

# **Economic Impact of the Dairy Market Stabilization Program – Foundation for the Future**

A report by Dr. Peter Vitaliano, Vice President of Economic Policy and Market Research, with contributions from Dr. Roger Cryan, Vice President of Milk Marketing & Economics, for the National Milk Producers Federation

March 2011



The economic analysis shows substantial benefits for U.S. dairy producers in 2009 if the Dairy Market Stabilization Program (DMSP) would have been in place. The report also shows that the DMSP reduces volatility for the U.S. dairy industry, and more importantly, it provides a significant return on investment to all producers across the country.

## Executive Summary

A recent report from Informa Economics, Inc., “Regional and Farm Level Impacts of the Foundation for the Future’s Dairy Market Stabilization Program (DMSP),” commissioned by the International Dairy Foods Association (IDFA), makes certain assertions regarding the regional impact of DMSP while failing to provide any economic analysis to support its claims.

The Dairy Market Stabilization Program is one component of a suite of programs that comprise the Foundation for the Future (FFTF), a broad proposal for overhauling current federal dairy policies to improve price transparency, reduce volatility and prevent loss of producer equity.

An analysis of the Informa report quickly reveals that it is so devoid of economic content that its numerical results cannot be accepted as credible.

- In particular, the study essentially makes no attempt to estimate dairy producer reactions to the reduction in payments for milk when the DMSP program would be in effect, nor how those reactions would have resulted in changes in the milk volumes marketed, the prices received by producers and the milk price-feed cost (subsequently “milk-feed”) margins.
- Informa doesn’t make any attempt to estimate an impact from use of the substantial sums it estimates would be withheld from producers to stimulate consumption of dairy products as DMSP is set to perform.
- Furthermore, the report’s results, taken at face value, basically fail to demonstrate the claimed regional disparities.
- In sum, the Informa report on the DMSP fails on multiple methodological levels to support any of its claims and must be dismissed from consideration as a meaningful economic study of an issue that is critically important to the nation’s dairy farmers.
- The NMPF analysis shows that the DMSP would have been active during March through May in 2009, with reductions relative to base required at the highest 4 percent level, subject to a maximum of 8% of marketings.
- The analysis shows that the U.S. average all-milk price would have been \$1.90/cwt. higher during calendar year 2009, and \$1.35/cwt. higher during the period January 2009 - July 2010, as a result of the operation of the DMSP, compared with the baseline of actual prices. This is an overall increase of \$3 billion in producer revenue.

## How the Dairy Market Stabilization Program Works

The DMSP is designed to act swiftly and infrequently to reduce milk production and to quickly improve dairy producers' price-cost margins during periods of market imbalance. It does so by sending strong and timely signals to all dairy producers when margins are low and encouraging them to reduce their milk marketings, thus improving prices and margins.

### *Milk Base*

Each calendar year producers will choose whether their milk base will be the average monthly milk production for the three months immediately prior to the USDA announcing that the DMSP will become effective or the same month in the previous year as the month that USDA announces that the DMSP will become effective. The DMSP base is fixed during the months the DMSP is activated. However, it is temporary to the extent that it is no longer applicable beyond the point in time when the DMSP payment reductions are suspended.

### *Margin Trigger Levels*

When the DMSP margin is \$6 or less for 2 consecutive months, producers are paid the greater of 98% of their milk production base or 94% of current milk marketings. If the margin is \$5 or less for 2 consecutive months, then producers are paid the greater of 97% of their milk base or 93% of current milk marketings. Should the margin be \$4 or less for 1 month, producers are paid the greater of 96% of their base milk marketings or 92% of current milk marketings. The DMSP producer payment reductions are suspended when the actual margin is above \$6.00 for two consecutive months or, U.S. cheddar cheese or nonfat dry milk prices are 20% above world prices.

