

AFBF FEDERAL MILK MARKETING ORDER WORKING GROUP
MILK PRICING PROVISIONS
MAY 2019

Issue:

In the U.S. milk is priced based on end-product pricing formulas whereby USDA mandatorily surveys the prices paid to wholesalers for dairy commodities of cheese, butter, nonfat dry milk and dry whey – meeting certain specifications -- and then uses the weighted average of these sales price to determine the regulated minimum price due to dairy farmers pooling milk on a Federal Milk Marketing Order.

Non-cooperative owned milk processing plants are required to pay these regulated minimum prices to farmers unless prices are agreed upon in a forward pricing agreement. Cooperative-owned plants may pay lower prices due to re-blending provisions provided to cooperatives under the Agricultural Marketing Agreement Act.

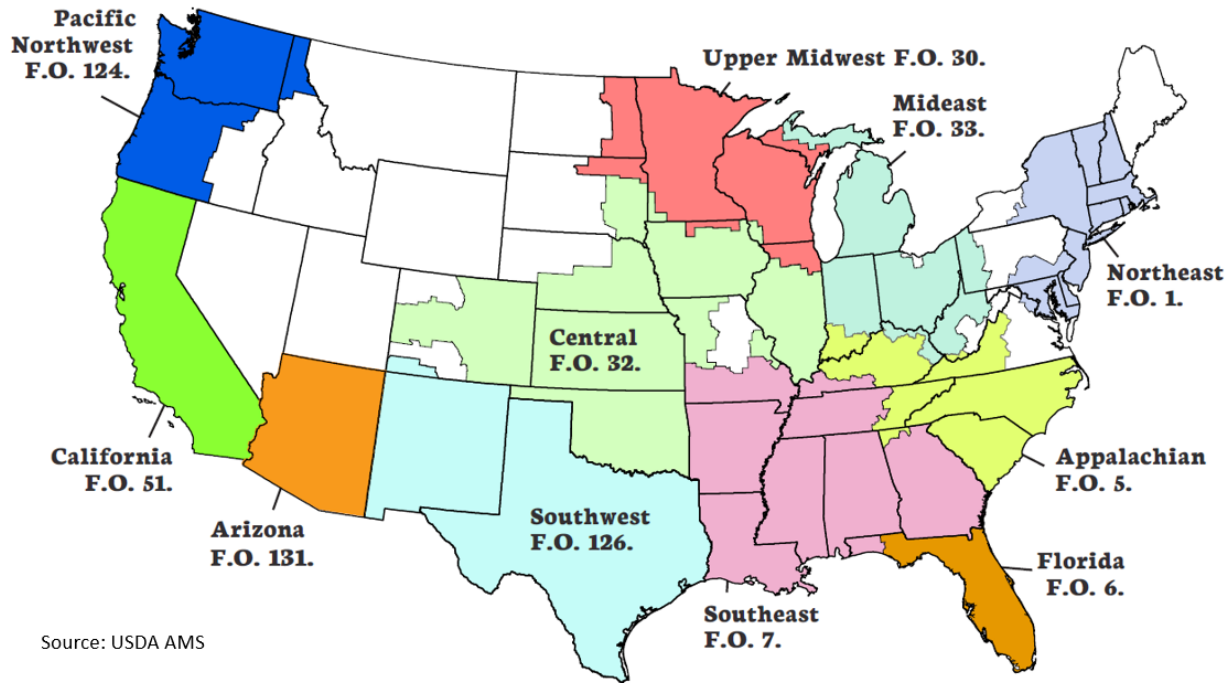
These milk pricing surveys do not include prices paid by plants for other dairy commodities and may mute the competitive market signals for the value of milk or milk components – especially given that cooperatives may re-blend balancing costs into the farmer’s milk check.

Additionally, these end-product pricing formulas contain make allowances and yield factors that change the final regulated minimum milk price due to a dairy farmer or their cooperative.

