BEFORE THE UNITED STATES DEPARTMENT

OF AGRICULTURE

AGRICULTURE MARKETING SERVICE

In the Matter of Milk in California Notice of Hearing on a Proposal to Establish a Federal Milk Marketing Order	7 CFR Part 1051 Docket No.: AO-15-0071 AMS-DA-14-0095

Clovis, California, November 2015

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Part 3

Introduction

The formulas for determining the component prices in Classes III and IV are the foundation of all regulated milk prices under the proposed order. The basic formulas, utilizing dairy commodity prices from a designated time period, are used to determine the prices for all classes of milk under the order. The price formulas for Classes I and II will be discussed in subsequent testimony. My focus today will be the formulas for determining component values in Classes III and IV.

There has been a lot of attention paid to regulated price differences between the classes of milk under the California State Orders (CSOs) and those that exist under FMMOs. As Federal Orders have historically been concerned with ensuring adequate supplies of, and the orderly marketing of, milk for fluid uses, it is worth exploring the purpose for which the orders establish regulated minimum prices for manufacturing classes (Class III and IV).

In order to assure that consumers have access to adequate supplies of fluid milk products, prices for such milk (Class I) need to be established at levels that encourage production of adequate supplies of fluid grade (Grade A) milk and to attract such milk to Class I uses over other uses. In order to accomplish both of these purposes, Class I prices have been established at levels that are generally higher than the prices of milk for other uses. Given the higher prices paid by Class I handlers, performance standards have been important pooling mechanisms under the FMMOs to ensure that the Class I market is served. From an economic perspective, the amount by which minimum regulated Class I prices should exceed those of the manufacturing classes under order regulation today is a debatable point.

If there is a need to set Class I prices higher than those in other classes, then there is also a need to know what those other class prices are. So again, to make sure supplies of milk for consumers were adequate, prices under the orders for manufacturing uses needed to be established as a basis for determining Class I prices. Establishing manufacturing class prices based on what manufacturing plants were paying for Grade B milk, or establishing them on the basis of finished manufactured prices applicable to the plants of handlers being regulated in the marketing area, implicitly recognizes the role of manufacturing class prices as market-clearing prices that capture the balance of supply and demand in the marketing area. It should not establish a new, non-market-based or enhanced price for that milk.

In the 1950s and 1960s, as transportations systems and equipment improved and bulk milk handling became more widely adopted, milk for Class I uses began travelling further distances, moving between FMMO marketing areas rather than merely within a single FMMO marketing area. With these changes, it became more important to have a coordinated approach to Class I prices between orders to move milk from geographic areas where milk was in surplus to areas in deficit, ensuring that the marketing of fluid milk remained orderly. In order to make sure that pricing conditions promoted orderly marketing both within individual order areas and between orders, the idea of a common basis for pricing within all areas began to gain favor.

A Minnesota-Wisconsin (M-W) price series began being used in some orders as the basis for order pricing of all classes of milk. The lowest class uses were generally set at or very close to the M-W price level. The M-W price was an average of prices paid by dairy product manufacturing plants for Grade B milk in Minnesota and Wisconsin. Over time, the M-W price was chosen as the basis for pricing in more orders, in part because the area had ample supplies of Grade B (unregulated) milk, but also because it was the largest reserve supply of milk in the

country. By adopting the M-W as opposed to a manufacturing milk price from say, Florida, it would be reasonable to assume a common price for manufacturing class milk established on the M-W basis would be a minimum price that would be market clearing in all FMMOs where it applied, and particularly east of the Rockies where interregional movements of milk were becoming more common. Today, the states of Minnesota and Wisconsin are no longer the regions where milk used for manufacturing has its lowest spatial value, California now has that distinction.

It is important to keep in mind that under the current FMMO system, the only plants that must be pooled are Class I plants with qualifying levels of route dispositions. The orders require that manufacturing class prices be paid for such milk that is pooled under the order, but do not require that minimum class prices be paid for milk that is not pooled, In addition, the orders do not regulate the transaction between the handler pooling the milk and nonpool plants. This is an important difference from the way minimum pricing is applied under California's state system of pricing. In California, handlers must pay the minimum regulated class prices for all Grade A milk they receive from producers, regardless of whether or not that milk is pooled. In addition, any plant buying milk from a cooperative is obligated to pay minimum class prices for those purchases. There are no below-class sales for any plants buying cooperative milk in California.

