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# **ANALYSIS OF NMPF'S FOUNDATION FOR THE FUTURE PROGRAM**

FAPRI-MU Report #05-10

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## EXECUTIVE SUMMARY

This analysis provides the quantitative results of eliminating certain aspects of current federal dairy policies and replacing them with the “Foundation for the Future” (FFTF) program. The analysis of the FFTF program is made relative to the FAPRI March 2010 baseline that is summarized at: [http://www.fapri.missouri.edu/outreach/publications/2010/FAPRI\\_MU\\_Report\\_01\\_10.pdf](http://www.fapri.missouri.edu/outreach/publications/2010/FAPRI_MU_Report_01_10.pdf).

There are four major policy changes considered in this analysis:

- 1) Elimination of the Dairy Product Price Support Program (DPPSP)
- 2) Elimination of the Milk Income Loss Contract (MILC) program
- 3) Introduction of the Dairy Producer Margin Protection Program (DPMPP)
- 4) Introduction of the Dairy Market Stabilization Program (DMSP)

The analysis does not incorporate the changes to the federal order system under consideration in the FFTF program.

The FFTF program provides payments under the base plan of the DPMPP on 90 percent of producers’ base milk production which effectively floors dairy farmers’ margins in tough margin times. Relative to the current set of federal dairy programs, the FFTF’s DPMPP base plan program will make payments less often but will provide a stronger safety net in extremely low margin events.

However, it is important to recognize that producers will have the flexibility to increase their level of margin protection using the supplemental plan contained in the FFTF program. The level of government support decreases and the amount of funding required from producers increases as the supplemental margin level grows, thus ensuring the program does not result in a chronic milk surplus.

On an average basis, this analysis shows that the FFTF program is expected to have little effect on dairy markets since the FAPRI-MU stochastic baseline has dairy producer margin levels that exceed FFTF trigger levels for a large majority of outcomes. For example, milk production increases average less than 180 million pounds per year under the analysis, less than 0.1 percent of yearly milk production.

However, for outcomes that do contain either relatively low dairy producer margins, the FFTF program provides meaningful support to dairy producers under the DPMPP and triggers the DMSP to help correct surplus milk production. The DMSP will provide a mechanism for the industry to correct excess supply periods, yet the base approach under the DMSP will allow supply growth to match growth in domestic and international markets.

# Analysis of NMPF's Foundation for the Future Program

## INTRODUCTION

This report provides a quantitative assessment of the Foundation for the Future (FFTF) program recently adopted by the National Milk Producers Federation's (NMPF) board of directors. The FFTF program has features meant to provide direct support to dairy producers' margins when they are at low levels while allowing markets to function without support in periods when producers' margins exceed these low levels.

As a result of the program's objectives, analysis of the effects of the program critically depends on the expected margins dairy producers will face in the coming decade. This future uncertainty adds complexity to providing a quantitative assessment of the program since discussion about the probability of being in a low margin environment is necessary to understand the impacts of the program.

The following sections of this report will provide the basis needed to fully explore the effects of the FFTF program. The report will include discussion about the FAPRI baseline and expected producer margins, the expected effects of eliminating current federal dairy programs under FFTF, the operation of the new FFTF policies and quantitative effects of the program.

## 2010 FAPRI BASELINE AND THE DPMPP MARGIN

The volatility experienced by the dairy industry in the past decade has been unprecedented. 2009 yielded the most glaring example, as record-high milk prices quickly evaporated while the industry also faced record-high feed prices, leading to some of the worst financial times the industry has ever experienced. The reality of extreme volatility makes projecting future levels of milk and feed prices a large task. Despite the challenge, FAPRI annually provides a ten-year outlook of many aspects of global agriculture.

The FAPRI baseline has been criticized for not incorporating the volatility that has existed in agricultural markets. For many years, the FAPRI baseline was constructed in a deterministic fashion. For example, each year had a unique outcome for the U.S. all milk price that was the best estimate of the milk price given average assumptions on weather, external forecasts of the global economy and modeled outcomes for other agricultural markets such as corn. The process tended to result in smooth paths for many variables given that these average assumptions were used to drive the agricultural specific baseline.

To address this concern about the smoothness and lack of volatility in the deterministic baseline, FAPRI has moved to a stochastic baseline development process that allows more risk to be incorporated into the baseline. By incorporating historical variability into external variables that were previously assumed to be at average levels yields future volatility similar to what the industry has experienced.

