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**The Impact of Expanding the
Minneapolis-St. Paul
Federal Milk Market Order Area**

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PREFACE

This study was financed by milk assemblers and milk dealers in the Minneapolis-St. Paul federal order milk market. The study came about because of the interest of several milk dealers and processors in the expansion of the market order area as defined by the federal order for the Twin Cities area. Expansion of the order has implications regarding the quantities of milk brought under regulation, the percentage of regulated milk used in fluid milk products, the producer blend price for milk, and the prices at which competing firms purchase milk for fluid milk product uses.

The estimates of the consequences of market area expansion are useful for both firm decisions and for federal order hearings. The study was also designed to provide some information on future expansion of market demand and federal order milk supplies.

Many milk assemblers, processors, and distributors in the Twin City metropolitan area provided information which was necessary for this study.

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The Impact of Expanding the Minneapolis-St. Paul
Federal Milk Market Order Area

Jerome W. Hammond*

Introduction

The objective of this study was to evaluate the probable consequences of expanding the milk market area as defined under the Minneapolis-St. Paul federal milk market order. Two questions are of particular importance: (1) What will happen to the proportion of the total milk supply used for fluid purposes? (2) What will happen to the uniform producer blend price for milk?

The Problem

Administered pricing of milk under the federal milk market order program introduces numerous rigidities into the milk marketing system. Provisions that were once designed to equate competitive conditions among distributors and handlers and to equitably distribute returns among producers need to be reviewed and revised periodically to adapt them to changing market characteristics. One of these changing market characteristics is the increase in the size of area that can be served by distributors. More than a decade ago, the North Central Regional Dairy Committee stated: "Outer-market shipments of milk in paper containers have become commonplace. This has increased the amount of overlapping in markets for fluid milk. . . . Developments such as the . . . rising cost of labor and increasing use of expensive equipment appear to be placing more and more premium on large volume. At the same time continuing

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improvement in highways, truck and refrigeration facilities have made it possible to distribute packaged milk over ever-widening areas".^{1/}

Besides the impact of technology on market size, there has been population growth in the metropolitan centers and geographic expansion of the metropolitan areas themselves. These factors have broadened the areas in which firms seek outlets for their products.

The Minneapolis-St. Paul milk market has been continuously affected by all of these developments. However, this competitive area does not correspond with the market area as defined under the federal milk market order for Minneapolis and St. Paul. This definition is: The market area is that area where sales of milk used for fluid products are subject to the provisions of the federal order. When established by the order in 1945, the area included about 875,000 people. Competition for outlets among distributors in 1945 was principally within that area.

The Minneapolis-St. Paul metropolitan trading area has undergone tremendous changes. Population within the market area has increased and suburban areas outside the specified federal order market area have expanded greatly. Some adjacent markets such as Anoka and Stillwater are now in the area of competition. In evidence of this fact, many firms within the market area have expanded their distribution areas and now compete for sales in outlying areas.

^{1/} North Central Regional Committee on Dairy Marketing, Outer-Market Distribution of Milk in Paper Containers in the North Central Region, Station Bulletin 600, North Central Regional Publication No. 39, Purdue University Agricultural Experiment Station, Lafayette, Indiana, October 1953, p. 7.

These changes in the area of competitive behavior may cause disparities in the purchase prices distributors pay for milk. Regulated distributors are required to pay minimum order prices as established by the order on the basis of milk use.^{2/} This also applies to regulated handler milk that is distributed outside the order market area. On the other hand, nonregulated handlers are not required to pay for milk on the basis of use. Nonregulated distributors who serve outlying areas may be paying producers a higher average price than the minimum uniform blend price, which is based on the value of milk in all uses, but they may also be paying less than regulated handlers pay for milk in fluid uses. In small rural markets that are served mainly by small local distributors, this problem may be relatively unimportant. However, in new suburban markets and the larger nearby submarkets, competitive problems can arise.

The distribution of returns to producers also is affected by the market area definition. It is fairly well established that federal order markets with marketwide pooling provisions attract the surplus from adjacent nonregulated markets. Since surplus milk, which is used in manufactured dairy products, is priced at a lower level than fluid use milk, it has the effect of lowering returns to producers serving the regulated market. So the question arises: Should only federal order producers in the supply area be required to bear the burden of the lower priced surplus milk or should it be the responsibility of all producers in the supply area?

^{2/}

Under the order, processors pay for milk according to use. A higher price is charged for milk used in fluid milk products and a lower price is charged for milk used in manufactured dairy products. Producers are then paid an average price--uniform producer blend price--based on the class prices and quantities of milk used in each class.

The above changes and resulting problems have led to questions by producers, producer groups, and handlers in the Minneapolis-St. Paul market area. Changing the market area through administrative procedures is receiving strong support by some groups. However, data are needed on milk supply, sales, and consumption in the area to intelligently make the order decisions. It is particularly important to know what will happen to utilization and producer prices.

Procedure

Data on several aspects of milk supply, sales, and consumption in the Minneapolis-St. Paul trade were assembled and analyzed for this study. Some population projections also were made, as they have implications for future changes in fluid utilization and producer prices. The general outline of the approach was to develop estimates of the following magnitudes:

1. Current and expected population in alternative market area specifications.
2. Fluid milk consumption and fluid milk sales in the trade area.
3. Milk production and potential supplies of milk eligible for use in fluid products.
4. Milk utilization under alternative market specifications.
5. Producer prices that would result from changing the federal order market area.

The specific procedure for this study was a comparative analysis of expected prices and milk utilization under alternative market areas that could come under regulation. Two alternative market area specifications were considered in this study. Supplies, consumption, and prices were compared to those for the current marketing area, which includes primarily Minneapolis, St. Paul, and their immediate suburbs (see area I, figure 1). One possible

alternative specification is to combine all of area I plus area II, which includes the counties adjacent to the immediate suburbs. Cities and villages such as Anoka, Stillwater, White Bear, and Forest Lake would be included in the area. Three Wisconsin counties bordering the Twin Cities also would be included. The second alternative specification is creation of that area which is being proposed by area cooperatives and processors as a new market area. This would include areas I, II, and III as indicated in figure 1. The area includes four additional Wisconsin counties on the east side of area II and ten additional Minnesota counties to the north and west of area II. Several large submarkets are included--St. Cloud and Stillwater in Minnesota and Eau Claire and Chippewa Falls in Wisconsin.