Order Prices should be Minimum Prices

To determine minimum prices under the order. The minimum regulated manufacturing class prices (Class III and IV) under a California order should not be set above market clearing levels in California. As we noted in earlier testimony, this disparity between where products are

produced and where they are consumed creates a spatial value for commodity dairy products that is lower in the West and higher in the East. If regulated milk pricing formulas fail to account for differences in spatial value of finished dairy products (and to account for current costs of manufacturing dairy products from milk), the milk will not be properly valued. In considering what it means for regulated milk prices to be market-clearing, we have to look beyond the balance of supply and demand of finished dairy products in the national marketplace, and focus clearly on what is happening in the local (state or region) market for milk. The markets for finished dairy products clear nationally, but the market for milk clears locally. In its final decision from Federal Order Reform, USDA noted (64 Fed. Reg. 16026, 16092 (April 2, 1999)):

"The price handlers can afford to pay for milk is determined by the price for which finished product can be sold. Therefore, a pricing system that translates finished product prices to a price for raw milk results in a representative raw milk price for both producers and handlers."

In order for the preceding statement to be true, the price used in the regulated price formula must be representative of the price at which the handler sells his finished product. Use of a national commodity price average likely results in an assumed achievable product price that will be lower than what some handlers actually receive and higher than what others can achieve because of their location. Also in the Final Decision, USDA stated (64 Fed. Reg. 16026, 16094-16095 (April 2, 1999)):

"The importance of using minimum prices that are market-clearing for milk used to make cheese and butter/nonfat dry milk cannot be overstated. The prices for milk used in these products must reflect supply and demand, and must not exceed a level that would require handlers to pay more for milk than needed to clear the market and make a profit."

In setting regulated milk prices, the danger is not in setting a minimum price that is too low, but in setting it too high. Regulated prices that are set too low (below the marketing clearing level) can be compensated in the marketplace through competitive premiums. Regulated prices that are set too high can lead to the milk produced by dairy farmers being left unpurchased or moved out of area to find a processing home. Class III and IV prices in a California FMMO must be set at levels where the plants can clear the market and operate profitably. The end-product pricing formulas used as the basis for determining Class III and IV component values under the order should reflect the commodity prices actually received by California plants and manufacturing costs that are reflective of current costs. The use of national weighted average commodity price levels and manufacturing costs that don't reflect current conditions in the proposed marketing area are not appropriate for a California.

Our proposal calls for USDA to establish western prices for the butter, cheddar cheese block, nonfat dry milk and dry whey commodity prices to be used in the Class III and Class IV pricing formulas. Unfortunately, we have been informed that confidentiality concerns will not allow the Department to report the dairy commodity prices paid by western plants. In the order language we submitted, we included default values, which adjusted the reported National Dairy Product Sales Report (NDPSR) prices released by AMS for the each of the dairy commodities, based on the historical difference between the U.S. NDPSR price and reported California or western based prices for the same commodity (Table 13). Manufacturing cost allowances in the formulas were updated based on the most recent weighted average manufacturing cost for each dairy commodity as reported in CDFA's manufacturing cost survey (Attachment 1).

Class III and Class IV Butterfat Price Formula

The butterfat price is calculated by taking the National Dairy Product Sales Report (NDPSR) price for Grade AA butter, less a western value adjuster of ~~$0.0208~~ ***$0.0218*** per pound, less a manufacturing cost allowance of $0.1724 per pound, the result multiplied by a yield factor of 1.211. The western value adjuster was calculated as the five-year simple average of the monthly differences (the most recent data available is for the period ending July 2014) between the NDPSR Grade AA butter price and the California f.o.b. price for butter as reported by the California Department of Food and Agriculture, Dairy Marketing Branch collected as part of their annual manufacturing cost summaries. The data can be found on the following website:

https://www.cdfa.ca.gov/dairy/uploader/postings/manufacturingcost/

The manufacturing cost allowance is the most recent California weighted average manufacturing cost for butter, released in November 2014, which can be found in Attachment 1 and is also reported at the following webpage:

https://www.cdfa.ca.gov/dairy/uploader/docs/Exhibit.pdf

Attachment 2 contains a mathematical representation of the butterfat component price formula, as well as the price formulas for all of the other components used in Class III and Class IV.

