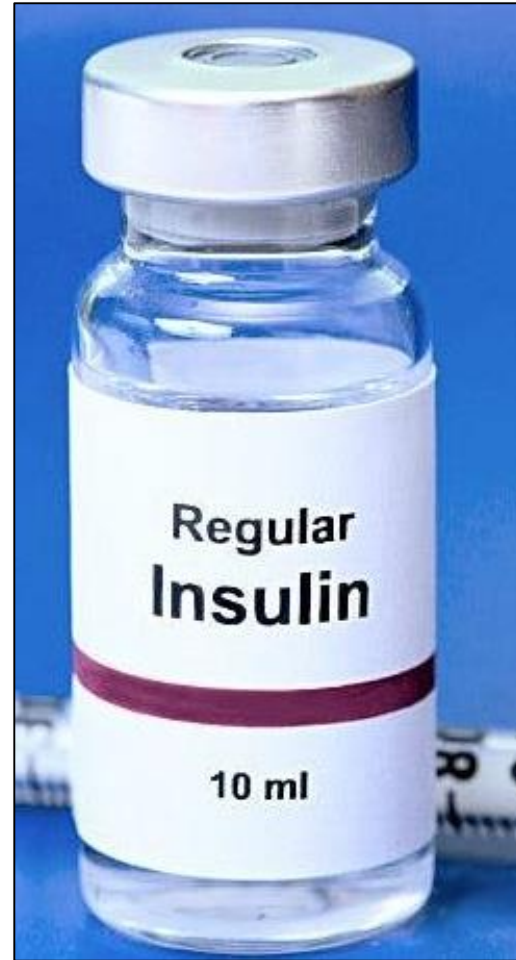# Disruptive Force #1

Cognitive dissonance?

"All milk naturally contains minute amounts of hormones, and science shows that there is no significant difference in hormone levels between organic and regular milk."

"In the first peer-reviewed study comparing conventional milk, milk labeled 'rbST-free' and organic milk, researchers found that the composition of the milk itself was essentially the same, despite the use of different production practices on the farm."

Disruptive Force #1: Bugs

Acres of land needed per pound?
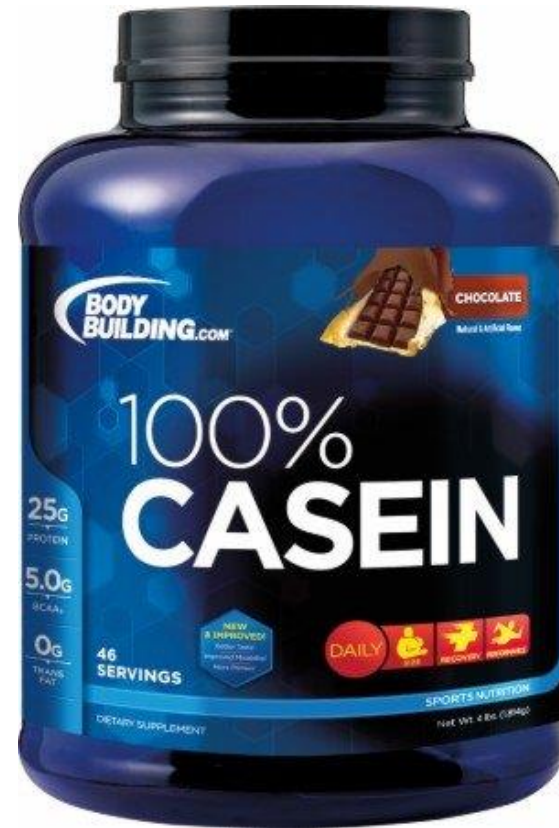
CO2 emissions per pound?

Water used per pound?

1951:
10,000 POUNDS OF PIG PANCREASES MAKE 1 POUND OF INSULIN

TODAY:
GENETICALLY ENGINEERED BACTERIA PRODUCE ANIMAL-FREE INSULIN

"THE FOOD AND DRUG ADMINISTRATION HAS DETERMINED THERE IS NO SIGNIFICANT DIFFERENCE BETWEEN CASEIN FROM COWS AND FROM GENETICALLY ENGINEERED BUGS."

Milk fat globule membrane (**MFGM**) is a complex and unique structure composed primarily of lipids and proteins that surrounds milk fat globule secreted from the milk producing cells of humans and other mammals. It is a source of multiple bioactive compounds, including phospholipids, glycolipids, glycoproteins, and carbohydrates that have important functional roles within the brain and gut.