In simple terms, the FAPRI stochastic baseline now contains 500 unique outcomes that vary depending on the particular draw made on the conditioning assumptions that drive the baseline. Some of these 500 unique outcomes exhibit record-high to record-low milk prices in a short period of time just as the industry has recently experienced.

In presenting the stochastic baseline, FAPRI tends to only report the average of the 500 outcomes. This averaging will smooth substantially the variation of individual outcomes. In analyzing policy, the power of the stochastic approach is that one can see the effects of the policy under different market environments. For example, focusing on the portion of the 500 outcomes with low milk prices will provide more insight into the operation of the program. This approach is certainly extremely important in understanding the FFTF program since most of its features will only operate in periods of low margins.

In general, the FAPRI baseline suggests recovery for many sectors of agriculture, including dairy, relative to 2009 as a result of the recovery of global incomes that allow consumers in this country and around the world to buy more agricultural products. Production costs are expected to increase in the coming decade, driven by a general increase in all categories, but particularly a sustained rise in energy-related inputs. A full report on the FAPRI baseline and the important drivers can be found at:

[http://www.fapri.missouri.edu/outreach/publications/2010/FAPRI\\_MU\\_Report\\_01\\_10.pdf](http://www.fapri.missouri.edu/outreach/publications/2010/FAPRI_MU_Report_01_10.pdf).

Since many features of the FFTF program are driven by the program's calculated margin of milk price less feed costs, it is important to understand the level of this calculated margin in the FAPRI baseline. First, the FFTF program defines this margin as:

$$\text{MARGIN} = \text{MILK PRICE} - (1.192 * \text{CORN PRICE} + 0.00817 * \text{SOYMEAL PRICE} + 0.0152 * \text{ALFALFA PRICE})$$

where

MILK PRICE = USDA/NASS U.S. All-milk price, \$/cwt

CORN PRICE = CME nearby contract corn price, \$/bushel

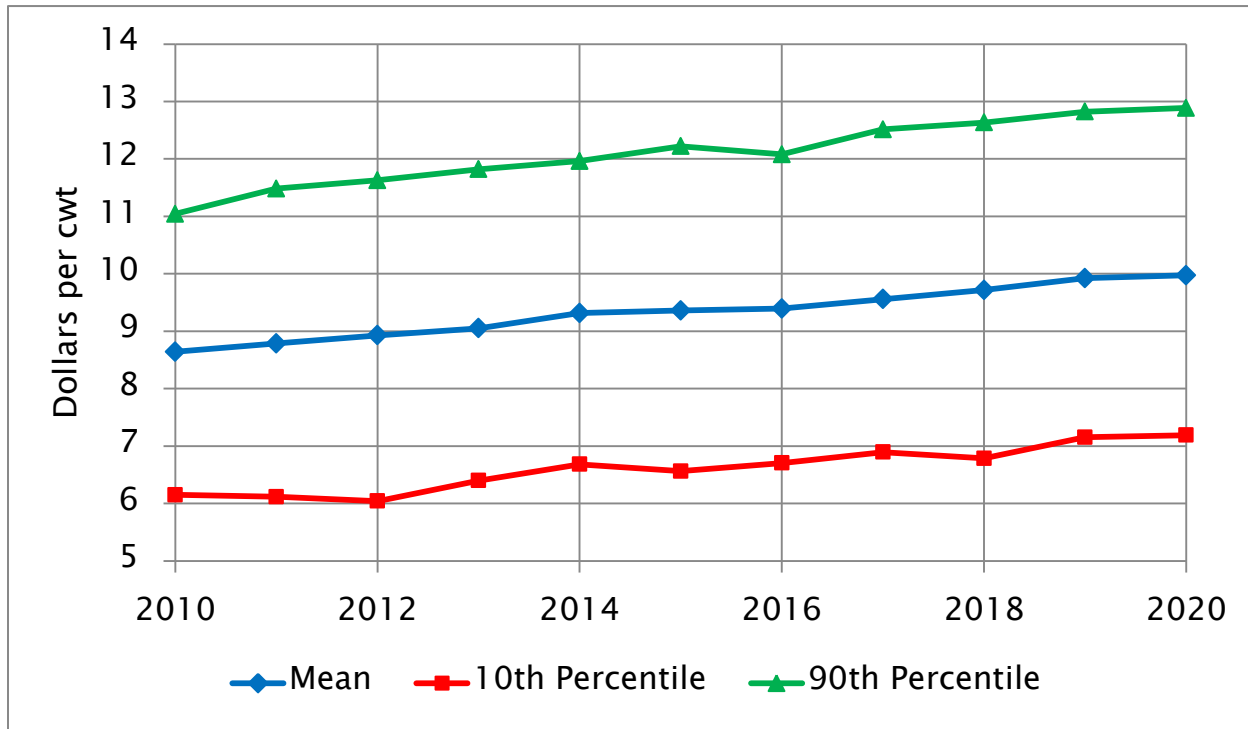
SOYMEAL PRICE = CME nearby contract soymeal price, \$/ton

