Analysis of Proposals to Modify Current Federal Milk Marketing Orders

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Summary

The USDA granted a petition to hold a national hearing to amend the uniform pricing provisions of all 11 federal milk marketing orders (FMMOs). A number of proposals have been submitted. The purpose of these proposals is to raise make allowances and "tweek" other parameters of federal order pricing. The elements of these proposals reflect minor changes compared to the major reforms that were implemented back in 2000. Proposals were submitted to USDA and testimony from witnesses and industry experts was taken during the hearing process that began in August and November 2023. USDA is now in the process of analyzing all the submitted proposals, appendices, and testimony and will craft one set of changes that will be applicable to all FMMOs. In addition, USDA will conduct an economic analysis of the impact of these changes. After seeking comments and making minor changes, USDA will then send out a "Final Rule" that will represent a set of 11 FMMOs that will incorporate these national pricing changes. Farmers and their cooperatives will then have the opportunity to vote yes or no for these changes.

A big challenge facing USDA is that the contribution of Class I fluid milk sales to the value of each federal order pool has been diminished over time as per capita fluid milk consumption has declined and milk going into Class III and IV processing has increased. The whole purpose of having a federal order is to use market-pooling to share the higher benefits of Class I sales with all farmers that participate in the pool. As exports continue to grow relative to fluid milk sales, more and more pools will likely shrink in volume and value over time. Class III and IV plants will depool as Class I's contrition to the pool diminishes over time. As a result, these plants will likely pivot and find new ways to price milk. This will increasingly occur as commodity prices in the West merge with international commodity prices and become less influenced by the Midwest.

USDA has not yet released a recommended decision. After reviewing the entire hearing record, it's very likely that USDA will accept a significant rise in make allowances along with a future pathway for adjusting make allowances over time. In addition, USDA will likely adopt other "tweeks" to pricing parameters that will partially offset the depressing effects of higher make allowances on farm milk prices. But USDA will likely only accept such changes as long as they don't unduly change the baseline price of milk. The exception may be higher Class I differentials along with a wider spread in county level Class I differentials from surplus to deficit counties. Higher Class I

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differentials will create greater value in the pool and improve efficiencies by maintaining fluid milk diversions by supply plants (Class III and IV plants) to fluid milk plants.

If USDA's final rule, which they alone will craft after reviewing industry comments, results in only a slight increase in farm milk prices (compared to the present formulas), then the milk supply will not significantly change. That should have minimal impacts on dairy commodity prices.

Introduction

Federal Milk Marketing Orders (FMMOs) underwent significant changes back in 2000:

- Consolidation of the number of federal orders from 31 to eleven.
- Creation of Class IV pricing.
- Introduction to Multiple Component Pricing (MPC).
- Updated map of Class I differentials by county.

MPC pricing using end-product pricing formulas and changes to Class I pricing were very big changes implemented in federal order reform in 2000. The hearing process became enormously more complex and required testimony from academics, industry, and government economists, as well as academic and industry food scientists and processors. End-product pricing required the creation of formulas and parameters including make allowances and yield factors. Make allowances reflected the average cost of converting pure components (i.e. butterfat) into finished dairy products (i.e. butter). In setting the level of make allowances, USDA reviewed various cost of production studies that ranged from smaller older plants in the Northeast and Midwest to larger and more efficient plants in the West.

After the initial implementation of order reform, a number of hearings were called in 2000-2008 in order to refine the pricing formulas and make allowances. End-product pricing requires accurate measures of make allowances, yield factors, and other formula parameters. Calling for a hearing to reforming FMMO's typically begins with academic studies (i.e. cost of production studies), a hearing process, industry proposals, testimony, proposed order language from USDA, industry responses, USDA modifications, and finally a vote by farmers on the final rule.[2] The time required from initiating a study to farm adoption of the USDA final rule would typically take 3-4 years.

The National Milk Producers Federation (NMPF) petitioned USDA on May 1, 2023 to hold a national hearing "to amend five pricing provisions under all Federal milk marketing orders."[3] On July 24, 2023 USDA sent out a notice to hold a public hearing to consider proposals seeking to amend the uniform pricing formulas applicable in all 11 Federal milk marketing orders FMMOs. USDA narrowed the scope of the hearing to focus on milk composition factors, commodity product prices, Class III and Class IV formula factors, base Class I skim milk, and Class I and Class II differentials. USDA sent out a request for proposals, and hearings were scheduled in August and November 2023 and ended in January 2024. USDA did an excellent job of summarizing the basic

[2] To understand the hearing process, see USDA, AMS, "Federal Milk Marketing Order Program: Understanding the Milk Order Amendment Process," October 2018.
[3] https://www.ams.usda.gov/rules-regulations/moa/dairy/petitions.

elements of all these initial proposals.[4] It's clear from the hearing record that most of these proposals aim to retain the basic features of the current FMMO system and simply implement various updates or "tweeks."[5] The major elements of these proposals are:

- Raising the level of make allowances for processing dairy commodities.
- Offsetting some of the milk price depressing effects of raising make allowances.
- Changing the formula for the base price of Class I skim milk.
- Raising county level Class I differentials.
- Increasing the "spread" in the farm value of milk from surplus to deficit areas.
- Incorporating export sales (realistically, to Mexico and Canada) of basic dairy commodities into the NDSPR survey by extending the 30-day pricing period to 45 days.
- Adding and subtracting commodities in the weekly NDPSR surveys.

Updating make allowances so that plants can recover processing costs became the number one reason for holding a national hearing. The last time make allowances were updated was back in 2008. They can only be changed through the rulemaking process. So, a hearing must be held. One of the problems with this approach is that by the time a change in the make allowance is implemented, it is already dated since it takes time to develop the cost studies and go through the hearing process. As a result, there is always a significant difference between the level of the make allowance used by USDA in deriving component prices, and actual plant costs. This divergence has gotten so big in recent years that plants are likely regularly reporting margin losses, have cut back on repairs and maintenance, and have forestalled capital improvements. That is not good for dairy farmers or the dairy industry.