Background:

Milk pricing regulations in Federal Milk Marketing Orders are among the most complicated commodity pricing regimes across all of agriculture. Milk pricing regulations in place today stem from pricing reform in 2000 that introduced end-product pricing formulas, by which regulated milk handlers are required to pay producers based on their utilization of the milk. Producers in a marketing area (Figure 1) share in the proceeds of all milk sales “pooled” on an order, and the regulated minimum milk price reflects the end-product pricing formulas and the farm’s share of the revenue sharing pool. For nearly 20 years there were only 10 milk marketing orders, but in September 2018 California was introduced into the FMMO system as a result of the 2014 farm bill ([2014 Farm Bill: Key Factors to Consider with a California Federal Milk Marketing Order](#)). Today, there are 11 FMMOs in the United States.

Figure 1. Federal Milk Marketing Orders

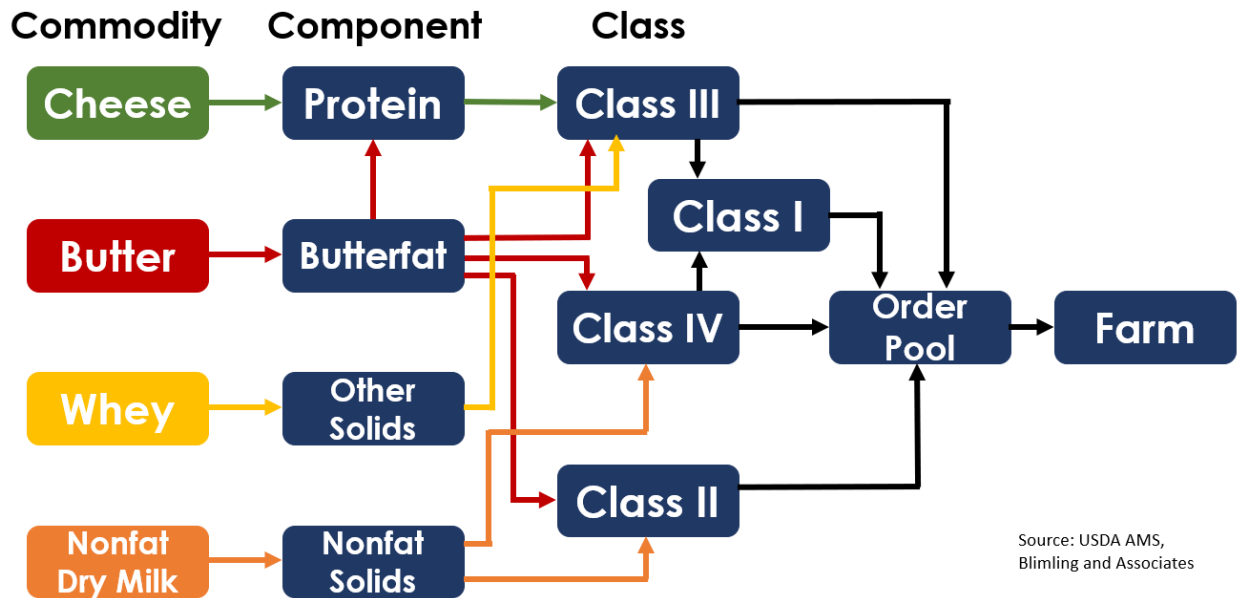


In FMMO milk pricing, we often talk about the [three C's](#): commodity, component and class. The different class prices are derived from various component values, which are in turn derived from several commodity prices.

There are several steps involved in determining farm-level milk prices for farmers pooling on a FMMO. First, each week, through mandatory price reporting, dairy manufacturers report to USDA the value and sales volume of wholesale butter, cheddar cheese, nonfat dry milk and dry whey.

Next, these prices are used to determine two-week and monthly weighted average commodity values. The two-week prices are used to determine advanced pricing factors for pricing fluid milk products. The monthly weighted average prices are used to determine both the component value and the classified value of milk. Both the two-week and monthly prices utilize end-product pricing formulas (described below) to determine the classified value. A flow chart of this end-product milk pricing system is depicted in Figure 2, and as demonstrated the cheese price is used to determine the protein value, which is then used to determine the classified value for milk used to produce cheese.