Population data for the areas were obtained from Bureau of the Census reports and the Minnesota Department of Health. Estimates of future population levels were made by projections of current trends.

Data on milk use, milk supplies, and prices were obtained from three main sources. Total milk production and grade A production by county were obtained from State-Federal Crop and Livestock Reporting Service reports. Fluid grade A milk supplies were obtained from the Crop and Livestock Reporting Services in each state. Prices and utilization for the existing market area were obtained from the statistical reports for the Minneapolis-St. Paul federal order market. Similar data for the other areas were obtained from handlers and distributors in the area. In some instances, estimates were provided by industry personnel who knew the proportions of business done by each firm.

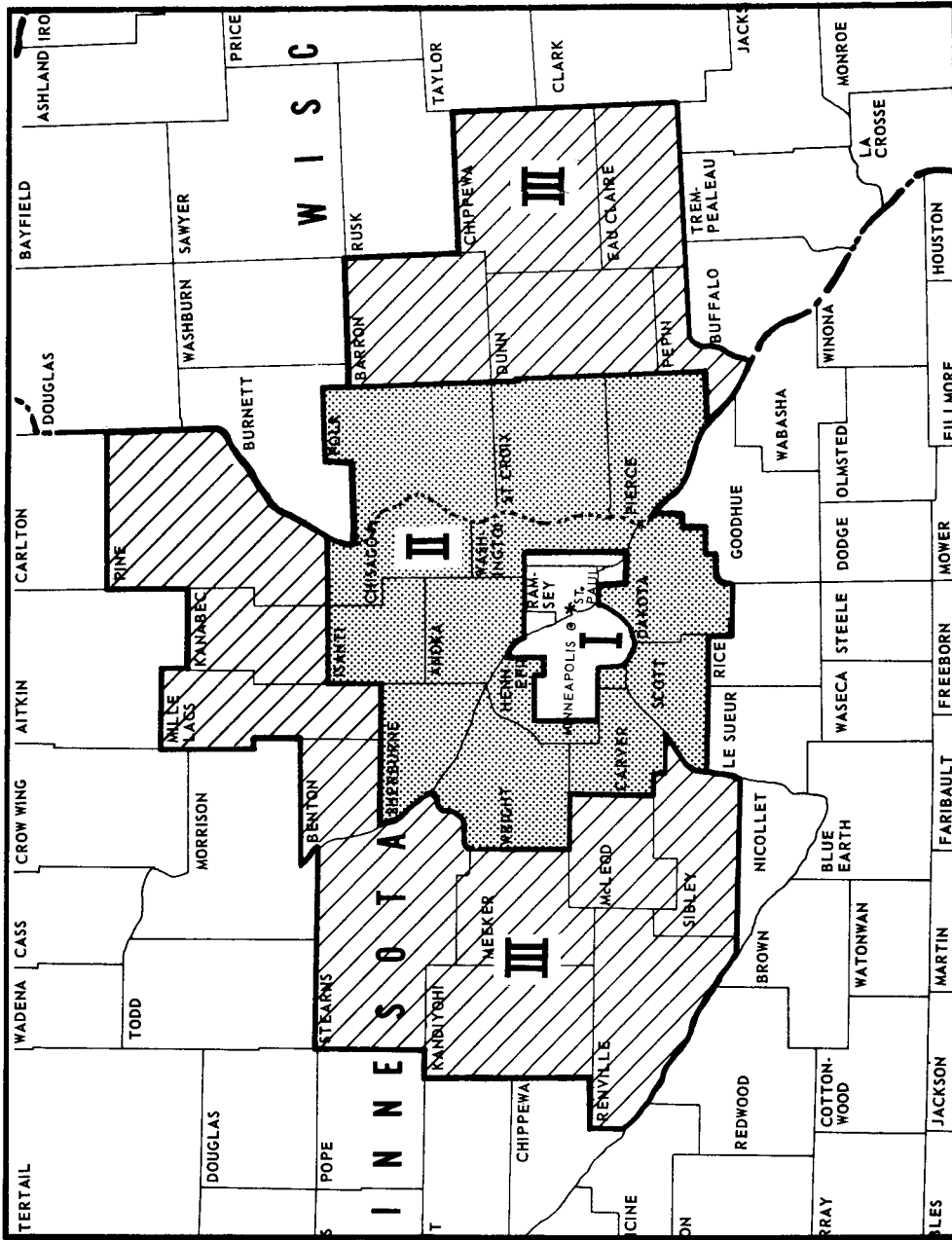


Figure 1. Areas included in the alternative market specifications for the Minneapolis-St. Paul federal milk order.

Background of Regulation

The marketing of fluid milk in the Minneapolis-St. Paul area has been regulated by a federal marketing order continuously since November 3, 1945. The regulation provides a method for establishing prices to be paid by handlers for milk on the basis of milk use. It also establishes a method for pooling these returns for the entire market and distributing them to producers.

All milk that is marketed in the area specified in the order must be priced and regulated in the above manner. The market area established in the order written in 1945 has not been changed other than to change the definition of areas that have been renamed or sub-divided. This area is denoted by roman numeral I in figure 1.

Population and Population Growth

One basic dimension of the milk marketing area and future characteristics of the metropolitan area is provided by population data. What is the current population? What is it likely to become? Where is it located?

Two population developments have an impact on milk marketing. One is the population growth within the market area as specified in the order. The second is the geographical expansion of the metropolitan area and the population growth within this expanded area.

In 1944, 1 year before issuance of the current marketing order and agreement, the population within area I was estimated at 875,000 (table 1). Population within this area had almost doubled to 1,510,700 in 1966. The anticipated population for this area for 1980 was estimated on the basis of the 1960-65 population trend. Growth rate for this period was about the same as that which prevailed for the period 1940-65. Some persons, however, are predicting that population growth in the core of this metropolitan area will stabilize

or at least a substantial decline in the rate of population growth in the market area will occur.

Table 1. Population and population projections for selected areas in the Minneapolis-St. Paul milkshed.

Area*	1940	1944	1950	1960	1966	1980
----- thousands -----						
Area I	---	875	1,066	1,342.3	1,510.7	2,000.0
Area II.....	---	---	255.1	329.4	372.7	495.3
Area III.....	395.7	---	405.4	422.7	436.5	451.1
Areas I and II.....	1,132.6	---	1,321.1	1,671.7	1,885.4	2,495.3
Areas I, II, and III.....	1,528.3	---	1,726.5	2,094.4	2,321.9	2,946.4

For areas, see figure 1.