Elements of Change in Proposals

Rather than reviewing all of the submitted proposals, only the major ones will be reviewed. These proposals will likely form the edges of the sandbox that USDA will consider when crafting their response.

Make Allowances

Make allowances are part of the end-product formula that derives component values from basic dairy commodity prices as follows:

$$CP_i = \left(WP_j - MA_j\right) * YF_j$$

where i = dairy component, j=dairy commodity, CP is the component price, WP is the wholesale price, MA is the make allowance, and YF is a yield factor.

One of the main reasons for calling for a national hearing was to adjust the level of make allowances used to compute component prices with end-product pricing formulas. Given rising

[4]https://www.ams.usda.gov/sites/default/files/media/NationalHearingProposedRegulatoryTextAmendmentstoMarketingAgreementsandOrders_Clean.pdf.

[5] For example, there are no proposals to reflect differences between commodity prices in the West in East, or to incorporate export values in individual federal order pools.

costs, make allowances are no longer aligned with actual plant operating costs. Since a plant cannot control market prices and faces component costs set by the USDA, make allowances reflect what the plant has left to cover their actual operating costs. To be clear, actual plant costs for converting components into finished dairy products are very different than make allowances. And make allowances are only used to derive component values.

USDA contracted with Dr. Mark Stephenson at the University of Wisconsin to conduct a cost of processing study for dairy products.[6] The study focused on cheddar cheese, whey and WPC, butter, and nonfat dry milk and skim milk. A total of 61 plants were surveyed. The study asked for a year's worth of data. According to Stephenson, "participating plant data span an 39 month period of time from October, 2017 through December, 2020." A simple average of Stephenson's cost of processing for all four products from roughly 2018-2020 was 28.2% above current make allowances. In other words, the study confirmed an average 28% increase in processing costs from 2008 to 2020. Thus actual processing costs in 2024 are likely to be higher than that reflected in the Stephenson study.

There were just three proposals for updating make allowances. One was by the NMPF. Their proposal increased make allowances an average 20.7% over current make allowances. It also called for mandatory USDA plant processing cost studies that would form the basis of future increases in make allowance levels. The other proposals came from IDFA and the Wisconsin Cheese Makers Association. Their proposals called for an average 28.2% increase in make allowances in Year 1, and a gradual 4-year phase-in for an additional 21.8% increase.

Table 1. Alternative Make Allowance Proposals

	Current	NMPF	% chng	IDFA/Wisconsin Cheese Makers[1]	% chng
Butterfat	0.1715	0.21	22.4%	0.2251	31.3%
Nonfat Solids	0.1678	0.21	25.1%	0.2198	31.0%
Protein	0.2003	0.24	19.8%	0.2422	20.9%
Other Solids	0.1991	0.23	15.5%	0.2582	29.7%
Average			**20.7%**		**28.2%**

[1]Year 1 of a four-year phase-in.

Raising the levels of make allowances has the direct effect of increasing the dollars that plants can recoup for meeting fixed and variable conversion costs, but also reduces the value of the calculated component prices. In other words, raising make allowances with no other changes provides more dollars to plants, but reduces the farm value of milk.

Yield Factors

The American Farm Bureau Federation (AFBF)and Edge Dairy Farmer Cooperative have proposed that USDA conduct periodic mandatory and audited survey of plant costs, manufacturing yields,

[6] Mark Stephenson, "Cost of Processing in Cheese, Whey, Butter and Nonfat Dry Milk Plants." University of Wisconsin-Madison, December 2021.

and efficiencies.[7] They argued that any survey that would lead to changes in make allowances should also include yield factors. The results of a survey could lead to possible changes in the elements of the yield factor (conversion of milk components to finished dairy products, and shrink). Select Milk Producers Inc. is proposing that USDA examine current farm-to-plant shrink factors embedded into current yield formulas. Their concern is that current farm-to-plant shrink factors for milk and butterfat are out of date and don't reflect current technologies. Reducing or eliminating these shrink factors would have the impact of raising farm component values via higher yield factors and component values.

Milk Composition

As stated above, raising the make allowances with no other changes will directly lower the farm value of milk. That's because the component prices for fat, protein, other and nonfat solids will all directly decline. One way to offset the negative impact of raising market allowances would be to "tweek" select parameters used by USDA to calculate the classified value of milk.

Milk composition changes as referenced in various submissions refer to parameters that impact the calculation of the prices of Class III and IV skim milk. Recall that the Class III and IV classified value of milk used by the USDA for computing the value of a federal order pool is directly impacted by reported pounds of use and the prices of milk components (fat, protein, other solids, nonfat solids). However, the classified value of fat and skim milk used in Class I processing and nonfat solids used in Class II processing are impacted by fat prices plus Class III and IV skim prices.

The following formulas use these milk component parameters in current pricing of federal orders:

Advanced Class III Skim Milk Pricing Factor ($/cwt) = Protein Price***3.1** + Other Solids Price***5.9**

Advanced Class IV Skim Milk Pricing Factor ($/cwt) = Nonfat Solids Price***9**

Class II Skim Milk ($/lb) = Advanced Class IV Skim Milk Pricing Factor + $0.70

Base Class I Skim Milk Price = (Advanced Class III Skim Milk Pricing Factor + Advanced Class IV Skim Milk Pricing Factor)/2 + $0.74

So, by raising the parameters **3.1**, **5.9**, and **9**, the classified value of Class I and II skim goes up. Hence the pool value is enhanced. In order to understand the impact on the value of a pool with significant Class I and II sales, go to the Northeast Federal Order and see how the classified value of milk is currently calculated.[8]

Prior to FMMO reform in 2000, milk in most orders was priced based on the unregulated value of Class III milk at 3.5% butterfat with a farm level adjustment for fat above 3.5%. The exception was the Upper Midwest which began to test component pricing. The point is, when FMMO reform was introduced in 2000, USDA kept the methodology to announce component values and class prices "at standard." The latter was defined as milk testing 3.5% fat, 2.99% true protein, and 5.7% other

[7] USDA prevented some proposals from being heard at the hearing. See https://www.ams.usda.gov/rules-regulations/moa/dairy/petitions.