## The Informa Study

The Informa study primarily consists of state-by-state estimates of milk production in the U.S. during 2000-2009 that would potentially have been subject to reductions in payments during those months when actual historic milk-feed margins would have triggered such reductions under the DMSP system. These potential volume estimates are used to develop corresponding estimates of potential reductions in payment, or "withholdings", which are presented as estimates of reductions in payments that would have actually occurred had the DMSP been in effect. These are then further represented as potential state and regional farm level disparities and inequities to which the DMSP would have given rise had the program been implemented at the specified times during the past decade.

The Informa report's virtually complete absence of economic analysis on the DMSP is easily demonstrated by examining the only section in the report that addresses the issue of producer response to the DMSP being implemented. That section - "Price Elasticity of Milk Production and DMSP" - consists entirely of three short paragraphs on pages 35-36. The first of these three paragraphs begins by asserting that "the DMSP withholdings will effectively reduce the average milk price received by farmers", follows this with a conditional assumption "if farmers treat the withholdings in this way", which is followed in turn by a brief estimate of production response, based on a prior discussion of milk supply elasticity, but abruptly concludes that "it is very difficult to say what the short-term impact of the program would be on production and deliveries of milk."

The second of these three referenced paragraphs reflects a slightly more nuanced treatment of the mechanisms embodied in the DMSP by observing that "under the DMSP, if the program is active and the farmer produces above his base level, he essentially receives two prices, the market average price for the milk below base (or above cap), and he receives a price of \$0 for milk above base but below the withholding cap".

This more correct understanding of the DMSP leads to the third paragraph of this section, which, in its entirety, is as follows:

"The introduction of a \$0 marginal milk price has not been experienced nationally before (as far as we're aware). It's likely that farmers who know they are about to go over their base production level while the program is active will try to limit production during that month, but with no historical comparison in the U.S., it's nearly impossible to say exactly what the impact on milk production will be."

With that, the report's brief consideration of dairy producer behavior under the DMSP, not to mention the resulting market impacts, comes to an abrupt end, having failed to take up the issue.

The DMSP was designed to impact market prices and dairy producer margins through two complementary mechanisms: 1) encouraging producers to reduce the volumes of milk they market, and 2) using funds collected from producer over-base marketings to stimulate additional dairy product consumption, primarily through the purchase and donation of dairy products through non-commercial food assistance channels. The Informa report's totally unsatisfactory treatment of the first of these mechanisms at least implies, however obliquely, that producer response may be relevant to a proper economic analysis of the DMSP. But the report doesn't seem to be aware of the importance of using the collected dollars to purchase dairy products. Despite Informa's own description of the DMSP, which includes the following sentences: "a new DMSP

Board, consisting of representative farmers and cooperative representatives, would be formed with the task of using the withheld monies to ‘effectively stimulate the consumption of dairy products both domestically and internationally’ (Page 8) and “an estimated total of \$626 million dollars would have been withheld from farmers in the 23 main dairy producing states” (Page 25), the report never attempts to put these two obviously related and critical matters together.