Source: Estimates made from data in 1960 County and City Data Books, U.S. Department of Commerce, records of the Minneapolis-St. Paul Market Administrator; Federal Milk Order Market Statistics, U.S. Department of Agriculture; 1966 county population estimates by the Minnesota Department of Health; and county population estimates for Minnesota counties by the Department of Agricultural Economics, University of Minnesota.

Population and population projections for 1980 were based principally on census reports of county population. Projections for Minnesota counties for 1980 were made by the Department of Agricultural Economics of the University of Minnesota.

In 1966 area II had about 25 percent as many persons as were included in the federal order market area (area I). Projections for 1980 indicate that this area will still have about 25 percent as many persons as area I. Nevertheless, the population would represent a sizable market for milk. The estimate is for about one-half million people to reside in area II by 1980. Another factor must be considered. Several large suburban communities are located in area II; Coon Rapids and Anoka are two of them. These areas will expand in population at a much greater rate than indicated by the county population projections.

Area III includes several fringe markets of sizable populations--St. Cloud in Minnesota and Eau Claire and Chippewa Falls in Wisconsin. It also includes several counties with primarily rural populations. Although the population in this area is now larger than in area II, its population growth rate has been lower. The projected population for 1980, based on the 1960-65 growth rate, will not be much larger than that in area II in 1980--451,000-- in area III versus 495,500 in area II.

Expansion of the Federal order market area in either of the ways considered above would involve a significantly larger market area population. Expanding the market area to include area II in 1966 would have added 372,700 people. Including both areas II and III would have increased the market area population by 831,100. A detailed breakdown of population and population projection by county is presented in table 2. A graphic illustration of population levels and projections is presented in figure 2.

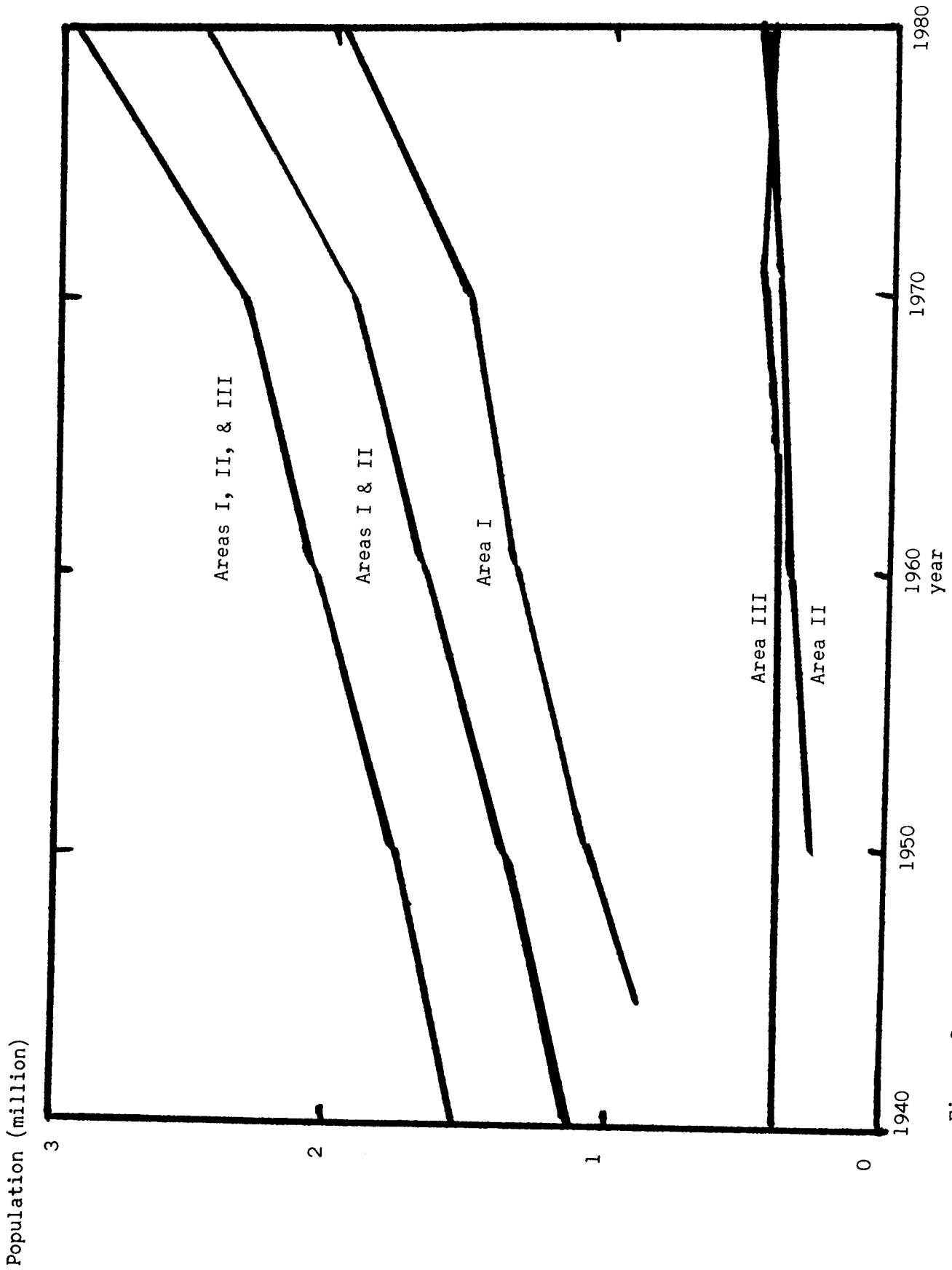


Figure 2. Population and population projections for selected areas in the Minneapolis-St. Paul area (see figure 1 for areas).

Table 2. Population and population estimates for selected counties in Minneapolis-St. Paul milkshed.

