# Mark W. Stephenson, Ph.D.

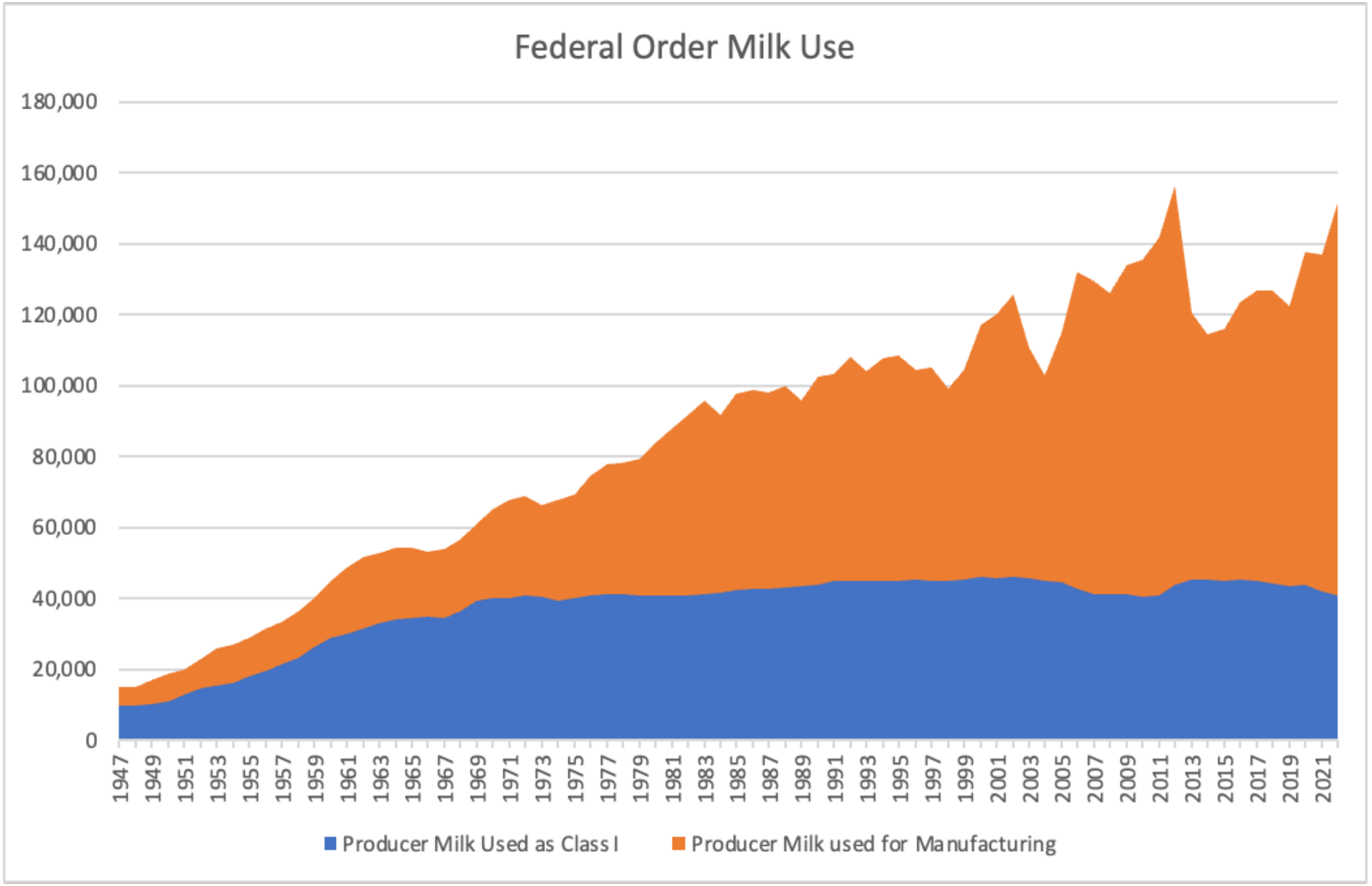
Federal Milk Marketing Order Hearing
Carmel, Indiana

- Fluid milk most important dairy product in 1940s.

- Fluid today is only about 18% of all milk whether regulated or not.

- Grade B has declined from 1950 at about 40% to less than 1% today.

