Milk Pricing and Market Dynamics

Product Development & Innovation

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Overview

- US Government Dairy Policy
- How Milk is Priced
- Calculating Milk Class Prices
- Market Dynamics
- Best Practices

Dairy Policy – History

Dairy cooperatives have been around for over 200 years, but their purpose remains unchanged – to improve the milk prices for dairy farmers.

- 1810 – First US dairy cooperative
- 1822 – Dairy cooperatives become involved in:
  - ✓ Retail fluid milk distribution
  - ✓ Whole milk distribution
  - ✓ Bargaining on milk prices and contracts
- 1920 – Dairy cooperatives attempted to replace flat pricing with classified pricing and pooling. Milk buyers had been refusing to pay one high flat price for all milk.
- 1922 – Capper Volstead Act allowed cooperatives to legally collude to establish prices and other terms of trade.
- 1920's – Voluntary classified pricing and pooling had only limited success.

Dairy Policy – History

- In 1933, emergency legislation was enacted by Congress to create federal dairy policy during the Depression. The Agricultural Adjustment Act (AAA) of 1933 established a framework for government regulation of milk prices and the terms under which milk can be sold.

- The 1933 Act became law in 1937 and the Federal Milk Marketing Order (FMMO) system began.

- Over time, the FMMO system has undergone numerous amendments and changes, but the general structure has stayed in place.

- In 2000, the Farm Bill contained Federal Order reform, which standardized provisions across orders, reduced the number of orders, and introduced end-product pricing to establish regulated minimum milk prices.

Dairy Policy – History

The Federal Milk Marketing Order system was designed for several purposes:

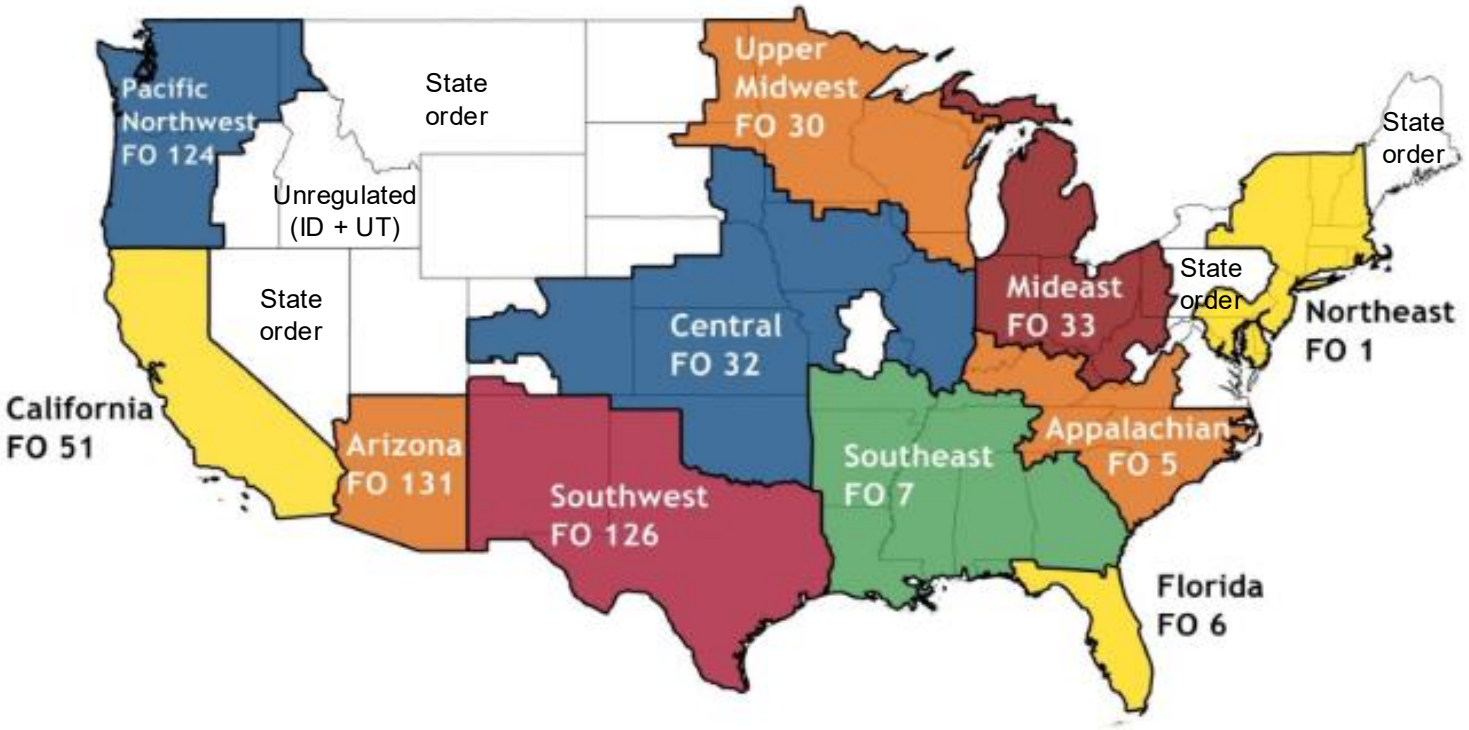
- To provide for orderly marketing of milk
- To assure reasonable prices to both dairy farmers and consumers
- To assure an adequate supply of wholesome beverage milk to consumers

