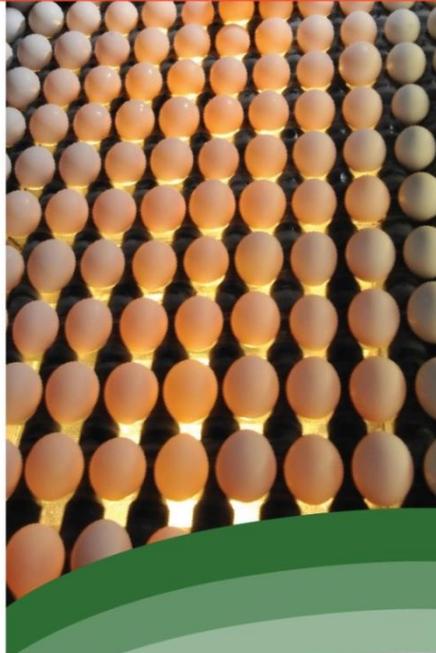




United States Department of Agriculture

Agricultural Marketing Service

Creating Opportunities for American Farmers and Businesses





Agricultural Marketing Service

Creating Opportunities for American Farmers and Businesses

Handler Training Module 6: Price Formulas

Educational materials
prepared by USDA AMS Staff

Considerations: Price Formulas

Content

- AMS Survey
 - National Dairy Products Sales Report
- Component Formulas
- Class Price Formulas
- Class I Price Surface

AMS Survey

Each month, the FMMO system sets minimum prices for all four classes of milk.

Dairy handlers pay these prices based on the classification of the products they produce.

Dairy Products Mandatory Reporting Program (DPMRP)

- USDA's Agricultural Marketing Service (AMS) conducts weekly surveys of dairy processors to determine the nationwide, market-based prices of key dairy products such as butter, cheese, whey, and NFDM.
- **Covered in the Federal Order Language:**
 - §1000.50 Class prices, component prices, and advanced pricing factors
- **More information at:**
 - www.ams.usda.gov/rules-regulations/mmr/dmr



National Dairy Products Sales Report

United States Department of Agriculture

Agricultural Marketing Service

Dairy Programs

Market Information Branch

DPMRP - 0321

June 13, 2018

National Dairy Products Sales Report Highlights

Butter prices received for 25 kilogram and 68 pound boxes meeting United States Department of Agriculture (USDA) Grade AA standards averaged \$2.38 per pound for the week ending June 9, 2018. The United States (US) price per pound decreased 2.6 cents from the previous week.

Cheddar Cheese prices received for US 40 pound blocks averaged \$1.65 per pound for the week ending June 9, 2018. The price per pound decreased 1.4 cents from the previous week. The price for US 500 pound barrels adjusted to 38 percent moisture averaged \$1.60 per pound, decreased 1.5 cents from the previous week.

Dry Whey prices received for bag, tote, and tanker sales meeting USDA Extra Grade standards averaged 29.8 cents per pound for the week ending June 9, 2018. The US price per pound increased 1.3 cents from the previous week.

Nonfat Dry Milk prices received for bag, tote, and tanker sales meeting USDA Extra Grade or United States Public Health Service (USPHS) Grade A standards averaged 82.8 cents per pound for the week ending June 9, 2018. The US price per pound decreased 0.8 cents from the previous week.

National Dairy Products Sales Report for Weeks Ending: 5/12/2018 - 6/9/2018

Butter Prices and Sales

United States	12-May	19-May	26-May	2-Jun	9-Jun
	(dollars per pound)				
Weighted Price	*2.3288	*2.3292	2.3795	2.4039	2.3784
	(pounds)				
Sales	*6,482,529	*7,249,258	*4,403,957	5,427,445	6,236,725

*Revised

Component Formulas

The formulas used to calculate the estimated prices of milk components all conform to the same general format:

Component Price/lb =

(Dairy Product Price/lb – Make Allowance/lb) X Yield

Component Formulas (con't.)

- The make allowance is the estimated cost per pound to manufacturer the finished product (excluding the cost of the raw milk).
- The yield indicates how many pounds of final product can be produced from a pound of that particular milk component.