	1940	1950	1960	1966	1980
<u>County</u>					
Areas I and II					
	----- thousands -----				
Anoka	17.9	35.6	85.9	162.7	185.2
Carver	17.6	18.2	21.4	25.1	36.1
Chisago	13.1	12.7	13.4	13.9	14.6
Dakota	39.7	49.0	78.3	109.1	188.2
Hennepin	568.9	676.6	842.9	893.3	1,180.7
Isanti	13.0	12.1	13.5	15.4	16.1
Ramsey	309.9	355.5	422.5	437.1	572.0
Scott	15.6	16.5	21.9	29.7	49.4
Sherburne	10.5	10.7	12.9	15.9	18.8
Washington	26.4	34.5	52.4	69.9	112.4
Wright	27.6	27.7	29.4	33.7	35.2
Pierce, Wis.	21.5	21.4	22.5	23.4	25.0
Polk, Wis.	26.1	24.9	25.0	25.0	25.0
St. Croix	24.8	25.9	29.2	31.2	36.6
Total	1,132.6	1,321.1	1,671.7	1,885.4	2,495.3
<u>County</u>					
Area III					
Benton	16.1	15.9	17.3	19.3	22.1
Kanabec	9.7	9.2	9.0	9.2	9.5
McLeod	21.4	22.2	24.4	26.4	26.8
Meecker	19.3	19.0	18.9	18.4	17.6
Kandiyohi	26.5	28.6	30.0	29.5	29.6
Mille Lacs	15.6	15.2	14.6	16.3	16.4
Pine	21.5	18.2	17.0	17.0	15.7
Sibley	16.6	15.8	16.2	16.6	16.9
Stearns	67.2	70.7	80.9	88.8	93.6
Renville	24.6	24.0	23.2	21.0	21.2
Wisconsin counties					
Bannon	34.3	34.7	34.3	33.9	33.0
Chippewa	40.7	42.8	45.1	46.5	50.1
Dunn	27.4	27.4	26.2	25.4	23.7
Eau Claire	47.0	54.2	58.3	60.9	67.6
Pepin	7.8	7.5	7.3	7.3	7.3
Total	395.7	405.4	422.7	436.5	451.1

Source: Same as table 1.

Fluid Milk Consumption and Sales

An estimate of per capita fluid milk consumption was used to derive the total fluid product consumption for the various areas. The per capita figure was calculated by adjusting the national average per capita consumption of fluid milk items by an index of fluid product consumption of the North-Central states. Three items were included in computation of the index: all fresh fluid milk, fresh skim milk, and cream. Weekly consumption of each item per urban household in the United States in 1965 was 8.55, .67, and .13 quarts, respectively. For the North-Central Region, these figures were 9.59, .89, and .17 quarts, respectively.^{3/} The following computation yielded an index of 113.9 for the North-Central Region.

$$\frac{9.59 + .89 + .17}{9.55 + .67 + .13} \times 100 = 113.9.$$

The per capita fluid product consumption in the United States and estimates for the North-Central Region for the 6-year period 1960-66 are presented in table 3. These figures were used as estimates of consumption in Minneapolis and St. Paul.

Per capita sales of fluid products for the North-Central Region have remained relatively stable between 1960 and 1966. Sales were 352.0 pounds per capita in 1960 and 347.4 pounds in 1966. These figures are considerably higher than the national averages. In 1960, national average per capita fluid milk sales were 309 pounds; by 1966 they had fallen to 305.

^{3/} U.S. Department of Agriculture, Food Consumption of Households in the United States, Spring 1965, a preliminary report, ARS 62-16, Washington, D. C., August 1967, p. 8.

Table 3. Per capita fluid milk product sales for the United States and the North-Central Region, 1960-66.

Year	Product weight in periods	
	United States ^{1/}	North-Central Region ^{2/}
1960	309	352.0
1961	302	344.0
1962	302	344.0
1963	304	346.3
1964	304	356.3
1965	305	347.4
1966	305	347.4

^{1/} Dairy Situation, DS 315, Economic Research Service, USDA, May 1967, p. 20.

^{2/} Calculated by multiplying U. S. figure by 113.9. This is an index based on relation of 1965 fluid product consumption in the North-Central Region to national consumption from the 1965 Food Consumption Survey.

The per capita sales figures were used to estimate total fluid product consumption for 1966 and 1980 in the counties in the three specified areas. These figures are presented by county in table 4. The aggregation of these figures for the three areas is presented in table 5. The addition of area II would have resulted in a market area with a total fluid use of 130,170,800 pounds (roughly 25 percent) more than the market order area as specified in 1966. The addition of both areas II and III would have resulted in a fluid use of 281,811,000 pounds (54 percent) more than in the area as specified in 1966. The estimates for 1980 based on constant per capita sales also are presented in tables 4 and 5.

The structure of fluid sales is indicated by the data in table 6. Average daily sales of all fluid products increased by about 14

percent between 1960 and 1966 because of population increases within the market area. Nevertheless, daily sales of several products have decreased in total. Whole milk items have decreased in total, but this decrease has been more than offset by increasing sales of skim milk products, both plain and fortified. Both heavy and light cream sales have decreased. This pattern of daily sales would also be reflected in annual per capita consumption.

Some additional data on Class I sales (fluid milk products) are needed to determine the impact of expanding the market area. Several of the regulated handlers in the market area are selling fluid milk products outside the market area. This milk is regulated under the order and paid for at the class I price. Expanding the market area size would bring a different amount of milk under regulation than is indicated by the previous consumption estimate. In 1966, some regulated handlers had substantial sales in areas II and III in addition to sales in area I. A few also had sales outside this entire area. The producer milk for these sales is regulated.

Table 4. Fluid milk product consumption and expected consumption by counties in the Minneapolis-St. Paul milkshed.

	1966, Class I consumption	1980, Class I consumption
<u>County</u>		
Areas I and II		
	----- thousand pounds -----	
Anoka	56,522.0	64,338.5
Carver	8,719.7	12,541.1
Chisago	4,828.9	5,072.0
Dakota	37,901.3	65,380.7
Hennepin	310,332.4	410,175.2
Isanti	5,350.0	5,593.1
Ramsey	151,848.5	198,712.8
Scott	10,317.8	17,161.6
Sherburne	5,523.7	6,531.1
Washington	24,283.3	39,047.8
Wright	11,707.4	12,228.5
Pierce, Wis.	8,129.2	8,685.0
Polk, Wis.	8,685.0	8,685.0
St. Croix, Wis.	10,838.9	12,714.8
Area III		
Benton	6,704.8	7,677.5
Kanabec	3,196.1	3,300.3
Kandiyohi	10,248.3	10,283.0
McLeod	9,171.4	9,310.3
Meeker	6,392.2	6,114.2
Mille Lacs	5,662.6	5,697.4
Pine	5,905.8	5,454.2
Renville	7,295.4	7,364.9
Sibley	5,766.8	5,871.1
Stearns	30,849.1	32,516.6
<u>Wisconsin</u>		
Barron	11,776.9	11,464.2
Chippewa	16,154.1	17,404.7
Dunn	8,824.0	8,233.4
Eau Claire	21,156.7	23,484.2
Pepin	2,536.0	2,536.0

Source: Calculated from population figures in table 2 and 1966 per capita consumption of fluid milk products in the North-Central Region from table 3.