FIGURE 1. USE OF MILK IN FEDERAL MILK MARKETING ORDERS



- Federal milk marketing orders are built around fluid milk. This is partly demonstrated by the concepts that fluid plants *must* be regulated, and manufacturing plants *may* be regulated if they so choose. An AMS document also explicitly states:

    - *FEDERAL ORDERS ARE USED TO STABILIZE CONDITIONS FOR FLUID MILK TO MAKE THE BUYING AND SELLING OF FLUID MILK AN ORDERLY PROCESS UPON WHICH DAIRY FARMERS, MILK DEALERS AND CONSUMERS ALIKE CAN DEPEND.*

- The primary tools of FMMOs are Classified Pricing and Pooling.
  - Higher prices for fluid which offsets greater costs of servicing those plants and to exploit inelastic consumer demand[1]
  - Pooling to promote equity among producers

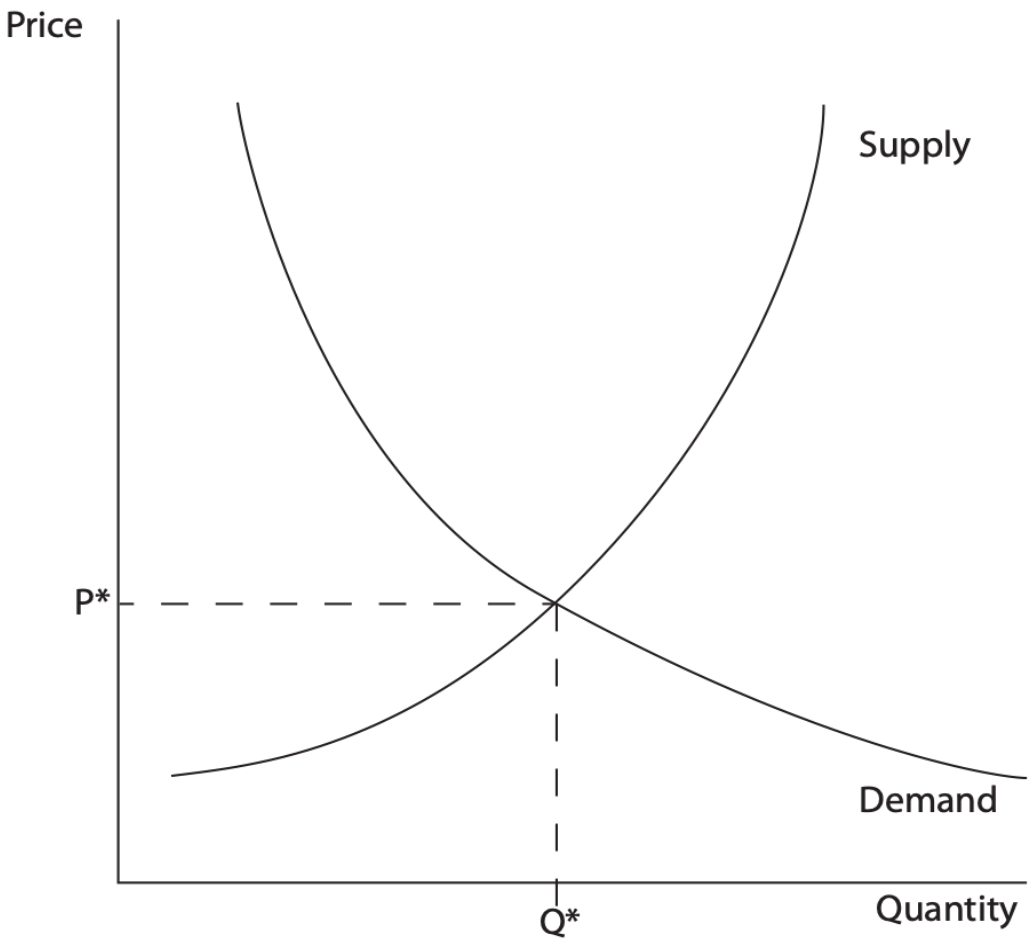
[1] Testimony from experts at this hearing suggest that own price elasticity for fluid milk may now be ***elastic***. A consequence of this would mean that raising prices now lowers producer returns rather than increasing them.