Component Formulas

Butterfat Price - §1000.50(I)

- The butterfat price per pound, rounded to the nearest one-hundredth cent, shall be the U.S. average NASS [AMS] AA butter survey price reported by the Department for the month less 17.15 cents, with the result multiplied by 1.211

Component Formulas

Nonfat Solids Price - \$1000.50(m)

- The nonfat solids price per pound, rounded to the nearest one-hundredth cent, shall be the U.S. average NASS [AMS] nonfat dry milk survey price reported by the Department for the month less 16.78 cents and multiplying the result by 0.99

Component Formulas

Protein Price - §1000.50 (n)

- The protein price per pound, rounded to the nearest one-hundredth cent, shall be computed as follows:
 - (1) Compute a weighted average of the amounts described in paragraphs (n)(1)(i) and (ii) of this section:
 - (i) The U.S. average NASS [AMS] survey price for 40-lb. block cheese reported by the Department for the month; and

Component Formulas

Protein Price (cont'd.)

- (ii) The U.S. average NASS [AMS] survey price for 500-pound barrel cheddar cheese (38 percent moisture) reported by the Department for the month plus 3 cents;
- (2) Subtract 20.03 cents from the price computed pursuant to paragraph (n)(1) of this section and multiply the result by 1.383;

Component Formulas

Protein Price (cont'd.)

- (3) Add to the amount computed pursuant to paragraph (n)(2) of this section an amount computed as follows:
 - (i) Subtract 20.03 cents from the price computed pursuant to paragraph (n)(1) of this section and multiply the result by 1.572; and

Component Formulas

Protein Price (cont'd.)

- (ii) Subtract 0.9 times the butterfat price computed pursuant to paragraph (l) of this section from the amount computed pursuant to paragraph (n)(3)(i) of this section; and
- (iii) Multiply the amount computed pursuant to paragraph (n)(3)(ii) of this section by 1.17

Component Formulas

Other Solids Price - §1000.50(o)

- The other solids price per pound, rounded to the nearest one-hundredth cent, shall be the U.S. average NASS [AMS] dry whey survey price reported by the Department for the month minus 19.91 cents, with the result multiplied by 1.03

Class Price Formulas

- **Covered in the Federal Order Language:**
 - §1000.50 Class prices, component prices, and advanced pricing factors
- **More information at:**
 - www.ams.usda.gov/rules-regulations/mmr/dmr

Class Price Timing

- By the twenty-third day of every month, each Market Administrator announces the Advanced Class I and II prices applicable to the following month.
- By the fifth day of every month, each Market Administrator will announce the prior month's minimum prices for each of the four classes of milk.
- ❖ Release dates will be on Wednesday. If the 23rd and 5th price announcements do not fall on a Wednesday, the price release will be on the preceding Wednesday, adjusted for Federal holidays.

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Calculating Class I Price



$$\begin{array}{l}
 \text{Advanced Component Price} \\
 \text{Average of Advanced Class III and Class IV Skim Milk Pricing Factor (\$/cwt)}
 \end{array}
 +
 \begin{array}{l}
 \text{Differential} \\
 \$0.74 (\$/cwt)
 \end{array}
 =
 \text{Base Class I Skim Milk Price (\$/cwt)}$$

$$\begin{array}{l}
 \text{Advanced Commodity Price} \\
 \text{Advanced Butter Price (\$/lb)}
 \end{array}
 -
 \begin{array}{l}
 \text{Make Allowance} \\
 \$0.1715 (\$/lb)
 \end{array}
 \times
 \begin{array}{l}
 \text{Yield} \\
 1.211 (\text{lb butter/ lb butterfat})
 \end{array}
 =
 \begin{array}{l}
 \text{Advanced Component Price} \\
 \text{Advanced Butterfat Pricing Factor (\$/lb)}
 \end{array}$$

$$\begin{array}{l}
 \text{Calculated in Step 1} \\
 \text{Base Class I Skim Milk Price (\$/cwt)}
 \end{array}
 \times
 \begin{array}{l}
 \text{Yield} \\
 0.965 (\text{cwt skim/ cwt milk})
 \end{array}
 +
 \begin{array}{l}
 \text{Calculated in Step 2} \\
 \text{Advanced Butterfat Pricing Factor (\$/lb)}
 \end{array}
 \times
 \begin{array}{l}
 \text{Yield} \\
 3.5 (\text{lb butterfat/ cwt milk})
 \end{array}
 =
 \begin{array}{l}
 \text{Advanced Class Price} \\
 \text{Base Class I Price (\$/cwt)}
 \end{array}$$

Class Price Formulas

Class I Price - §1000.50

(a) Class I Price. The Class I price per hundredweight, rounded to the nearest cent, shall be 0.965 times the Class I skim milk price plus 3.5 times the Class I butterfat price.

(b) Class I skim milk price. The Class I skim milk price per hundredweight shall be the adjusted Class I differential specified in §1000.52, plus the adjustment to Class I prices specified in §1005.51(b), §1006.51(b) and §1007.51(b), plus the average of the advanced pricing factors computed in paragraph (q)(1) or (2) of this section plus \$0.74 per hundredweight.