Class IV Nonfat Solids Formula

The nonfat solids price is calculated by taking the NDPSR price for Grade A and Extra Grade nonfat dry milk, less western value adjuster of ~~$0.0257~~ ***$0.0244*** per pound, less a manufacturing cost allowance of $0.1997 per pound, with the result multiplied by a yield factor of 0.99. The western value adjuster was calculated as the five-year simple average of monthly differences (for the period ending ~~July~~ September 2015) between the monthly NDPSR Grade A and Extra Grade nonfat dry milk price and the monthly California Weighted Average Price for Grade A and Extra Grade nonfat dry milk as reported by CDFA. The CDFA data for NFDM prices can be found on the following website:

https://www.cdfa.ca.gov/dairy/xls/MonthlyCommodityPrices.xlsx

The manufacturing cost allowance is the most recent California weighted average manufacturing cost for nonfat dry milk, released in November 2014, which can be found also be found in Attachment 1.

Class III Protein Price Formula

The protein price is calculated by replacing the NDPSR cheddar block/barrel monthly price average used in existing FMMO Class III price calculations with the NDPSR weighted average cheddar cheese block price for the month, less an adjuster of ~~$0.0340~~ ***$0.0224***, and replacing the manufacturing cost allowance currently used in FMMO Class III price calculations with $0.2291. The western value adjuster was calculated in two steps. First, the five-year simple average of the monthly differences between the simple average of the daily CME 40 lb. block

cheddar cheese price occurring from the 26th of the prior month to the 25th of the month when the protein price will be effective and the California f.o.b. price for cheddar blocks as reported by the California Department of Food and Agriculture (CDFA) for the month was calculated. The five-year period of comparison was the one ending in August 2011. The California cheddar cheese f.o.b. prices were collected by CDFA's Dairy Marketing Branch as part of their annual manufacturing cost summaries. Unfortunately, the most recent California cheddar price data available is for that period. CDFA stopped reporting the cheddar data for confidentiality reasons.

Next, the five year simple average of the monthly differences between the NDPSR weighted average monthly cheddar cheese block price and the simple average of the daily CME 40 lb. block cheddar cheese price ~~occurring from the 26th of the prior month to the 25th of~~ for the calendar month when the protein price will be effective. This data comparison is for the five year period ending in August 2014, consistent on a monthly basis with the period when the f.o.b. prices were available and with an ending date similar to the butter price comparison used to calculate the butter price adjuster used in the butterfat price formula. The differences calculated in each step were added together for the purposes of calculating the cheese price adjuster (Table 13). While the use of two price series comparisons to calculate the cheese price adjuster is somewhat complex, ~~We~~ we chose this method in order to have an adjuster that was more representative of current conditions in the market.

Class III Other Solids Price Formula

If we are going to use dry whey to represent the other solids value as under the existing FMMOs, then at a minimum the prices and manufacturing costs used should be appropriate for

California. This could be accomplished by subtracting an adjuster to the monthly NDPSR dry whey price for the month of ~~$0.0084~~ ***$0.0063*** per pound. This western value adjuster for whey was calculated as the five-year simple average of the monthly differences (for the period ending September ~~July~~ 2015) between the monthly NDPSR dry whey price and the simple average of the weekly Western Dry Whey-Mostly prices between the 26th of the prior month and the 25th of the month to which the NDPSR whey price average would apply.

Unfortunately, CDFA no longer reports a manufacturing cost for dry whey due to confidentiality. However, we believe an appropriate manufacturing cost allowance can be constructed by adding the difference between the FMMO Class III formula dry whey manufacturing allowance of $0.1991 per pound and the Class IV nonfat solids formula make allowance of $0.1678 per pound, an amount equal to $0.0313 per pound, to the most recent weighted average manufacturing cost for nonfat dry milk from CDFA (Attachment 1). The resulting dry whey manufacturing cost allowance would be $0.2310 per pound.

However, merely updating the western dry whey value and manufacturing cost for dry whey still does not reflect the bulk of products made. Nor does it reflect the value of whey to the plants that are unable to capture that value because they don't make finished whey products due to high capital costs and their inability to recover these costs given the scale of their operations.