[8] https://www.fmmone.com/Price_Announcements/Statistical_Uniform/UP202401.pdf.

solids. Thus the definition of Class III and IV skim milk used component parameters derived from "standard milk."

The proposals for milk composition outlined in table 2 recognizes that a) the formulas for milk prices would benefit from an offset to the higher make allowances, and b) that average component levels in milk have increased significantly since 2008. Thus, the skim value of Class III and IV milk should recognize this. USDA will also likely acknowledge this since it helps maintain the value of most federal order pools.[9]

The NMPF proposal "seeks to increase the skim component factors to equal the weighted average nonfat solids, true protein, and other solids factors for milk pooled on Federal orders using data for the three years prior to implementation, with a 12-month implementation lag." Their proposal (see table 2) simply reflects an update for the average component levels in farm milk, which is a 2%-9.6% increase over "standard component levels" as reflected in current formulas for skim milk. Their proposal also requests that skim component factors be updated every three years. The National All-Jersey proposed similar changes, but with annual updates.

Table 2. Changes in Skim Component Factors

	Current	NMPF/ National All Jersey	% chng
Nonfat Solids	9.00	9.41	4.6%
Protein	3.10	3.39	9.4%
Other Solids	5.90	6.02	2.0%

Survey of Commodity Prices

When USDA switched from a survey of unregulated Grade B manufacturing milk to end-product pricing under Federal Order Reform, they recognized that they needed publicly announced dairy commodity prices. The industry preferred a government survey rather than relying on prices announced from the CME spot call. The survey, today called the NDPSR (National Dairy Product Survey Report) is conducted by USDA's Agricultural Marketing Service (AMS). Each Tuesday dairy manufacturers enter data into an electronic platform and the commodity prices and volume surveyed are released the next day.

The definition of block and barrel cheddar, salted butter, nonfat dry milk, and dry whey used in the survey is very restrictive and only represents a small subset of U.S. dairy product production. That definition is as follows:

- Salted butter (80% butterfat), fresh or storage (frozen), in 25-kilogram and 68-pound boxes meeting USDA Grade AA standards.

[9]Any decline in the value of a federal order pool would likely lead to more depooling and less stable marketing conditions.

- Cheddar cheese in 40-pound blocks, colored between 6 and 8 on the National Cheese Institute color chart, meeting Wisconsin State Brand, USDA Grade A, or better standards.
- Cheddar cheese in 500-pound barrels, white, meeting Wisconsin State Brand, USDA Extra Grade, or better standards.
- Edible non-hygroscopic dry whey in 25-kilogram bags, 50-pound bags, totes, and tankers meeting USDA Extra Grade standards.
- Non-fortified, nonfat dry milk in 25-kilogram bags, 50-pound bags, totes, and tankers meeting USDA Extra Grade or USPH Grade A standards.

There are a few proposals that seek to change what is allowed under the AMS's mandatory survey. These proposals are as follows:

1. **National Milk Producer's Federation**. They proposed to eliminate barrel cheddar cheese from the NDPSR survey. The argument in favor of this proposal is that demand for barrel cheese used for processed cheese has flatlined in the US, whereas the volume of barrels being sent to the CME has grown over time. The theory is that barrel manufacturers are actually producing "native" liquid whey (no coloring added to the cheese) that can be used to process high quality whey products. Barrel cheese sent to the CME is considered a by-product. The argument against this proposal is that it would likely raise the price of "cheese" used in the advance and monthly protein price calculations since barrels often trade below blocks, and further create a disconnect between the cost of manufacturing cheese and the sale price. For example, a west coast cheese processor that elects to be pooled on an order would need to pay farmers more for protein. That would create a disconnect with export cheese sales into Asian markets. A final argument against dropping barrels from the NDPSR survey is that it would reduce the volume of cheese the survey is based on, further making the survey less representative.
2. **American Farm Bureau**. Their proposals would add 640-lb cheddar cheese blocks and unsalted butter to the weekly NDPSR survey. Back in 2000 when the idea of a national government survey was implemented, there were little or no "640s" being produced. But it is much more common today. Also, unsalted butter was considered a "value-added" product and very little was produced. A lot of butter today is packaged into 68-lb boxes and sent to public warehouses for freezing. It is then pulled out later in the year for "printing" into quarters or one-pound blocks. So if more unsalted butter is processed and packaged into 68-lb boxes, it makes sense to include it in the survey. Yes, it may sell at a premium or discount, depending on the time of the year, but it would increase the volume of the survey. The same goes for 640's. It's cheddar cheese and adding 640's would increase the representativeness of the survey.
3. **California Dairy Campaign**. This proposal seeks to add mozzarella to the cheese price survey. On the surface this sounds like a good idea. Afterall, there is a lot of mozzarella cheese processed in the U.S. In 2022 mozzarella cheese production in the U.S. was 4.6 billion lbs, compared to 4.0 billion lbs of cheddar cheese production.[10] It would add a lot of volume to the survey. The only problem is very little of today's mozzarella production is in the form of a standardized commodity. Most is custom made and specialized.

[10] Source: USDA, NASS, "Dairy Products: 2022 Summary," April 2023.

Exports and the NDPSR Survey

Exports are not reflected in the current NDPSR survey, even if the product exported meets the strict definition of dairy commodities outlined above. That's because the timing between when export prices are set and the actual shipment occurs (when title is transferred) is usually greater than 30 days. Basically, USDA has always preferred that once a dairy commodity has been manufactured and "sold," the timing between setting the price and transferring title is within 30 days.

The American Farm Bureau Federation proposed that this 30-day limit be extended to 45 days for sales of nonfat dry milk. The practical impact of their proposal is that a significant share of U.S. exports of nonfat dry milk to Mexico would be included in the weekly NDPSR survey. The problem of course is that 1) exports of SMP to Asian countries would be excluded, and 2) exports of other dairy products would also be excluded.

