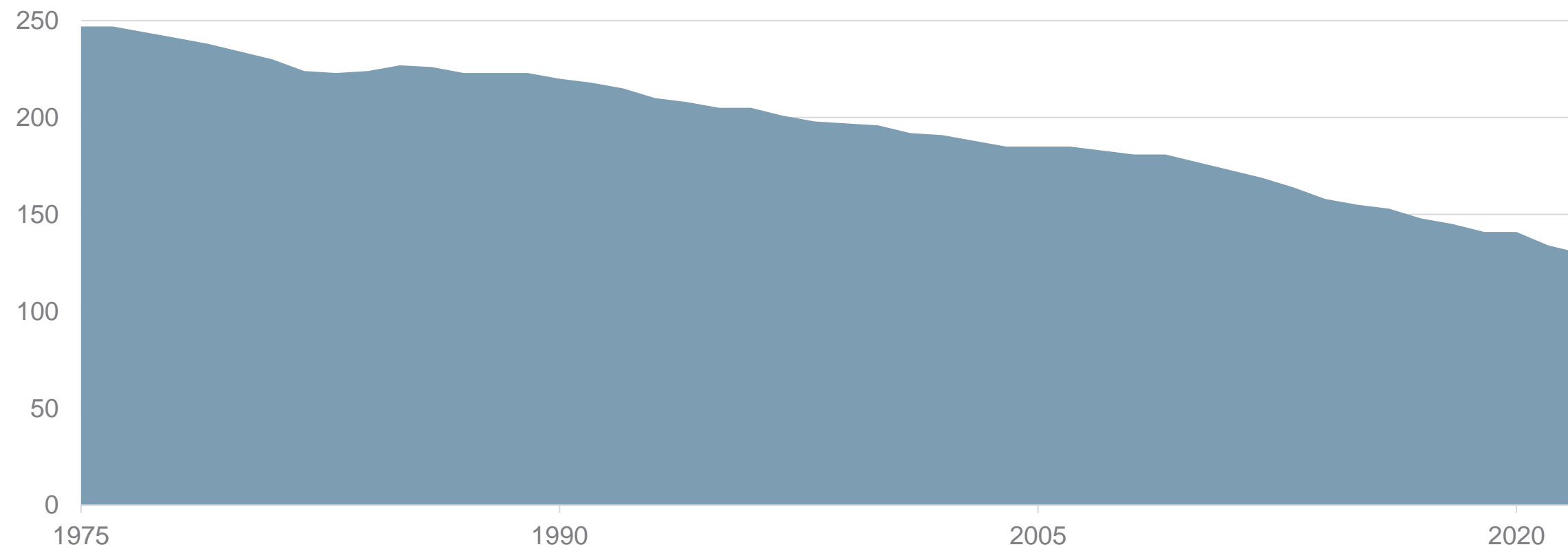
New product launches for snacking cheese in U.S. dairy export markets



The slide in fluid milk consumption continues

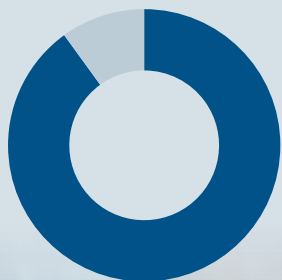
Fluid milk consumption down 26.5% since 2010

Pounds per person per year



The slide in fluid milk consumption continues

Begins with school milk



37 processors and **over 90% of schools** agreed to reduce sugar to under 10 grams per 8-ounce serving