Figure 2. Commodity Value Flows in Pricing



Classified Pricing

A key part of the classified end-product pricing system is that the milk has a different value depending on how it is used. There are four classes of milk based on the end use of that milk:

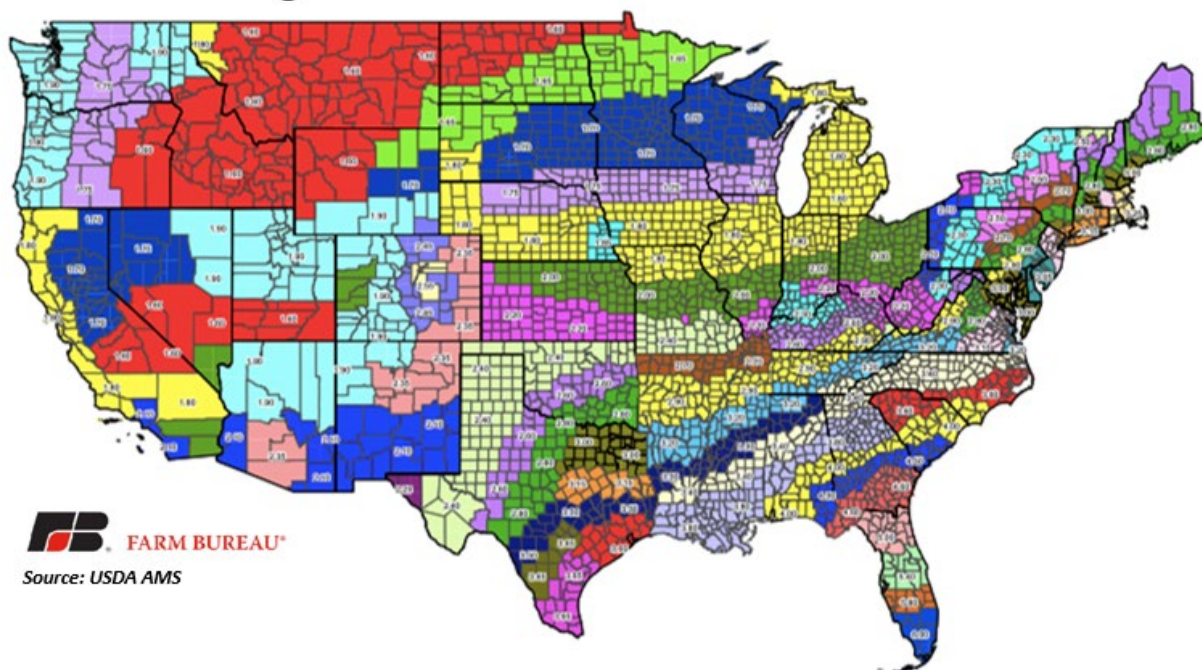
- Class I: fluid milk for drinking, including eggnog and buttermilk ([Price Formula](#))
- Class II: soft products like ice cream, yogurt and cottage cheese ([Price Formula](#))
- Class III: hard cheeses, cream cheese and whey ([Price Formula](#))
- Class IV: butter and dry products such as milk powder/NFDM ([Price Formula](#))

Class I fluid milk typically receives the highest price under the FMMO system. The rationale for Class I milk prices being the highest value dates to an early economic argument that demand for fluid milk was inelastic, meaning a higher price wouldn't significantly change demand for milk. As a result, fluid milk carried a higher price differential that was used help balance fluid milk supply and demand and cover transportation costs. (The prolonged decline in fluid milk consumption suggests this economic argument may need reexamination, e.g., [Trends in Beverage Milk Consumption](#)).

Until recently, Class I prices were calculated by using the higher of Class III and IV advanced pricing factors. As of May 1, 2019, the Class I skim milk price formula is the average of the monthly Class III and IV advanced skim pricing factors plus 74 cents hundredweight and including the applicable adjusted Class I differential, [Proposed Changes to Fluid Milk Pricing](#).

