REPORT TO THE EDUCATION COMMITTEE

ALTERNATIVE FOOD SERVICE SYSTEMS FOR MAINE'S PUBLIC SCHOOLS

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[1975]

INTRODUCTION

In July, 1973, the Maine State Legislature enacted a law (P.L. 1973, c. 607) that required all elementary and junior high schools to provide hot lunch programs by September, 1974. The Commissioner of Education may waive this requirement until September, 1978, for schools which would experience undue hardships to fulfill the requirements of the 1973 Act. Today, approximately 105 schools have not been able to institute a hot lunch program. By 1978, the average daily participation rate is expected to increase nearly 100% from the present figure of 115,000 per day to 230,000 per day.

During the Special Session, the State Legislature enacted a bill (March 13, 1974) to investigate and analyze various alternative food service systems in regard to the following: nutritional value of meals, efficiency of operation, costs of production, capacity to produce for large numbers of people, and the ability to meet Maine's particular needs via a system that does not conflict significantly with Maine values. Thus, several alternative food service systems have to be identified and each one has to be studied in terms of the above criteria.

The following chapter analyzes the historical development of the United States school lunch program, the pressures that are now shaping its evolution, the various alternative systems

CHAPTER I

HISTORY OF THE NATIONAL SCHOOL LUNCH PROGRAM

have recognized education as a fundamental right of school pupils in its constitution and statutes. On the other hand, no state has considered free meals to be either a fundamental right of students or a moral obligation of the state to provide to all pupils.

Despite the refusal of the states and the inability of the federal government to accept the interpretation of the social activists in regard to hot school meals, there are new developments on both governmental levels that portend great changes in feeding school children. A number of states including Maine have adopted laws requiring that all public schools serve hot lunches to all pupils, and low income children will be given reduced price or free meals. The Federal Government, which presently reimburses the states that provide free and reduced price meals, may take a step further via Senator Hubert Humphrey's bill. The Humphrey bill would supply federal funds for all states which provide free meals including breakfast to all school pupils.[1]

Thus, the nation's public school administrators are researching alternative mass feeding systems to accomplish the goals that the state and federal governments are establishing. Maine is included in the list of states that are analyzing these various alternatives. The type of system adopted depends on the particular goals and decisions made by each state as well as by the federal government. As a result it is necessary to analyze each alternative in terms of goals and objectives, and to relate the systems to their respective goals.

The present national school lunch program is markedly different from school feeding in the early 1900's, not only in operation, but also in philosphy. Early school lunch programs were undertaken by philanthropic societies, primarily women's societies, because the school systems, the states and the federal government did not consider social services within the rightful realm of government authority. In the pre-1933 depression years, a laissez-faire philosphy governed the operation of government which was considered to be primarily an instrument for law enforcement and defense. Thus, societies such as the Stair Center Association in Philadelphia, the Women's Educational and Industrial Union in Boston, the Women's School Alliance of Milwaukee, the Cleveland Federation of Women's Clubs, and charitable societies in other large metropolitan areas throughout the United States sponsored free hot lunches for students in all income groups in some of the city schools. The Children's Aid Society of New York City initiated a hot lunch program in that city in 1853, and volunteer social organizations continued that program sporadically after the Civil War until 1920. In 1918, a survey conducted by the New York Bureau of Municipal Research of school lunchroom services in 86 cities with a population greater than 50,000 revealed that 25 percent of the cities had lunch services in elementary schools and 76 percent had some type of lunch program in the high schools.[2]

Rural school children in the late 1890's and early 1900's were much less fortunate than their urban counterparts. Country schools did not have the facilities possessed by the urban schools to prepare and provide meals. Provision of hot lunches in the rural sections of the country was dependent upon voluntary efforts of parents and teachers to send food with their children to be warmed on schoolhouse wood stoves.[3]

A few school boards throughout the country began to accept responsibility for school lunch programs in the 1920's, but this practice was the exception to the rule. A dramatic change occurred in 1932 and 1933, however, in regard to public school lunch programs. The depression, which affected all income levels, produced popular support for government intervention in the nation's economy as a means of resolving the economic plight.[4]