Immune Enhancing Components in MilkFat
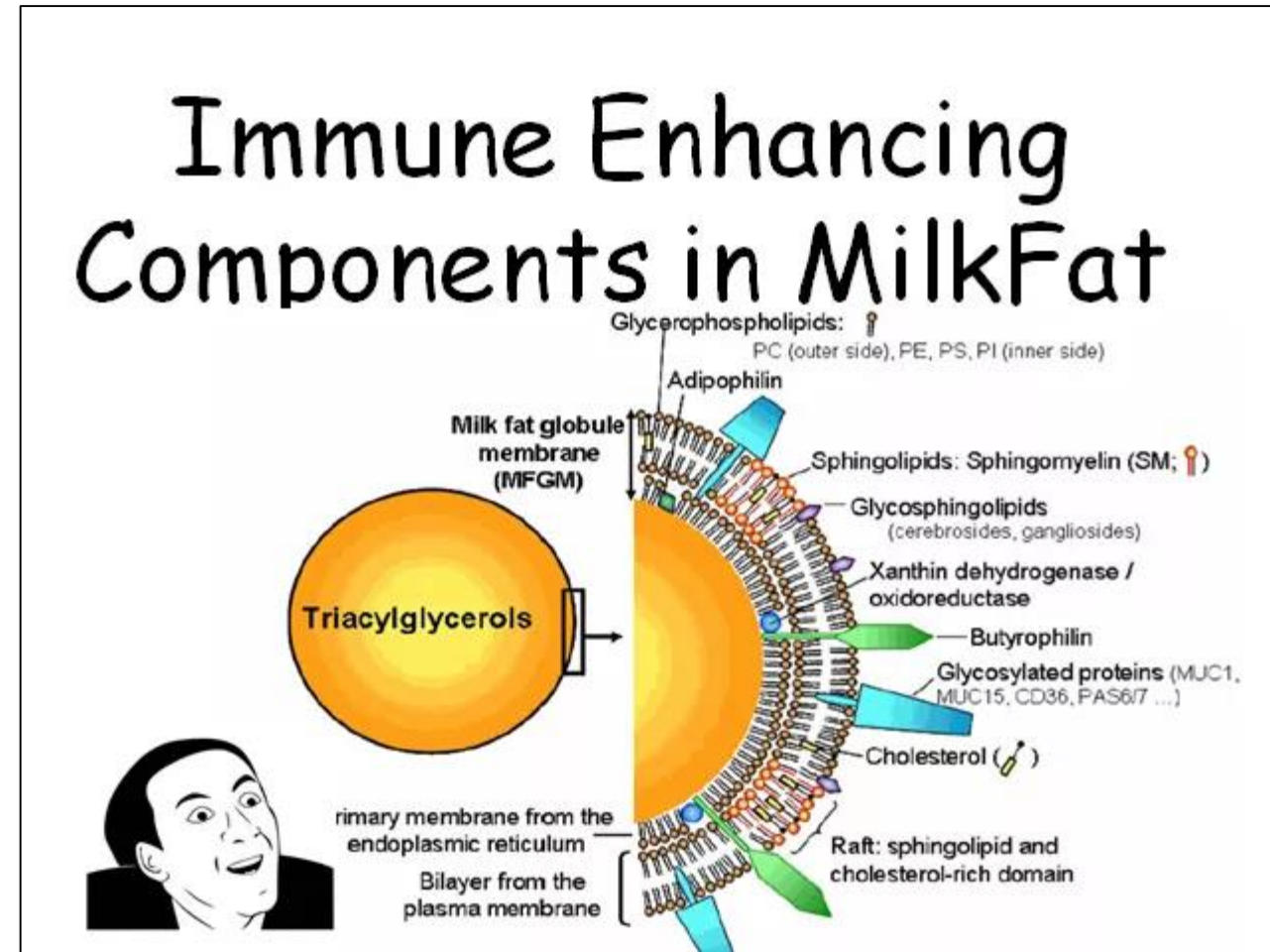
Disruptive Force #2: Federal Policy

Changes to U.S. federal policy in the last 12 months were monumental.

1) Final unravelling of the Post-WWII international order (aka the trade wars)

2) Dairy Margin Coverage – revamped farm bill dairy almost-insurance.

3) Dairy Revenue Protection – new crop insurance program for dairy producers.

Dairy Revenue Protection Insurance Has Been Quickly Adopted Across U.S.