The conditions before 1933 were very different than today:

- Many sellers (farmers) and few buyers (plants)
- No on-farm refrigeration
- Highly seasonal production (high in spring, low in fall)
- Poor transportation infrastructure (roads, trucks)
- Small farms hauled milk in cans to local creameries

Federal Milk Marketing Orders

The Federal Milk Marketing Order is a legal document that specifies the terms under which regulated milk handlers (cooperatives and proprietary plants) must operate when purchasing milk from dairy producers. There are 11 Federal Orders across the country and the geographical location of a Federal Order is determined by the market area of the processor, not the location of the farm.



Federal Milk Marketing Orders

- Federal Orders establish prices at two levels
  - Farm Level – based on level of various milk components and value of those components and average utilization of all milk in the market area
  - Processor Level – based on milk component levels, component values and processor's specific utilization of the milk

- Processors (Plants) that handle Grade A milk are called "handlers".
  - Fluid milk bottlers
  - Supply plants (e.g. cheese plants)
  - Dairy cooperatives

- Dairy farmers who market their milk to a handler are called "producers". Handlers are regulated, but dairy farmers are not.

- Handlers are regulated by being required to pay at least minimum class prices into a Federal Order pool. All handlers within a class pay the same base price for milk, thereby ensuring equal raw product costs.

Dairy Cooperatives

Dairy cooperatives are obligated to pay the pool prices but are not obligated to pay their dairy farm members the blend price.

- Dairy cooperatives re-blend when paying their members.
- Dairy cooperatives manufacture dairy products, sell raw milk to different handlers in different markets, and take all milk revenues generated to divide among their members.
- At the end of the year, dairy cooperatives pay out profits to their members. This is referred to as a patronage refund or the "13th check."

Milk Classification

One of the central tenets of the FMMO's is classified pricing. The FMMO's establish a minimum price that handlers have to pay each month based on how the milk is used. Each class has a different price with Class 1 being the highest value and Class 3 and 4 having lower prices for milk. The quality of the milk is the same – the FMMO system applies a different price to the milk depending on how it's used.

Classification	Products
Class 1	Fluid milk
Class 2	Ice cream, yogurt, cottage cheese, sour cream
Class 3	Cheese, whey
Class 4	Butter, milk powder

Multiple Component Pricing

All milk prices in Federal Orders are based on component values derived from product price formulas – this is called Multiple Component Pricing (MCP).