General acceptance of a government supported economy also brought about government subsidization of hot school lunch programs. The changes in the role of government did not imply that the nation's goals or values had been revolutionized. Instead, New Deal economics were viewed as a slightly different means to achieve the same end. Therefore, federal subsidization of hot lunch programs in public schools did not mean that the federal or state governments felt a moral obligation to provide free hot lunches to all students who had a fundamental right to hot meals. Federal and state subsidization was considered a temporary measure by both levels of government and a means of protecting children until better times arrived.[5]

In 1932 and 1933, the Reconstruction Finance Corporation granted federal funds to several Missouri town for school lunch programs. The national government expanded its aid for these programs throughout the country under the Civil Works Administration, the Federal Emergency Relief Administration and the Works Progress Administration. A total of 39 states received funds from the depression agencies.[6] In addition, the United States Department of Agriculture distributed surplus commodities to school districts throughout the nation. By 1941-42, state and local participation with the federal government in the school lunch program reached a peak.

World War II, which brought about the dismantlement of the W.P.A. and a halt to the distribution of surplus agricultural commodities to schools, was an ominous portent for the hot lunch programs in the nation's schools. Congress decided to appropriate funds in 1943 and 1944, however, in order to prevent the complete collapse of the hot lunch programs which had become dependent upon federal aid. State funds were insufficient to keep them operating, and between 1944 and 1946, the national government appropriated one hundred ten million dollars to provide hot lunches for seven million children.[7]

In 1946, Congress extended and expanded the practice and policy it had been following previously, and enacted the National School Lunch Act. Unlike former acts, which required annual

become less and less available for low income groups as grain has been diverted to feed livestock.[11]

Nutritional deficiencies, according to the American National Institute for Social Advancement and the National Research Council, have serious biological and psychological repercussions, especially upon pre-natal infants and children between the ages of 1 and 18 years. Dr. Pattabi Raman points out that individuals suffering from pre- and post-natal malnutrition can genetically pass on psychological and biological deficiencies to their offspring, and thereby create an uninterrupted circle.[12]

The results of the recent discoveries of nutritional research have created a groundswell of support for the extension of free meals to all school children and to the elderly. Not only did the White House Task Force on Nutrition in 1969 endorse free breakfasts and lunches for all school students, it also proposed a broad expansion of the food stamp program, the provision of free meals to the low-income elderly, and the creation of a nutritional educational program in all public schools as a means of combatting misleading advertising on television.[13] Furthermore, the Education Commission of the States is presently constructing a model which can be used to measure nutritional education in the nation's schools and to develop guidelines for programs in nutrition. If the McGovern

bill is passed, it is estimated that the United States Department of Agriculture will funnel two hundred forty-six million dollars to the schools for nutritional education over a three year period. Secretary Earl Butz, however, staunchly opposed the bill, despite its growing support in the Congress.

The awakening of the American conscience to the problems of hunger and poverty had and still has tremendous portent for the hot school lunch programs in the United States. The hot lunch program is now viewed as only one part of the problem, and the system chosen to resolve it may not bear any resemblance whatsoever to the present day school lunch delivery system. Although neither the right to be free from hunger nor the concept that government is morally obligated to prevent hunger has been adopted by any level of government in the nation, they have taken steps to reduce the problem.

Up to the present time, the effects of the "hunger and poverty" movements upon the hot school lunch programs has been to expand the base which the program serves and to increase the type of meals served to include breakfast. In order to broaden the scope of the hot lunch system and to increase the number of beneficiaries in the program, a number of changes had to be made in the apportionment of funds formula, and more funds had to be directly allocated to economically depressed areas. Although the 1946 NSLA allocated a greater proportion of federal monies to low income states than to states with a higher per capita income, the apportionment formula failed to take into account percentage of school lunches

served to the total school population. The formula was based exclusively on the number of school children in each state and the average per capita income of individual states. Thus a school in one state with a similar school population and per capita income but served twice as many meals as a school in another state, received the same quantity of federal funds as did other states.[15]

The 1962 amendment to the NSLA corrected a number of deficiencies in the 1946 act including the apportionment formula and the distribution of funds. Nevertheless, the act failed to correct one very serious and abusive problem which concerned local control of standards and criteria for the distribution of free and reduced meals.[16] As a result, many children of low income families who would have received free or reduced meals in one state or community did not receive them in others. The federal government did not attack this problem until 1968 when it established uniform standards for all states in regard to eligibility for reduced and free meals.[17]