Even though close to 20% of milk solids produced in the U.S. is now exported, there is no good way to incorporate these sales into the NDPSR survey. The survey today basically reflects short term domestic sales. That is good for domestic manufacturers that want to line up their cost of milk components with a short-term sale price. However, given the large lead times required for exports, and the fact that international prices may not always converge with domestic prices (i.e. butter and cheese), FMMO pricing may not always be practical for export-oriented manufacturers. That is why one can predict that more and more west coast manufacturers that focus on exports will increasingly depool their plants from federal orders over time.

Proposals for Changes in Class I Pricing

One other reason for calling for a national hearing is to revise Class I pricing. Two changes are being considered. One is the Class I pricing formula. The second is the level of Class I pricing differentials by county. One driving force for change is dairy farmers who believe that the current Class I formula basically robbed them of Class I revenue. That's because the current base Class I formula, which calculates an average of Class III and IV skim milk prices, resulted in lower Class I revenue when dairy commodity prices (namely cheese and nonfat dry milk) wildly converged, as occurred during the pandemic. That is in comparison to the earlier formula which used the "higher of" Class III and IV skim milk prices. The other driver for change is the loss of Class I revenue in many federal order pools due to the relentless decline in annual per capita fluid milk consumption. That has created many problems for federal order pools including: 1) increased possibility of negative PPD's, 2) greater instances of depooling, and 3) a reduced timeline for the day when federal milk marketing orders (which are based on Class I sales) are no longer viable. One temporary fix for this problem is to raise Class I differentials as well as enhance the Class I base formula in order to generate more Class I revenue.

Raising Class I differentials will result in fluid milk processors charging more for farm milk components to their retail customers. This could also result in milk buyers pushing back on other costs such as manufacturing, packaging, distribution, etc. Thus, fluid milk processors will likely oppose any increases in Class I pricing. Another impact is that if retail fluid milk stores pass on some or all of the price increases for Class I milk to their customes, it will result in lower Class I sales. Fluid milk processors will argue that that is the opposite of what the market needs. But one

could argue that fluid milk demand is very "inelastic." In other words, an increase in the retail price of milk would result in very little change in consumption.

Base Class I Price Formula

The formula for Class I pricing changed in March 2019 when the base Class I skim price switched from the "high of" to an average of Class III and IV skim milk pricing factors plus a fixed price of $0.74cwt.[11] That change was prompted by an agreement between NMPF and IDFA that the change would 1) allow Class I prices to be hedged using the futures markets, and 2) that producers would largely be left whole by the fixed adjustment of $0.74/cwt. In other words, the new formula over time would generate the same amount of Class I revenue as the "higher of" did. But when the pandemic struck and retail food service businesses were severely constrained, cheese prices fell dramatically relative to nonfat prices. As a result, farmers claim they lost significant Class I revenue compared to what they would have received under the "higher of." Thus a number of proposals, including that of the NMPF, are calling for the return of the "higher of" Class III and IV skim milk prices to be used in the base Class I pricing formula.

IDFA's revised submission dated June 20th, 2023 is a modification of the current average of Class III and IV skim milk. IDFA proposes to maintain the predictability of the average of advanced Class III and IV skim in order to continue the ability to hedge Class I risk. They understand that the $0.74/cwt "add on" that is currently used as of May 2019 does not make milk producers "whole" when the Class III and IV skim prices diverge. Thus, they came up with a unique approach that involves a 24-month average and lag structure that basically recomputes this add on each year. Their example for 2023 results in an add on of $1.51/cwt which is above the current $0.74/cwt.

New Map of Class I Differentials

NMPF proposed raising current county level Class I differentials. Differentials are added to the manufacturing value of milk (the Class I mover) in order to determine the Class I price. These fixed price differentials have not changed since the late 1990s. NMPF proposes to raise the levels of all Class I differentials, and in some cases, effectively increase the spread in Class I differentials between surplus and deficit areas. The rise in Class I differentials can be justified based on the general rise in inflation since the late 1990s, and the fact that milk prices are generally cheaper than many plant-based alternatives, which is a clear competitor to fluid milk consumption.

Each county in the current map of Class I differentials in the U.S. was assigned a fixed per unit differential for Class I milk whether the county was located in a federal order or not. Generally speaking, Class I differentials increased when moving North to South and West to East. Also, Class I differentials were lower in surplus rural areas and higher in deficit areas (urban locations).

Table 3 shows the current and proposed Class I differentials for each federal order. Each order has an associated county from which Class I prices and the producer price differential (PPD) are announced. For example, the base zone county for the Northeast Order is Boston which is located in Suffolk County, Massachusetts. The current differential is $3.25/cwt. NMPF is proposing to raise

[11] See Federal Register, "Federal Milk Marketing Orders-Amending the Class I Skim Milk Price Formula," National Archives, March 11, 2019.

Table 3. National Milk Producers Federation Proposal (Revised) for Select County Level Class I Differentials, $/cwt

Federal Order	County/State	Current	Proposal[1]	change	% chng
Northeast FO 1	Suffolk, MA	3.25	5.10	1.85	56.9%
Appalachian FO 5 [2]	Mecklenburg, NC	3.40	5.60	2.20	64.7%
Florida FO 6 [2]	Hillsborough, FL	5.40	7.30	1.90	35.2%
Southeast FO 7 [2]	Fulton, GA	3.80	5.95	2.15	56.6%
Upper MW FO 30	Cook, IL	1.80	3.10	1.30	72.2%
Central FO 32	Jackson, MO	2.00	3.35	1.35	67.5%
Mideast FO 33	Cuyahoga, OH	2.00	3.70	1.70	85.0%
California FO 51	Los Angeles, CA	2.10	3.00	0.90	42.9%
Pacific NW FO 124	King, WA	1.90	3.00	1.10	57.9%
Southwest FO 126	Dallas, TX	3.00	4.00	1.00	33.3%
Arizona FO 131	Maricopa, AZ	2.35	3.00	0.65	27.7%
Average		2.82	4.28	1.46	54.5%

[1]National Milk Producers Federation revised proposal, June 20, 2023.
[2]Includes adjustments to Class I differentials.

this by $1.85 to $5.10/cwt. That represents a 56.9% increase. On average, using city centers across all 11 federal orders, the NMPF revised proposal would raise Class I differentials by $1.46/cwt or 54.5%.