The MCP formulas require 3 inputs:

- Yield – how much product can be made from the milk
- Manufacturing cost – how much it costs to turn the milk into a commodity product. The manufacturing cost is also called the make allowance.
- End-Product price – what is the market value of the product

Note: Yield and manufacturing cost are dictated by USDA rules

And utilize a specific product price formula for each component:

(End-Product Price – Make Allowance) x Yield Per Lb of Component

Make Allowances

- In the Federal Order product price formulas, make allowances represent all costs other than the cost of farm milk and other milk inputs necessary to convert milk into a finished product.
- In addition to in-plant costs, the make allowance also includes administrative overhead, costs associated with marketing the finished product, and a value for return on investment.
- The current make allowances went into effect in June 2025:
  - Butter $0.2272/lb
  - Nonfat dry milk $0.2393/lb
  - Cheese $0.2519/lb
  - Dry whey $0.2668/lb
- Make allowance changes must go through the USDA rules making process which often includes a hearing. The process for the current make allowances began in 2023 and included updates to the manufacturing costs with more current data.

Yield Factors

- The yield factors used in Federal Orders reflect the volume of finished product from processing one pound of component. The USDA accounts for the loss of components between the farm and plant by making adjustments to the yield factors.
- Because the yield of cheese is dependent on both the protein and butterfat in milk, there are two yield factors in the cheese product price formula, one for protein, and one for butterfat, and are based on the Van Slyke Cheese Yield Formula.
- The current yield factors USDA currently uses to determine the pounds of finished product that can be made from each pound of component are:
  - Butter 1.211
  - Nonfat dry milk 0.990
  - Dry whey 1.030
  - Cheese: Protein 1.383
  - Cheese: Butterfat 1.589

Product Prices

- Class and component prices are announced for the previous month on or before the 5th of the following month, and always use all weekly dairy product price data not used for the last month's class and component prices.

- The monthly component prices, announced on or before the 5th of the following month, are used to calculate the Federal Order minimum prices for Class II butterfat and all Class III and Class IV prices.

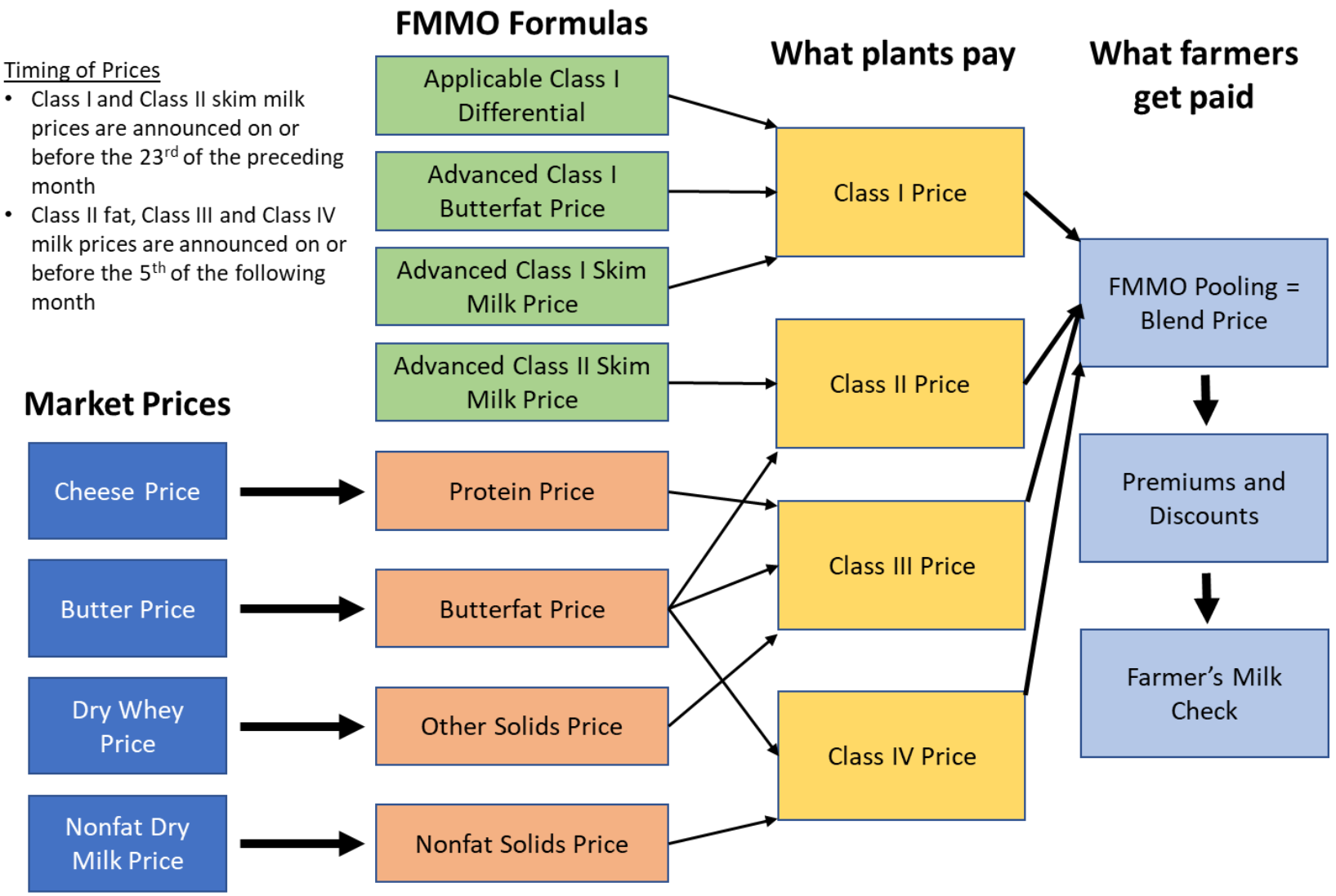
- Advanced prices and pricing factors are announced for the following month on or before the 23rd of the preceding month, and always use the two most recent weeks of dairy product price data.