Cincinnati lactose-free milk

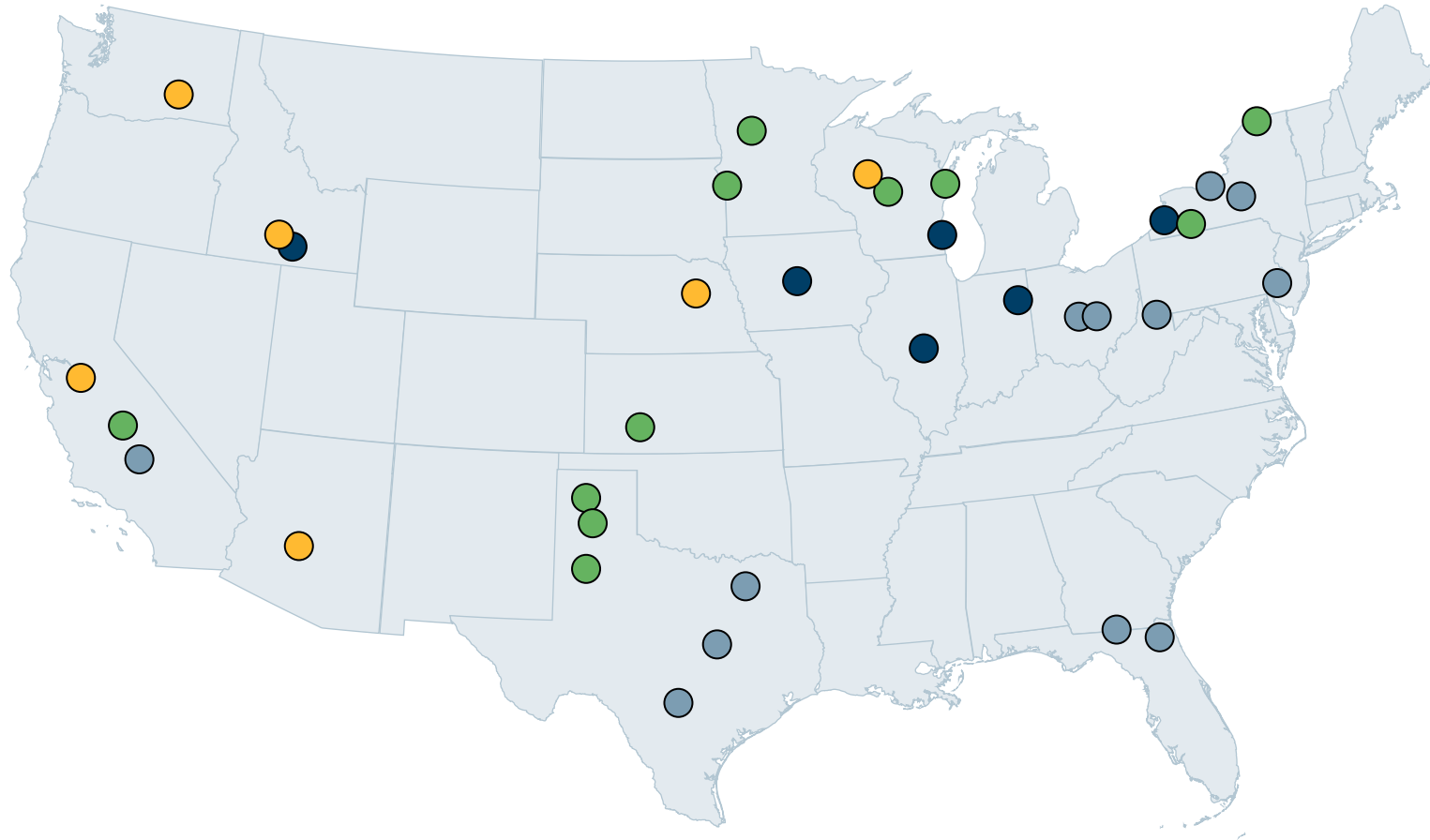
- ▶ **7%** boost in milk consumption
- ▶ **16%** more school meal consumption



In all 15 public high schools

What's the future for U.S. cheese consumption?

