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USDA's Final Decision on Multiple Component Pricing for Midwest Federal Milk Marketing Orders

by

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Bob Cropp and Ed Jesse[1]

INTRODUCTION

On August 3,1995, Patricia Jensen, Acting Assistant Secretary of Agriculture, signed a final decision adopting a multiple component pricing (MCP) plan for five Midwestern federal milk marketing orders. The decision must be approved by two-thirds of the producers affected in a given order before implementation. Under federal milk order provisions dairy cooperatives are permitted to bloc vote on behalf of producer-members. Because of broad producer and industry consensus for MCP, approval is anticipated with implementation around November 1, 1995.

The five federal order markets included in the final decision are: Chicago Regional, Nebraska-Western Iowa, Upper Midwest, Eastern South Dakota, and Iowa. Together, these five orders accounted for 26.4 percent of all milk pooled under federal orders during 1994.

A public hearing to adopt MCP under the five orders was held in January, 1994. Following the hearing, additional information was provided to USDA through briefs filed by affected parties. Based upon the hearing record and briefs, the Secretary of Agriculture issued a recommended decision on MCP on October 25, 1994. Comments and exceptions to the recommended decision were received until January 16, 1995.

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The final decision differs only slightly from the recommended decision.[2] One change exempts milk handlers from quality payments (a somatic cell count adjustment) on Class I (beverage) milk use. Also, a minor change was made in the calculation of the value of milk solids other than protein and butterfat. Producers are unaffected by the change in handlers' quality payment and only slightly affected by the change in calculating the value of other solids.

Currently, seven of the existing 34 federal milk marketing orders have implemented MCP. These 7 orders accounted for 23.2 percent of all milk pooled under federal orders during 1994. With the adoption of MCP by these additional five Midwestern orders, 12 orders will have implemented MCP and these orders represent almost half of all milk pooled under federal orders. Other orders will likely adopt MCP programs in the near future. The Midwest plan will likely be a model for new plans, and existing plans will probably be amended to conform with the midwest plan. There are proposals for the upcoming 1995 Farm Bill to mandate MCP on all milk nationally.

In this paper, we present the key provisions of the final MCP plan and describe, in detail, the manner in which producer and milk handler prices will be established. We also discuss the likely impact of MCP on producers and handlers.

Provisions of the Final Decision

Under the amended order, producers will be paid on the basis of their total pounds of three components marketed: butterfat, protein and other nonfat solids (solids-not-fat other than protein). Producers will also share in the value of their federal order pool's Class I (beverage use), Class II (soft manufactured products) and Class III-a (skim milk used for nonfat dry milk) uses on a per hundredweight basis. Regulated handlers will pay for the milk they receive on the basis of total pounds of butterfat, pounds of protein and other nonfat solids used in Classes II (soft manufactured products) and III (hard manufactured products), skim milk used in Class I, and the hundredweight of total milk used in Classes I and II.

In a modification of the recommended decision, a per hundredweight somatic cell adjustment will apply to the value of milk used in Classes II and III, but not in Class I. However, producers will still be paid a somatic cell adjustment on ***all*** milk marketed, regardless of use. In effect, MCP applies to Class III and Class II uses of milk, but not Class I. The pricing of Class I is unchanged from the current pricing procedure. More specifics on pricing follow.

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[2] The recommended decision is discussed in considerable detail in an earlier Marketing and Policy Briefing Paper. See Marketing and Policy Paper No. 49, *USDA's Recommended Decision on Multiple Component Pricing for Midwestern Federal Milk Marketing Orders*, Department of Agricultural Economics, University of Wisconsin-Madison, November 1994.

Components and component prices:

(a) Protein Price: The protein price will be based on the value of protein in the manufacture of block cheddar cheese, as determined by market prices. This is in contrast to existing MCP plans, which price protein as a residual to the Basic Formula Price[3] minus butterfat value. The formula used to derive the protein price is:

Protein Price Per Pound = 1.32 X National Cheese Exchange 40# Block Cheddar Price Per Pound

This formula places no value on protein contained in whey products.

The National Cheese Exchange (NCE) 40# block cheddar price will be the monthly average price as reported by USDA's *Dairy Market News.* This is a time-weighted average of weekly Exchange "opinions."

The factor, 1.32, is the approximate yield of cheddar cheese at 38 percent moisture per pound of protein in milk. In other words, one pound of protein in cows' milk will yield about 1.32 pounds of 38 percent moisture cheddar cheese. The factor is derived from the Van Slyke cheese yield formula, which projects theoretical cheese yield based on the butterfat and protein content of milk and the moisture content of cheese.