Location Adjustments

Agricultural commodities are priced either at a futures exchange or at a physical spot market. Prices are also set at the farm and at ports or urban areas in relation to these market setting prices. Prices are typically lowest at the farm and highest at the city centers (where there are consumers). The difference between the market price and these other locations is called a “basis.” Basis typically is determined daily by changes in transportation costs and other factors.

The dairy industry is no different. FMMO’s recognize that in order to encourage the movement of surplus milk from rural areas (where there are supply plants) to urban areas (where there are Class I fluid plants), the farm price must be lower than that in the city center. During federal order reform back in the late 1990s, USDA used a transportation study by Cornell University to set county level Class I differentials. These were also used to set the relative price of milk for counties that supply milk to the order. For example, farm milk in eastern Washington was set 15 cents/cwt lower than farm milk near Seattle. While the cost of transporting milk today from eastern Washington over the Snoqualmie pass to Seattle or Portland is much greater than 15 cents/cwt, the lower farm price helps move milk and dairy products to consumers.

USDA uses the county level map of Class I differentials to set location adjustments. This reflects the change in value of milk from the announced location (the city center for an order) to a more rural location where the farmers and plants are located. It was originally designed to help pay part

of the cost of diverting milk from a surplus region to fluid plants located near the city center. For example, the Class I differential for Boston which is part of the Northeast Federal Order number one is $3.25/cwt. A fluid milk plant located in the county surrounding Boston will charge their customers the Class I mover plus $3.25/cwt. The Class I differential in Syracuse, New York is $2.50/cwt, or $0.75/cwt less than Boston. Syracuse is located both south and west of Boston in a rural part of western New York. When the market administrator announces the uniform blend price for milk each month, plants in Syracuse will pay their local farmers $0.75/cwt less for their milk.

The NMPF revised proposal not only raises the level of Class I differentials in every county relative to current levels, but in some cases increases the spread or the location adjustment between surplus and deficit areas. An example of select counties is provided below and in table 4.

- **Northeast Order One**. As stated earlier, the Boston Class I differential was raised $1.85/cwt from current levels in the NMPF proposal. But more rural areas of the order were raised by $1.70/cwt. As a result, the location adjustment for Syracuse would change from the current negative $0.75/cwt to a negative $0.90/cwt.
- **Central Order 32**. This order has a large geographic area with a number of major cities. Prices are announce out of Kansas City. The NMPF proposal raised the Kansas City Class I differential by $1.35/cwt to $3.35. But the differential to the north in Lemars, Iowa is proposed to go up by just $1.05/cwt and to the West in Denver up just $0.75/cwt. Thus the Lemars location adjustment changed from a current negative 0.25/cwt to a proposed negative $0.55. However, Denver's location adjustment flipped from a positive $0.55/cwt to a negative $0.05/cwt.
- **Florida Order 6**: the Florida order has the highest Class I differentials in the U.S. since it is located the farthest from any surplus milk region. The central city for price announcements is Tampa which is located in the north on the Gulf side. Jacksonville is located north of Tampa on the east coast, and Miami is located well south of Tampa on the east coast. The NMPF revised proposal seeks to raise the Florida differentials by $1.90/cwt and preserve existing location adjustments.
- **California Order 55**: this is a relatively new order with prices announced out of Los Angeles. The Class I differential there is currently $2.10/cwt and NMPF is proposing to raise it an additional $0.90/cwt. Both San Francisco and Fresno have lower Class I differentials and negative location adjustments. The NMPF proposal would raise the San Francisco location adjustment from a negative $0.30/cwt to a negative $0.10/cwt, but maintain the existing negative $0.50/cwt location adjustment for Fresno.
- **Pacific Northwest Order 124**: The city center for this order is Seattle. There is a Class I differential zone of $1.90/cwt all along the north to south I-95 corridor. But most counties east of the Cascade mountain range are in a $1.75/cwt zone with a negative 15 cents/cwt location adjustment. The NMPF proposal would raise both differentials by $1.10/cwt and maintain the current levels of location adjustments.

In summary, the NMPF revised proposal would significantly raise all county level Class I differentials, but not by the same amount. In some orders, rural areas with surplus milk would see Class I differentials rise less than in the orders' city center. That would increase the spread and

Table 4. Select Cities and Location Adjustments: Current vs. National Milk Producers Federation Proposal

	Current:		NMPF Proposal:		
City, State	Class I Differential	Location Adjustment	Class I Differential	change	Location Adjustment
Northeast Order 1:					
Boson, MA	3.25	0.00	5.10	1.85	0.00
Mt. Holly Springs, PA	2.80	-0.45	4.50	1.70	-0.60
Syracuse, NY	2.50	-0.75	4.20	1.70	-0.90
Central Order 32:					
Kansas City	2.00	0.00	3.35	1.35	0.00
Lemars, IA	1.75	-0.25	2.80	1.05	-0.55
Denver, CO	2.55	0.55	3.30	0.75	-0.05
Florida Order 6:					
Tampa, FL	5.40	0.00	7.30	1.90	0.00
Jacksonville, FL	5.00	-0.40	6.90	1.90	-0.40
Miami, FL	6.00	0.60	7.90	1.90	0.60
California Order 55:					
Los Angeles	2.10	0.00	3.00	0.90	0.00
San Francisco	1.80	-0.30	2.90	1.10	-0.10
Fresno	1.60	-0.50	2.50	0.90	-0.50
Pacific NW Order 124:					
Seattle	1.90	0.00	3.00	1.10	0.00
Yakima	1.75	-0.15	2.85	1.10	-0.15

thereby make for a more negative location adjustment. In other areas, the change in Class I differentials would be uniform, effectively locking in the current location adjustments.