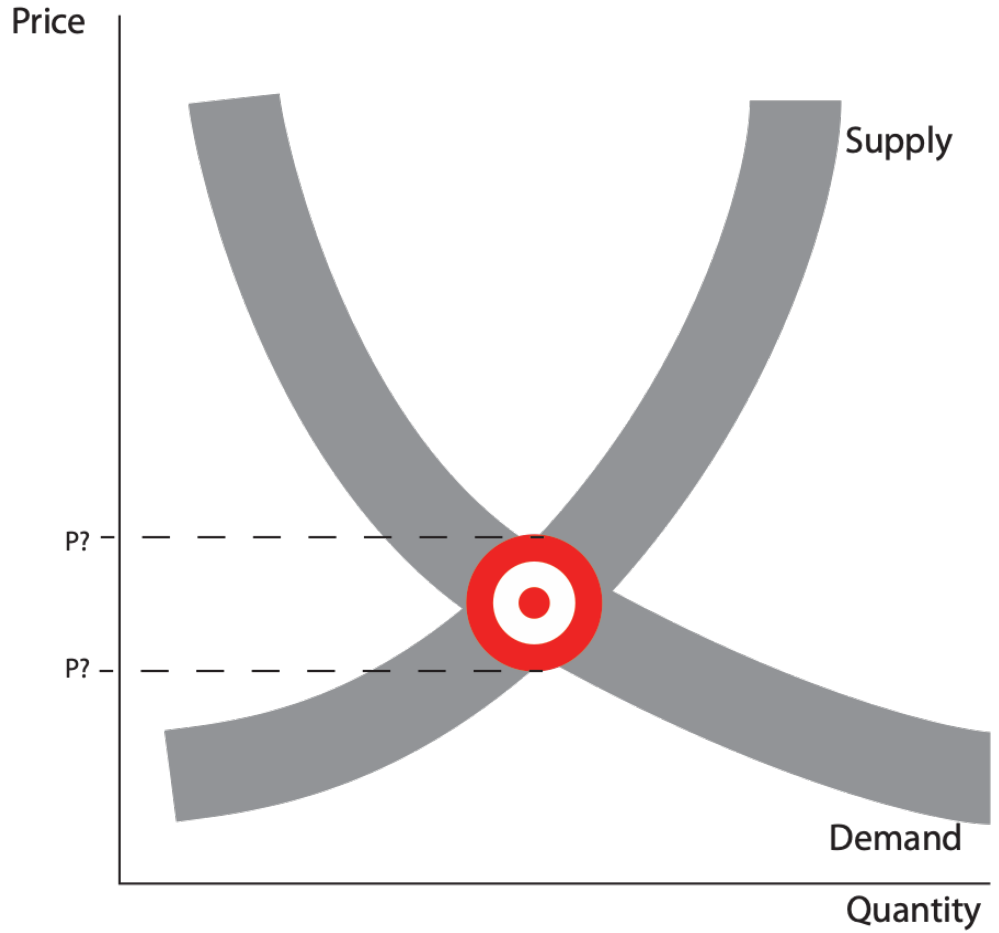
- FMMOS have always relied on ***minimum*** pricing. I.e., you are welcome to pay more for milk, but if you are regulated, you cannot pay less.

- Being chronically above the market clearing price creates surplus product which the market can't clear.

A higher price mistake can only be fixed by opting out of regulation if you are a manufacturing plant. FLUID plants cannot pull that ejector cord.

FIGURE 2. DISCOVERING A MARKET CLEARING PRICE.



- Being slightly above for short periods of time may be accommodated by accumulating dairy product stocks.

- This is also a signal that markets are not clearing and may suggest a disorderly marketing condition and a need to lower the product price.

- **IT IS BETTER TO ERR ON A SOMEWHAT TOO-LOW PRICE THAN ONE THAT IS TOO HIGH—ESPECIALLY FOR FLUID PLANTS WHICH CANNOT OPT OUT OF REGULATION.**

# U.S. Dairy Sector Simulator Model ("USDSS")

- The USDSS solves a complex task of simulating assembly of raw milk from dairy farms across the contiguous 48 states and shipping it to plants where dairy products are manufactured to be distributed to consumers.
- The model's task is to find the most efficient movements of milk assembly, product processing and distribution of final products, subject to many constraints.
- The model does not develop or reflect actual values for milk, but rather the relative values when raw milk always goes to its global highest and best use.

# Class I Differential—Grade A

- The $1.60 Class I differential was implemented during federal order reform; it is worthwhile today to reconsider the justification for this base value.
- AMS documentation indicates that part of that value was to support conversion from Grade B to Grade A milk production.
- Today, compensation to support conversion to or maintenance of Grade A status is not needed.
- Grade A status is no longer a Class I issue—it is an industry-wide standard.
- Voluntary premiums have been and are used to incentivize milk production qualities.

# Class I Differential—Balancing

- Another part of justification was balancing.
- Justifications to make this a pool-wide expense are no longer efficient and consistent with orderly marketing goals.
- Cooperatives and individual producers offer successful, negotiated incentives.
- Fluid plants have changed behavior.
- A high proportion of manufactured milk often no longer serves a balancing function.
- Shift means there is more than an adequate supply of milk.