The monthly average NCE 40# cheddar block price for June 1995 was $1.2526 per pound. Hence, if the MCP plan had been in effect in June, the protein price (for all five orders) would have been $1.6534 per pound (1.32 X $1.2526).

(b) Butterfat Price: The value of butterfat will remain the same as under current federal order provisions. However, rather than expressing the butterfat value as a butterfat differential (price per one-tenth change in butterfat test above or below 3.5 percent), the value will be expressed and paid as a price per pound of butterfat.

The butterfat differential is the difference in value between 0.1 pounds of butterfat and 0.1 pounds of skim milk. Hence, it is related to both the butter price and the M-W price. The specific formula used to calculate the butterfat differential is 0.138 times the average monthly price for Grade A butter on the Chicago Mercantile Exchange (CME) minus 0.0028 times the Basic Formula Price ("at test," i.e., at average butterfat percent) for the month. For June 1995, the butterfat differential calculated in this fashion was .064 per point.

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[3] The Basic Formula Price replaced the M-W price as the Class III price and Class I price mover in May 1995. The new series is still based on reported Grade B milk prices in Minnesota and Wisconsin, but changes in product prices are used to update the series. For a detailed description of the new price series and rationale for its adoption, see Marketing and Policy Briefing Paper No. 48, *USDA's Recommended Decision on Replacing the M-W Price*, Department of Agricultural Economics, University of Wisconsin-Madison, September 1994.

The following formula is used to convert the butterfat differential to a value per pound of butterfat:

Butterfat Price/Lb. = [(965 X Butterfat Differential) + Basic Formula Price]/100

For June 1995, this formula yields a butterfat price per pound of $0.7318 {[(965 X .064) + $11.42]/100}.

(c) Other Solids Price: Other milk solids besides butterfat and protein consists mainly of lactose (milk sugar) and ash. These components have limited market value compared to fat and protein.

The other solids price will be computed as a residual value rather than based on specific market values. The other solids value *per hundredweight* will be computed by subtracting butterfat and protein values per hundredweight from the Basic Formula Price, at test. The other solids value per pound will be the value per hundredweight divided by the estimated percentage of other solids associated with the Basic Formula Price. The specific formula is:

Basic Formula Price at test
- Average butterfat test X Butterfat price
- Average protein test X Protein price
= Other Solids value per hundredweight of milk
÷ Average other solids test
= Other Solids price per pound

Each of the three component values--butterfat, protein and other solids, will be expressed on a per pound basis with four places to the right of the decimal.

Current month average tests for butterfat, protein, and other solids will be reported by the National Agricultural Statistics Service (NASS) at the same time that the Basic Formula Price is reported. The Basic Formula Price for the current month is derived by updating the previous month's Base M-W price by changes in product prices (e.g., the Basic Formula Price for June is the May M-W Price plus a formula value reflecting product price changes between May and June). Hence, the current month component tests used to derive the other solids price will necessarily be estimates rather than reported test values.

Since the other solids price is computed as a residual value, it could be negative (although this would be a very unlikely occurrence). If the computation of the other solids price did result in a negative value, the protein price would be adjusted (downward) to result in a zero value for the other solids price.

Using the Basic Formula Price "at test" is a change from the recommended decision, which used 3.5 percent as butterfat test and the M-W price (now the Basic Formula Price) adjusted to 3.5 percent butterfat. The initial formula was flawed. While the Basic Formula price was adjusted to a 3.5 percent butterfat test under the recommended decision, the skim component tests were left "at test." Therefore, the value of the protein that would be deducted to arrive at the residual value for computing the other solids price could be incorrect. The use of the "at test" Basic Formula Price corrects this problem.

The method of calculating the June 1995 Other Solids price is illustrated below:[4]

	$11.3000	June Basic Formula Price (BFP) "at test"
-	2.6491	BFP butterfat test (3.62%) times butterfat price ($0.7318)
-	5.1751	BFP protein test (3.13%) times protein price ($1.6534)
=	$ 3.4758	Other solids value per hundredweight
÷	5.4500	Pounds of other solids per hundredweight (BFP Solids-not-fat test [8.58%] minus BFP protein test [3.13%]).
=	$0.6378	Other solids price per pound

Note that there is no direct testing for other solids test. Rather, the other solids percentage is computed by subtracting the protein test from the solids-not-fat test. Thus, handlers need to test for percent butterfat, percent protein and percent solids-not-fat.