Impact of Changes in Formula Parameters

How Will USDA "Likely" Respond?

There have been numerous proposals recently to modify portions of current federal milk marketing orders. USDA reviewed all submissions and in some cases eliminated proposals from the hearing process. During the two hearings, USDA conducted oral testimony including questions and answers by opposing council before an administrative law judge. USDA must now gather all this information (proposals and hearing record) and complete one set of new federal orders. USDA therefore decides on the changes and must make sure they all work together in a comprehensive manner to ensure the functioning of federal orders. Part of the process of implementing changes and crafting

new orders is for USDA to conduct an economic impact assessment. USDA will forecast how the new orders will impact the milk market.

The initial proposal from USDA will be called a "recommended decision." USDA will then ask for industry comments. After reviewing these comments, USDA will release a "final rule." Farmers will then be asked to vote yes or no to accept or reject the final rule. If they vote no for an order, it will be eliminated.

So, what will USDA do? Since they have not yet issued a recommended decision, one can only speculate on what they will do.

Here are some basic rules that USDA will likely follow:

1. Any change should improve the functioning of federal orders.
2. Changes should not lead to higher or lower farm milk and dairy commodity prices.
3. Survey prices should reflect current spot pricing (within a short time frame) and should be representative of the market.

With regard to the first rule, it's very likely that USDA will agree to raise current make allowances. That's because the industry cannot function without profitable dairy processing plants. If plants are not making acceptable margins, they are not budgeting properly for repairs and maintenance and not expanding with the milk supply. Given that make allowances were last changed in 2008, it's very likely that USDA will agree to an increase in line with higher processing costs. The IDFA/Wisconsin Cheese Makers proposals calling for a 28% increase in make allowances will likely be selected since it correlates to the Stephenson study. Make allowances need to adjust to reflect the commercial realities of processing dairy products.

But what about dairy farmers? Shouldn't they also get a cost of living increase? USDA has never agreed to that concept. Plants must be profitable in order to serve dairy farmers. But dairy farmers face "the market." They allocate capital to a risky venture. End product pricing has always had the goal of returning a value for components that reflects the reality of the market place. Enhancement to dairy farm income is better achieved through various farm bills.

Another change USDA will likely accept in order to improve the functioning of federal orders is an increase in Class I differentials along the lines of the NMPF proposal. Table 3 above only reflects changes in Class I differentials for reporting city centers in all federal orders. Not all counties have the same increase in Class I differentials. In fact, many counties located in rural areas had proposed increases that were below that of the city centers. Thus it is likely that the average increase from all county level Class I differentials in the NMPF proposal may be more in line with the general rate of inflation since 2008 of 46% as reported by the Bureau of Labor Statistics consumer price index (all urban consumers). As stated earlier, raising the Class I differential will not only improve pool revenue and farm milk prices, but it will also help incentivize supply plants to continue to participate in the pooling process.

USDA may also accept NMPF's request to return the definition of Class I skim milk pricing back to the "higher of" Class III or IV advanced skim milk pricing factors. USDA simply wants to reflect a Class I differential that sits on top of a manufacturing value. The original definition of manufacturing

value under federal order reform (when Class IV pricing was introduced) was "the higher of." So, if farmers are asking for that, it's likely to return.

With regard to no. 2 above, it is apparent that an increase in make allowances, all else the same, will lower the farm price of dairy components. Thus it is very likely that USDA will also agree to proposals to increase the milk composition parameters in order to provide a partial offset. Also, NMPF made a strong argument that component levels in milk have increased since federal order reform was introduced in 2000. Such a change will help maintain a neutral farm milk price and not create economic policy incentives to expand or contract the U.S. milk supply.

Finally, with regard to no. 3 above, USDA will likely not accept NMPF's proposal to drop barrel pricing in the cheese NDPSR survey. The main reason is because such a change will make the survey less representative. USDA may agree to add 640s to the survey. Another proposal that USDA will not likely adopt is expanding the NDPSR survey from 30 days to 45 days in order to be more reflective of exports (for dry proteins). Unfortunately, USDA will likely stick to the idea that spot commodity pricing should be set within a short period of time, such as 30 days.

First Impact Simulation

It's difficult to assess what impact each proposal will have on the component and class prices in federal orders. Each proposal suggests changing a number of different parameters. And some proposals are more comprehensive than others.

In this section our goal is to compare three proposals to the current federal order. One scenario reflects the NMPF revised proposal which 1) drops barrels from the NDPSR survey, 2) raises make allowances, 3) increases milk component factors, and 4) changes the base Class I skim formula and raises Class I differentials. A second scenario reflects IDFA's two proposals for make allowances and the base Class I formula. And a third scenario reflects a "likely" USDA recommended decision. The latter is basically a guess that reflects the following:

- Maintains current cheddar block and barrels in the NDPSR survey.
- Adopts NMPF's map of Class I differentials.
- Adopts NMPF's formula for the "higher of."
- Adopts IDFA's proposal for increasing make allowances.
- Uses NMPF's recommendation for increasing milk component factors for true protein, other solids, and nonfat solids.
- Uses all other formulas from the current federal orders.

Methodology

A typical approach to analyzing various policy scenarios would be to use a dynamic simultaneous equations econometric model to forecast a baseline and simulate various scenarios. However, a simpler approach will be used. We'll take an average of historical dairy commodity prices and plug them into the current formulas with the changed parameters for each scenario. This will provide a baseline and scenarios that reflect a one pass direct impact. Comparing the scenarios to the baseline will then provide an estimate of impact for each policy change.

The methodology involves calculating historical prices and choosing one county as part of one federal order pool to reflect revised Class I pricing. For the data, an average of historical commodity prices for the five years January 2019 to December 2023 was calculated. For the federal order pool the Northeast Order one was selected since it is a large pool that is well diversified among classes. And Syracuse was selected to compute the farm price of milk since it also reflects a significant location adjustment relative to the city center (Boston). And finally, the analysis assumed that the advanced butterfat and advanced Class III and IV prices were the same as the 4-week class and component values since 1) it would greatly simplify the analysis, and 2) it would not distort the results since a five-year average was used.