Dairy Revenue Protection Sales As of Dec. 14, 2018

Dairy-RP Participation
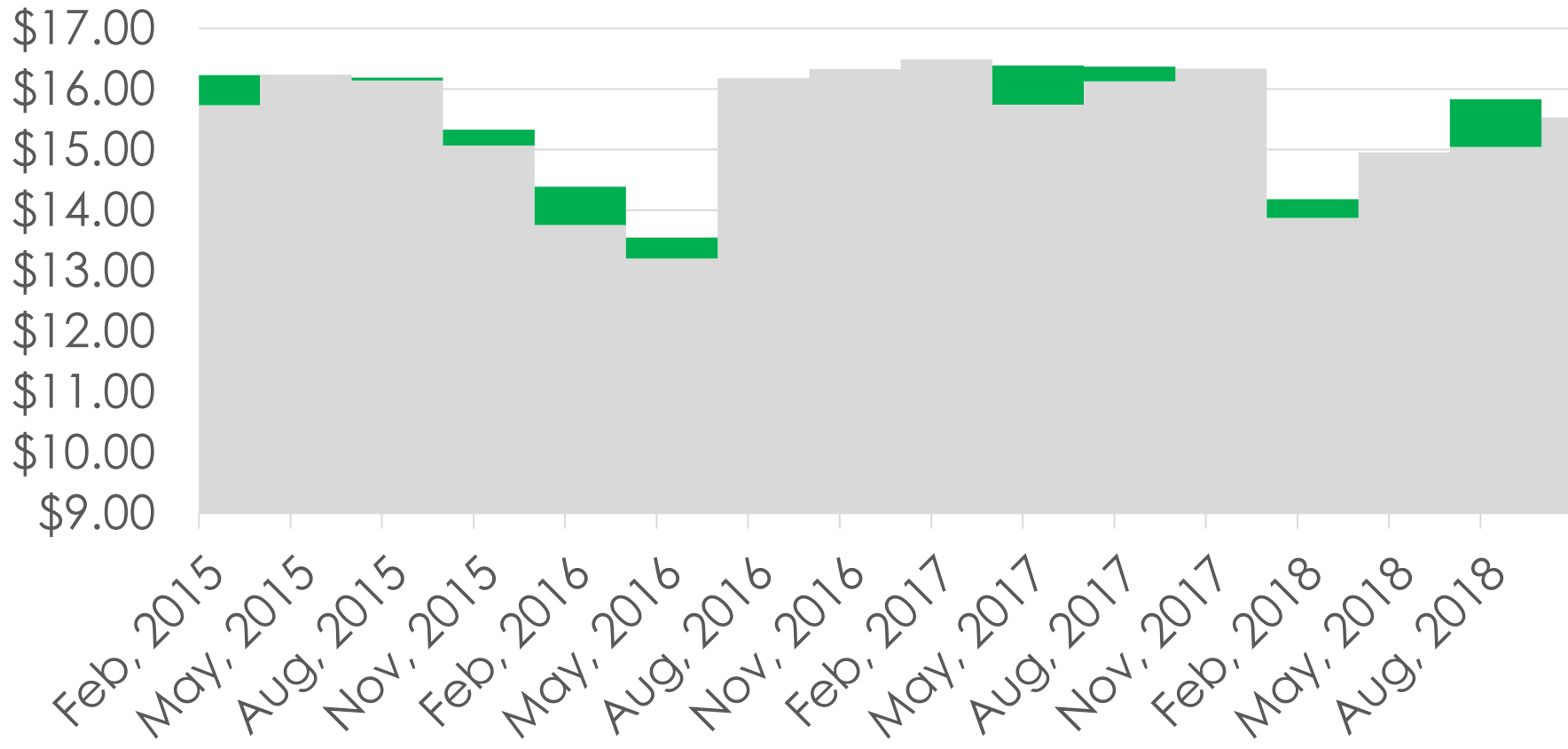
- Active Policies
- Policies With Endorsements
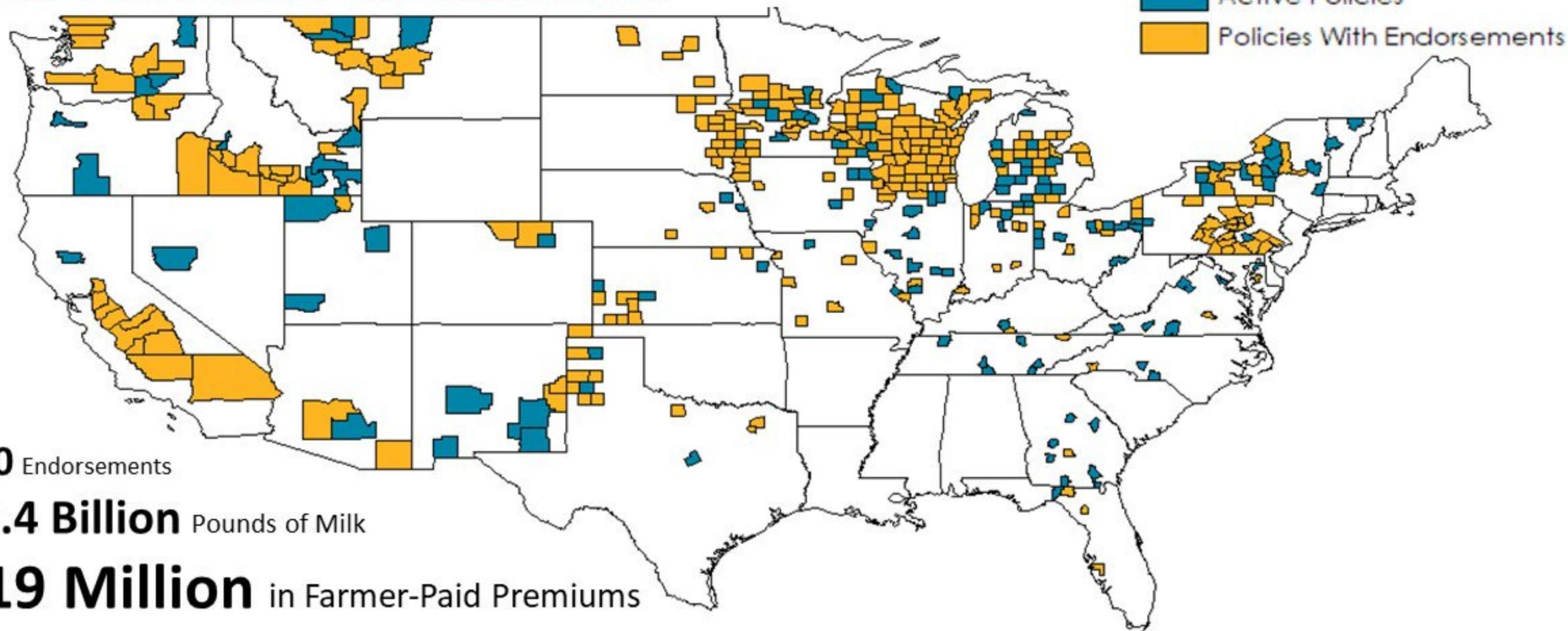
720 Endorsements

10.4 Billion Pounds of Milk

$19 Million in Farmer-Paid Premiums

Historical Performance

DRP Gross Indemnities (Assuming No Yield Shocks)
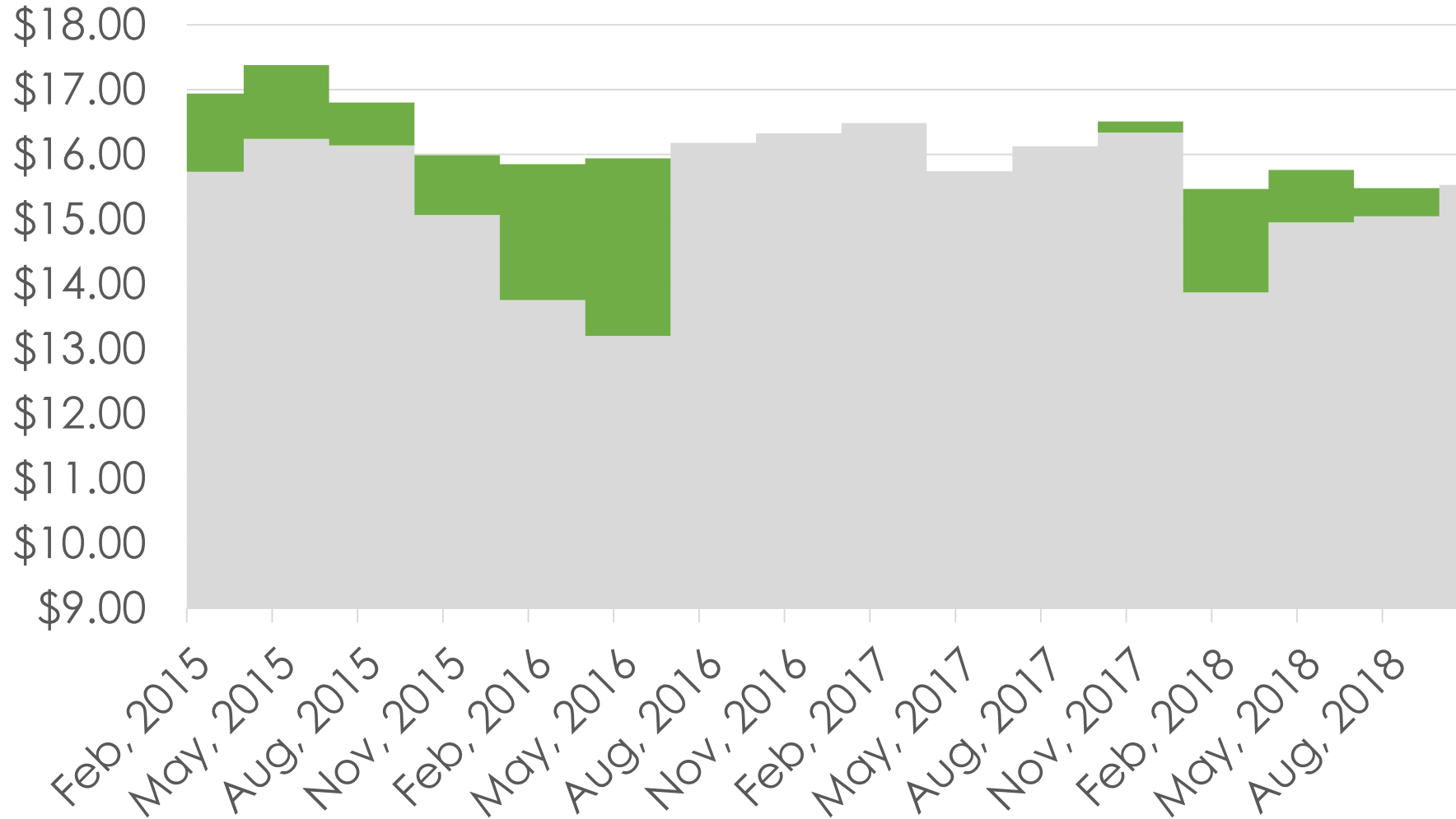Insurance Strategy: 100% Class III, 95% Coverage Level, Always
Protect Front Quarter