- The advanced component prices, announced on or before the 23rd of the preceding month, are used to calculate the Federal Order minimum prices for Class II skim milk and all Class I prices.

Multiple Component Pricing

- There are four component price values that determine the Federal Order class milk prices, derived from commodity product prices for butter, nonfat dry milk, cheese and dry whey utilizing these components:
  - Butterfat – value is based on butter
  - Nonfat solids – value is based on nonfat dry milk
  - Protein – value is based on cheese and butter
  - Other solids – value is based on dry whey
- These component values are used to determine the minimum prices used in all Federal Orders

How Milk Pricing Works



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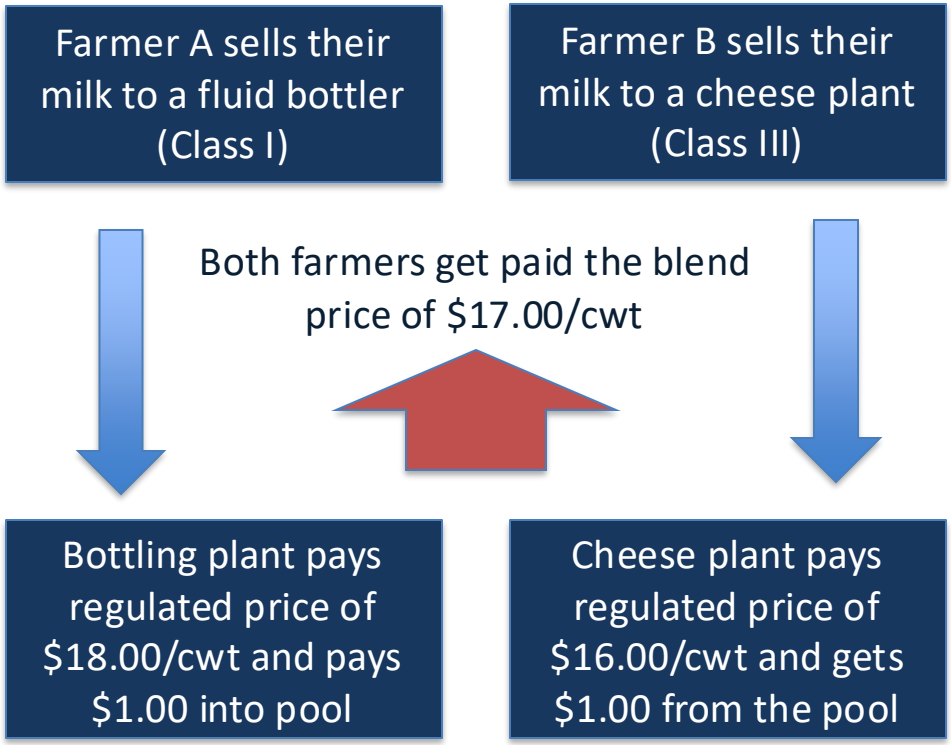
How Milk Pricing Works