The 1968 Act also expanded the provisions of the 1966 Child Nutrition Act, which increased appropriations for food and equipment for schools in economically depressed areas, inaugurated breakfast and milk programs in many schools and day care centers in depressed regions, and increased administrative staff to plan and supervise these programs.[18]

While the federal government moved in the direction of providing more and more funds to reduce poverty and hunger, a number of states, including Maine, have taken steps to provide food and hot meals to lower income groups. Massachusetts, for example, not only took action to aid the elderly, but also passed a state law requiring all schools to provide food service to all children by 1974. Since it was impossible for schools without cafeterias and kitchen to meet the legislative mandate by 1974, two alternatives were available to these communities. Some towns such as Woburn opted to use commercial frozen dinners and reheat them in microwave ovens. Frozen dinners can be reconstituted in 40 minutes in an equipment area of minimal space, and the meals can be consumed in individual classrooms.[19]

Boston, on the other hand, opted to construct a central food production facility (CFPF) in which all meals can be processed, packaged, blast frozen, and stored in a central unit. The meals are transported to each school from the frozen food warehouse. As a result of administrative problems, engineering difficulties, lack of organization, and a multitude of planning agencies, the CFPF has not been as successful as anticipated. Nevertheless, the city is beginning to resolve some of the problems in the system.[20]

A number of Connecticut towns, like their Massachusetts counterparts, have also adopted commercially prepared frozen dinners, but for different reasons. Many schools in Connecticut

did not have kitchens or cafeterias, and the ones that did possess the facilities were located in affluent areas. A number of legal aid societies brought law suits against the municipalities, the most notable one being Bridgeport, on the basis of the equal rights amendment and protection clause. The court concurred and stated that a town cannot provide food service for some people and deny it to others. As a result, several hundred towns have adopted the frozen dinner system as a means of complying with a court mandate.[21]

Maine, like Massachusetts and a number of other states, has also passed a law requiring all elementary schools to provide hot lunches to elementary school children. The Pine Tree State has made significant progress in the school lunch program from the depression years when a few towns such as Sanford served hot lunches prepared by an active parents' organization. Approximately 115,000 school lunches are served every day in Maine at the present time, but by 1978, the figure could be as high as 230,000 as a result of the recent state law. Nearly 120 schools must make a decision in regard to the type of facility and service that will be adopted.[22]

The Pine Tree States must not only have alternative mass feeding systems under study in order to implement the 1973 school lunch act, but also be prepared for proposed federal programs in

nutrition and nutritional education. As a result of Maine's low per capita and household income, it is probable that the nutritional diet of many Maine families is very low. At the present, two-thirds of all Maine families earn less than $7,000 per annum which places many of these families in the low or below low income category. According to Federal Regulations, a family of four with an annual income of $6000 after taxes is eligible for food stamps. Officials expect, however, that only fifteen percent of Maine's population will receive food stamps. Maine ranks 45 of 50 states in per capita income which is another indication of its low income status.[23] Furthermore, two-thirds of the state's unemployed receive no unemployment compensation.[24] One of the results of low per capita income in Maine has been to rank the state 35th in a range of 50 states on the American Medical Association's national health scale. Maine ranks beneath low per capita income states such as Tennessee, West Virginia, South Carolina and Texas in quality of health care.[25] Thus, there is strong pressure within and outside the state to develop nutritional education programs and free hot meals for school students and low income elderly persons.

There is overwhelming evidence that the Maine population suffers from nutritional deficiencies. Maine people consume large quantities of starch, carbohydrates, and refined foods,

and are very deficient in iron, Vitamin A and Vitamin C. Serious health problems, namely arteriosclerosis, diabetes, heart disease, dental disease and obesity are related, in part, to poor nutrition. In addition, there is substantial evidence to indicate that growth development is a serious problem among Maine children between the pre-natal stage and 10 years of age.[26]

Nutritional deficiencies, while most notable among low income groups, are also significant among some middle and upper income groups in Maine. One of the important factors involved in this situation concerns nutritional education. A lack of knowledge regarding nutrition and food is being combatted to a small degree by the efforts of homemaking services to provide information and practical experience for some low income families. Nevertheless, this service in itself is grossly inadequate, and intense nutritional programs in the schools that provide information and sound nutritional food for all school students are strongly supported by several state agencies as well as the federal government, but no funds have been allocated for nutrition education.