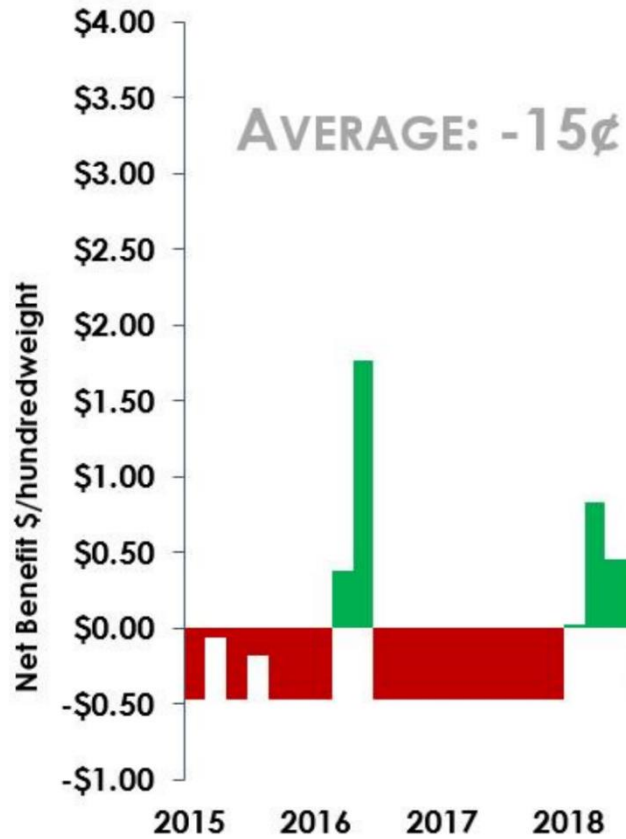DRP Gross Indemnities (Assuming No Yield Shocks)
Insurance Strategy: 100% Class III, 95% Coverage Level, Always Protect Most Distant Quarter
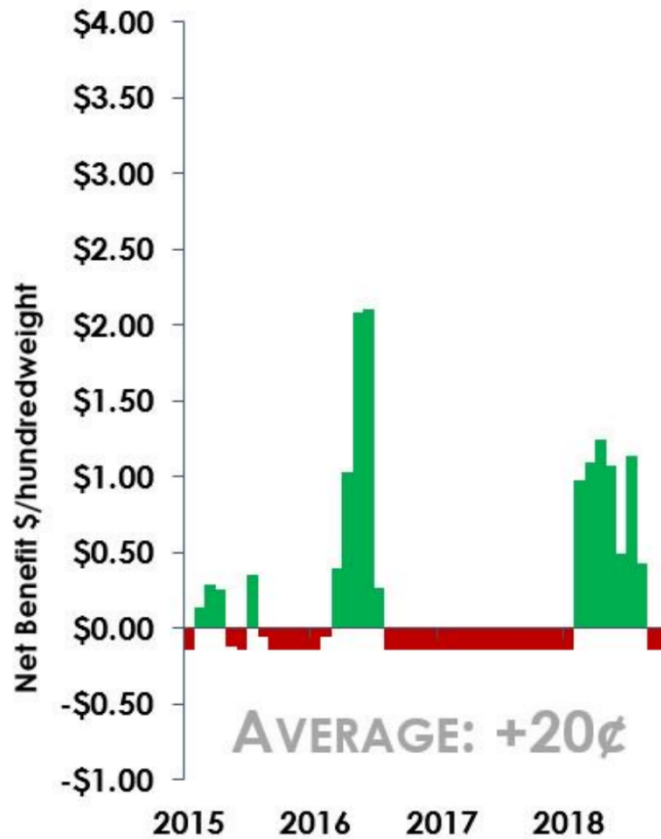
If the government was not shut down now, producers would be able to protect revenue up through June 2020!
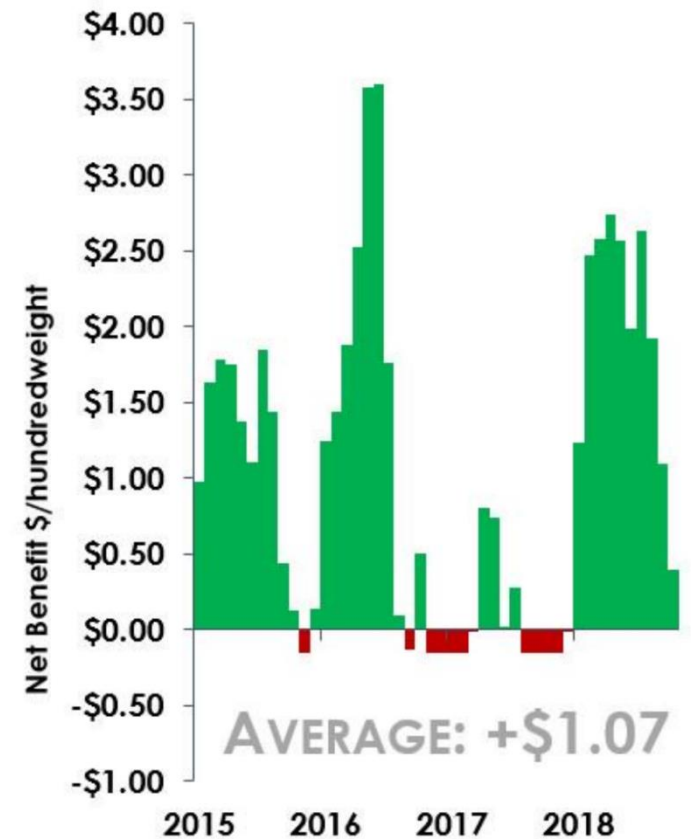
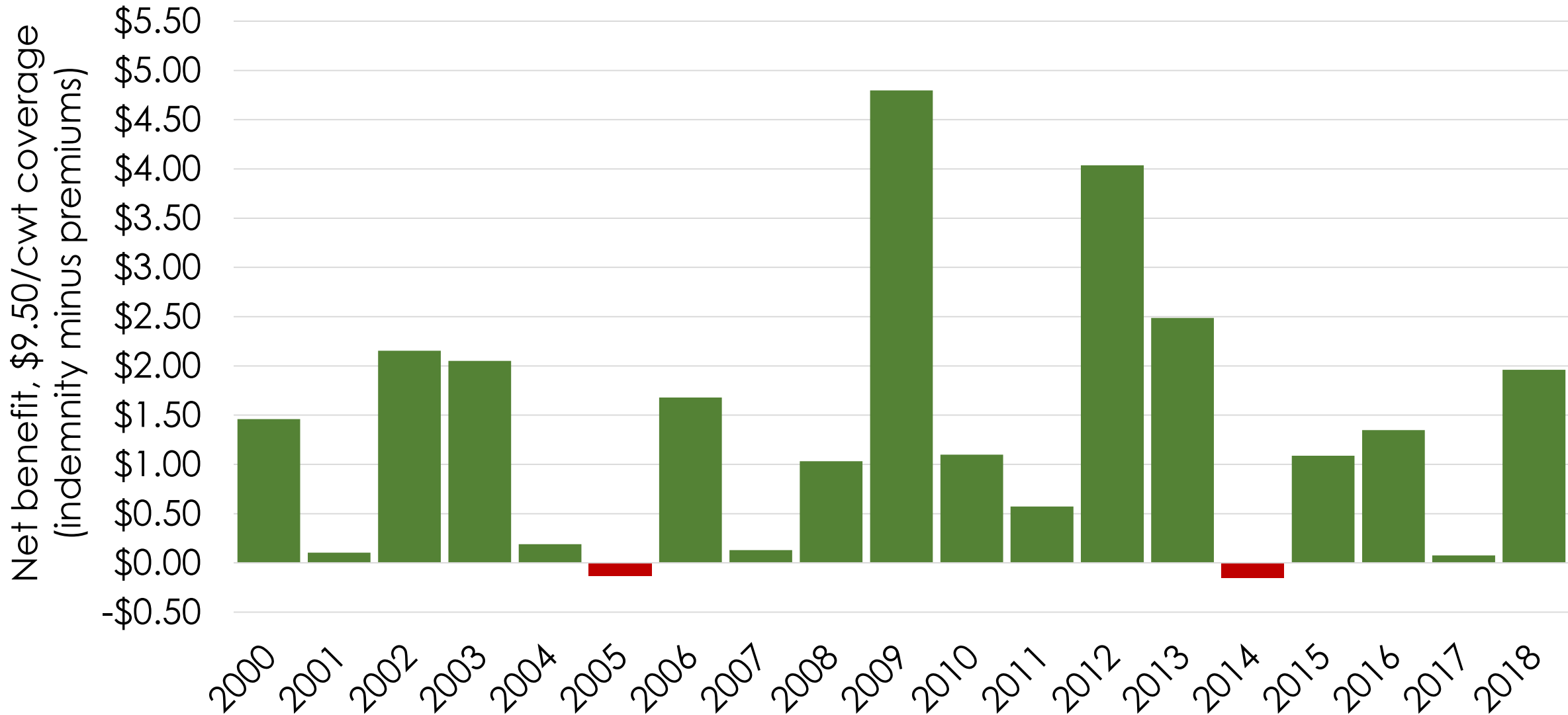# The road to Dairy Margin Coverage