# Class I Differential—Incentive to Serve Class I

- The third reason for the $1.60 has been identified as the cost to move milk (largely via diversion) from manufacturers to fluid plants when it is needed.
- I am not persuaded that this is still a factor as Class I cannot be considered in isolation.
- Class I plants, in reality, may have to pay twice – once to the pool and the second time as a premium.

# IT IS GETTING HARDER TO MOVE MILK.

- This shows what is needed is that this money not be included in the pool but instead allowed to be used by the Class I plants to directly incentivize their suppliers.
- If it is determined that the $1.60 is necessary to ensure service to Class I plants, it would be more effective to require that Class I plant prices include the $1.60 but that they can pay that $1.60 directly to their supplier and not into the pool. The remainder of the differential however, would be part of the market-wide pool.

# Additional Insights from the USDSS

- The primal and dual solutions of the USDSS represent values from the optimal solution. USDSS model validation does show us that the evolution of regional processing structure closely correlates with the optimal model solution.
- Examples include that the most milk deficit regions have primarily fluid and few manufacturing plants. Surplus regions have more manufacturing than fluid plants. And, fluid plants are located closer to population centers while manufacturing is closer to the milk supply.
- Actual milk movements (not model representations) may differ from the optimal, but differing by much is like swimming against an economic current.

- USDSS model can give us an idea of the relative value of milk used in different types of plants.
- AMS has only asked for the dual values at fluid plants.
- The model can generate these dual values anywhere there is a plant of any type, or a farm, or a population center, so we can get values at a fluid plant, and we can also look at those values at cheese plants.
- If those plants happen to be across the road from one another, the dual values can actually differ based on the need for the finished product.

- A plant making cheese in some location might be more valuable to the global solution of the USDSS than the fluid plant across the road.

- This comparison can approximate the “incentive” value or “give up” charge for delivering milk to a fluid plant instead of a manufacturing plant.

- The following map (Figure 3 in the exhibit) uses the USDSS model to show the difference in the dual or marginal values of milk for fluid and cheese use at all locations across the 48 states.

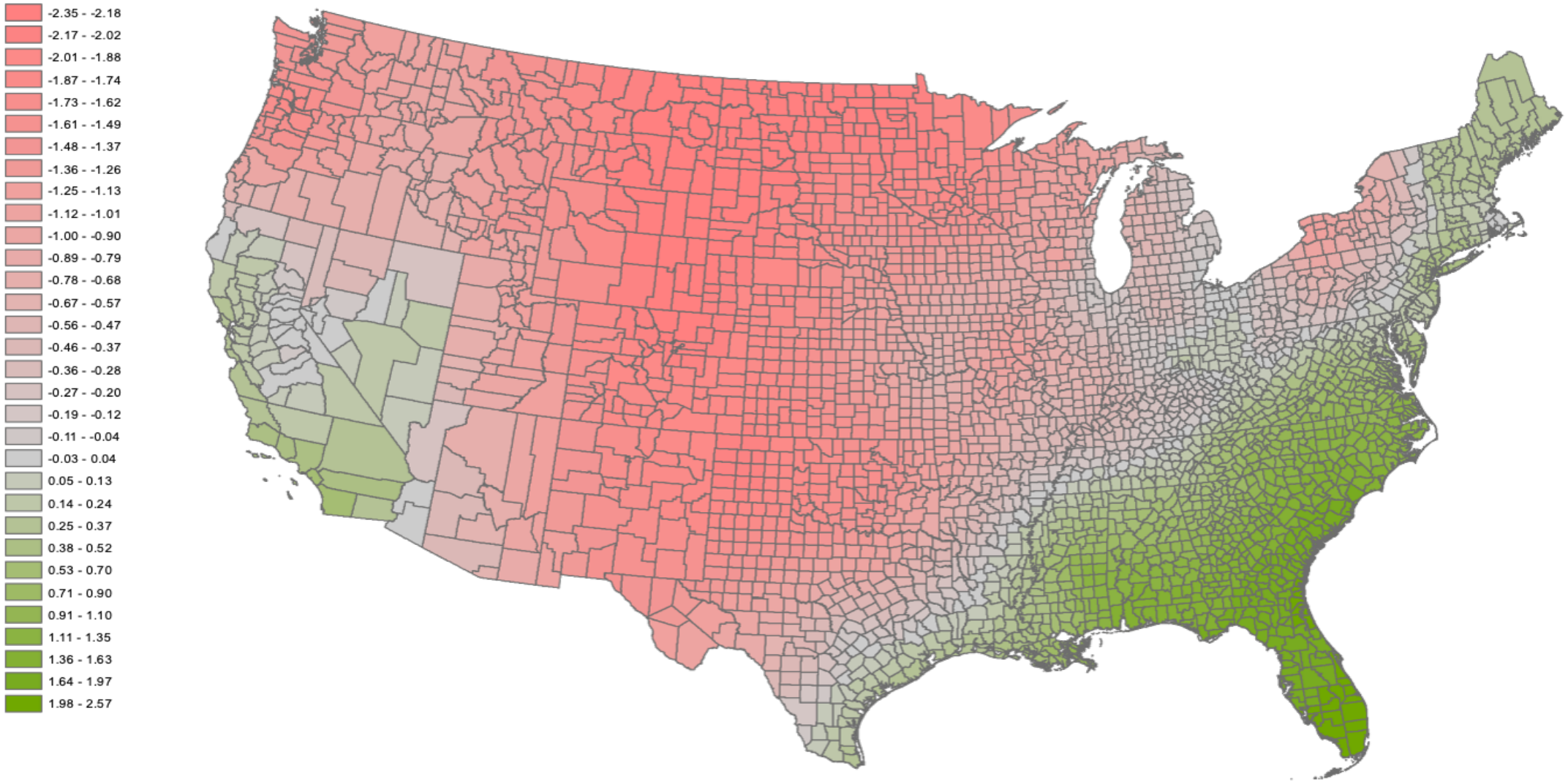
- It represents Class I minus Class III dual values with shades of red to green.  Note: these values are not inclusive of the $1.60.