The decisions that must be made not only in Maine but also by every other state in the nation regarding school food service must be made in light of Senator Hubert Humphrey's bill and the mass feeding concept of a number of social activist organizations. The Humphrey bill, which has gained substantial support in Congress over the last year, would establish free hot meals for

all students in public schools. Several spokesmen of the "hunger and poverty" organizations would like to extend the Humphrey bill to all low income groups. At the present, only five percent of the school children throughout the country who were eligible for reduced-price school lunches last year received them. Administrative weaknesses and irregularities must bear at least sixty percent of the blame for this situation, asserts the Community Nutrition Institute. Thus the decision that has to be made by individual school systems in the near future or decisions that have already been made could possibly be inappropriate for the type of system that may have to be developed in the future to serve a very large population. At the present, there are 25,000,000 pupils participating in the school lunch program. Federal funds for school lunches have increased from $60,000,000 in 1946 to more than $160,000,000 in 1967 to $1,612,052,000 in 1973-74.[27]

The purpose of this study is to explore various alternative food service systems which can be instituted to meet current and future needs. The system that best meets these needs is dependent upon a number of factors. Federal legislation regarding the universal school lunch system, federal legislation concerning social services, state social service legislation, local needs and problems, and a variety of other factors are involved in the development of a school food system for the State of Maine. Whatever system is devised, however, must take into account Maine's particular needs, its historical development, the state's geography, its financial

resources, and the values, attitudes and opinions of Maine people.

FOOTNOTES: CHAPTER I

1. Community Nutrition Institute, Weekly Report, October 10, 1974, Vol. IV, p. 4, (Senate Bill 3123 - March 1974).

2. United States Department of Agriculture, Food and Nutrition Service, The National School Lunch Program, Background and Development, United States Government Printing Office, 1971, pp. 4-9.

3. Ibid., pp. 9-10

   Discussion with Miss Gertrude Griney, Supervisor, School of Nutrition, Maine Department of Education, October 1, 1974.

4. The U.S. Department of Agriculture, Food, The Yearbook of Agriculture, 1959, pp. 692-93.

5. The National School Lunch Program, Background and Development, pp. 12-13.

6. Ibid., p. 11.

7. United States Department of Agriculture, National School Lunch Program Statistics.

8. Committee on School Lunch Participation, Their Daily Bread, McNelley-Rudd Printing Service, Inc., Atlanta, Georgia, 1968, pp. 1-11.

9. William E. Leuchtenburg, Franklin D. Roosevelt and the New Deal, 1932-1940, Harper and Rowe, New York, 1963.

10. U.S. Department of Agriculture, The National School Lunch Program, Background and Development, p. 22.

11. White House Conference on Food, Nutrition and Health, Final Report, U.S. Government Printing Office: Washington, D.C., 1970, pp. 302-04.

12. S. Pattabi, Raman, Nutrition and Educational Planning, World Order: Wilmette, Illinois, Spring 1973.

13. White House Conference on Food, Nutrition and Health, Final Report, pp. 283-305.

    Community Nutrition Institute, Weekly Report, August 15,1974, p. 4.

14. Ibid., p. 4.

    Interview with Mr. Bruce Hunter and Philip Fox, Education Commission of the States, Denver, Colorado, October 18, 1974.

    Weekly Report, August 15, 1974, p. 3

15. United States Department of Agriculture, The National School Lunch Program, Background and Development, pp. 17-22; Committee on School Lunch Particiaption, Their Daily Bread, pp. 6-11; Food: The Yearbook of Agriculture, 1959, pp. 694-8.

16. The National School Lunch Program, Background and Development, p. 17.

17. Ibid., pp. 21-2.

18. Ibid., pp. 21-2.

19. Interview with Miss Gertrude Griney, School of Nutrition, Department of Education, September 25, 1974.

    Interview with Messrs. Alden Carpenter and Kirkstein, Morton Frozen Foods, September 25, 1974.

20. Ibid.

21. Ibid.

22. Chapter 607, Maine Public Laws, 1973.

23. Bureau of the Census, United States Department of Commerce, Statistical Abstract, 1973.

24. Telephone interview with Mr. Bernstein, Department of Manpower Affairs.

25. Governor's Conference on Nutrition, Augusta, Maine, October 23, 1974.

26. Rose-Marie Cyr, An Investigation of the Nutritional Problems That Occur in Maine, Unpublished Report to the Bureau of Health, August 27, 1974, Maine Department of Health and Welfare.