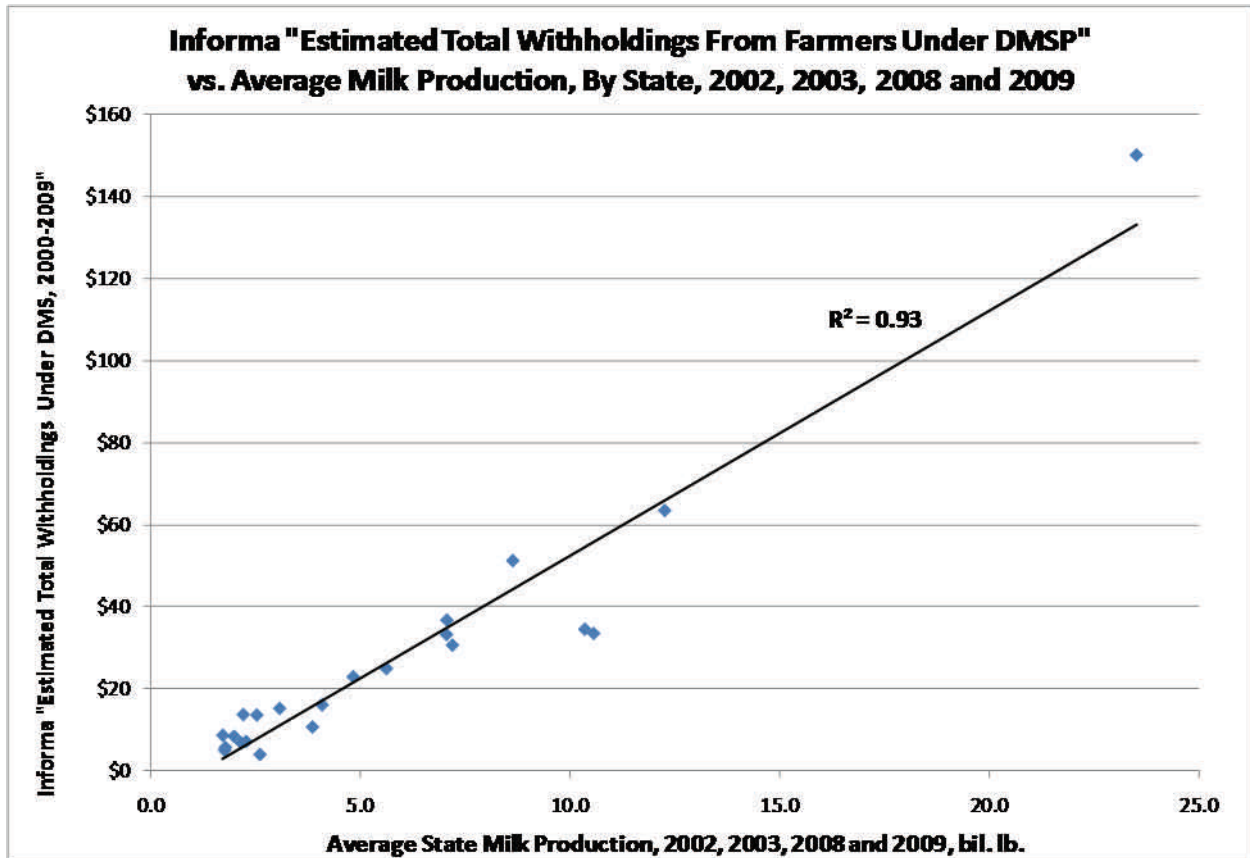
The Informa report’s claims demonstrating regional and farm level impacts of the DMSP are presented primarily in Section II, titled “Estimating Historical Withholdings under DMSP” and claim, despite the fundamental flaws discussed above, “to estimate the amount of money that would have been withheld from farmers if the program had been in effect from 2000 to 2009.” Exhibit 18, on page 24 in that section, is a table entitled “Estimated Total Withholdings Under DMSP, 2000-2009”. It includes numbers for 23 states for which monthly milk production and price data are available from USDA for the years 2002, 2003, 2008 and 2009, when the DMSP would have been in effect based on historic margins during those years. These estimates do include one sole, simplistic exception to the study’s failure to engage the issue of producer response to the DMSP and it relates to the report’s estimates of total withholdings from producers during 2009. Specifically, the nine months during which the program would have been active that year, based on actual margins, were reduced to an assumed six months, to account for the possibility that, “if the program had been in place, some would argue that the periods of low margins would not have lasted as long as they did” (Page 23).

The table in Exhibit 18 is the basis for the claim in the highlights summary at the beginning of the report, that “if the DMSP had been in place between 2000 and 2009 we estimate that more than \$626 million in milk payments would have been withheld from dairy farmers ... (and) more than half of the total withholding would have come from five states ...”