Table 5. Fluid milk product consumption and expected consumption in the Minneapolis-St. Paul milkshed and specified areas in and adjacent to Minneapolis-St. Paul. ^{1/}

Area ^{2/}	1966			
	Population, thousands	Consumption of class I products, thousand pounds	Population thousands	Consumption of class I products, thousand pounds
Area I	1,510.7	524,817.2	2,000.0	694,800.0
Area II	374.7	130,170.8	495.3	172,067.2
Area III	436.5	151,640.2	451.1	156,712.0
Areas I and II	1,885.4	654,988.0	2,495.3	866,867.2
Areas I, II, and III	2,321.9	806,628.2	2,946.4	1,023,579.0

^{1/} See table 4 footnote for method of estimation.
^{2/} See figure 1 for counties in each area.

Table 6. Consumption of fluid milk products in the Minneapolis-St. Paul federal order milk market area, 1960-66.

Item	1960	1961	1962	1963	1964	1965	1966	Percent change, 1960-66
Whole milk	1173.6	1164.6	1175.7	1196.4	1177.1	1157.3	1108.4	-5.6
Fluid whole milk	7.6	7.2	7.6	7.4	6.3	7.0	7.7	+1.3
Plain skim milk	18.1	24.4	31.1	42.3	62.9	72.5	83.9	+363.5
Skim milk, sol. added	109.7	139.1	160.1	180.3	215.0	250.1	306.0	+178.9
Buttermilk	14.7	13.8	14.1	14.0	14.3	13.3	13.1	-11.9
Fluid milk, dry	16.6	27.2	21.5	24.7	27.1	30.5	30.5	+83.7
Milk and cream mix.	31.3	30.5	31.1	30.4	29.3	28.3	26.2	-16.3
Light cream	6.2	5.6	5.1	4.3	3.4	2.8	2.3	-62.9
Heavy cream	8.1	8.5	8.5	8.4	8.0	7.8	6.9	-14.8
Sour cream	3.4	5.5	5.3	5.2	6.2	6.8	7.2	+111.8
Eggnog	.9	1.2	1.1	1.1	1.3	1.3	1.4	+55.6
Total daily sales	1,399.1	1,422.5	1,461.3	1,514.5	1,550.9	1,577.7	1,593.5	13.9

Source: Federal Milk Order Market Statistics, Annual Statistical Bulletin for 1960-1966, USDA

Regulated handlers under the order provided estimates of their sales by county in some instances. When firms refused to supply data, county estimates were calculated from data furnished by competing firms in the area. This setup enabled us to account for most Class I sales of handlers as reported by the market administration. This estimate of class I sales is less than that reported by the federal market administration. The difference occurred because several small handlers did not cooperate in the survey and because of some differences in accounting for milk.

Results of aggregating the sales by regulated handlers under the Minneapolis-St. Paul federal milk order according to the areas where sales were made appear in table 7.

Table 7. Sales by regulated handlers in selected areas in the Minneapolis-St. Paul milkshed, 1966.

	pounds
Area I	524,817,200
Area II	82,182,800
Area III	16,697,000
All other areas	102,537,100
Total	726,234,100

These figures show 28 percent of the sales of all regulated handlers to be outside the marketing area. For this milk, regulated handlers are paying the class I price for the milk sold outside the area. However, competitive plants outside the area are not required to pay the minimum class price. Since data on pay prices of non-regulated handlers are not available, it was impossible to determine the competitive situation regarding milk purchases.

The importance of the regulated handlers in each of the three

areas is indicated by the data in table 8. In area I, for all practical purposes, all class I sales were made by regulated handlers. In area II, 17.6 percent of the fluid sales were made by regulated handlers. In area III, this percentage was 11.0. Regulated handlers, then, have an important share of the market outside of the present market area. Estimated sales by regulated handlers by county are presented in table 9.

Table 8. Distribution of fluid milk sales between regulated and non-regulated handlers in three specified areas of the Minneapolis-St. Paul milkshed 1966.

Area	Estimated fluid milk sales	Sales by regulated handlers	Percent of total fluid sales by regulated handlers	Sales not regulated
	-----pounds-----		-----percent-----	
Area I	524,817,200	524,817,200	100	0
Area II	130,170,800	82,182,800	63.1	47,988,000
Area III	151,640,200	16,697,000	11.0	134,943,200

Expansion of the order area would bring under regulation most of the fluid milk product consumption in the expanded area plus the sales of previously regulated handlers who are outside of these areas. ^{4/} It also would bring under regulation the sales of newly regulated handlers now outside the alternative specification of the area. Most of the sales of the small bottlers included in regulation as a result of market expansion would be within the specified market area.

^{4/} Part of the milk in rural areas would be consumed on the farm where it is produced. Therefore, it would not come under regulation.

Table 9. Sales of class I products by regulated handlers.

<u>County</u>	
<u>Areas I and II</u>	<u>Pounds</u>
Washington	21,453,000
Ramsey	176,893,000
Dakota	15,218,000
Hennepin	340,307,000 ^{1/}
Scott	4,939,000 ^{1/}
Carver	5,901,000
Wright	4,340,000
Sherburne	2,094,000
Isanti	1,712,000
Anoka	23,619,000
Chisago	390,000
Polk, Wis.	3,040,000
St. Croix, Wis.	3,030,000
Pierce, Wis.	4,064,000
Total	607,000,000
<u>County</u>	
<u>Area III</u>	
Sibley	123,000
McLeod	129,000
Meeke	433,000
Stearns	6,170,000
Benton	1,676,000
Mille Lacs	3,272,000
Kanabec	250,000
Pine	250,000
Barron, Wis.	1,531,000
Chippewa, Wis.	381,000
Eau Claire, Wis.	593,000
Dunn, Wis.	65,000
Pepin	0
Renville	1,824,000
Total	16,697,000
Sales outside Areas I, II, and III by regulated handlers	<u>102,537,100</u>
	726,234,100

^{1/} These sales are greater than estimated consumption because of store sales within the area to consumers outside the market area and because of consumption in restaurants and institutions by persons employed in the market area but who are residing outside the market area.