New or recently completed plants through 2026 – approaching \$8 billion

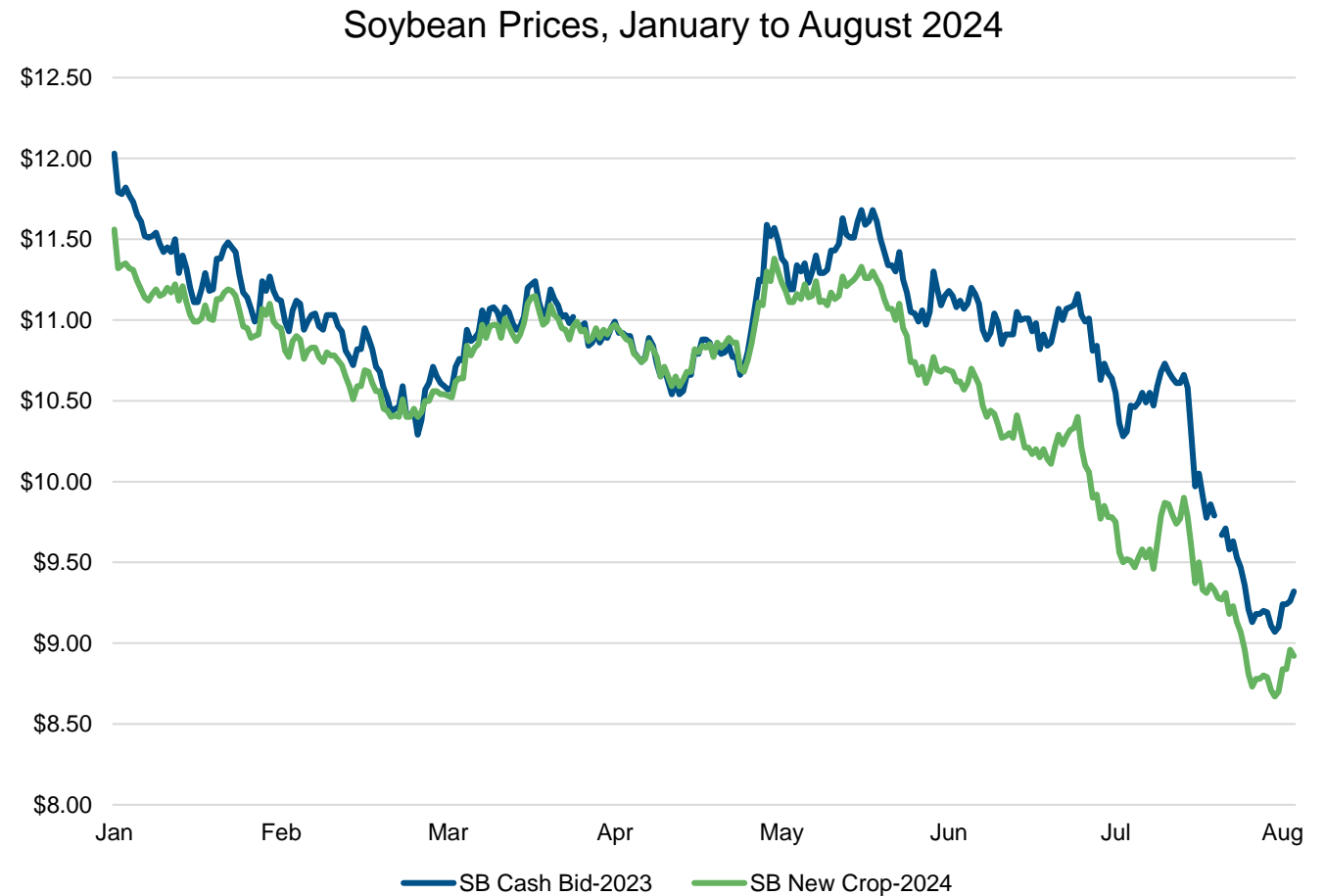


Milk class

- I-Beverage milk
- II-Soft products
- III-Cheese & whey
- IV-Butter & powder

My personal journey on a 6th generation farm

- 6th Generation Family Farm
 - 376 acres
 - Had been dairy and crops
 - 69-father died in 2019
 - Mom and I now operate it
- Main crops
 - Soybeans
 - Corn
 - Wheat
 - Alfalfa
- Wife's family farms, too
 - First U.S. dairy to install robots
 - 2000 initial year; 24 years experience
 - Crop over 700 acres



Soybean meal prices have dropped with more availability

Soybean meal, in \$/ton



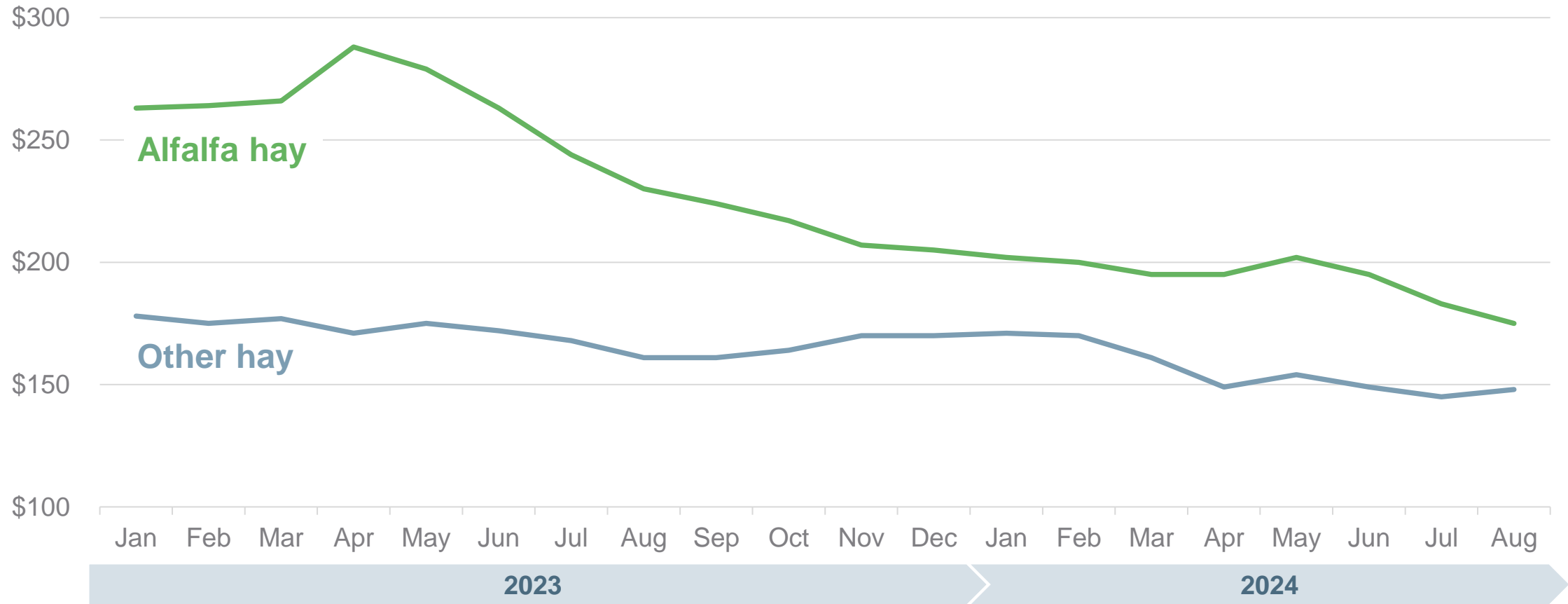
Corn prices have fallen steadily since June 2023