    U.S. Department of Health, Education and Welfare, Health Services Administration, Ten-State Nutrition Survey, 1968-1970, Washington: U.S. Government Printing Office,1971.

27. Community Nutrition Institute

CHAPTER II

THE PUBLIC DECENTRALIZED SCHOOL LUNCH SYSTEM

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There are approximately 888 schools in Maine, of which 650 have preparation kitchens and 718 have a school food service program. Each local community or school district controls and operates its own food service program in the schools. Within each district or community there is a supervisor, employed by and under the jurisdiction of the superintendent, who develops menus with the help of the food service staff in the several schools, purchases food items, is responsible for the placement of personnel, and supervises the entire food service operation in the local area or district. In addition to a supervisor, there is an "on-site" manager in each school kitchen who is responsible for the operation of the individual kitchen. Presently, there are 62 district and local food service supervisors in the State of Maine and roughly 650 local "on-site" managers.

Maine's school systems, including the food service programs, like those across the nation, are not controlled and operated by the state. Power rests in the several superintendents and school boards. The only authority that the state possesses over the food service programs consists of the power of distribution of federal and state funds to local food service

systems and the power to close facilities that fail to meet Maine's health and sanitation code. Thus, a school that fails or refuses to implement the free and reduced lunch policy of the federal government can be denied federal and state funds by the Division of Nutrition in the State Department of Education. Any school kitchen that fails to meet state health standards can be closed by the Department of Health and Welfare.

A school food service program that does not provide nutritious food can be denied funds to operate its kitchen facilities. Generally most schools that have been found deficient in food quality have attempted to remedy the situation as quickly as possible. Generally, insufficient funds have been the chief cause of deficient quality of food. One of the problems connected with this situation is the need for a larger staff to supervise the preparation of food, identify problems and help the kitchen staff to resolve problems.

The goal of the present school food service system is to improve child nutrition and to promote more effective learning. Today, approximately 115,000 students in public schools participate daily in school lunch programs. A total of 19,443,647

lunches were served in Maine in 1973-74, of which 7,652,710 or 40% of the meals were free and reduced lunches. The total cost of the school lunch program in Maine is $13,116,000, of which children's payments account for 37% of the cost, federal subsidies account for 45% of the cost, and 18% of the cost is paid by state and local sources.

Maine schools, however, are going beyond the goal and providing meals for the elderly and low income groups and for day care centers. Many of the schools, therefore, perceive the goal of the school food service program to reduce hunger and malnutrition throughout their area or district population. Presently, 91 schools in the state offer breakfast, and the average daily participation rate (ADPR) is roughly 6200. Approximately 75 percent of the breakfasts served are free and reduced price breakfasts. In conjunction with the breakfast program, there is a milk program in which 767 schools participate. The ADPR in the milk program is nearly 62,000.

In addition to breakfast and milk programs, there are roughly 25 schools in Maine serving free lunches to all school students. Towns such as Buckfield, Rome, Van Buren, Sherman, Moscow, Pleasant Ridge, and Greenbush have adopted the universal free lunch policy. Many other Maine towns, including

Madison, Livermore Falls, and China are very interested in adopting the free lunch program. Approximately 4,000 students are now served by the free lunch program.

Another program offered by several Maine schools is food service for the elderly. There are approximately 4 schools (Brunswick, Farmington, Van Buren, Madison) with food service programs that serve 500-600 elderly people each day. Many school superintendents are very interested in the food for the elderly program and have made numerous inquiries of the State Department of Education - Division of Nutrition - in regard to setting up programs for the elderly. Indications are that these programs will experience rapid growth in future years.

Maine schools are also involved in special food service programs for children. Approximately 100 day care centers involving roughly 500 children received meals from public schools. Twenty-one schools in the state are engaged in producing meals for day care centers and headstart centers.

ADVANTAGES OF THE PUBLIC DECENTRALIZED FOOD SERVICE SYSTEM

In order to evaluate the present de-centralized public food service programs in Maine, it is necessary to study the strengths and advantages as well as the weaknesses and disadvantages of the existing system. It is also necessary to study the problems confronting the administration of the food service program, and to propose remedies for the problems and weaknesses that can be resolved.