ORIGINAL MPP
$8 COVERAGE
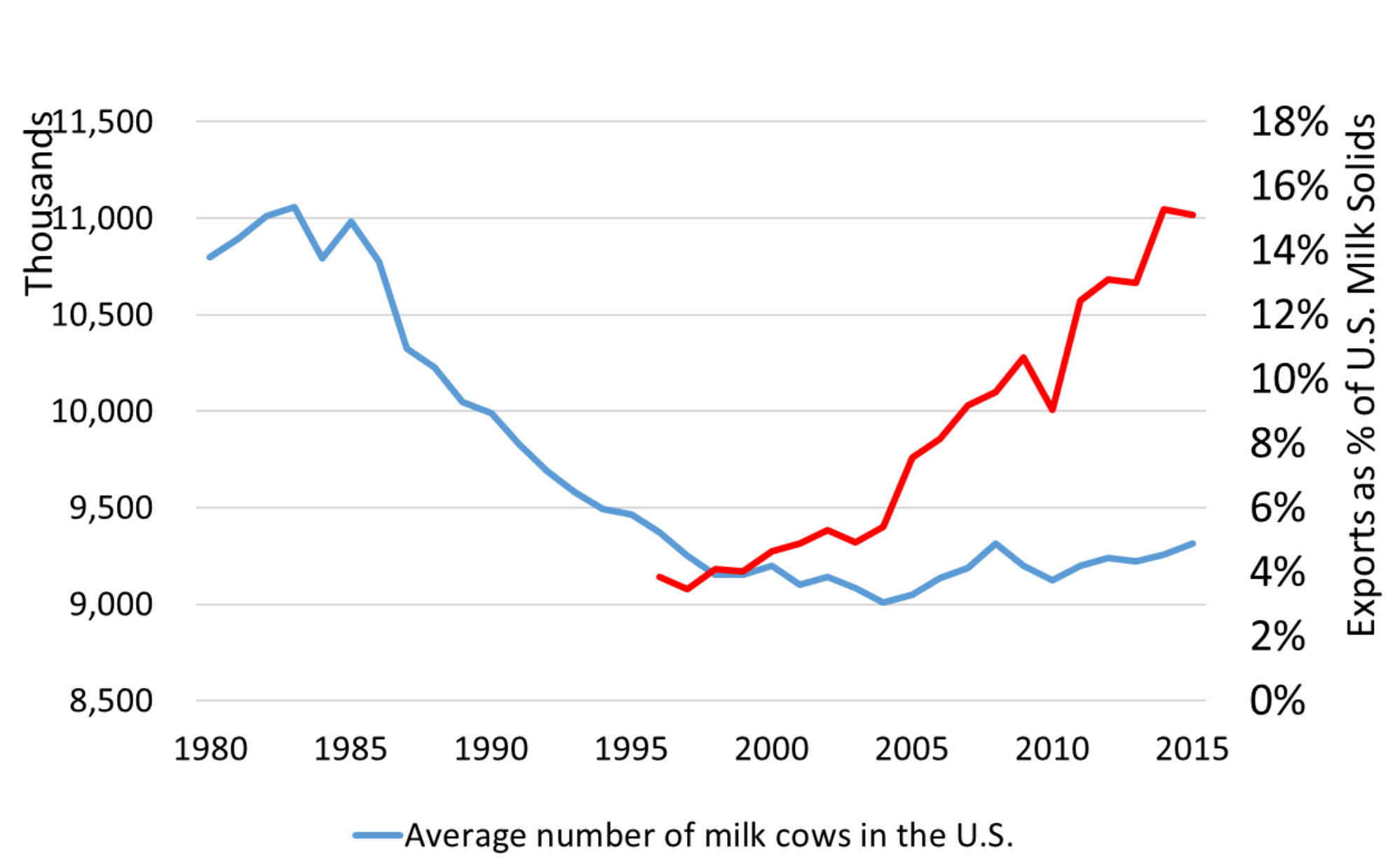
AVERAGE: -15¢

MPP (BIPARTISAN BUDGET ACT)
$8 COVERAGE

AVERAGE: +20¢

DAIRY MARGIN COVERAGE
$9.50 COVERAGE

AVERAGE: +$1.07

A safety cocoon?

Net benefit, $9.50/cwt coverage (indemnity minus premiums)

$5.50
$5.00
$4.50
$4.00
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
$0.50
$0.00
-$0.50

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

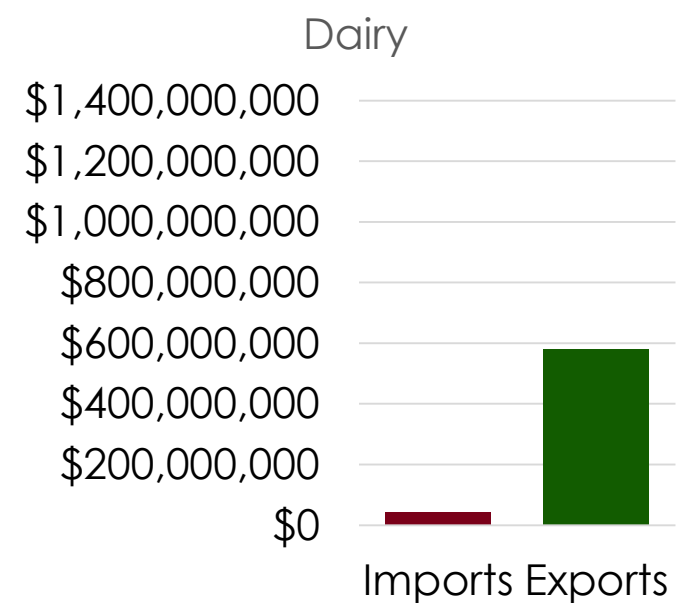# U.S. Dairy Herd Stabilized when Dairy Exports Took Off