The larger bottlers may have substantial sales outside the market area. ^{5/} For example, expanding the Minneapolis-St. Paul market area to include area II probably would bring Oak Grove Dairy in Norwood under regulation. This dairy operates in 37 Minnesota counties. Although exact data are not available for this firm, its volume of Class I sales in 1966 was estimated to be 51 million pounds. ^{6/} This volume was allocated over the dairy's distribution area as follows:--one-third in area II, one-third in area III, and one-third in the counties outside the three areas illustrated in figure 1. Expansion of the federal order market area to include area II would include not only the 17 million pounds sold by this firm in the expanded market area, but it also would bring under regulation the additional 34 million pounds sold outside area II.

Expansion of the market area to include both areas II and III would bring under regulation several bottlers with sales outside this area--Oak Grove Dairy in Norwood, Minnesota; Purity Dairy in St. Cloud, Minnesota; and Dolly Madison Dairies and Oak Park Dairies in Eau Claire, Wisconsin. Whether Marigold Dairies in Rochester, Minnesota, would be regulated under an expanded Minneapolis-St. Paul order is questionable.

^{5/} Small bottlers are those who operate in a small local area--one or two small rural communities. Large bottlers are those who distribute in several counties and have large sales in metropolitan areas.

^{6/} This was calculated by multiplying producer numbers as reported in the Minnesota-North Dakota federal order hearing record by 936, the average daily delivery of milk per producer in the Minneapolis-St. Paul federal order. The result was expanded to an annual basis. Since this firm produced no Class II products, this component was taken as the estimate of Class I sales.

Estimates by industry personnel indicate that total fluid product sales of these four firms involved about 150 million pounds in 1966, of which 50 million pounds were outside areas I, II, and III.

Milk Supplies

To calculate the impact of expanding the market order on class I utilization and prices to producers, data on supplies are needed. Milk sold under the regulation of the Minneapolis-St. Paul milk order comes from a very large area. In 1966, milk for the market was obtained from the 38-county area outlined in figure 3. This supply area includes the three areas we have considered in the alternative market area (except Stearns, Kandiyohi, and Renville Counties in Minnesota) plus 12 additional counties in Minnesota and Wisconsin.

Expansion of the market area would mean that additional milk supplies would be brought under regulation. Milk could come from two sources: (1) grade A milk supplies that are currently assembled by nonregulated dairy plants and (2) manufacturing grade milk supplies that could be converted to grade A milk with proper price incentives. Data on all milk supplies will be presented in this section. For later analysis, only grade A milk receipts will be considered. Total supplies do, however, indicate the potential supply.

Total Milk Supplies

The total milk supply (fluid grade A and manufacturing grade) that would be potentially available to the Minneapolis-St. Paul federal order market is illustrated by the data in table 10. The largest milk supplies are available in an area outside of areas I and II. This area produced about 69 percent of the entire milk

supply in the area in 1966.^{7/}

Historical trends in the federal order supply area as it existed in 1966 show an expansion in total milk supply (table 10). In 1955, this area produced 6,526,000,000 pounds of milk. This amount increased to 7,905,000,000 pounds in 1964. It had decreased to 7,291,000,000 pounds in 1966, but it still exceeded the 1955 production by more than 700 million pounds. The change within the area is characterized by different patterns. Areas I and II have shown practically no increase in total production between 1955 and 1966. That portion of the federal order supply area outside areas I and II has contributed the gains in milk production (table 10).

Grade A Milk

Only part of the total milk supply is grade A and, therefore, eligible for use in the federal order market. However, actual grade A production figures are much more difficult to obtain than total production figures. The figures used are for grade A milk receipts at plants located in each of the alternative market specifications. Therefore, grade A milk can be received from farms located in other areas. On the other hand, grade A receipts provide a more useful piece of information for this analysis since they constitute the quantities of milk actually supplied to the market. Grade A milk receipts are listed in column 2 of table 11.

If grade A milk receipts are a good estimate of grade A milk production in each of the areas, then about 30 percent of total milk production in the entire area met grade A requirements in

^{7/} For delineation of areas I and II, see figure 1.

Table 10. Total milk production in supply area for Minneapolis-St. Paul federal milk market, 1955-66. 1/

Area	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
	----- million pounds -----											
Areas I and II	2,271	2,362	2,431	2,418	2,431	2,431	2,457	2,454	2,402	2,521	2,446	2,280
Federal order supply beyond areas I and II	4,255	4,491	4,686	4,830	4,864	4,929	4,993	5,072	5,095	5,384	5,254	5,011
Total federal order supply area	6,526	6,853	7,117	7,248	7,295	7,360	7,450	7,526	7,497	7,905	7,700	7,291
Renville, Stearns, and Kandiyohi Counties	615	672	699	718	763	823	851	862	846	940	930	859

1/ The supply area is those counties which were supplying milk to the Minneapolis-St. Paul milk market in 1966.

Sources: Production from Minnesota counties taken from Minnesota Agricultural Statistics, Crop and Livestock Reporting Service, USDA-Minnesota Department of Agriculture, St. Paul, Minnesota.

Production from Wisconsin counties for years 1955-62 taken from Wisconsin Special Bulletin No. 78, Livestock, Dairy, Poultry, for years 1963-67, from Wisconsin Agricultural Statistics, Wisconsin Statistical Reporting Service, USDA-Wisconsin Dairy Association, Madison, Wisconsin.

1966. The proportion decreased with distance from the market center. Areas I and II received 45 percent of total milk as grade A; areas beyond I and II received 22 percent as grade A.

One would expect these percentages to increase over time in view of past experience. Based on total Minnesota data, grade A milk as a percentage of all milk increased from 15.9 in 1962 to 17.0 percent in 1966. In Wisconsin the percentage increased from 40.5 to 42.4 for the same period. Since the incentives to shift to grade A milk production generally are higher near fluid milk markets, it is probable that the federal order supply area percentages may increase at a more rapid rate than that experienced for the state as a whole.