The strengths and advantages of the public decentralized school lunch system may be described as follows:

DIETARY

1. Each school kitchen can provide nutritious meals that are well accepted in the local area. It permits local and regional specialization of lunches.
   a. Cheddar cheese for example is very popular in Southern Maine, but is very unpopular among children of the St. John Valley.

2. "On-site" kitchens offer the potential for top quality products and more servings of food.
   a. Local preparation has the potential to provide more attractive meals and fresh vegetables and fruits.

LOCAL BENEFITS

1. Local school kitchens purchase Maine vegetables, fruits, potatoes and fish products.

2. "On-site" kitchens provide employment to local inhabitants who have a significant interest in the local school. Approximately 2000 or more individuals are employed in local school kitchens throughout the state.

OPERATION AND POTENTIAL OF THE SYSTEM

1. On-site kitchens offer great flexibility to meet the needs of the elderly, provide services during and following disasters, and to serve day care centers.
   a. Several Maine schools are presently providing meals to 500 or more senior citizens and to 1500 pre-school children in day care centers.

2. On-site kitchens provide greater flexibility than other systems to offer breakfast programs and other similar services.
   a. There are 91 schools serving breakfast in Maine.

3. On-site kitchens offer maximum potential for cultural enrichment of educational programs.
   a. In some schools, the school lunch program is integrated with different subjects. For example, children can learn the names of vegetables and other foods as well as the importance of nutrition by integrating the food service with different subjects.
   b. In some schools, French and Spanish classes help provide French and Spanish meals to the school or use the facilities to prepare cultural meals for their own classes.

ENERGY CONSUMPTION

1. On-site kitchens use less energy than central or regional kitchens and satellite kitchens engaged in the preparing and cooking, blast freezing, and reconstituting the meals. The on-site kitchen is involved in one energy process rather than three energy processes.

DISADVANTAGES OF THE PUBLIC DECENTRALIZED FOOD SERVICE SYSTEM

The disadvantages and weaknesses of the public decentralized school lunch program may be described as follows:

ADMINISTRATION

1. There is a very limited number of individuals with good managerial ability and experience to operate school lunch programs efficiently and at minimum costs at levels schools can afford to pay.
   a. There are no regulations that require school food service managers to possess experience or to have any educational background in management. Very few managers in Maine food service programs have any experience in management and nutrition.

2. As a result, there is insufficient attention to quality and nutritional value of school meals.

3. There is inadequate control over and supervision of production personnel. Since local school districts control the school lunch program in Maine, the districts do not have to accept food service training programs and the advice of the Division of Nutrition in the State Department of Education.
   a. Most employees in school food service have other commitments and are unable or are unwilling to take part in food service training programs. In addition, the Nutrition Department has found that many individuals in school kitchens have acquired unacceptable cooking habits and methods which they are unwilling to change.

4. As a result, there is inadequate provision for the State Department of Education to supervise school lunch program costs and personnel.
   a. Often times, for example, labor saving equipment purchases are not followed by reductions in the labor force. As new equipment has been purchased, or as kitchens have used more and more convenience foods, the Nutrition Department has observed that there have been no reductions in food service personnel because labor reductions would be very unpopular or because the school will vary its menu and use its personnel in different capacities.

CONSTRUCTION AND OVERHEAD COSTS

1. There are considerable overhead costs to maintain and operate 650 kitchens. See Table

2. Decentralized food service systems lack economies of scale.
   a. Many school kitchens are inherently inefficient by virtue of the very small size of the student population. For example, a kitchen employing 5 people and serving 200 people will incur labor costs of 35¢ per meal compared to a kitchen employing one person serving 25 meals which incurs a labor cost of 56¢ per meal.

3. The 1973 Public Law (chapter 607) requiring school lunch programs for all elementary and junior high schools will create significant costs for some schools which plan to construct kitchens in order to comply with the law.
   a. In January, 1974, there were 170 schools without kitchen facilities and the cost of construction was estimated at that time to be roughly $5,000,000. Today, approximately 120 schools have no kitchens and the cost would probably be more than $5,000,000.