Class I prices share a common base value but will vary by location. This is due to the Class I differential, which varies across the country due to specific supply and demand fundamentals of beverage milk in each region. [Class I price differentials range](#) from a low of \$1.60 per hundredweight in the Upper Midwest to \$6 per hundredweight in Florida, Figure 3. The manufacturing value of milk in all other classes is the same across the U.S.

Figure 3. FMMO Class I Price Structure



These classified milk values are ultimately used in revenue sharing pools to determine the regulated minimum price that is due to dairy farmers pooling on an order. There are two types of milk pooling schemes: multiple component pricing and skim-fat pricing.

Determining Component Values

The primary idea behind multiple component pricing is to arrive at a milk price that is derived from the end products made from the milk. On the face of it, the basic formula for component pricing is very simple:

$$\text{Component Value} = \text{Yield} \times (\text{Commodity Price} - \text{Make Allowance})$$

The yield is how much of the commodity can be made from the milk, the commodity price is the value of the end product – based on the USDA surveys -- and the make allowance is the manufacturing cost of processing the milk into the end commodity. These component values are then used to determine the minimum prices for the orders through the classified pricing system. Federal orders specify four different components: butterfat, which derives its value from the price of butter; nonfat solids, which derive their value from the nonfat dry milk price; protein, which derives its value from cheese

and butter prices; and other solids, which derive their value from the dry whey price. In the component value formula, the yield and make allowances are fixed and can only be changed through a rulemaking proceeding, while the commodity prices change monthly.

Make allowances are processing credits designed to reflect the average processing costs associated with producing cheeses, butter, nonfat dry milk (NFDM) or dry whey. Yield factors represent the volume of the finished commodity produced from processing one pound of the component. Table 1 highlights the make allowances and yield factors used in the end-product pricing formulas.

Table 1. Make Allowances and Yield Factors by Dairy Commodity

Commodity	Make Allowance	Yield Factor
Butter	\$0.1715/lb	1.211
Nonfat Dry Milk	\$0.1678/lb	0.990
Dry Whey	\$0.1991/lb	1.030
Cheese	\$0.2003/lb	1.383

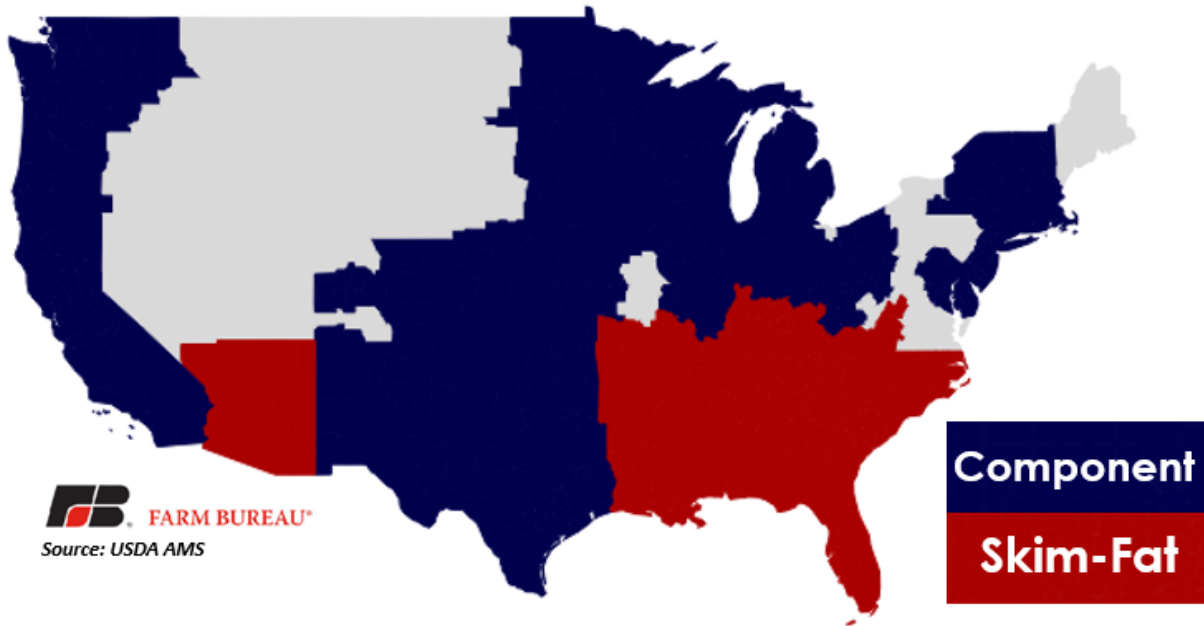
The commodity prices used in the component value formulas are based on wholesale commodity prices collected weekly by USDA's Agricultural Marketing Service. Each week, large manufacturers are required to report data on sales transactions for cheddar cheese (40-pound blocks and 500-pound barrels), dry whey, nonfat dry milk and butter to be aggregated and published in the National Dairy Products Sales Report.