Results

The results of the three simulations and baseline are provided in tables 5-8. The formulas currently used in federal orders for component and class prices were used.[12] Only the parameters from the various proposals were used to change the simulated values. For example, while the formula for butterfat in current federal orders was employed, the level of the make allowance was changed, resulting in a different component value.

The same set of commodity prices were used in all scenarios. Note the historical average spread between blocks and barrels was $0.1251/lb (see table 5). The exception was the NMPF scenario which dropped barrels from the NDPSR survey. That had the impact of raising the true protein price since the historical average block price was 4.88 cents/lb above the average AMS cheese price.[13]

Table 6 illustrates the make allowances and milk component factors used in this study. Note that the average NMPF make allowance is 20.5% above current levels whereas the IDFA proposal for make allowances is 28.0% higher. Without any other changes, a higher make allowance will lower the farm value of milk components. That said, the NMPF proposal calls for increasing the level of milk component factors used in the Class III and IV skim formulas. Such a change would partially offset the negative impact of a higher make allowance on the pool value of milk.

The component values calculated in table 7 are lower than the estimate of the current federal order formulas by the level of the make allowances in these proposals. Note that the component levels are lowest for the IDFA scenario and the USDA "likely" scenario since the IDFA make allowance increases are greater than the NMPF scenario. The exception is the true protein price in the NMPF scenario which is actually higher than that in the "current" scenario. That is due to dropping barrels from the NDPSR survey and from the AMS calculation of the "cheese price."

The Class III and IV skim values at standard in table 7 under the IDFA scenario are all lower than the NMPF scenario since the IDFA scenario uses higher make allowances. Note that the Class III prices at standard under the NMPF scenario are higher than the current scenario due to the higher true protein values. The USDA "likely" scenario for Class III and IV skim milk prices is greater than the

[12] See: https://www.ams.usda.gov/resources/price-formulas .

[13] The AMS or Agricultural Marketing Service uses a 3 cent/lb premium that is added to the barrel price. Over the period January 2019 to December 2023, the weighted average volume of blocks in the NDPSR survey was 48.6%.

IDFA scenario because even though it assumes the IDFA proposal for make allowances, it also adopts the milk component factors recommended by NMPF.

Table 5. Historical Prices and Class I Differentials Used in the Analysis

	Units	Current	NMPF[1]	IDFA[2]	USDA "Likely" Scenario
5-yr Average of Commodity Prices:					
butter	$/lb	2.2080	2.2080	2.2080	2.2080
nonfat dry milk	$/lb	1.2447	1.2447	1.2447	1.2447
cheese	$/lb	1.8459	na	1.8459	1.8459
40-lb blocks	$/lb	1.8947	1.8947	1.8947	1.8947
500-lb barrels 4/	$/lb	1.7695	na	1.7695	1.7695
spread	$/lb	0.1251	na	0.1251	0.1251
dry whey	$/lb	0.4568	0.4568	0.4568	0.4568
Select Class I Differentials:					
Boston, MA	$/cwt	3.25	5.10	3.25	5.10
Mt Holly Springs, PA	$/cwt	2.80	4.50	2.80	4.50
Syracuse, NY	$/cwt	2.50	4.20	2.50	4.20
Syracuse-Boston	$/cwt	-0.75	-0.90	-0.75	-0.90

[1]National Milk Producers Federation.
[2]International Dairy Foods Association.

Table 6. Make Allowances and Milk Component Factors Used in the Analysis

	Units	Current	NMPF[1]	IDFA[2]	USDA "Likely" Scenario
Make Allowances:					
butter	$/lb	0.1715	0.2100	0.2251	0.2251
cheddar cheese	$/lb	0.2003	0.2400	0.2422	0.2422
dry whey	$/lb	0.1991	0.2300	0.2582	0.2582
nonfat dry milk	$/lb	0.1678	0.2100	0.2198	0.2198
Milk Component Factors					
true protein	$/lb	3.10	3.39	3.10	3.39
other solids	$/lb	5.90	6.02	5.90	6.02
nonfat solids	$/lb	9.00	9.41	9.00	9.41

[1]National Milk Producers Federation.
[2]International Dairy Foods Association.

The Class I values in table 7 reflect a number of moving parts. The base Class I price at standard in the NMPF scenario is 16 cents/cwt above the current scenario due to 1) the higher true protein value, 2) higher milk component factors for Class III and IV, 3) the use of the "higher of," and d) the lower value of butterfat due to higher make allowances. The base Class I skim price in the IDFA scenario was even with the current scenario since the lower Class III and IV skim values were exactly offset in the IDFA proposal by their Class I base formula that used an adjuster that was computed to be equal to $1.25/cwt. The IDFA base Class I price at standard is 22 cents/cwt below the base "current scenario" since it uses a lower butterfat price.

The Class III and IV skim values in table 7 under the USDA "likely" scenario are higher than the IDFA scenario since they used the higher milk component factors, but lower than the NMPF scenario since the NMPF scenario has a higher protein price and lower make allowances. The USDA "likely" scenario also maintains the "higher of" since adoption of the IDFA lagged 24-month average formula for Class I would increase the Class I base price under this scenario above both the NMPF and IDFA scenario (along with the other assumptions for this scenario). Despite the adoption of the "higher of "and the milk component factors from the NMPF scenario, the base Class I price at standard under the USDA "likely" scenario is 55 cents/cwt below the current scenario.

Next, the Class I value for milk at standard in Syracuse was computed. Why Syracuse? The answer is because Syracuse is part of a balanced federal order in terms of utilization between classes, and reflects a significant location adjustment. Some orders have very little Class I utilization, others have a lot, and some have no change in the location adjustment under the NMPF proposal. So for Syracuse, the NMPF scenario is $1.86/cwt above the current scenario due to the higher Class I skim value and the higher Class I differential. The IDFA scenario is 22 cents/cwt below the current scenario since it had a lower Class I butterfat value and did not include any changes in Class I differentials. The USDA "likely" scenario is between the NMPF and IDFA values since it adopted NMPF's "higher of," mik component factors, and higher Class I differentials, but also adopted IDFA's higher make allowances.