Corn price received in \$/bushel



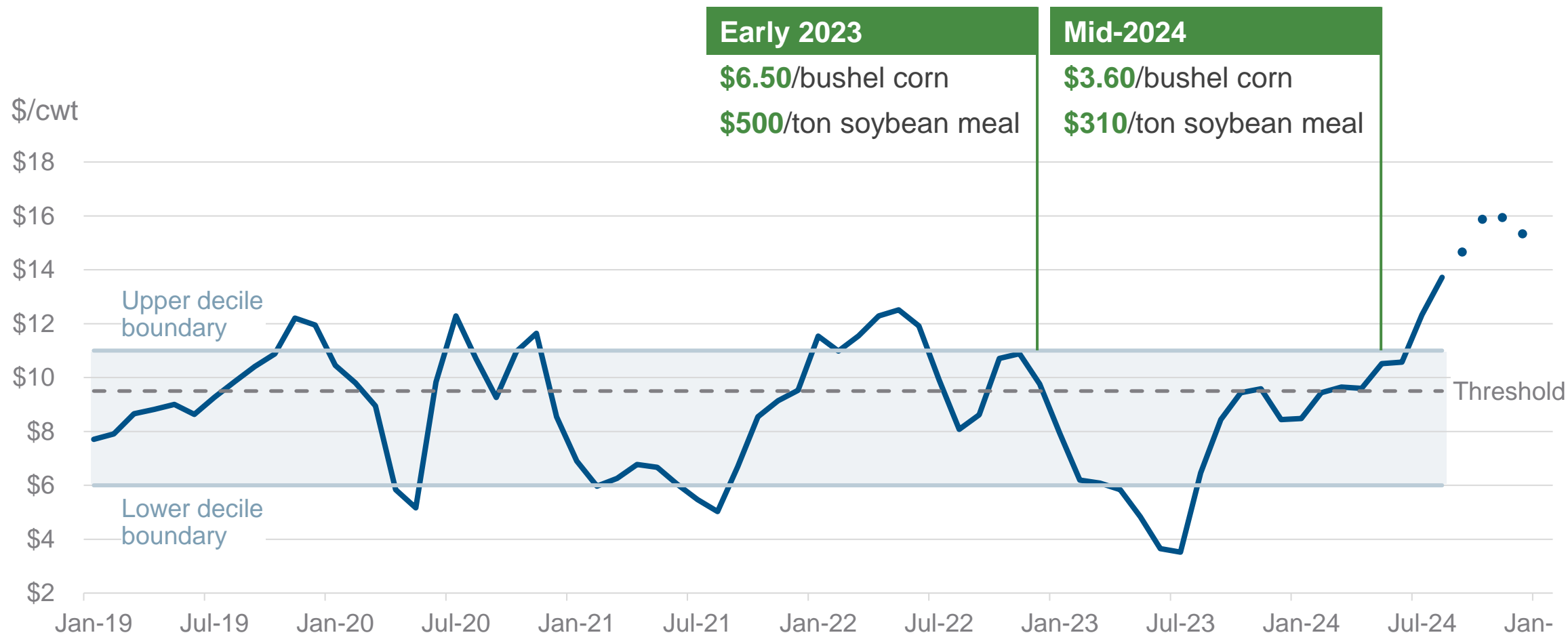
Feed costs are coming down

Alfalfa and other hay prices, in \$/ton



Dairy margins should improve throughout the year

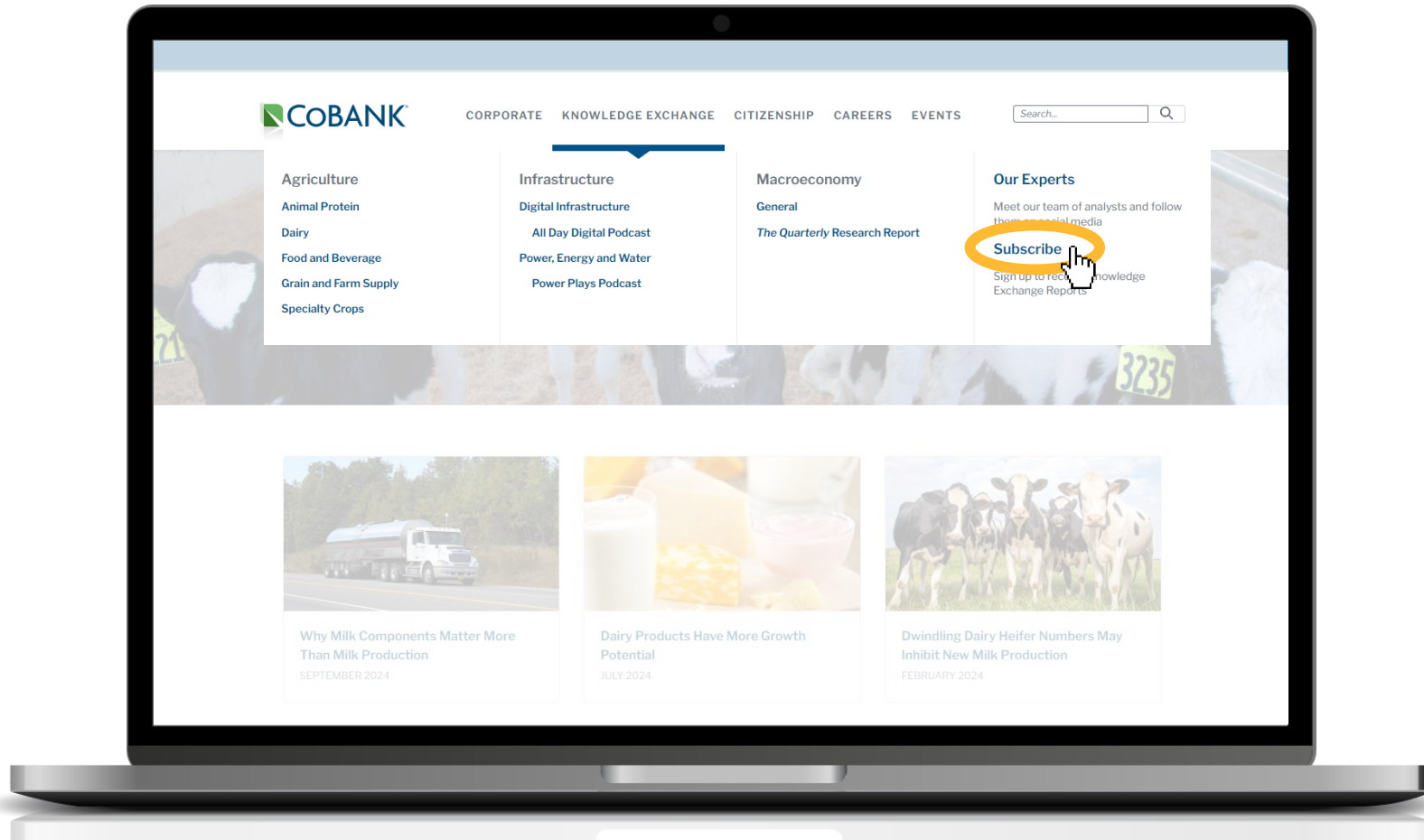
Actual and forecast dairy margin



Dairy reports from Knowledge Exchange



Subscribe to receive new reports



The Dairy Outlook 2025 and Beyond

Corey Geiger, Lead Economist, Dairy
Knowledge Exchange Division, CoBank

Six-Generation Farmer

Director, World Dairy Expo, 2020 to present

President, Holstein Association USA, 2019 to 2022

Director, Council on Dairy Cattle Breeding, 2019 to 2022

Editor, *Hoard's Dairyman*, 1995 to 2023

Two-Time Award Winning Published Author