ALFALFA PRICE = USDA/NASS alfalfa price, \$/ton.

Applying this margin formula to the FAPRI baseline results in the margin levels in figure one. On average, the margin is expected to remain above many of the trigger levels established under the FFTF policies. There are particular outcomes where the margin is low enough to trigger all FFTF policies. For example, figure one shows that ten percent of the margin outcomes are below \$6.60 per cwt in 2015. This figure provides the background to show that the FAPRI baseline would suggest that it is possible to trigger policies under the FFTF but that it is not probable that these policies are triggered in any given year relative to the FAPRI baseline.

It is important to understand that one of the primary reasons that the program operates at a level where it is possible, but not probable, to trigger FFTF policies in any given year is that one goal of the FFTF program is to fit under the baseline government spending of current dairy policies as shown by the Congressional Budget Office (CBO) baseline. The current CBO baseline shows \$102 million of annual net outlays for dairy programs on average over the FY2011 to FY2020 period. FFTF margin-trigger levels set too high would move government spending on these programs well above CBO baseline levels.

FIGURE 1. FFTF MARGIN UNDER THE FAPRI BASELINE



## REMOVAL OF CURRENT FEDERAL DAIRY PROGRAMS

The analysis provided here eliminates the Dairy Product Price Support Program (DPPSP) and the Milk Income Loss Contract (MILC) program. Each of these programs has small effects in the FAPRI baseline on average. In a small percentage of outcomes, there are removals of dairy products under the DPPSP. While there tends to be a larger opportunity for removals of nonfat dry milk and butter in the baseline than cheese, on average small quantities of either of these two products is removed.

Once dairy products are removed under the DPPSP, these government stocks are allowed to come back into the market in subsequent years when dairy product prices rise. The return of these government stocks to the market tends to moderate the rise in dairy product prices, although the effect is rather small since most of the time government stocks remain at modest levels.

The MILC program does make payments to producers under the FAPRI baseline, but the level of these payments remains very small on average. Increasing milk prices over the baseline reduces the likelihood of payments under the MILC program, as does the change in the feed price trigger in September 2012 as mandated under current law. In addition to the fact that the FFTF program does not cap benefits based on a producer's level of marketings and the MILC does, there is another important difference between the DPMPP and MILC.

The MILC program begins to make payments sooner in an environment of declining margins than the DPMPP, but only provides coverage on 45 percent (34 percent after September 2012) of the price decline and caps individual producer eligibility at 2.985 million pounds annually. Conversely, the DPMPP provides 90 percent base coverage when the margin declines below \$4 per cwt. The level where payments start under the DPMPP is typically lower than for MILC but depends on the choice individual producers make regarding supplemental coverage.

## DPMPP AND DMSP UNDER THE FFTF PROGRAM

The Dairy Producer Margin Protection Program (DPMPP) has two components. First, the base program will make payments to producers when the margin falls below \$4 per cwt (this trigger level is subject to change following the government cost estimate resulting from CBO analysis of this proposal). Payments will be made on a quarterly basis. Producers can receive payments on 90 percent of their historical milk base, defined as their highest milk production from the previous three years. This program is available at no cost to producers. This analysis assumes that a small number of producers would opt to not participate in the base program, resulting in the assumption 85 percent of 2009 milk production will receive payment under the base program.

Participating dairy producers will then have the option to “buy-up” coverage over the \$4 base program level. Producers will be required to pay a portion of the cost of this additional coverage. The higher the level of coverage they choose, the higher the percentage of the cost they will bear. Producers will have some flexibility in the timing of signing up for the supplemental program, but it is a choice made for the remaining life of the program. There will be both economic and non-economic factors that will affect an individual producer’s choice of the level of supplemental coverage they sign up for.