Alternative Formula for Other Solids Price Calculation

The current Class III component price formulas establish a value for milk based on the price, costs, and yields associated with a plant making cheddar cheese, and on the plant converting the whey stream by product into dry whey. The problem with this formula

construction is that, for a plant that does not manufacture dry whey, its revenues do not match up with a milk cost that is in part driven by movements in dry whey prices. Some plants make other finished whey products that, at times, allow them to capture enough revenues to compensate for the fact that they do not manufacture dry whey. However, as the testimony of Mr. Barry Murphy indicated, there are many cheese plants in California that cannot capture revenues to offset their increased milk cost. For cheesemakers that do not have finished whey operations, margins can become compressed, and their financial viability threatened, by the manner in which the regulated minimum price is calculated under the current Class III formula.

Investment costs to make finished whey products (dry whey, WPC, WPI) are very high and a majority of plants do not have enough volume to justify the investment. There are plants that cannot make finished product and which instead are selling liquid whey to others who make the finished product. The value of this sale would be more appropriate for a pricing formula because it is closer to a value that all plants can achieve. The value of the whey contribution should be capped because there will be many cheese plants that cannot find any viable market outlet for their whey and they will capture no value from their whey stream.

The Value of Whey in the Price for Milk

End product pricing for milk attempts to represent a market value for milk by capturing the value of the basic commodities that can be produced from milk less their make cost plus a reasonable return (ROI) to processors. For cheddar cheese, those factors are reasonably well known. The byproduct from cheese production is whey and the value of whey to a cheesemaker is much more difficult to establish. The baseline product chosen to represent the value of whey

in the FMMO other solids price formula has been dry whey. It is thought by some to be the lowest common denominator among the wide array of products that can be derived from whey solids. The costs for drying a liquid product from whey containing approximately 6% solids have been debated and surveyed, and have been used in FMMO regulated pricing. The experience from recent years, however, has shown that dry whey prices are volatile and not necessarily indicative of whey's value to cheesemakers or of industry trends.

In order to capture value for whey, it must be dried in some form by someone. That gives it the ability to be stored and shipped at a reasonable cost. The place to start in establishing whey's value to a cheesemaker, then, is with a finished product in dry form and work backwards from there. The question is, which product is the most representative indicator of the value of whey to a typical cheesemaker. USDA reports information on Dry Whey, Whey Protein Concentrates (WPC), and Whey Protein Isolates (WPI) in its *Dairy Products* annual summary. The Whey Protein Concentrates are in two categories: 25 to 49.9% protein and 50 to 89.9% protein. Whey protein Isolates contain no less than 90% protein. In the U.S. just 5% of cheese plants produce dry whey.

Cheese whey is approximately 6% solids. About 12% of the solids are protein and 88% are other solids, primarily lactose. As measured by protein content (the most valuable whey component) more than three times the amount of U.S. dried whey products are in the form of WPC/WPI rather than dry whey. Over the past eight years, production of dry whey has been declining while production of Whey Protein Concentrates and Isolates has been increasing. Growth rates over that time based on production data contained in USDA's *Dairy Products* annual summary for the various categories are as follows:

WPC 25 - 49.9	+1.1%
WPC 50 - 89.9	+8.3%
WPI	+9.5%
All types WPC/WPI	+6.1%
Dry Whey	- 3.3%.

The difference in prices on a per-pound of protein basis between dry whey and WPC 34 has been extremely volatile over the past eight years. A cheesemaker whose whey revenue is derived from the market for WPC 34, while the milk price is tied to the market for Dry Whey, has likely experienced margin squeezes over that time which periodically have been dramatic.

Cheese Making Versus Whey Processing

The whey business is a completely different line of business from the cheese business. The equipment is different. The technology is different. The target market is different. The sales and marketing effort is different and the products are different. Dry whey and WPC are nutritional ingredient products utilized in a wide range of ancillary products both human and animal. Cheese on the other hand can be an ingredient product, but the product made by most cheese plants is more likely a consumer product either at a retail or food service level. It is judged on the basis of flavor, texture, aroma, packaging, and perhaps performance in its intended use. For many cheesemakers, making cheese is an art. Whey processing is looked upon more as a science. The capital cost required for a whey processing and drying plant is often larger than that of a comparable cheese plant. To justify that size of investment, a whey processor typically requires a substantial volume of resident whey which may or may not be supplemented by additional sources of external whey. That scale requirement rules out the vast majority of cheese plants in the country. Despite that fact, the current milk pricing encourages cheesemakers

to venture into that line of business in which they may have little interest, no proficiency, and no passion to pursue.