The chart below, generated from analysis done by the National Milk Producers Federation (NMPF), shows that there is a strong linear correlation between the Informa report’s 23 state estimates presented in Exhibit 18 and the average milk production in those states during the four years in which the DMSP would have been active during the 2000-2009 period. For reasons discussed below, California is not included in this table. For the other 22 states, the correlation between Informa’s estimated withholdings under the DMSP for individual states and the average level of milk production in those states is quite high, with an  $R^2$  value of 0.93.<sup>1</sup> In other words, Informa’s own flawed estimates still show that withholdings under the DMSP would simply be proportional to

<sup>1</sup>  $R^2$  value (Regression Analysis) is a Statistical method to estimate any trend that might exist among important factors. For instance,  $R^2$  of 1.0 (100%) indicates a perfect fit.

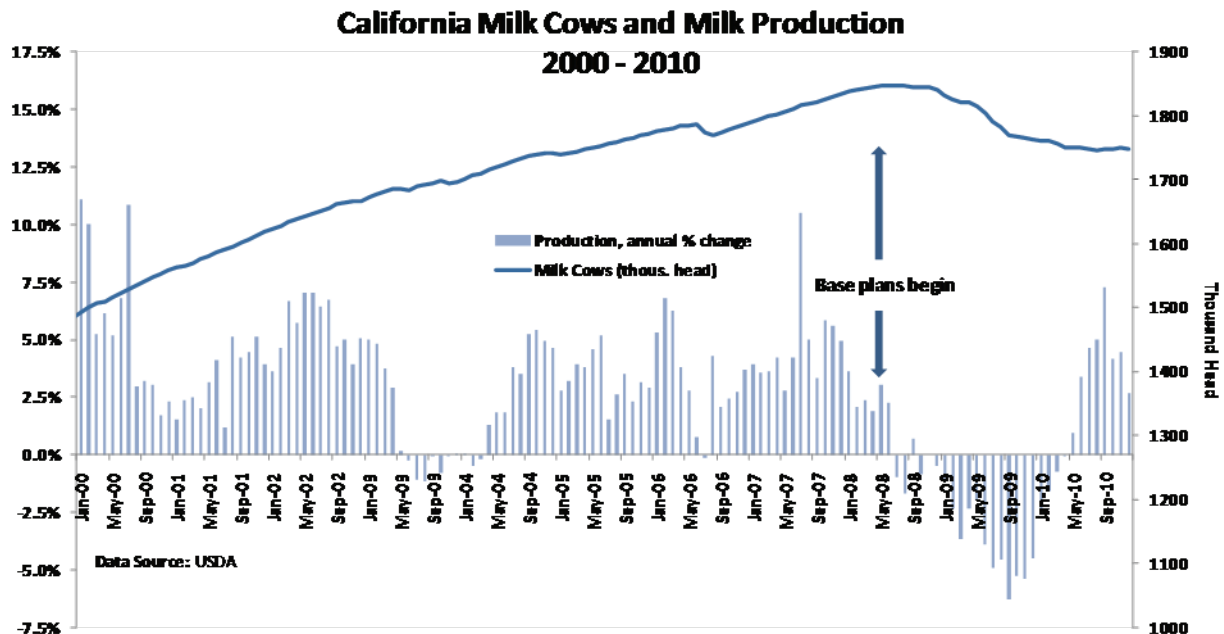
milk volumes, regardless of the state where the milk was produced, and therefore regionally equitable.