- Green colored counties are locations where delivering milk to a fluid plant is of more value (model can lower global total cost more, i.e., there is a more efficient market if milk goes to a fluid plant).

- The intensity of red color shows where delivering milk to a cheese plant is of more value to the overall market.

- A fluid plant located in a red colored region of the map would find that cheese plants in the area were unwilling to give up milk unless you compensated them for at least their opportunity costs which are greater than the fluid plant's marginal cost of milk.

**Figure 3.** Difference in the Marginal Value of Milk in Class I Minus Class III Plants.



- The US average value of these differences was -38¢ indicating that on a national average it is more valuable (cost saving) to the model to have milk in a cheese plant than in the fluid plant in most counties.

- The range goes from somewhat more than $2 per cwt more favorable to a cheese plant (in red) to somewhat more than $2 per cwt more favorable to a fluid plant (in green) in the Southeast.

- The model result bolsters the argument to not dilute the value of the $1.60 into the pool if that value represents a balancing cost for fluid and an opportunity cost for manufacturing plants.

- Rather, require the fluid plants to pay the $1.60, but let the fluid plants pay that portion directly to the farms, cooperatives or manufacturing plants who supply the milk.

- This slight change in the FMMO mechanism does not take regulated value away from producers. Rather a portion of the minimum Class I payment directly rewards the milk that helps balance the fluid industry and attract farm milk to the plant.
- The market-wide pool would have less to distribute which may discourage non-performing distant milk from choosing to pool. This response could increase the Class I utilization in heavy manufacturing regions to something more like level needed to balance fluid needs.

# Concluding Comments

- The dairy industry has evolved a long way from the conditions of the 1940s.
- The structure of FMMOS was conceived to solve fluid milk problems when fluid bottling was the most important use of farm milk and the dominant class of milk overall.
- Manufacturing uses are now ascendant and the FMMOS are functioning as a fluid-based system in a manufacturing-dominant world.
- I believe that this is why we are seeing many of the issues being raised at this hearing. Handler actions, such as de-pooling, are more of a symptom of the underlying problems than the problems themself.

- Milk use for manufactured dairy products cannot be ignored.

- They have a geographic basis just like fluid milk does. And, in many locations they can out-compete fluid plants for the local milk supply under our current FMMO regulations.

- Perhaps we can move in a direction to allow a portion of the differential to be paid directly by plants to their supplier and not be shared across the pool.

- This would focus the differential paid by Class I and make Class I prices more directly potent to attract milk to the fluid plants.

- Many of the market-wide justifications for the fixed increment added to the base Class I price value are no longer valid.
  - Grade A conversion and maintenance is not justified with current production practices.
  - Intra-week balancing is being done by fluid plants accepting milk on the weekends, and even seasonal balancing is being challenged by the increasing production of ESL products.
- Market-wide pooling of the entire Class I premium has attracted far more milk to most orders than is necessary to assure fluid needs.
- A portion of the Class I value would be better directed to compensate suppliers directly rather than diluting the payment across the entire pool.