Based on interaction with those experienced in the operation of the crop insurance program, this analysis assumes that 50 percent of eligible milk will sign-up for coverage at a \$6.50 per cwt margin. This choice will also depend on the projected CBO cost of the different margin coverage levels.

The Dairy Market Stabilization Program (DMSP) reduces the amount of milk a producer would receive a payment for if the producer exceeds his DMSP base. Under the DMSP, a producer’s base is defined as either a rolling three-month average or last year’s production for the same month. It is triggered when the margin falls below \$6 per cwt for two consecutive months. Once triggered, the continuation of DMSP is also subject the relationship between world versus U.S. dairy product prices. The further the decline in the margin, the larger the reduction in base marketings for which a producer will receive a milk check. The largest reduction in base marketings is 4 percent or an 8 percent maximum payment reduction that will occur when the margin falls below \$4. The operation of the DMSP will help to reduce expenditures under the DPMPP since it will tend to reduce the period of time margins fall below trigger levels for DPMPP payments by helping limit milk supplies in a surplus market condition.

## THE RESULTS

Table one highlights the effects on dairy markets of the policy changes contained in the FFTF program. The scenario (FFTF) shown in this table includes the following policy changes:

- 1) Elimination of the Dairy Product Price Support Program (DPPSP)
- 2) Elimination of the Milk Income Loss Contract (MILC) program
- 3) Introduction of the Dairy Producer Margin Protection Program (DPMPP)
- 4) Introduction of the Dairy Market Stabilization Program (DMSP)

The analysis does not include the changes to federal milk orders under consideration in the FFTF program.

As shown in table one, the effects on dairy markets are small on average under the proposal. Dairy product prices change very little under the analysis with nonfat dry milk prices falling by \$0.001 per pound on average over the analysis period. The removal of the DPPSP program provided little change in dairy product prices since strong world demand kept product prices above support levels for many of the stochastic outcomes resulting in only small government removals of dairy products on average.

TABLE 1. AVERAGE EFFECTS OF THE FFTF POLICIES ON DAIRY MARKETS

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Milk Production (million pounds)</b>											
Baseline	188,762	191,250	193,464	195,613	197,893	200,271	202,464	204,692	206,839	209,218	211,616
Scenario	188,735	191,302	193,565	195,751	198,046	200,440	202,643	204,865	207,011	209,385	211,760
Change	(27)	52	101	138	152	169	179	173	172	168	145
<b>Milk Price (dollars per cwt)</b>											
Baseline	\$16.92	\$17.40	\$17.65	\$17.85	\$18.01	\$18.30	\$18.48	\$18.60	\$18.82	\$19.02	\$19.18
Scenario	\$16.89	\$17.42	\$17.65	\$17.84	\$18.00	\$18.30	\$18.47	\$18.59	\$18.81	\$19.01	\$19.16
Change	-\$0.04	\$0.02	\$0.00	-\$0.01	-\$0.02	\$0.00	\$0.00	-\$0.01	-\$0.01	-\$0.02	-\$0.02
<b>Nonfat Dry Milk Price (dollars per pound)</b>											
Baseline	\$1.245	\$1.287	\$1.338	\$1.376	\$1.401	\$1.421	\$1.440	\$1.461	\$1.487	\$1.507	\$1.535
Scenario	\$1.248	\$1.286	\$1.338	\$1.376	\$1.400	\$1.420	\$1.439	\$1.459	\$1.485	\$1.506	\$1.535
Change	\$0.003	-\$0.001	-\$0.001	-\$0.001	-\$0.001	-\$0.001	-\$0.002	-\$0.002	-\$0.002	-\$0.001	-\$0.001
<b>Butter Price (dollars per pound)</b>											
Baseline	\$1.460	\$1.490	\$1.484	\$1.469	\$1.479	\$1.510	\$1.515	\$1.528	\$1.545	\$1.558	\$1.562
Scenario	\$1.427	\$1.501	\$1.486	\$1.469	\$1.478	\$1.517	\$1.524	\$1.531	\$1.551	\$1.561	\$1.559
Change	-\$0.034	\$0.011	\$0.001	\$0.000	-\$0.001	\$0.007	\$0.009	\$0.003	\$0.006	\$0.003	-\$0.002
<b>Cheese Price (dollars per pound)</b>											
Baseline	\$1.684	\$1.722	\$1.730	\$1.741	\$1.757	\$1.774	\$1.791	\$1.797	\$1.814	\$1.827	\$1.836
Scenario	\$1.685	\$1.721	\$1.728	\$1.738	\$1.753	\$1.770	\$1.787	\$1.793	\$1.810	\$1.823	\$1.833
Change	\$0.001	-\$0.001	-\$0.002	-\$0.003	-\$0.003	-\$0.004	-\$0.004	-\$0.004	-\$0.004	-\$0.004	-\$0.004
<b>American Cheese Domestic Use (million pounds)</b>											
Baseline	4,216	4,258	4,319	4,386	4,449	4,521	4,590	4,657	4,722	4,795	4,866
Scenario	4,216	4,259	4,320	4,387	4,451	4,523	4,593	4,659	4,725	4,797	4,868
Change	(0)	1	1	2	2	2	2	3	3	3	2
<b>Nonfat Dry Milk Exports (million pounds)</b>											
Baseline	586	696	733	749	774	788	809	816	824	851	867
Scenario	583	696	734	751	776	791	813	819	828	854	870
Change	-3	1	1	2	3	3	4	3	3	3	2