4. Some Maine schools according to the Department of Nutrition, have obsolete or inadequate equipment.

   The United States Department of Agriculture has found deficiencies in equipment and kitchen layouts throughout the country. These deficiencies are generally attributable to: (1) lack of funds at local level; (2) architects not having expertise in designing food service facilities; (3) failure to employ a registered food service consultant to plan and supervise installation of facility.

   Other problems concerning equipment in various Maine kitchens include:
   a. Inadequate working space and overcrowding of equipment.
   b. Aisle space that is too narrow.
   c. Sinks that are poorly designed for washing large pieces of equipment.
   d. Certain types of equipment that are too high for maximum usage.
      Example: three compartment, self-contained steamer.
   e. Raised "walk-ins" in some older facilities which do not permit food to be rolled out of refrigerator unit.

5. Many schools could use equipment more efficiently by scheduling production over a longer period of the day.
   a. According to the USDA, a well-designed kitchen and cafeteria should utilize 12-30% of the total space in each school.

6. Small, remote schools have no choice of purveyors which keep them dependent on one vendor and the prices of that vendor.

PROBLEMS CONFRONTING SCHOOL LUNCH PROGRAMS

There are a number of problems that confront the administration of school lunch programs in general.

Many people, including superintendents and principals, do not see the correlation between hunger and school performance. As a result, school lunch programs are considered of secondary importance in some schools, and the facilities are often limited and inadequate.

There is a serious lack of knowledge among all groups of people concerning nutrition. In addition, there is no agency working full time on nutrition. Consequently, the public does not see the need to provide nutritious meals in school.

Lunch periods are too short. Most lunch shifts in Maine allow for less than 20 minutes. Longer lunch periods would permit additional servings per student and more time for meal consumption.

There is a very significant lack of trained and experienced personnel to supervise food service operations and to teach nutrition to food service employees.

There are almost no food kitchen managers and district supervisors with a background in management and nutrition.

RECOMMENDATIONS REGARDING THE PUBLIC DECENTRALIZED SCHOOL FOOD SERVICE SYSTEM

1. Need for a coordinated-integrated nutritional Educational Program in grades K-12. The program would require teachers trained and experienced in the field of nutrition.

2. A compulsory in-service training program for all food service personnel that would certify all personnel in nutrition and food service methodology.
   a. Many states, such as North Carolina and Florida, have already adopted this program. The University of Massachusetts has a nutrition program that leads to an associate degree, and New Hampshire is trying to establish one.
   b. Maine's educational legislation allows the Commissioner to establish standards for food service personnel. Any new laws regarding compulsory in-service training and nutritional education would require a grandfather clause.

3. A compulsory training program in management for all school kitchen food managers and district supervisors.
   a. Several states have created managerial programs for food service administrators.

4. A study of different means by which Maine schools can serve the elderly and other groups, particularly in terms of meals. A rural school food service operation for the elderly may possibly be operated differently than an urban school operation.

SCHOOL LUNCH PROGRAM IN MAINE

1964-1973

	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
FEDERAL SCHOOL LUNCH Reimbursement (in 000's of dollars)	611.6	635.5	649	717.5	749.2	786.1	845.9	1,553	1,188.6	1568.2	2,001
TOTAL NUMBER SCHOOL LUNCHES served in Maine (in 000's)	12,302.2	12,863.4	13,957.1	14,552.9	14,888.7	16,179.5	17,438.5	18,171.	19,212.	19,603.1	19,443
AVERAGE DAILY LUNCH Participation (in 000's)	76	79.3	85	87.1	904	96.7	103.4	107.8	113.4	117.4	116.6
NUMBER OF SCHOOLS with Hot Lunch Programs	603	604	610	618	612	623	627	662	692	712	718
FEDERAL REIMBURSEMENT FREE AND REDUCED LUNCHES (000's of Dollars)			8.3	6.2	15.8	209.5	703.6	1,787	2,259.5	2,636	3,456
TOTAL NUMBER of free and reduced lunches served (in 000's)	951	964.2	1,027.6	1,049.1	1,087.7	1,106.	3,087.2	4,677.6	5,940	6,740.2	7,652