The other central tenet of the FMMO's is pooling. While handlers pay different prices for milk depending on how it's utilized, the pooling concept results in all dairy farmers being paid the same base price for their milk regardless of where they sell it. The goal of pooling is to evenly distribute money from milk sales to farmers and avoid destructive competition between farms.



Simplified Pooling Example

Milk Utilization in Order	Class Price
Class I – 50%	$18.00
Class III – 50%	$16.00
Blend price	**$17.00**

Pool Obligation

Class I – pays $1.00 ($18.00-17.00)
Class III – draws $1.00 ($16.00-17.00)

Pooling

- USDA's Agricultural Marketing Services administers the Federal Order program. Each month, they announce minimum prices which milk buyers are obligated to pay.

- Cheese plants, for example, are obligated to pay the Class III price for milk they use, if they are regulated. This price is different than ice cream, fluid bottling, or milk powder plants.

- Federal Orders regulate the flow of payment between plant and producer using a pooling concept.
  - All producers in a given Order are paid roughly the same price regardless of where their individual milk goes.
  - Monthly, plants are required to account for milk usage according to class.
  - A weighted average price is computed. This price, known as the "blend" or "uniform" price is the basis for payments to dairy farmers.

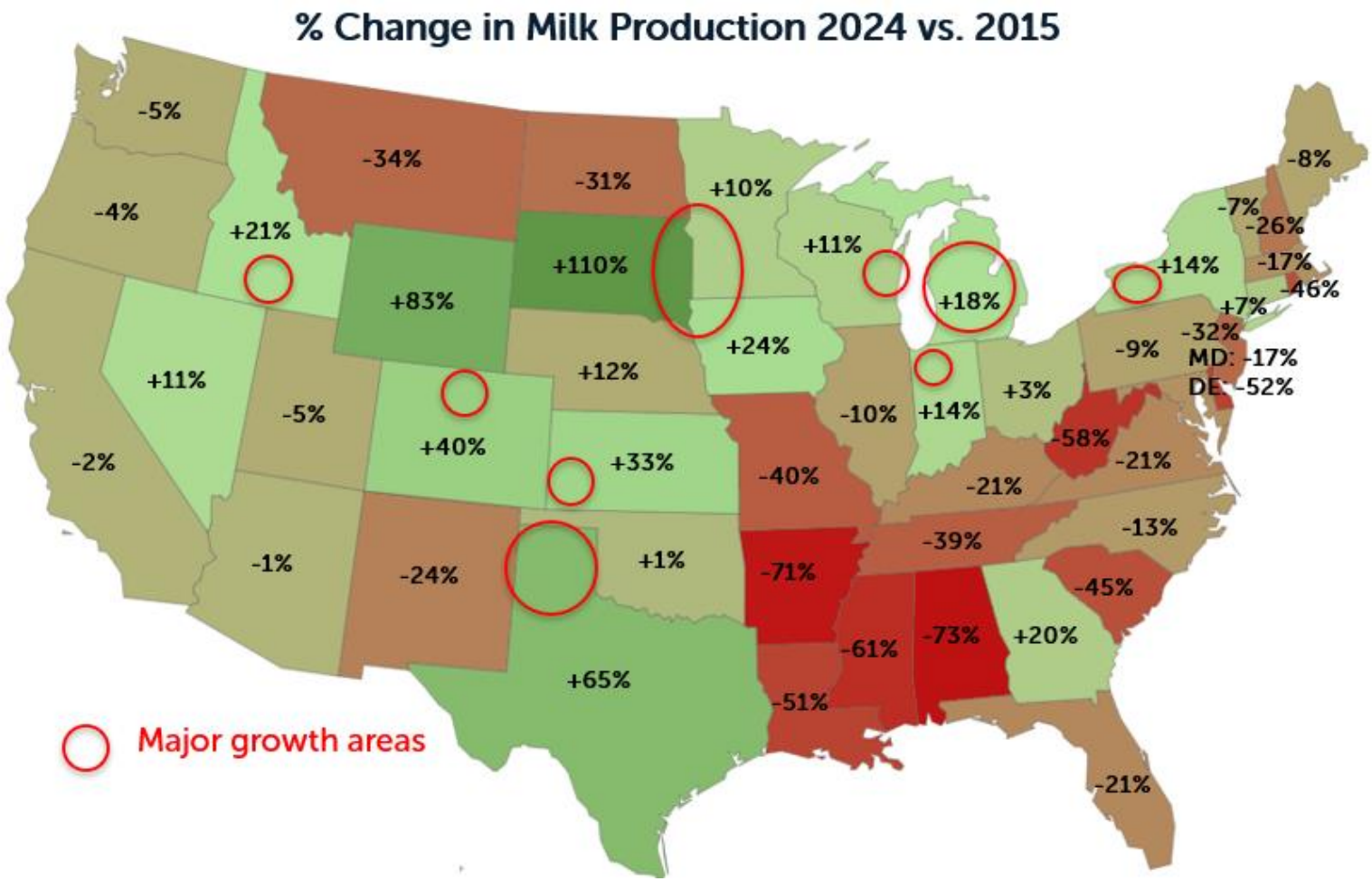
Pooling

- In 2023, 26% of all pooled milk in FMMO's was used in Class 1, 9% in Class 2, 54% in Class 3, and 11% in Class 4. However, milk utilization varies widely around the country and directly impacts the pay price for farmers. Note: only around 60% of milk was pooled (40% unregulated).
- All producers are paid on a Class III basis, $17.02 in this example.
- The difference between the blend price and Class III price is paid to producers in the form of the "Producer Price Differential" (PPD).

		Federal Order			
Class	Price	Northeast	Florida	Upper Midwest	California
1 (mover)	$19.20	28%	82%	6%	18%
2	$20.10	25%	15%	1%	5%
3	$17.02	30%	2%	92%	63%
4	$19.12	17%	1%	1%	15%
Blend Price		**$20.01**	**$23.71**	**$17.31**	**$18.21**
PPD		**$2.99**	**$6.69**	**$0.29**	**$1.19**