As a result of the DPMPP, milk production expands slightly under the scenario. The maximum increase in milk production is 179 million pounds in 2016. The result of larger milk supplies is a slight decline in milk prices of \$0.02 per cwt on average over the period. This analysis shows that the FFTF program does not result in large changes in dairy markets on average.

It is important to understand that these results are the average effects of the FFTF program. Drilling down to further understand FFTF program operation, it is important to examine how the program operates in periods of low margins.

Table two takes the 25 lowest baseline margin outcomes in 2014 and follows these same 25 low 2014 outcomes in subsequent years to see the effects of the DPMPP from in a low margin environment. The results are an “average producer” outcome and would not reflect what an individual producer will receive, which will depend on their choice of supplemental program coverage.

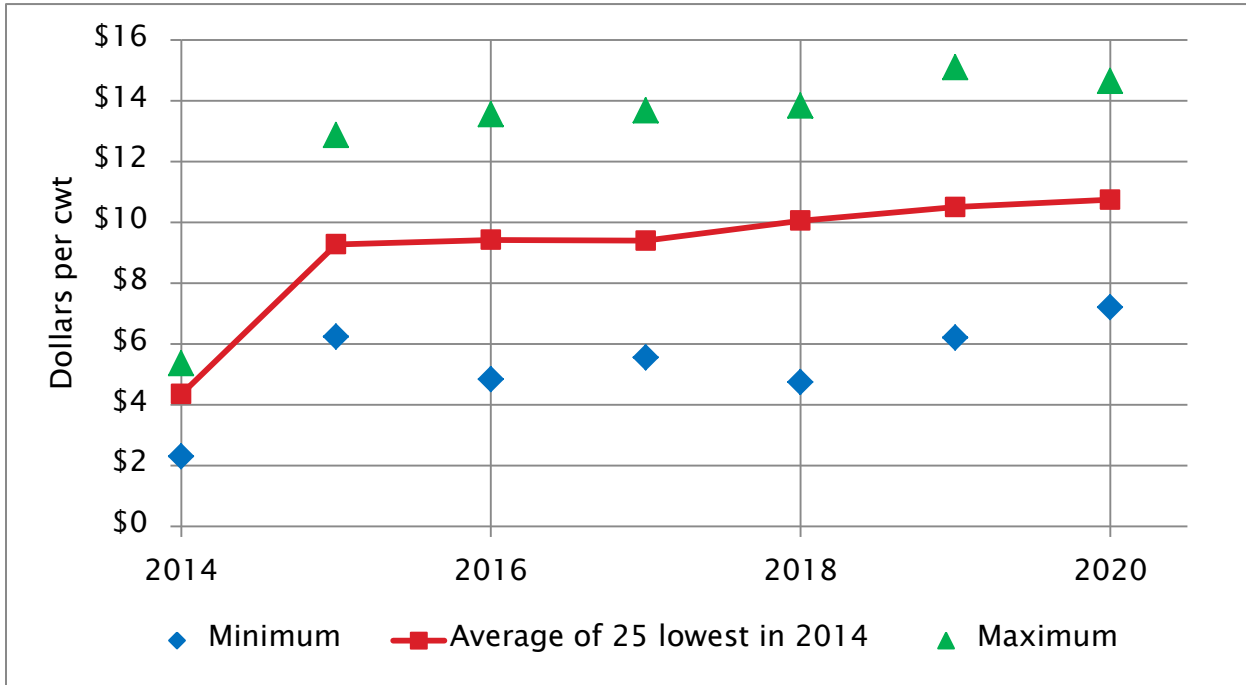
**TABLE 2. AVERAGE DPMPP PRODUCER PAYMENTS AND GOVERNMENT COSTS UNDER LOW MARGIN OUTCOMES**