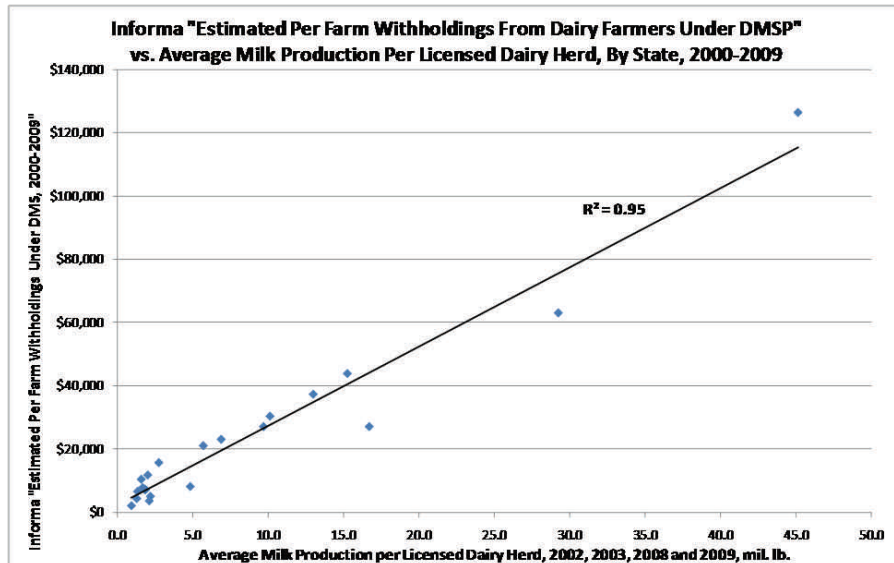
California is not included in the above table for the simple reason that by April 2008, the state's three largest cooperatives and two non-member handlers of independent milk had all instituted base programs that placed limits on the milk volume a producer could ship each month because statewide milk production was exceeding available plant milk processing capacity. Producers who shipped more than their base were penalized - i.e. paid less - for milk they shipped over their production base. The Informa report ignores this fact and instead asserts incorrectly that California producers reduced production due to high input costs.

The chart below shows that these production limiting plans had the immediate effect of reducing the state's milk production during 2008 and 2009. Since four-fifths of Informa's total estimated withholdings under the DMSP during 2000-2009 would have occurred during the period the California base plans were in effect, California is not comparable to the other 22 states for the purpose of the analysis shown in the table above and has been consequently excluded.

The Informa study and a January 24, 2011 IDFA press release on the study totally ignored the fact that California milk producers were actually subject to reduced payments under these various in-state base programs and had adjusted their milk production significantly in response. Instead, the IDFA press release chose to highlight the incorrect Informa finding that “compared to (other) regions, California, the number one dairy-producing state in the country, barely broke the top 10 states in amount withheld over the 10-year span and ranked 23rd as a percent of the withholding compared to total milk production in the state.”



In addition to estimating total withholdings under the DMSP, the Informa report also estimates withholdings by farm for the same 23 states. Exhibit 20, on page 26 of the report, is a table entitled “Per Farm Withholdings Under DMSP, 2000-2009”. The chart below shows that there is also a strong linear correlation between the Informa report’s 23 state estimates presented in Exhibit 20 and the average milk production per farm in those states during the same four years in which the DMSP would have been active during the 2000-2009 period. For this purpose, milk production per farm for a given year is measured by dividing milk production in each state by the number of licensed dairy herds in the state that year, as reported by the USDA National Agricultural Statistics Service (NASS). The correlation between Informa’s estimated withholdings per farm under the DMSP for individual states and the average milk production per farm in those states is also very high, with an  $R^2$  value of 0.95, excluding California, as discussed above. Even with California included, this relationship still has a high correlation, with an  $R^2$  value of 0.86. Simply put, Informa’s own estimates show that withholdings per farm under the DMSP would simply have been proportional to milk volumes per farm, regardless of farm size or the state where the farm was located and, therefore, proves that DMSP is equitable in the treatment of producers in terms of both farm size as well as region.



The Informa report also estimates withholdings by state under the DMSP during 2000-2009 as a percent of the monetary value of annual milk marketings and also per hundredweight of milk marketed. These two comparisons are particularly affected by the failure of the study to take into account any producer response to the activation of the DMSP. As the California example vividly demonstrates, dairy producers will react strongly to economic signals that milk they produce in excess of a given level has a lower or zero value. It must be assumed that the differing estimates of withholdings under the DMSP in other states would not occur because their imposition would quickly lead to production adjustments that would lower actual withholdings, as the study's results for California actually demonstrate.

