

# **Milk Prices In Nevada**

## **Introduction**

There are many issues that Northern Nevada Dairy farmers currently face, including the pricing of milk that is exported to the state of California. Most Northern Nevada Dairy farmers belong to the Western Area of Dairy Farmers of America (DFA) based in Corona, California. DFA is a milk marketing cooperative serving California, Nevada, and Hawaii, with over 436 members who produce over 5.5 billion pounds of milk annually (Dairy Farmers of America, Inc. 2001). Milk distributed to California from Nevada passes through DFA and is delivered to either Model Dairy in Nevada or one of DFA's California manufacturing facilities.

A few years back, Nevada Dairy farmers chose to have Nevada milk prices calculated the same way as Northern California. The Nevada Dairy Commission (NDC) sets the price of milk in Nevada the first of every month. The Nevada State Legislature created the NDC in 1955 to promote production and marketing of milk, monitor trade practices, ensure a continuous supply of milk, and to protect the health and welfare of the people of Nevada (Nevada Dairy Commission 2001). However, when Model Dairy reaches maximum capacity; excess milk is shipped to California and added to the pool.

## **Milk Classes**

The NDC sets prices for class I, II, and III milk. Class I milk is produced and marketed as fluid milk. Class I milk has the highest requirement of raw nutrition of all the classes of milk and therefore receives the highest price of the three classes of milk. The price for class I milk is calculated monthly, whereas classes II and III milk are calculated bi-monthly. Class II milk is used to produce yogurt, frozen dairy products, heavy cream, cottage cheese, and sterilized

products. Class III milk is used to produce cheese. Since there is no cheese plant in northern Nevada, all of Northern Nevada’s milk is distributed as class I or II milk within the state.

## Milk Price Calculation

### Class I

The following example explains how Class I prices are calculated by NDC for Northern Nevada dairy producers. Table 1 shows Class I milk prices calculated for August 2000.

Calculations in step one show how the monthly prices for Class I fat are derived for Table 1.

The Chicago Mercantile Exchange (CME) is a commodity exchange market where futures and options contracts on butter, cheese, and solid nonfat dry milk (SNF) are traded. Nevada milk pricing relies heavily on the commodity prices for butter, cheese, and SNF. The commodity prices are used to calculate fat and SNF prices that are then used to calculate the hundredweight price for milk. The formulas below help visualize where CME prices are used and how much they would affect the price of milk. The CME commodity prices for butter, cheese, and SNF may be located on the Internet at <http://usda.mannlib.cornell.edu/reports/nassr/price/dairy/>. The commodity prices for butter, cheese, and SNF are a monthly estimate taken between the 26<sup>th</sup> day of the previous month and the 25<sup>th</sup> day of the current month.

**Table 1. Computation of Class 1 Milk Price**

Description	Monthly Price	Multiplier	Value	Divisor	Price
N CA Class I					
Lb. SNF	0.8346	8.7000	7.2610		
Lb. Fluid	0.0230	87.8000	2.0194		
Skim milk			9.2804	0.9650	9.6170
Lb. Fat	1.3285	3.5000	4.6498		
Cwt. Milk			13.9302		13.9302

## Class I Milk Formulas

Step 1: Class I fat price =  $(1.2071 - 0.10) * 1.2 = 1.3285$

CME butter is the commodity price for butter at the CME. The price is a monthly estimate on the price released between the twenty-sixth day of the previous month through the twenty-fifth day of the current month.

0.10 is the butter adjuster

1.2 is the butter yield per pound of fat.

Step 2: Commodity Reference Price (CRP) =  $(1.2071 * 1.2) * 3.5 + (1.0066 * 0.99) * 8.7 = 13.7397$

3.5 is the fat content of whole milk

1.0066 is the CA Non Fat Dry Milk (NFDM) is the California weighted average of prices received by plants for NFDM.

0.99 is the NFDM yield from one pound of SNF\*.

8.7 is the SNF content of whole milk.

Step 3: Price of class I SNF =  $((13.7397 + 0.464) - (1.3285 * 3.5)) * 0.76 / 8.7 = 0.8346$

0.464 is a fixed differential

3.5 is the percentage of fat in raw milk

0.76 is the Proportion of residual value assigned to SNF

8.7 is the percentage of SNF in raw milk

Step 4: Price of Class I fluid =  $((13.7397 + 0.464) - (1.3285 * 3.5)) * 0.24 / 87.8 - 0.0031 = 0.0230$

0.24 is the Proportion of residual value assigned to fluid.

87.8 is the percentage of fluid in raw milk and for Northern California subtract an additional .0031 from the per pound price of fluid carrier

Step 5: Skim Milk Price =  $((0.8346 * 8.7) + (0.0230 * 87.8)) / 0.9650 = 9.6170$

0.9650 is a fixed differential.

Step 6: Class I Price cwt =  $9.2804 + (1.3285 * 3.5) = 13.9302$

## **Class II**

Table 2 explains the pricing for Class II milk. The calculations below Table 2 show how the prices were derived. Table 2 shows a difference in how Class II milk prices are calculated. Class II fat prices must have Class IV fat prices calculated first. Class IV fat prices are used in California to calculate cheese price. Class IV fat and SNF prices are used to calculate Class II and III milk in California. Class IV fat prices must be taken from the previous two months and averaged to solve for Class II fat prices. Class IV fat and SNF commodity prices can be found on the Internet at <http://www.cdfa.ca.gov/dairy/Priceletter/index.html>. These prices have already been averaged and can be directly used in the milk formulas as shown below in step one. These prices are being calculated for August so the Class IV fat and SNF prices will be taken from June and July.