Class Price Formulas

Class I Price (cont'd.)

(c) Class I butterfat price. The Class I butterfat price per pound shall be the adjusted Class I differential specified in §1000.52 divided by 100, plus the adjustments to Class I prices specified in §1005.51(b), §1006.51(b) and §1007.51(b) divided by 100, plus the advanced butterfat price computed in paragraph (q)(3) of this section.

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Calculating Class II Price

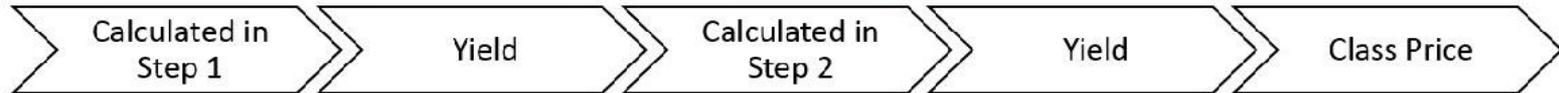
* Price announced on or before the 23rd of the preceding month
 ** Price announced on or before the 5th of the following month
<https://www.ams.usda.gov/market-news/dairy>



1
$$\begin{matrix} \text{*Advanced} \\ \text{Class IV Skim} \\ \text{Milk Pricing} \\ \text{Factor} \\ (\$/\text{cwt}) \end{matrix} + \$0.70 (\$/\text{cwt}) = \begin{matrix} \text{*Class II} \\ \text{Skim Milk} \\ \text{Price} \\ (\$/\text{cwt}) \end{matrix}$$



2
$$\begin{matrix} \text{**Butterfat} \\ \text{Price} \\ (\$/\text{lb}) \end{matrix} + \$0.007 (\$/\text{lb}) = \begin{matrix} \text{**Class II} \\ \text{Butterfat} \\ \text{Price} \\ (\$/\text{lb}) \end{matrix}$$



3
$$\begin{matrix} \text{*Class II} \\ \text{Skim Milk} \\ \text{Price} \\ (\$/\text{cwt}) \end{matrix} \times 0.965 (\text{cwt skim} / \text{cwt milk}) + \begin{matrix} \text{**Class II} \\ \text{Butterfat} \\ \text{Price} \\ (\$/\text{lb}) \end{matrix} \times 3.5 (\text{lb butterfat} / \text{cwt milk}) = \begin{matrix} \text{**Class II} \\ \text{Price} \\ (\$/\text{cwt}) \end{matrix}$$

- cwt = hundredweight, 100 pounds.
- Class prices are announced as dollars per hundredweight.
- 0.965 represents standard assumption of 96.5 pounds of skim in 100 pounds of milk.

Class Price Formulas

Class II Price - \$1000.50

(d) Class II price. The Class II price per hundredweight, rounded to the nearest cent, shall be 0.965 times the Class II skim milk price plus 3.5 times the Class II butterfat price.

Class Price Formulas

Class II Price (cont'd.)

(e) Class II skim milk price. The Class II skim milk price per hundredweight shall be the advanced Class IV skim milk price computed in paragraph (q)(2) of this section plus 70 cents.

(f) Class II nonfat solids price. The Class II nonfat solids price per pound, rounded to the nearest one-hundredth cent, shall be the Class II skim milk price divided by 9.

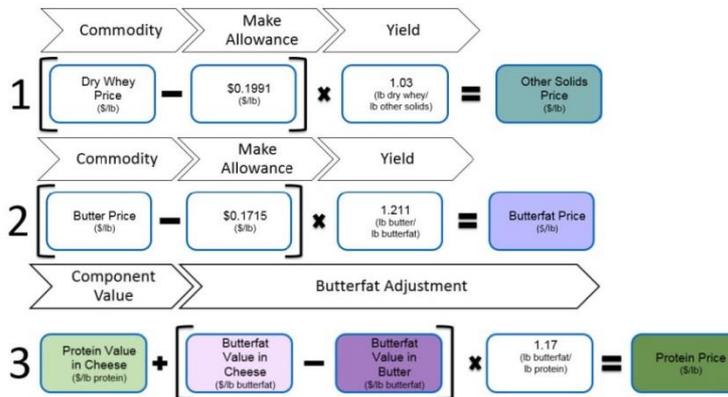
(g) Class II butterfat price. The Class II butterfat price per pound shall be the butterfat price plus \$0.007.