	2014	2015	2016	2017	2018	2019	2020
<b>DPMPP Margin (dollars per cwt)</b>	\$4.35	\$9.28	\$9.42	\$9.40	\$10.06	\$10.50	\$10.74
<b>DPMPP Payment (dollars per cwt)</b>	\$1.05	\$0.02	\$0.06	\$0.03	\$0.03	\$0.01	\$0.01
<b>DPMPP Margin + Payment (dollars per cwt)</b>	\$5.39	\$9.29	\$9.49	\$9.43	\$10.08	\$10.52	\$10.75
<b>Government Outlays Under DPMPP (billion dollars)</b>	\$1.98	\$0.03	\$0.12	\$0.06	\$0.05	\$0.02	\$0.02

Table two shows the 25 lowest margin outcomes in 2014. These outcomes result in an average DPMPP payment to producers of \$1.05 per cwt. Both base and supplemental program payments would be made under most of these outcomes for at least one quarter of 2014. The average DPMPP government outlay is \$1.98 billion.

Another issue to consider is how long the industry will stay in a low margin environment once the program is triggered. Table two shows that after the low margins and DPMPP operation in 2014, there is a very low probability of repeating that level of program operation in subsequent years (DPMPP payments average less than \$0.04 per cwt over 2015 to 2020). Figure two shows the average margin for these 2014 low margin outcomes as well as the maximum and minimum margin outcomes providing additional evidence that DPMPP operation does not likely result in a long-term low margin situation.

FIGURE 2. 25 LOWEST MARGIN OUTCOMES IN 2014



Although the program may keep dairy producers in business through the low margin period, there is little incentive to expand production as a result of the program. Margin levels even after adjusting for DPMPP payments remain below historically average levels for the industry. A historical base against which DPMPP payments are made certainly contributes to the outcome of little supply response from the program.

## SUMMARY

The FFTF program eliminates the currently operating dairy product price support and MILC programs, and introduces two new components to support producers when margins are poor. The DPMPP feature is a margin insurance program that provides payments to dairy producers in times of low margins. It provides complete protection on 90 percent of base-level milk production once payments are triggered. The program has a supplemental program that allows producers to buy higher margin coverage. That program is partially subsidized by the government with the level of subsidy declining as producers choose higher margin coverage levels.

The FFTF program can provide producers with more protection than current dairy programs in times of extremely and relatively low margins when using the base plan and/or the supplemental plan, respectively. The current MILC program will begin to make payments sooner than the base program under the DPMPP but it will only cover 45 percent of the price decline once payments begin and caps individual producer eligibility at 2.985 million pounds annually. As the margin situation deteriorates, the base program will eventually

provide larger payments than current programs. The option for producers to add supplemental coverage will provide the flexibility for producers to pick the level of coverage they need.

The DMSP feature of the FFTF program will provide another lever to help correct times of low margins. The FAPRI baseline has few observations that result in a triggering of the DMSP, but in those periods of low margins, producers will be given a signal that supply adjustments need to occur. The base feature under DMSP will allow for industry expansion as needed to account for demand growth, since the base production level under DMSP is a rolling average of the three most current months.

Relative to current dairy policy, this analysis shows the market effect of the FFTF program is expected to be small. Both the current program and the FFTF program only provide support when prices or returns are well below average levels. Under the base plan, the FFTF program provides more support when margins are exceptionally tight, but may provide less support than the current program when margins are higher. The supplemental plan will give producers an additional option to increase their level of margin coverage. It should help reduce the financial severity of low margins and as such reduce some of the downside profitability volatility the industry has experienced recently. The program will in effect reduce high price periods that result after the loss of too many producers from the low margin period. Though demand shocks will still result in price volatility for the industry in the future, the FFTF program will moderate the range of producer margins that would be experienced without the program.