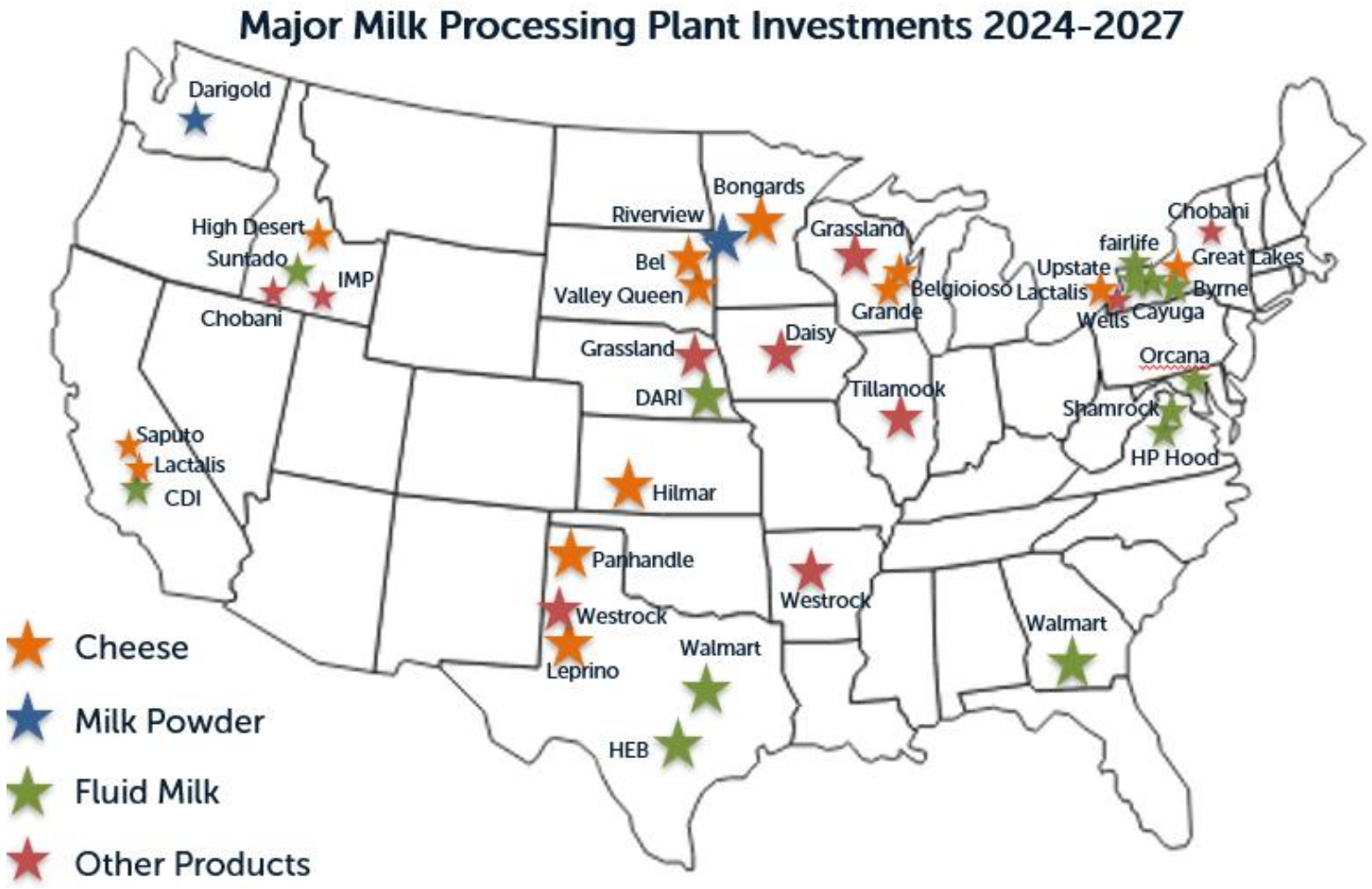
Milk Production Trends

From 2015 to 2024, US milk production grew 8%, but with most of the growth concentrated in a small number of areas – Southwest, Idaho, and the Upper Midwest.



Milk Production Trends

There is over $10 billion of new plants and expansions underway – an unprecedented amount of investment in milk processing.



Dairy Pricing Applications

Decisions dairy plants make each day

- When does a cheese plant use condensed skim milk vs. raw milk?
- When does a cheese plant use NFDM instead of milk (CSM or raw)?
- Why do class 1 fluid plants add condensed skim milk to their products?
- How are high butter/butterfat prices impacting cheese plant profitability – full fat and low fat?
- How do whey product prices impact cheese plant profitability?
- Why does a milk powder plant make SMP vs. NFDM?

Best Practices

- Dairy plants will focus on optimizing milk sourcing strategies to ensure they get the milk they need at a competitive price.
- Most plants opt for a cooperative milk supply – the cooperative then manages any pooling and balancing and charges a service fee/premium.
- Some supply contracts are 1-year in length while some can be much longer. Plants and cooperatives negotiate contracts that are favorable to both parties.
- While 5-10% of the total milk cost is represented by the negotiated premium, 90-95% of the total cost is driven by commodity market prices.
- Companies that have risk from rising or falling prices can use a variety of tools to better manage their margins – futures, options, swaps, forward contracts, and inventory builds.