The Valuation of Cheese Whey

In 2012 a survey of all 121 Wisconsin cheese plants (Attachment 3) was conducted by the Wisconsin Agricultural Statistics Service in cooperation with the Wisconsin Department of Agriculture, Trade, and Consumer Protection, found that 80% of all respondents either did not process or did some limited processing of the whey they generated. Only 20% produced some form of value-added dried product. Limited processing results in some degree of liquid product transport savings. Those savings are required to be retained by the cheese plant to justify the investment in processing equipment and cover the cost of labor and operating expense to perform the processing. Operating expenses include utilities, waste treatment, equipment cleaning, and maintenance along with depreciation, interest, insurance, taxes and the like. The limited processing performed by smaller cheese operations is of negligible value to whey processing facilities that dry whey products and have extra capacity to purchase outside whey. The value of limited processing lies almost exclusively in the concentration of solids and the resulting savings in freight expense.

In California, according to testimony, only one plant dries whey on a consistent basis. Only 13 of the 57 cheese plants (only 23%) process whey in any fashion. Most plants in the state receive no value for the whey from their operation or the value is less than the cost of recovery and transportation.

The alternative amendment to the other solids price formula that we submitted to USDA on May 27, 2015 was meant to represent the value to a cheesemaker of selling liquid WPC-34 to a plant that would then make the liquid product into a finished dry product. The proposal was nearly identical to the one that was presented to CDFA at a Class 4b hearing held on June 3, 2015. Since that time, we have been able to gather additional information on the market for liquid whey being sold by cheese plants, and have found that there are a great variety of different forms of liquid whey being marketed, ~~from~~ ranging from dilute whey to liquid WPC with higher protein concentrations. While there is variation in the products being marketed, the concept of adapting a formula that represents a liquid whey value, rather than a finished dry whey value is one that we feel is appropriate.

The milk price should reflect what the cheesemaker can earn by selling his wet separated whey f.o.b, at his cheese plant. The likely buyer is someone devoted to the whey processing business that has extra capacity and lies within a reasonable distance. Ideally, an ongoing survey of prices, on a pound of protein basis, for which cheese plants sell liquid whey to other plants for further processing should be the basis for establishing the other solids value for milk used to make cheese because it more accurately reflects returns achievable by a greater number of plants. Unfortunately, no such ongoing survey of liquid whey prices exists.

Instead, the value of whey in the Class III other solids formula should be a function of the WPC 34 market because that is the predominant buying scheme for liquid whey. Whey processors are interested primarily in the protein portion of the whey. The lactose or permeate portion represents a disposal problem to most cheesemakers and is unlikely to be compensated for by a whey processor. By utilizing a WPC-34 reference price and converting it to a dry whey equivalent basis, much of the current other solids pricing methodology can be retained. The

costs for drying whey have been surveyed and a dry whey manufacturing allowance, albeit one that is likely outdated, is used in the current Class III formula. The costs for producing WPC-34 are not known, and we know of no publicly available data of those costs. A dry whey equivalent WPC-34 price can be calculated by first dividing the WPC-34 price by 0.34, which would express the price on a pound of protein basis. This resulting price would then be multiplied by 0.12, the assumed proportion of dry whey that is protein to complete the conversion.

The other solids factor would be the dry whey equivalent WPC-34 price, less the make allowance, less a factor to represent the cost of cooling the whey and delivering it to the nearest whey processing facility. The proposed make allowance is the current California NFDM weighted average manufacturing cost plus the difference between the current dry whey make allowance over the then current NFDM make allowance. The transportation cost allowed is a distance of 50 miles at $3.00 per mile on 6% whey or $0.05 per pound of whey solids. An allowance of $0.03 per pound of solids is provided to compensate for the cost of cooling the whey. Because the price does not serve to protect small cheesemakers when the WPC-34 price is very high nor dairy producers when the price is very low, a floor price of $0.25 per hundredweight on a skim milk basis ($0.0424 per lb. of other solids) and a ceiling price of $1.50 per hundredweight ($0.2542 per pound of other solids) is proposed. The order language for this other solids price calculation proposal is shown in Attachment 4.