Federal Order Milk Supplies

Federal order milk supplies are made available from only the grade A milk in the supply area. The federal order handlers assemble most of the grade A milk near the market area. On the basis of the data in table 11, regulated handlers under the federal order assembled 76 percent of the grade A milk in areas I and II in 1966. These two areas were aggregated because such a small quantity of milk actually is produced in area I. In the federal order supply area outside areas I and II, there are important fringe markets serviced by some relatively large nonregulated handlers. In this area, 47 percent of the grade A milk was assembled by handlers regulated under the Minneapolis-St. Paul federal order; the remainder was assembled by nonregulated handlers.

The federal order milk supply area has been expanding. In 1950, federal order supplies were assembled from only 17

counties, which included only 3 Wisconsin counties. ^{8/} The 1966 supply area included 38 counties, 22 in Minnesota and 16 in Wisconsin. This area expansion has resulted in a large increase in the quantity of milk assembled by regulated handlers. The annual volumes of milk assembled by federal order plants for 1955-66 are presented in table 12.

Table 11. Milk supplies in selected areas in and near the Minneapolis-St. Paul order supply area, 1966.

	Total Milk Production ^{1/}	Total Grade A milk receipts ^{2/}	Total federal order milk receipts ^{3/}
----- thousand pounds -----			
Areas I and II (figure 1)	2,280,000	1,016,126	769,738
Federal order supply area beyond areas I and II	5,011,000	1,086,530	513,159
Enter 1966 federal order supply area (figure 3)	7,291,000	2,102,656	1,282,897
Renville, Kandiyohi, and Stearns Counties	759,000	32,392	0
Total of three areas	8,150,000	2,135,048	1,282,897

Sources: ^{1/} Minnesota Agricultural Statistics, 1967, Crop and Livestock Reporting Service, St. Paul, Minnesota, March 1967. Wisconsin Agricultural Statistics, 1967, Wisconsin Statistical Reporting Service, Madison, Wisconsin, July 1967.

^{2/} Provided by the Crop and Livestock Reporting Service in Minnesota and the Statistical Reporting Service in Wisconsin.

^{3/} Calculated on basis of proportion of federal order producers located in each of the areas.

Expansion of the market area under the order would bring about changes in milk receipts. Table 13 contains a listing of estimated receipts of fluid milk at plants if the market area had been expanded in 1966 (alternative market area specifications 1 and 2). It also lists milk receipts at regulated plants as they were defined under the actual order in 1966. Column two lists receipts for alternative market specification 1. The first figure

^{8/} Swantz, Alexander, Economic Effects of Federal Regulation of the Minneapolis-St. Paul Fluid Milk Market, Marketing Research Report No. 11, P.M.A., USDA, Washington, D.C., May 1952, p. 15.

in this column is the same as the quantity of grade A milk receipts at all plants in areas I and II, since all grade A receiving plants in this area would have come under regulation if the market area had been expanded to include area II. The second figure 513,159,000 pounds, indicates that no additional milk receipts in the supply area beyond areas I and II would have been brought under regulation. Thus, total regulated milk receipts would have increased 19 percent, to 1,529,285,000 pounds, by expanding the federal order market area to include area II in 1966.

Column three lists estimated receipts at regulated plants if the market area had been expanded to include areas I, II, and III (alternative market area specification 2). Again, the grade A receipts of all plants in areas I and II would have been brought under regulation. However, a large part of the grade A receipts in the 1966 supply area beyond areas I and II would not have been brought under regulation. There are eight large dairy plants in this area that receive grade A milk for use in manufactured dairy products. This milk would not come under the federal order regulation. Estimates of their annual quantities of grade A milk were made on the basis of November and December 1967 grade A milk receipts of these plants as reported to Associated Dairymen, a regional dairy cooperative federation. After adjusting for this milk, receipts from the 1966 federal order supply area beyond areas I and II would have been 708,168,000 pounds. All grade A receipts in the three additional counties--Stearns, Kandiyohi, and Renville--would have been brought under regulation, as all milk is received by fluid milk bottlers. This amount is relatively small, 32,626,000 pounds. Total regulated grade A milk receipts would have increased by 37 percent, to 1,756,920,000 pounds, if the market area had been expanded to include areas I, II, and III in 1966.

Table 12. Receipts of milk from producers by handlers regulated under federal milk order, 1955-66.

Year	Receipts, thousand pounds ^{1/}
1955	699,870
1956	782,094
1957	835,722
1958	851,045
1959	851,908
1960	946,125
1961	1,030,730
1962	1,047,017
1963	1,110,009
1964	1,104,475
1965	1,092,577
1966	1,282,897

^{1/} Taken from federal milk order market statistics, USDA.

Table 13. Actual producer milk receipts at plants and estimated receipts at plants from expansion of the Minneapolis-St. Paul federal order Market Area, 1966.

Section of supply area	Actual supply area, 1966	Quantity received at plants in:	
		alternative market specification 1	alternative market specification 2
-----thousand pounds-----			
Areas I and II (see figure 1)	769,738	1,016,126	1,016,126
Federal order supply area beyond areas I and II	513,159	513,159	708,168
Entire 1966 federal order supply area	1,282,897	1,529,285	1,724,294
Renville, Kandiyohi, and Stearns Counties	0	0	32,626
Total of all areas	1,282,897	1,529,285	1,756,920

Utilization and Price Effects of Changing the Market Area Specification

The previous data have shown what would happen to the volume of fluid milk sales and milk receipts in the Minneapolis-St. Paul federal order as a result of expanding the market area. The important questions are: What would this expansion do to fluid utilization ratios and what would happen to the producer uniform blend price? The previous data and estimates provide necessary information for calculating these values under the alternative market specifications for 1966.

Two estimates of utilization and price were made for each of the market area specifications. The first included all within-area sales plus only those out-of-area sales by bottlers who actually were regulated in 1966. The second estimate for each specification included the above sales plus those out-of-area sales of bottlers who would have come under regulation as a result of order area expansion. These out-of-area sales estimates were based on information provided by competing handlers. This procedure of making two estimates allows for recalculation of utilization and prices if new estimates or actual reports on sales of non-regulated plants become available.