The 23 states for which Section II of the Informa report presents estimates account for approximately 90 percent of U.S. milk production during 2000-2009. In an appendix, the report extends its estimates to all 50 states, for the remaining 10 percent of U.S. milk production. Adding the 27 additional states and the additional 10 percent of milk production does not result in any significant change to the conclusions of this discussion.

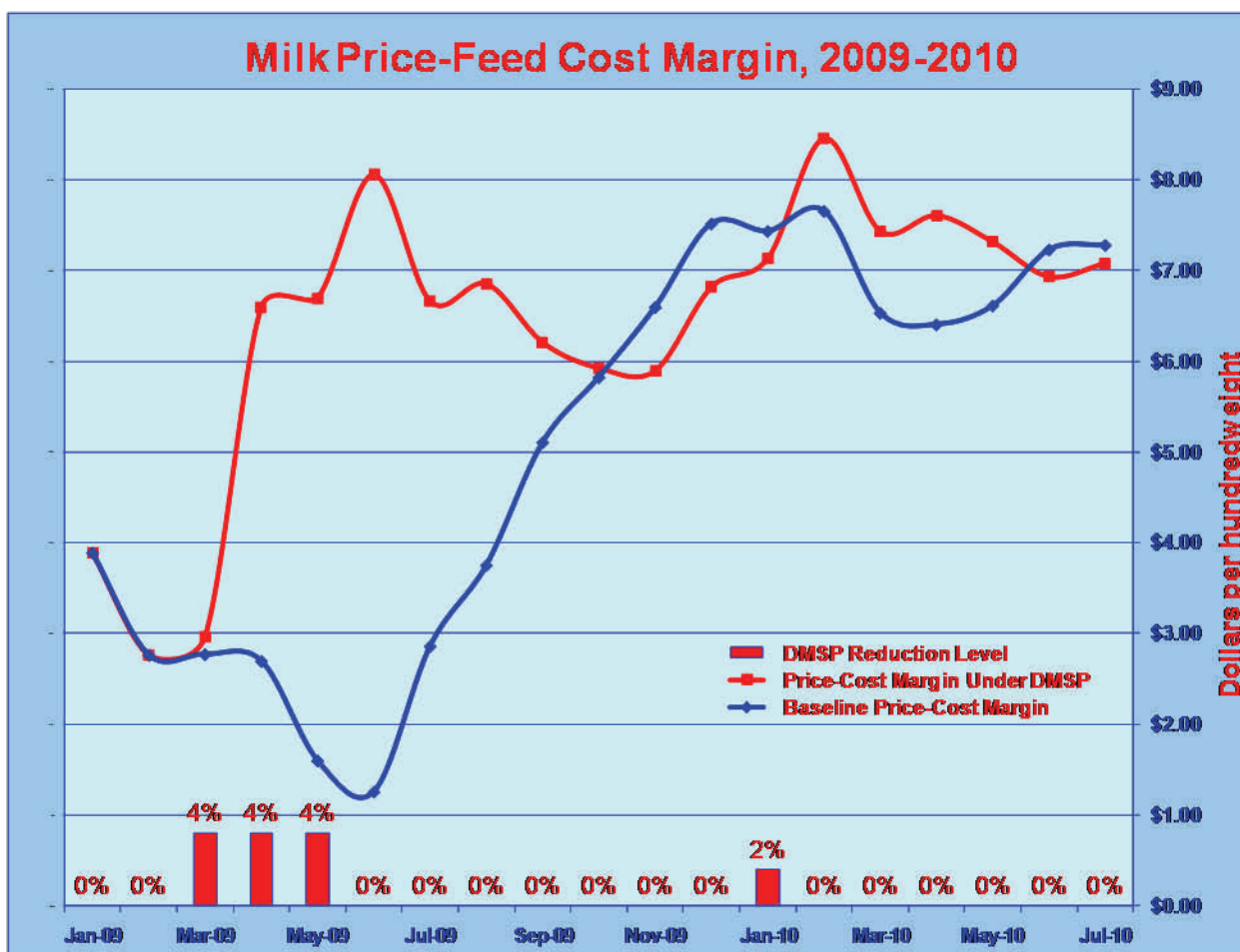
## NMPF Analysis

A more productive approach to assessing the impact of the DMSP is taken here by reporting on two economic analyses of the DMSP. One is by Dr. Peter Vitaliano, Vice President for Economic Policy and Market Research for NMPF, and the second is by Dr. Scott Brown, the Associate Director of the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri. Dr. Brown's analysis includes a rigorous economic review of the DMSP for 2009 and can be accessed through [www.fapri.missouri.edu](http://www.fapri.missouri.edu). While these two analyses focus on 2009, which is the historical year during which the DMSP would have been most active, they also estimate the impact of dairy producer response to the program, together with dairy product purchases and the resulting changes in milk volumes marketed, milk prices and margins.



The Vitaliano-NMPF analysis is based on a monthly economic model of the U.S. dairy industry in aggregate. The model calculates the DMSP triggers and estimates the behavior of dairy producers during months when the program would have required withholdings to be made from payments to producers who marketed milk in excess of their bases in 2009. It estimates the aggregate response of producers during these months based on a comparison each month of the relative costs and returns of alternative marketing responses, given prices, costs and their DMSP base volumes relative to a baseline of assumed marketing volumes in the absence of the program. These baseline marketing volumes assumed, for individual producers, a fixed herd size and an average production per cow reflecting the national average production. Milk price responses were estimated based on estimates of dairy product price responses to total reduced volumes of milk marketed by producers as well as to estimated removal, via donation to food assistance programs, of dairy products purchased with funds withheld from milk volumes marketed by producers in excess of their bases when the program is active. It was assumed that such donations to food banks would consist entirely of cheese in the amount of 91 million pounds in a period of 6 months, of which 15% (0.2% of total cheese consumption) is assumed to displace commercial sales.