Growth of U.S. Exports / US Milk Production Growth

Period	Milk-Fat	Skim-Solids
2007-2014	34%	79%
2014-2017	-31%	18%

Exports to Mexico and China

Dairy

Imports Exports

Dairy

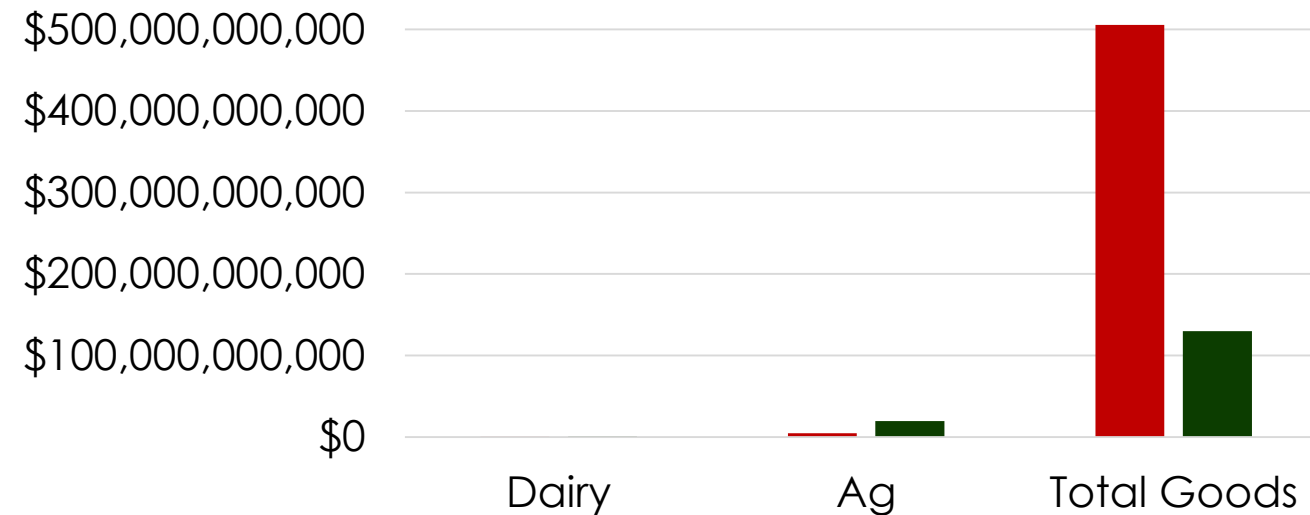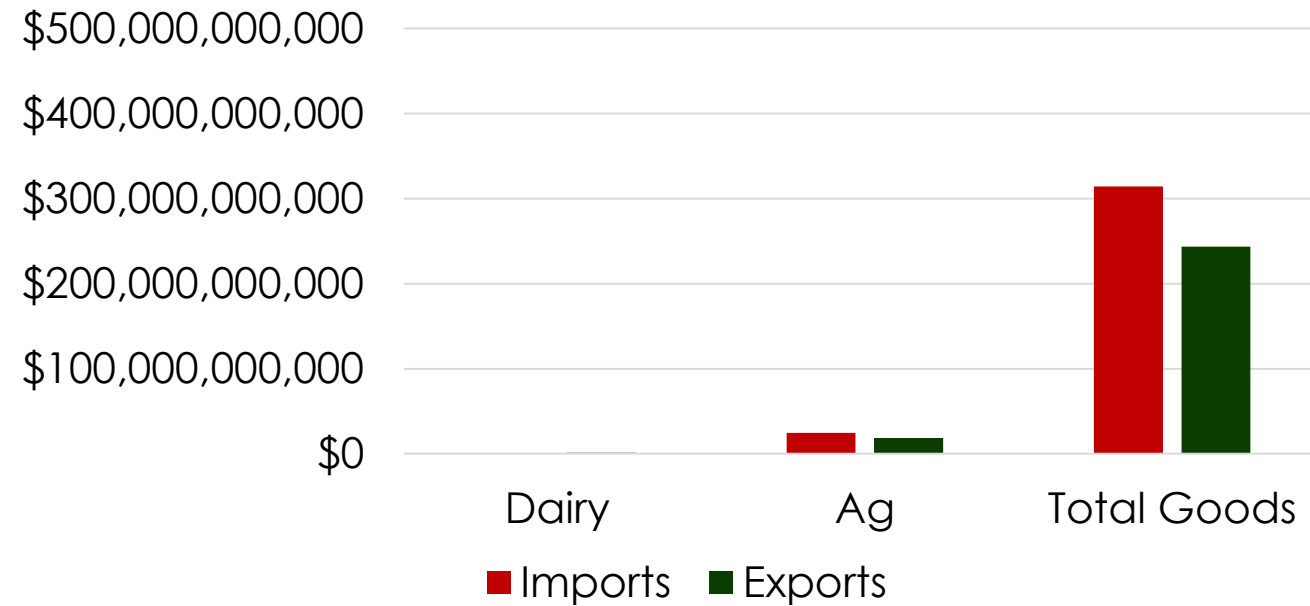Imports Exports