Specification 1 (area I plus area II)

The first market specification for the use and price calculations includes the existing market area (area I) plus area II, as designated in figure 1. The fluid grade supply for this area was calculated in table 13 as 1,529,285,000 pounds.

Class I sales by handlers in the expanded marketing area for 1966 would have included three items. The entire fluid consumption in areas I and II would be included in sales of regulated handlers. This amount was estimated to be 654,988,000 pounds (table 4).

Also, the handlers who already were regulated in area I were making sales in area III and beyond. These last two values have been calculated from the reports of regulated handlers (see table 7). If the order had been expanded, total Class I sales would have been:

	pounds
Consumption in areas I and II	654, 988, 000
Sales by regulated handlers in area III. .	16, 697, 000
Sales by regulated handlers outside areas I, II, and III	<u>102, 537, 100</u>
Total	774, 222, 100

Comparison of the total with actual 1966 Class I utilization showed very little increase--16, 853, 690 pounds. This small increase occurred because regulated handlers already had a sizable share of sales in area II, the area outside the federal order market area.

The above calculations would lead to a Class I utilization in market specification 1 of 50.6 percent ($\frac{774, 222, 100}{1, 529, 285, 000} \times 100$). Thus, market area expansion to include area II would have decreased Class I utilization. Actual 1966 utilization for the market was 58 percent.

Decreased Class I utilization would, of course, decrease the blend price to producers. The uniform blend price that would have been paid to producers with the above utilization was based on 1966 class prices. The Class I price was \$4.81 per hundredweight (Cwt.) and the Class II milk (remainder of the milk supply) price was \$3.92 per Cwt. Multiplying the respective quantities by these prices and dividing the sum by the total supply yields a uniform producer blend price of \$4.37 per Cwt. The blend price for the

existing market area in 1966 was \$4.44 per Cwt. ^{9/}

What would have been the result if all sales of the newly regulated handlers had become Class I sales under the order? In a previous section, it was estimated that newly regulated handlers would have had 34 million pounds of sales outside of area II in 1966. With this addition to order area Class I, sales would have increased to 808,222,100 pounds. The utilization would have been 52.8 percent, or a decrease of 2.5 percentage points over the actual utilization of 58 percent for 1966. With the same class prices as above, this utilization would have yielded a producer uniform blend price of \$4.39 per Cwt.

Specification 2 (area I plus areas II and III)

The procedures for calculating the impact of increasing the market area to include both areas II and III parallel those for the previous specification. Total supply of milk for 1966 would have been 1,756,920,000 pounds (table 13).

For the first estimate, 1966 fluid sales that would have been brought under regulation were estimated as fluid consumption in areas I, II, and III. Sales of previously regulated handlers outside the market area were included. Results were:

	pounds
Consumption in areas I, II, and III	806,628,200
Sales by previously regulated handlers outside areas I, II, and III	<u>102,537,100</u>
Total	909,165,300

^{9/} This blend price figure differs from that reported in Federal Milk Order Statistics, USDA, because of the method of applying the location differential. It was calculated simply by applying reported class prices to actual utilization for that year. This method was used because it avoided additional calculations and yet allowed comparison of the relative price levels.

The above Class I use would still have yielded a class utilization ratio less than the actual 58 percent for 1966. On the basis of these figures, Class I utilization for the alternative market specification would have been 51.7 percent ($\frac{909,165,300}{1,756,920,000} \times 100$).

The uniform producer blend price for these quantities of milk and 1966 class prices would have been \$4.38 per Cwt. This price compares to \$4.44 the uniform blend price calculated on the basis of actual utilization for 1966.^{10/}

Consideration of all fluid sales of the newly regulated handlers for market specification 2 would alter the utilization and price estimates. Earlier, it was estimated that the large newly regulated plants had sales of about 50 million pounds outside of market area specification 2 in 1966. This volume would have increased Class I utilization to 959,165,300 pounds (909,165,000 pounds + 50,000,000). In this case, the utilization percentage would have been 54.6 percent, still below the 58 percent reported for the actual order area in 1966. The blend price for this proposed area would have been \$4.41 per Cwt.

^{10/} See footnote 9, page 32.

Summary and Conclusion

This report describes some recent changes that have taken place in milk marketing in the Minneapolis-St. Paul area and provides estimates of the impact of expanding the Minneapolis-St. Paul federal milk market area.

Population increases are expected to continue in the future. Much growth is expected to take place in the suburban areas and adjacent cities not now included in the milk marketing area. As a result, milk distributors now distributing principally within the marketing area may find an increasing proportion of their sales outside the area.

If per capita fluid sales in the Twin Cities market parallel those in the rest of the nation, total fluid use has changed very little. Per capita sales were 352.0 pounds in 1960 and 347.4 pounds in 1966. An apparent shift to lower fat content in products would, however, decrease the butterfat content of the total. The total quantity of milk used for fluid purposes may increase in direct ratio to population change both within and outside the federal order marketing area.

Total milk supply in the federal order supply area includes two grades of milk. Manufacturing grade milk is eligible for use only in manufactured dairy products. Grade A milk is eligible for both fluid and manufacturing purposes and it is the grade of milk principally regulated under the marketing order. Much of the supply, 70 percent in 1966, was manufacturing grade milk. This milk, however, can be shifted to grade A uses with the proper price incentives. Based on past experience, fluid milk supplies will increase and they will come from this source.

The impact of expanding the Minneapolis-St. Paul federal

milk order marketing area was determined by comparing price and utilization for two alternative market specifications. Expanding the market area to include an additional tier of counties (area II) around Ramsey, Hennepin, and Dakota Counties would have decreased Class I utilization from 58 to 52.8 percent in 1966. Expansion to include area III (figure 1) would have reduced utilization to 54.6 percent. The expansion that includes area II would have decreased the producer uniform blend price for 1966 by 5 cents per cwt. The expansion that includes both areas II and III would have decreased the producer uniform blend price by 3 cents per cwt. The reason for the increased utilization in market area specification 2 over market area specification 1 is that much of the increased grade A supply in area III would not be brought under the federal order regulation because it is used principally by plants producing manufactured dairy products.

It is also worth noting that additional milk supplies have come into the market since 1966 without any expansion in the market area. Consequently, actual 1967 class I utilization dropped to 48 percent. Therefore, on the basis of the above analysis, market area expansion at the present time could substantially increase the uniform producer blend price.