Producer Price Differential:

Since the Basic Formula Price is retained as the base price, the combined values of butterfat, protein, and other solids equals the Class III price, which is the Basic Formula Price of the current month. There is additional value to milk pooled under federal orders from Class I and Class II sales, which are normally priced higher than Class III. However, Class I and Class II milk are priced at the Class III price (Basic Formula price) *for the second preceding month* plus a fixed differential per hundredweight. Hence, the "added" value of Class I and Class II sales is negative whenever the Class III price shows a 2-month increase that is larger than the respective differential.

As of December, 1994, USDA adopted a III-a classification of milk used to make nonfat dry milk. The Class III-a price is a product formula price that has been averaging substantially under the Class III price. Hence, Class III-a sales reduce the pooled value of producer milk.

[4] The June Basic Formula Price and the tests for butterfat, protein and solids-not-fat shown in this example are the June 1995 *Base Month M-W values*; not the estimated values that would actually be used if the MCP plan had been in effect. We are uncertain at this time how these estimates will be derived.

To account for these producer price adjustments in the new MCP pricing plan, a ***producer price differential*** is computed, which is expressed per hundredweight of milk. The producer price differential is a weighted average of the difference between the Class I, Class II, and Class III-a prices and the Class III price.

An illustrative computation of the producer price differential for June 1995 is shown below. The June Class III price was $11.42 per hundredweight.

Class	Actual Price ($/Cwt)	Actual Price Minus Class III ($/Cwt)	Utilization (%)	Value (+/-)
I	12.56	1.14	16	0.184
II	11.46	0.04	5	0.002
III-a	10.37	(1.05)	4	(0.042)

Weighted average value/Cwt. = $0.144

The producer price differential calculated in this manner is further adjusted for shrinkage and overage, inventory reclassification, receipts of other source milk allocated to Class I, receipts from unregulated supply plants, location adjustments, and, in the Chicago Regional order, transportation and assembly credits. These adjustments involve technical aspects of federal order accounting rules that we will not attempt to explain in this paper.

Producers will be paid this producer price differential on each hundredweight of milk marketed. In essence, the producer price differential is just a new terminology rather than a real change in producer payments. Currently, producers receive this same weighted added value from Class I, Class II and Class III-a milk sales in their blend prices.

Somatic Cell Adjustment:

The producer price differential paid to each producer would be adjusted on the basis of the somatic cell content of the producer's milk. In a modification from the recommended decision, handlers' value of milk used in Class II and Class III, but not in Class I, also would be adjusted for somatic cell count.

The decision to exclude handlers' Class I milk from application of a somatic cell adjustment was based on several factors. The hearing record contained little testimony or

evidence to quantify the economic effect of varying somatic cell levels on Class I milk. There was, however, testimony as to the effect somatic cells have on shelf life, off flavors and rancidity in fluid milk products. But since no specific data about the value of using high-quality milk in fluid products were presented and opposition to the application of a somatic cell adjustment on Class I was strong, the Secretary of Agriculture decided not to apply the somatic cell adjustment to milk used in Class I. Further, it was concluded that since 70 to 80 percent of the milk pooled under these five orders is used in Classes II and III, application of a somatic cell adjustment to that proportion of the milk used by handlers will doubtless result in a favorable effect on the general quality of the milk in the marketing areas.

The value adjustment per hundredweight for each 1,000 somatic cells will be determined by multiplying .0005 times the monthly average National Cheese Exchange 40# block cheddar cheese price. For June 1995, this amounted to .0005 X $1.2526 (NCE 40# block cheese price) or 0.063 cents per 1,000 SCC. Based on recent cheese prices, the adjustment will range from 0.06 to 0.07 cents per 1,000 SCC.

The producer adjustment for SCC would be computed by subtracting monthly average SCC tests in 1,000 cells per milliliter from 350 and multiplying by the adjustment per 1,000 SCC. Hence, producers with SCC tests higher than 350,000 would receive a negative adjustment (deduction); producers with SCC tests lower than 350,000 would receive a positive adjustment (premium). Using June 1995 adjustment of 0.063 cents per 1,000 SCC, the SCC adjustment for a producer with a SCC test of 500,000 would be *negative* 9.45 cents per hundredweight of all milk marketed (350-500 = -150 X 0.063 cents = - 9.45 cents). A producer with a SCC test of 100,000 would have a *positive* adjustment of 15.75 cents per hundredweight (350-100 = 250 X 0.063 cents = 15.75 cents per hundredweight of all milk marketed.