The Class II values at standard in table 7 follow a similar pattern to the Class IV values with the NMPF scenario lower than the current scenario, the IDFA scenario lower than the NMPF scenario, and the USDA "likely" scenario somewhere in between.

Finally, table 8 takes all the class prices and an assumption for pool utilization rates and computes the blended farm price of milk at standard zoned to Syracuse. The blend price encapsulates all of the changes that were in each proposal. The farm price of milk in Syracuse under the NMPF scenario, with no other simultaneous changes, is calculated to rise 3.8% above the current baseline scenario largely due to higher Class I and III prices. The IDFA scenario is calculated to decline 2.9% relative to the current baseline due to lower class prices as a result of higher make allowances. Recall that there were only two IDFA proposals: one to raise the make allowances, and another to modify the current Class I base skim price formula. Finally, the USDA "likely" scenario is calculated to rise 1.3% above the current scenario. That's because the Class II and IV prices are lower than the current scenario, the Class III price is even, but the Class I price is higher due to the use of the NMPF's higher Class I differentials, the return to the "higher of," and the new milk component factors.

Table 7. Calculated Component and Class Prices Used in the Analysis

	Units	Current	NMPF[1]	IDFA[2]	USDA "Likely" Scenario
Component prices:					
butterfat	$/lb	2.4662	2.4196	2.4013	2.4013
true protein	$/lb	2.7055	2.7839	2.6388	2.6388
other solids	$/lb	0.2654	0.2336	0.2045	0.2045
nonfat solids	$/lb	1.0661	1.0244	1.0147	1.0147
Class III:					
Skim milk price	$/cwt	9.95	10.84	9.39	10.18
Price @ std	$/cwt	18.23	18.93	17.47	18.23
Class IV:					
Skim milk price	$/cwt	9.59	9.64	9.13	9.55
Price @ std	$/cwt	17.89	17.77	17.22	17.62
Class I:					
Skim milk price[3]	$/cwt	10.51	10.84	10.51	10.18
Base Price @ std	$/cwt	18.77	18.93	18.55	18.23
Syracuse Price @ std	$/cwt	21.27	23.13	21.05	22.43
Class II:					
BF	$/lb	2.4732	2.4266	2.4083	2.4083
Skim milk price	$/cwt	10.29	10.34	9.83	10.25
Price @ std	$/cwt	18.59	18.47	17.92	18.32

[1]National Milk Producers Federation.

[2]International Dairy Foods Association.

[3]The Class I skim price formula under the IDFA scenario reflects a calculated adjuster of $1.25/cwt which replaced the current adjuster of $0.74/cwt.

Table 8. Assumed Utilization Rates and Simulated Syracuse Blend at Standard

	Units	Current	NMPF[1]	IDFA[2]	USDA "Likely" Scenario
Average utilization rate used for Federal Order No. One[3]					
Class I	percent	30.9	30.9	30.9	30.9
Class II	percent	24.7	24.7	24.7	24.7
Class III	percent	28.7	28.7	28.7	28.7
Class IV	percent	15.7	15.7	15.7	15.7
Syracuse blend price @ std	$/cwt	19.20	19.93	18.65	19.45

[1]National Milk Producers Federation.
[2]International Dairy Foods Association.
[3]September 2022.

Conclusions

In 2000 federal order reform introduced significant changes including 1) consolidating the number of federal orders, 2) introducing multiple component pricing, 3) introducing Class IV pricing, and 4) updating Class I differentials. The current national hearing is maintaining most of the current order language. As said earlier, it's more of a "tweek" to formula parameters.

The proposals have centered around raising make allowances, which last changed in 2008, and modifying Class I premiums and the base skim Class I formula. Other changes include raising the milk component factors for the Class III and IV skim formulas as a way to offset some of the negative milk pricing effects from higher make allowances.

Two things were done in this study. First, the direct effects of two proposals were simulated: the NMPF and the two IDFA proposals. A simple simulation of policy changes on the formulas using a historical five-year average of commodity prices was conducted. Second, judgement was used to pick and choose from all the major proposals and simulate a set of policy changes that would reflect a USDA "likely" scenario. No doubt everyone has an opinion on this topic.

In every scenario, raising the make allowances had the direct predictable effect of lowering the calculated values of milk components. The IDFA scenario would raise make allowances the most and mirrored the cost study by Dr. Stephenson. That in turn would lower the value of the pool and the uniform price of milk calculated by the market administrator. In a dynamic simultaneous model, a lower farm price of milk would decrease the supply of milk and increase demand for dairy products, resulting in a gradual rise in dairy commodity prices over time.

The NMPF proposal also raised make allowances. But in addition, they raised the levels of most milk component factors. Along with eliminating barrels from the NDPSR survey, this acted as an

offset to higher make allowances. With a dynamic simultaneous model, these policy changes would result in minimal impacts on the milk supply, market demand, and commodity prices.

The final changes were those in the Class I price of milk. The two changes under consideration were the rise in Class I differentials, as in the NMPF proposal, and the two changes proposed in the base Class I skim pricing formula. The IDFA proposal for maintaining the current formula for the Class I base skim price with a small tweek on the adjuster would basically offset the rise in make allowances. The NMPF proposal called for a return to the "higher of." Overall, the NMPF proposal would lead to higher Class I values compared to the IDFA proposal. Again, the impacts would be greatest in those regions that have pools with high Class I utilization rates.

In conclusion, the USDA will pick and choose from various proposals to create new order language which will meet the objectives of improving the performance of federal orders. The USDA "likely" scenario developed here resulted in a farm blend price that was between the NMPF and IDFA scenarios, and increased just 1.3% relative to the baseline. That implies that there would be less secondary impacts on the milk supply and consumer demand. It's true that consumers of fluid beverages will face higher prices, but the inelastic nature of fluid demand suggests this will have minimum impact on the long-term trend of lower fluid consumption.