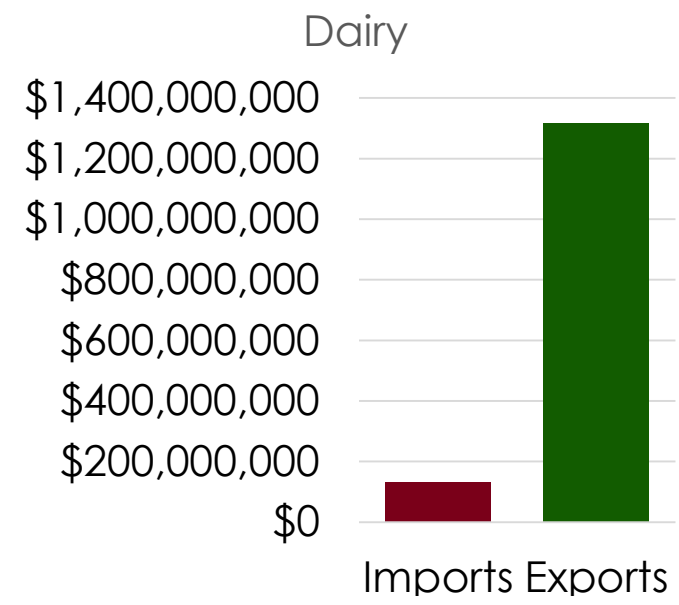
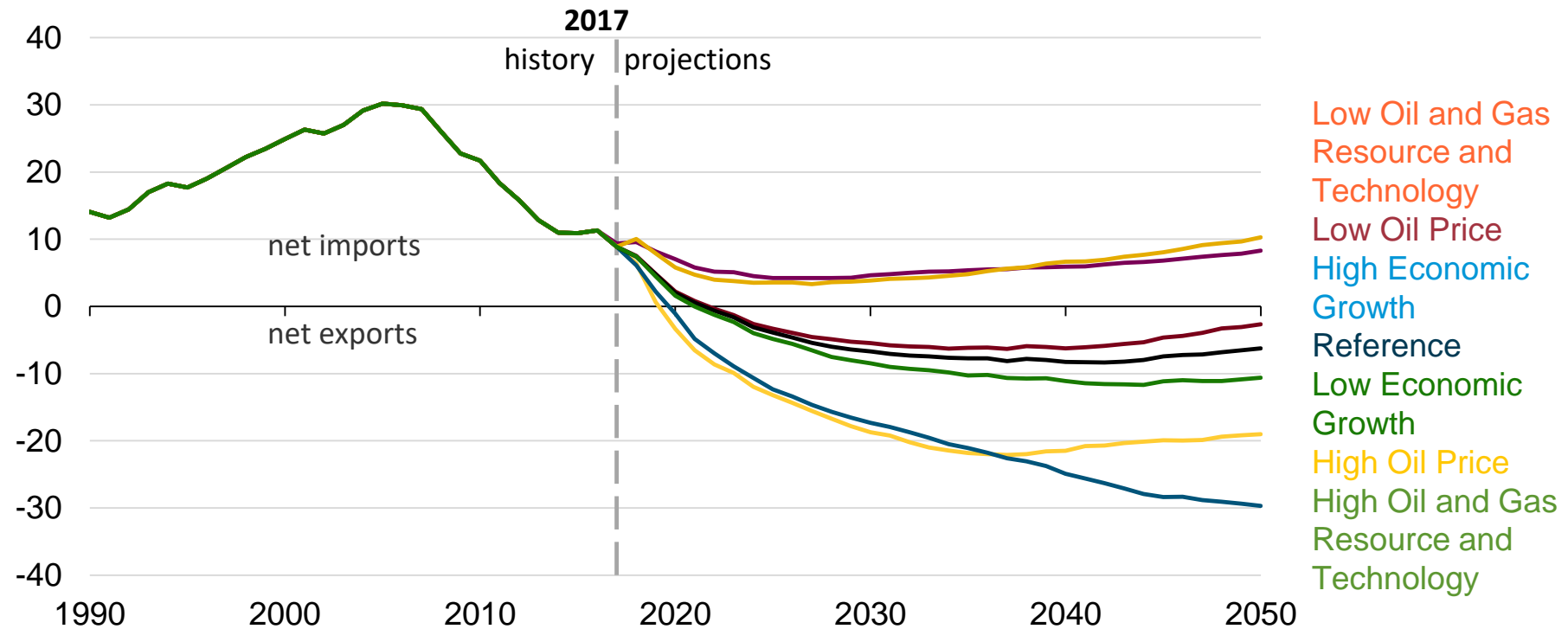# Exports to Mexico and China
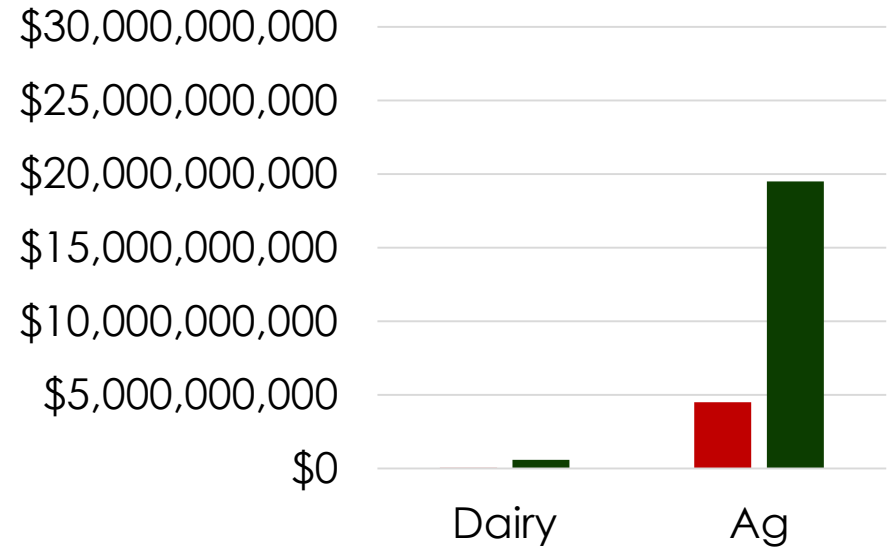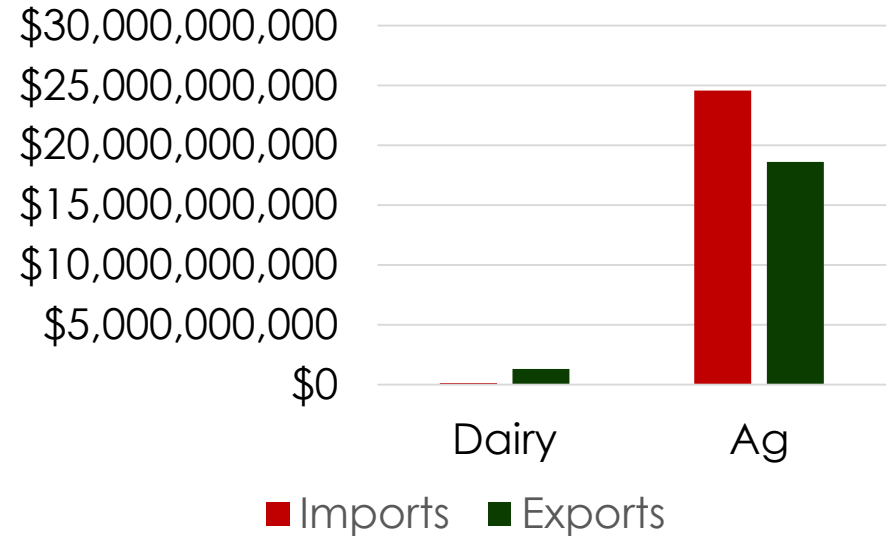
Exports to Mexico and China