Testing:

The five orders currently base protein testing on the standard Kjeldahl method, which tests for nitrogen and then converts the nitrogen to protein. Since there is a certain amount of free nitrogen in milk this test somewhat overstates the protein content of milk. Recent developments in testing allow for testing for true protein which is a more accurate reflection of protein content. Nevertheless, the final decision does not mandate a specific testing procedure. However, if at a latter date there is a change to testing for true protein, a change in the 1.32 factor may be necessary.

Effect On Producers

Compared to current pricing, the final MCP decision for the five federal orders will redistribute revenue among producers depending on the composition of their milk. The objective of MCP is to make producer payments more equitable based on the value of dairy

products that can be made from each individual producer's milk. With the implementation of MCP, some producers should experience a lower milk check and others a larger milk check. Those producers with relatively high milk solids composition and low SCC should receive a larger milk check. But those producers with relatively low milk solids composition and high SCC will likely receive less. Therefore, some producers will be very pleased with MCP and others not so pleased.

Across all producers, the MCP plan is revenue-neutral, or at least close to revenue-neutral. If however, the relative milk solids composition of all producer milk averages higher than the average milk solids composition of the Basic Formula Price, an increase in total revenue from the current payment method would be possible. In the long run, if producers respond by producing milk with a higher milk solids composition, total revenue would also be increased.

It needs to be emphasized that federal milk marketing orders set *minimum* pay prices. Handlers may pay more than these minimum prices, but not less. The exception is cooperatives, which are allowed to pay their producer less than minimum established federal order prices. Nevertheless, competition among milk handlers, cooperatives and investor owned firms, would not permit an individual cooperative to pay much less than the minimum federal order prices. Federal order data clearly show that both cooperatives and investor owned firms in the Midwest now pay considerably more than the established minimum order prices.

Most producers in the Midwest already ship their milk to a milk plant that offers some type of voluntary MCP program and milk quality adjustments. Therefore, the precise impact of the final decision for adopting MCP on individual producers cannot be determined. Because of the required payment of minimum established prices by investor owned firms and competition among these firms and cooperatives, premiums to producers selling milk with above average protein composition and low SCC are common, but deducts for milk of below average protein composition and high SCC have been limited or not practiced. Given this, most producers are likely to see only small changes in their milk checks with the MCP when adopted. Perhaps those producers selling milk at the extreme ranges of milk composition and milk quality, both high milk composition and high milk quality, and low milk composition and low milk quality, will see significant changes in their milk checks with the adoption of the MCP plan. (See Marketing and Policy Briefing paper No. 49 for more specific discussion of the impact of MCP on both producers and handlers).

The potential impact of the final decision on individual producers is illustrated below. This only illustrates the change in producer milk checks resulting from changes in federal order provisions; it does not consider voluntary MCP and quality payment programs that currently exist. The Chicago Regional order prices for June, 1995 and the June component MCP component and producer price differential values calculated earlier are used in the illustration. The June blend price was $11.56 per hundredweight and the butterfat differential was $0.064 per point.

Producer A:

Producer A markets 60,000 pounds of milk in June containing 4.0% butterfat, 3.3 % protein, 5.45% other solids and a SCC of 200,000.

a) Milk check under current system:

	$ 11.5600	Blend Price
+	.3200	Butterfat (4.0%-3.5%=5 points X $0.064)
=	$ 11.8800	Pay Price Per Hundredweight
X	600.0	Hundredweights marketed
=	$7,128.00	Milk Check

b) Milk check under MCP:

	$1,756.32	2,400# of butterfat @ $0.7318 per pound
+	3,273.73	1,980# of protein @ $1.6534 per pound
+	2,085.61	3,270# of other solids @ $0.6378 per pound
+	86.40	600 Cwt. @ $0.144 Producer Price Differential
+	56.70	SCC adjustment: (350-200) X $0.00063 = $0.0945 per hundredweight X 600 Cwt. (premium)
=	$7,258.76	Milk Check

c) Difference: Producer A receives $130.76 more under MCP of which $56.70 is due to low SCC.

Producer B:

Producer B markets 60,000 pounds of milk in June containing 3.3% butterfat, 2.9% protein, 5.45% other solids, and a SCC of 500,000.

a) Milk check under current system:

	$ 11.5600	Blend Price
-	.1280	Butterfat (3.5%-3.3%) = 2 points X $0.064
=	$ 11.4320	Pay price per hundredweight
X	600.0	Hundredweights marketed
=	$6,859.20	Milk Check

b) Milk check under MCP:

	$1,448.96	1,980# butterfat @ $0.7318 per pound
+	2,876.92	1,740# protein @ $1.6534 per pound
+	2,085.61	3,270# other solids @ $0.6378 per pound
+	86.40	600 Cwt. @ $0.144 Producer Price Differential
-	56.70	SCC Adjustment: (350-500) X $0.00063 = ($0.0945) per hundredweight X 600 Cwt. (deduct)
=	$6,441.19	Milk Check

c) Difference: Producer B receives $418.01 less under MCP of which $56.70 is a deduct for high SCC.