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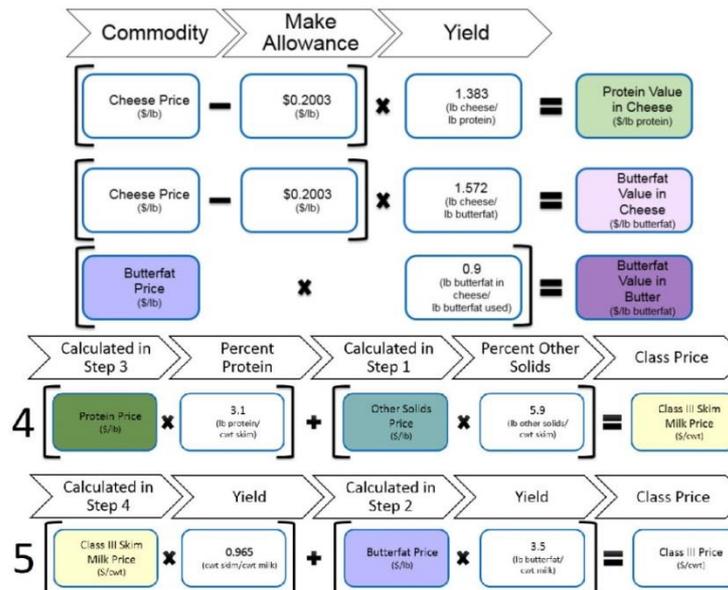


All prices announced on or before the 5th of the following month
<https://www.ams.usda.gov/market-news/dairy>

Calculating Class III Price



Third step expanded



- cwt = hundredweight, 100 pounds.
- Class prices are announced as dollars per hundredweights.
- 0.965 represents standard assumption of 96.5 pounds of skim in 100 pounds of milk.

Class Price Formulas

Class III Price - \$1000.50

(h) Class III price. The Class III price per hundredweight, rounded to the nearest cent, shall be 0.965 times the Class III skim milk price plus 3.5 times the butterfat price.

(i) Class III skim milk price. The Class III skim milk price per hundredweight, rounded to the nearest cent, shall be the protein price per pound times 3.1 plus the other solids price per pound times 5.9.

Agricultural Marketing Service



Calculating Class IV Price

All prices announced on or before the 5th of the following month

<https://www.ams.usda.gov/market-news/dairy>

1

Commodity	Make Allowance	Yield	
Butter Price (\$/lb)	-\$0.1715 (\$/lb)	1.211 (lb butter/lb butterfat)	= Butterfat Price (\$/lb)

2

Commodity	Make Allowance	Yield	
Nonfat Dry Milk Price (\$/lb)	-\$0.1678 (\$/lb)	0.99 (lb nonfat solids/lb NFDN)	= Nonfat Solids Price (\$/lb)

3

Calculated in Step 2	Yield	
Nonfat Solids Price (\$/lb)	× 9 (lb nonfat solids/cwt skim)	= Class IV Skim Milk Price (\$/cwt)

4

Calculated in Step 3	Yield	Calculated in Step 1	Yield	Class Price
Class IV Skim Milk Price (\$/cwt)	× 0.965 (cwt skim/cwt milk)	+	Butterfat Price (\$/lb) × 3.5 (lb butterfat/cwt milk)	= Class IV Price (\$/cwt)

- cwt = hundredweight, 100 pounds.
- Class prices are announced as dollars per hundredweight.
- 0.965 represents standard assumption of 96.5 pounds of skim in 100 pounds of milk.

Class Price Formulas

Class IV Price - \$1000.50

(j) Class IV price. The Class IV price per hundredweight, rounded to the nearest cent, shall be 0.965 times the Class IV skim milk price plus 3.5 times the butterfat price.

(k) Class IV skim milk price. The Class IV skim milk price per hundredweight, rounded to the nearest cent, shall be the nonfat solids price per pound times 9.

Class I Price Surface

- Within each Federal Milk Order, the Class I milk price is determined by adding the appropriate Class I price differential to the base price.
- Within each federal order, one county is designated as the **principal pricing point** and serves as a reference point for defining Class I price differentials.

For more information see §1000.52.

Class I Price Surface

- The Class I differential shall be the differential established for Los Angeles County, California, which is reported in §1000.52.
- The Class I price shall be the price computed pursuant to §1000.50(a) for Los Angeles County, California.