Energy & food independence + robots relieving labor constraints → U.S. national interest may be perceived as inducing global *disorder*

Net energy trade

quadrillion British thermal units

So where are the dairy markets headed?

U.S. international policy: Disrupt global order to maintain dominance?
- No trade deal with China
- No longer guaranteeing safety of global supply chains
- Return of (automated) manufacturing to U.S.
- Move towards greater self-sufficiency of North America (tariff wars end once USMCA is ratified)
- Global growth slowing down in 2019/2020 as adjustment begins?
- U.S. dairy exports to Asia a collateral damage?

Dairy Policy Innovations
- Supply less price-responsive, managed more through supply chain coordination
- Consolidation slows for <200 cows farms
- Mid-size farms most fragile

Food manufacturing innovations + scientific advancements:
- Opportunity in fat, threats in protein space
- Complexity / non-replicability as selling point

Disruptive Force #3: UDM Data Platform: IT + Economics + Trust

- UDM = Understanding Data Markets

- **Wave 1: Data aggregation**
  - Global dairy and commodity markets tracking platform – 50 partners and growing fast

- **Wave 2: Primary data generation + "App store"**
  - Facilitating daily sales of Dairy Revenue Protection
  - CAFO permits on public notice
  - Micro-level trade data aggregation using machine learning

- **Wave 3: Industry collaboration & data integration:**
  - Weekly milk production, dairy products and cold storage report
  - Transparency in OTC markets