The illustrations above compare *minimum* prices generated by federal order pricing rules. Most dairy producers in the Midwest receive more than these minimum prices in form of various premiums. Therefore, the actual impact of MCP will most likely differ from what we illustrated. We can not predict how the premium structure of milk plants will change with the implementation of MCP. Some plants may offer protein and quality premiums on top of the order-mandated values. Others may adhere to the order prices for components and SCC and alter plant premiums or volume premiums. But all plants will be required to show on their producer milk checks the price paid per pound of butterfat, protein and other solids; the producer price differential; and the SCC adjustment. Given the uncertainty about how plants may choose to alter their payment plans with the implementation of MCP, the comparisons shown above should be viewed as highly tentative.

MCP makes producers aware that protein is the most important component in that it receives the highest price per pound. Protein will account for between 40 and 50 percent of the value of most producer's milk checks. Butterfat and other solids receive about the same price per pound, and together account for about 50 to 60 percent of the milk check. That leaves milk volume, the producer price differential, accounting for a rather small share of the milk check. Under MCP in Midwest federal order markets where the primary use of milk is for manufacturing, producers can improve their milk check by feeding and breeding for high protein composition milk with low SCC. Caution should be noted however, that producers will be paid for *pounds* of protein marketed and not for *percent* of protein.

Effect On Handlers

Order-regulated Class II and Class III milk handlers will be affected by MCP in the opposite way from producers. In general, handlers costs will increase (decrease) to the extent that they acquire milk that has higher (lower) protein and other solids content than monthly M-W Basic Formula protein and other solids tests. However, this is appropriate since higher protein and other solids means higher yields of cheese, nonfat dry milk, and other

manufactured dairy products. These handlers will receive more (less) revenue per hundredweight of milk from manufacturing dairy products from milk with higher (lower) milk solids composition.

However, the effect of MCP on handler costs will be moderated in two ways. First, handlers receive milk that is commingled among many producers. This has an averaging effect on milk composition. The range in protein tests among handlers will be much smaller than the range among producers.

Second, pooled manufacturing plants already pay for protein in the form of protein premiums and deductions. Existing premiums may fall short of the value of protein under MCP, and premiums and deductions are not symmetric. Plants also pay milk quality premiums which differ from the SCC adjustment value under the MCP plan. Hence, the impact on plant costs will be much less than indicated by comparing order minimum prices with and without MCP.

Although all handlers, including Class I handlers, will be required to apply the minimum SCC adjustment to all their producers' milk, handlers are exempt from paying this quality value adjustment on Class I milk. Their cost of Class I milk will be unchanged from current practice. Compensations for lower (higher) than average quality milk used for Class I will be handled by payments to (draws from) federal order pools. But in realty, the quality of milk for Class I does not deviate much from the average quality of all federal order milk. Hence, the need for quality adjustments payments to Class I handlers out of the order pool will be minimal.

Summary

Multiple component pricing in Midwestern federal milk markets is long overdue. The region is the major cheese producing area of the U.S. Cheese yields are heavily influenced by protein composition of milk. It is essential that dairy producers receive appropriate economic signals to encourage expanded production of protein.

MCP promotes equity among producers by relating milk prices more closely to the relative values of milk components. Current federal order pricing benefits producers whose herds produce low levels of nonfat solids at the expense of producers with high-solids herds. This cross-subsidization is moderated somewhat through voluntary MCP programs that pay protein premiums. But most existing protein premiums do not compensate producers for protein relative to its market value in cheese.

Similarly, MCP more equitably treats dairy manufacturing plants. Current pricing rules result in large variations in plant margins, depending on the composition of milk. MCP dampens these variations by pricing milk more in line with its value in producing manufactured dairy products.

In the short run, MCP will have little or no effect on total producer revenue, but it will alter the distribution of the revenue pie. In the long run, MCP should encourage the adoption of feeding and genetic selection that will increase protein, and, thus, producer revenue. MCP should also lead to greater consistency among payment plans, making it easier to compare what is being offered by competing plants.