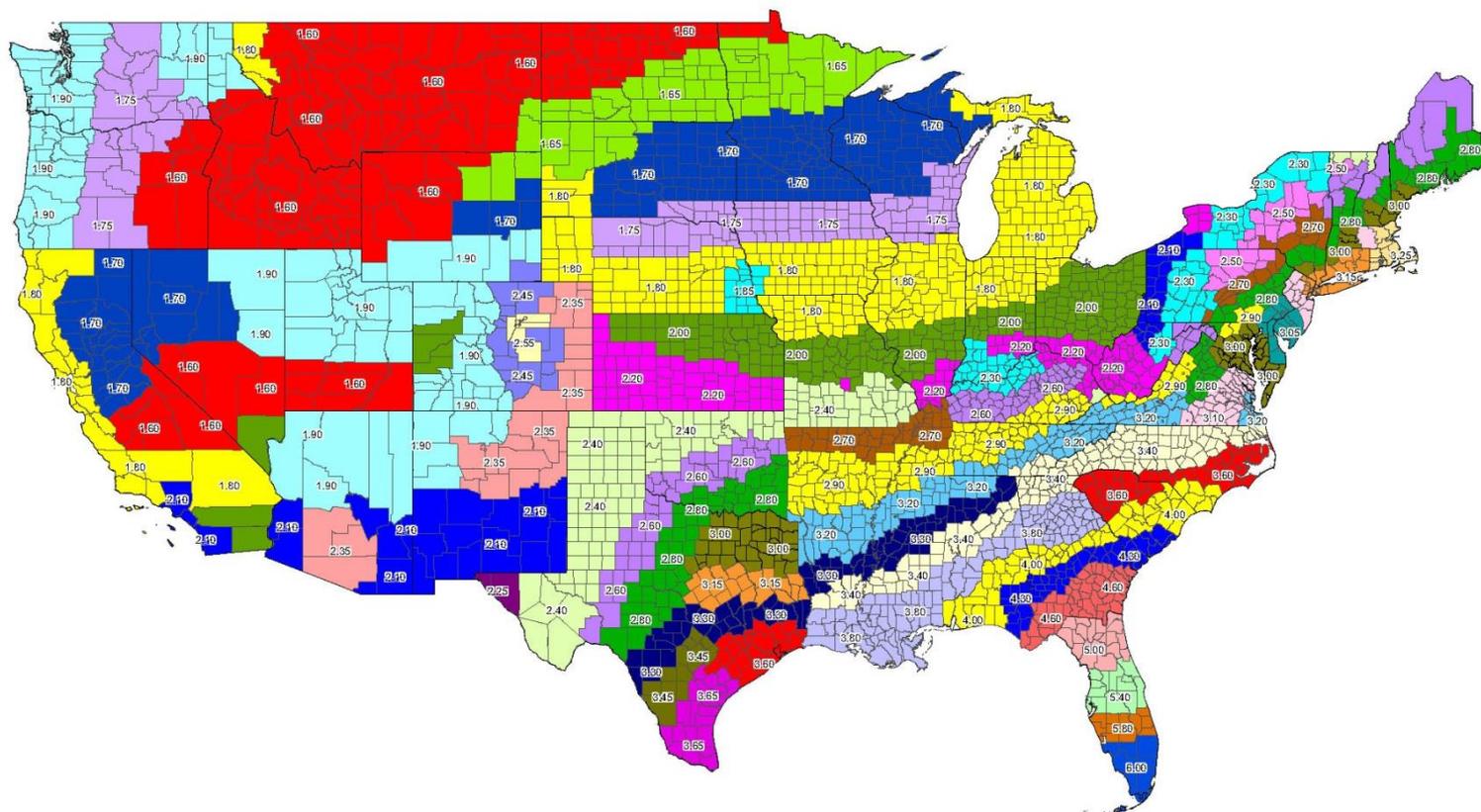
For more information see §1000.52.

Class I Price Surface

County/parish/city	State	FIPS Code	Class I Differential Adjusted for Location
ALAMEDA	CA	06001	1.80
ALPINE	CA	06003	1.70
AMADOR	CA	06005	1.70
BUTTE	CA	06007	1.70
CALAVERAS	CA	06009	1.70
COLUSA	CA	06011	1.70
CONTRA COSTA	CA	06013	1.80
DEL NORTE	CA	06015	1.80
EL DORADO	CA	06017	1.70
FRESNO	CA	06019	1.60
GLENN	CA	06021	1.70
HUMBOLDT	CA	06023	1.80
IMPERIAL	CA	06025	2.00
INYO	CA	06027	1.60
KERN	CA	06029	1.80
KINGS	CA	06031	1.60
LAKE	CA	06033	1.80
LASSEN	CA	06035	1.70
LOS ANGELES	CA	06037	2.10
MADERA	CA	06039	1.60

For more information see §1000.52.

Federal Milk Marketing Order Class I Price Structure



Effective May 1, 2008