The results of the NMPF analysis can be summarized in the following chart, covering all months in 2009 and through July, 2010:



The analysis shows that the DMSP would have been active during March through May in 2009, with reductions relative to base required at the highest 4 percent level, subject to a maximum of 8% of marketings. The estimated producer response to these required reductions, together with donations of purchased cheese, results in price responses that would have rapidly stabilized milk-feed cost margins generally in the range of \$6 to \$8 per cwt. Milk supply response to these higher prices are estimated to have reduced the margin, relative to baseline levels, toward the end of 2009, triggering an additional month of reductions at the 2% of base/maximum 6% of marketings level. The analysis shows that the U.S. average all-milk price would have been \$1.90/cwt. higher during calendar year 2009, and \$1.35/cwt. higher during the period January 2009 - July 2010, as a result of the operation of the DMSP, compared with the baseline of actual prices. This represents an increase of \$3 billion for producer income.

## **Conclusions**

The Informa report's "analysis" of the impact of the Foundation for the Future's Dairy Market Stabilization Program is methodologically deficient to such an extent that it is incapable of contributing constructively to the serious discussion of developing a new policy appropriate for the U.S. dairy industry in the 21st century. It fails to analyze the two major components designed into the DMSP that would positively impact U.S. dairy producer revenue during periods of reduced producer margins and instead focuses just on the cost of the program's incentive mechanism that would set these two components in play during such times. The resulting cost estimates, though seriously flawed, fail even to support the report's claims of inequity between regions and among producers.

An economic analysis of the DMSP by NMPF shows that the program would have improved and stabilized milk prices and margins and generated a substantial improvement in dairy producer income during the financially catastrophic year 2009 by an increase of \$3 billion of additional revenue for producers.

The NMPF report also demonstrates that the DMSP reduces volatility and provides greater demand for dairy products benefiting all sectors of the industry.

**National Milk Producers Federation  
2101 Wilson Blvd., Suite 400  
Arlington, VA 22201  
(703) 243-6111  
[www.nmpf.org](http://www.nmpf.org)**