Another characteristic of the classified pricing system is timing. AMS announces the advanced Class I price and the advanced Class II skim price, as well as the necessary information to calculate them, on or before the 23rd of the preceding month. For example, the January 2020 Class I beverage milk price will be announced in December 2019.

AMS announces the commodity prices, and therefore the Class II fat, Class III and IV prices on or before the 5th of the following month. You can't value protein and butterfat for a certain month until you know what the cheese and butter prices were in that month.

These component and classified values are used in the final step of milk pricing: revenue sharing pools. There are two types of revenue sharing pools: skim-fat pricing and multiple component pricing. In both cases the handler value of milk is determined by summing the value of all milk pooled on the order by class of utilization and the producer value is determined based on the pooling method.

**Figure 4. FMMO Pricing Regulations:
Component and Skim-Fat Orders**



Skim-Fat Pricing Pool

In four of the FMMOs, Appalachian, Arizona, Florida and Southeast, the milk pricing regulations are based on butterfat and skim pricing and do not incorporate proteins. In this pricing framework the handler's value of milk is based on the classified skim and fat value of milk, whereby the Class I and II skim and fat values are higher value due to the differentials.

The producer value of milk in a skim-fat pool is then the weighted average value of butterfat and skim. These prices are referred to as the uniform fat and skim values. An example of a pool calculation is available [here](#). Under skim-fat pricing, prices are set based on the fat content in the milk. The uniform butterfat and skim prices are announced after the monthly pooling process.

Since the formula bases the price on the fat content of the milk, it categorizes everything else as skim; as a result, the water contained in the skim portion receives the same price per pound as non-fat solids. Producers with a higher milkfat content will have a higher minimum regulated milk price – holding the location adjustment constant.

Component Pricing Pool

While the skim-fat pools determine the handler value of milk based on the classified values of skim and fat, in a component pricing order the handler's value of milk is based on their utilization of butterfat, protein, non-fat solids and other solids, but also include the Class I and II differentials.

The producer value of the milk is then based on the components in the pool – and are based on the announced component prices for fat, protein and other solids. The equity payment from the pool is called the producer price differential and is defined as the difference between the handler value and the component value, divided by total pounds in the pool. An example of a pool calculation including the PPD can be found [here](#). Producers pooling on a component pricing order will have a higher regulated minimum price based on the solids content of their milk.

Farm Bureau Policy:

We Support:

- An expanded role for markets and private enterprise in establishing prices for all classes of milk;
- A competitive pay price;
- Federal Milk Marketing Orders 5 and 7 should be based on multiple component pricing instead of skim/fat pricing;
- Modifications in the Federal Milk Marketing Order structure, formulas and price classes used to compute milk prices in order to better reflect current market conditions and enhance transparency and take into account the regional differences in the cost of milk production and incorporate multiple component pricing into all classes of milk; an economic analysis prior to any major revisions to the number of milk classes or Federal Milk Marketing Orders. This analysis should include economic impacts to the dairy industry and farmer income; and
- Improving price discovery through mandatory daily electronic reporting of more common dairy products including reporting and auditing of prices and inventories. The number of plants being surveyed should be increased as well as the penalties for inaccurate dairy reporting;