**Table 2. Computation of Class II Milk Price**

Description	Monthly Price	Multiplier	Value	Divisor	Price
N. CA Class II					
Lb. Fat	1.3425	3.5000	4.6988		
Lb. SNF = skim	0.9227	8.7000	8.0275	0.9650	8.3186
Cwt. Milk			12.7262		12.7262
Less skim price			8.3186		
BF Differential			4.4076	35.0000	0.1259

**Class II Milk Formulas**

Step 1: Class IVa fat price first month =  $(1.1854 - 0.045 - 0.097) * 1.2 = 1.2521$

Class IVa fat price second month =  $(1.2744 - 0.045 - 0.097) * 1.2 = 1.3589$

1.1854 is the commodity price for Class IV fat from the first previous month

0.045 is the manufacturing cost allowance

0.097 is the butter manufacturing cost allowance

1.2744 is the commodity price taken from the second previous month

Step 2: Class II fat price =  $((1.2521 + 1.3589) / 2) + 0.037 = 1.3425$

Take the average fat lb. price of Class IVa for the previous two months.

Step 3: Class IVa SNF price first month =  $(1.0070 - 0.14) * 0.99 = 0.8583$

Class IVa SNF price second month =  $(1.0072 - 0.14) * 0.99 = 0.8585$

0.14 is the NFDM manufacturing cost allowance

0.99 is the NFDM yield factor

Step 4: Class II SNF price =  $((0.8583 + 0.8585) / 2) + 0.0643 = 0.9227$

Take the average SNF lb. price of Class IVa for the previous two months

Step 5: Skim Milk Price =  $(0.9227 * 8.7) / 0.965 = 8.3186$

Step 6: Class II cwt price =  $(1.3425 * 3.5) + 8.0275 = 12.7262$

### Class III

Table 3 shows how Nevada cheese prices would be calculated if Nevada had a cheese plant. Class II butterfat is used to calculate skim milk and fat price for Class III. Class III hundredweight prices are calculated without using the fat price or skim milk price. Class III in California is very similar to Class II but Class III does not have the raw nutrients of Class II. Class IVb in California is used to calculate cheese price. Class IVb in California and Class III in Nevada are calculated differently because Nevada did not change their cheese price to fit California like they did with Class I and II. They did not change their price because they don't use Class III to price any of their milk.

**Table 3. Computation of Class III Milk Price**

Nevada cheese:	Monthly Price	Multiplier	Value	Divisor	Price
Cheese Barrel Price	1.0600				
Less base price	1.2625				
Difference	-0.2025	10.0000	-2.0250		
Plus Base CWT Price			10.4200		
New CWT Price					8.3950
Class III BF. Diff			0.1259		
Less 1 cent			0.0100		
Adj. BF Diff					0.1159
Computed Skim Price	0.1159	35.0000	4.0576		
Skim Price					4.3374
Fat Price	0.1159	10.0000	1.1593	100.0000	1.2024

#### Class III Milk Formulas

Step 1: Class III cwt price =  $10.42 + ((1.0600 - 1.2625) * 10) = 8.3950$

Step 2: Skim milk price =  $8.3950 - ((0.1259 - 0.01) * 35) = 4.3374$

Step 3: Fat price =  $(0.1159 * 10) + (4.3374 / 100) = 1.2024$

## Quota Milk

Quota is the amount of milk that may be sold in the market at a certain price. Producers who do not have quota are subject to milk plants using their milk as Class IV because milk plants have reached maximum capacity for the other classes of milk. Quota prices are established through the milk pool. Each month the milk plants report how much milk they processed and how the milk was classified.

To find quota price you multiply the price of fat for each class of milk by the amount produced in each class of milk. Add all of the figures and divide by the total milk production to get quota price of fat. For each class of milk you must find the solid non-fat price for each class and multiply that price by the production levels for each class. Add the figures and divide by the total milk production to get the price for solid non-fat milk. 8.7 should be used to divide the difference between quota and non-quota price from the last month. That result should be multiplied by total production and the total production of solid non-fat should be subtracted. Then you divide by total production and add the figure used as multiplier to get solid non-fat quota price. Take the quota fat price and multiply it by 3.5. Take the quota solid non-fat price and multiply by 8.7. Add fat and the solid non-fat together deriving at the quota hundredweight price. Quota price is less than the price of Class I, because of the influence of the other class pricing that is used to derive quota price.

When milk is distributed as quota milk, money is taken from the hundredweight price and paid to the milk pool. When the pool receives that money a proportion of that money is given back to the producers. When Nevada milk producers send their milk to California it is considered quota milk. Even though Nevada producers do not have a quota, all of their milk is

sold in Class I milk plants. Northern Nevada producers have money taken out towards the pool just like they would if their milk was sold in Nevada.

### **Conclusion**

The increase in supply in the Western United States has led to a drop in milk commodity prices. As shown in the formulas above when commodity prices fall it directly affects the hundredweight price of milk. CME prices fluctuate as the supply of milk is reported. Currently milk prices have fallen from the increased production of milk. Increased production led an increase in the number of milk cows, which was a result of higher prices from the past.

Northern Nevada producers would have a stronger market if there were some other processing plant in Northern Nevada. An additional processing plant would allow excess milk to be distributed in Northern Nevada and therefore reduce hauling costs. A cheese plant is an example of another processing plant. Milk pricing has changed thoroughly throughout the last ten years and will continue to have minor changes in the formulas until a stable market is obtained.

## **Bibliography**

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