INCOME AND EXPENDITURES - FOOD SERVICE PROGRAM IN MAINE, 1964-1974

INCOME	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75
CHILDREN'S PAYMENTS (in Millions)	3.40	3355	3815	4222	440	4717	4879	5014	4919	4787	4885
FEDERAL SUBSIDIES RECEIVED (000's of dollars)	891.8	931	916.6	988.3	1,079	1,310	1,637	2,962	5,110.7	5,085	5,901
ALL OTHER (Includes state funds) 000's of dollars	466.6	504	563	738	773	937	1,072	1,195	1,233	1,601	2,207
TOTAL INCOME (Millions)	4.75	4.79	5.29	5.95	6.24	6.96	7.58	9.17	11.2	11.5	12.9
EXPENDITURES											
FOOD (In 000's)	3,121.1	3,1909	3,520.	3,987.7	4,0444	45306	4,763.3	5,692.2	6,581.1	7,1955	8,237.8
LABOR (In 000's)	1,355	1,442	1,582	1,733	1,911	2,188	2,461	2,923	3,417	3,559	3821
MAINTENANCE, UTILITIES (000's)	276.6	287.5	309.2	262.8	350.9	3933	448.9	577.2	888.8	1,028	1,056
TOTAL EXPENDITURES (000's)	4,753	4,029	5,411	5,983	6,306	7,117	7,674	9,193	10,886	11,783	13,116

CHAPTER III

A CENTRAL FOOD PRODUCTION FACILITY

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A CENTRAL FOOD PRODUCTION FACILITY

There is no central food production facility or kitchen in the United States that processes and manufactures all the school meals for an entire state or region. Most of the central school kitchens are located in large metropolitan areas and serve the urban area in which they are located. In addition, a majority of the central school kitchens in the United States do not process or manufacture most of the meals that are produced in these facilities. Many central kitchens use convenience items and frozen entrees, and the major function of the kitchen is limited to packaging and distribution.

In Boston, Massachusetts, for example, a central kitchen serving schools with an average daily participation rate (ADPR) of 40,000, packages and serves approximately 7,000 meals per day. The kitchen is more of an assembly plant than a manufacturing firm. It produces approximately one-sixth of the total number of meals required in Boston schools and its output has been restricted because the school kitchens served by the central kitchen have not been equipped with the necessary equipment to reheat and reconstitute the meals.

There are a number of other central kitchen operations in such places as Cleveland, Ohio; Laredo, Texas; Philadelphia, Pennsylvania; and Baltimore, Maryland. For the most part, the meals are prepared from convenience food items. Cleveland's central kitchen prepares 85,000 school lunches per day, Philadelphia's central kitchen prepares 20,000 school lunches per day, and the Laredo central kitchen prepares 8,000 meals per day. One of the greatest problems of the central kitchen food service program concerns the transportation of meals to receiving schools or satellite kitchens. New York City's food service director, for example, has been emphasizing unit or self-contained kitchens in order to avoid union problems that complicate the transportation system of a central kitchen operation. More than 500 New York elementary schools receive meals from a central kitchen.

Baltimore, on the other hand, has accelerated the central kitchen concept throughout the county. The transportation problems associated with a central kitchen operation have been avoided by the city's food service director, Lyle Root. He has contracted food delivery by competitive bid to individuals who have the means to transport school meals. In many cases, housewives with station wagons operate the delivery system.

In Los Angeles, California, a central kitchen operating with a staff of 20 people prepares and manufactures all the meals for the school district and sends bulk food items to 490 school cafeterias. The central kitchen has saved 800 employee hours per day compared to the self-contained kitchens.

The central kitchen is particularly practical in districts where no food service facilities presently exist and in new districts in which building programs are being planned. According to the Educational Facilities Laboratory, a non-profit corporation established by the Ford Foundation to aid schools and colleges in the development of educational facilities, there are several criteria that can make a central kitchen impractical. A region with severe weather conditions along with poor terrain in which the grade on any route exceeds 7 per cent, makes the transportation of bulk food almost impossible. Consequently, central kitchens have been confined primarily to urban and metropolitan areas in which the schools lacked kitchens and the schools are relatively close to each other. These problems can be overcome by shipping frozen pre-plated meals to schools in quantities that will allow a truck to be delayed for 2 or 3 days and pose no problems to the receiving schools

A central food production facility for the State of Maine may be defined as a central food processing plant manufacturing meals for Maine's public schools. The plant would be constructed to serve all the schools in the state and provide meals for any other groups such as the elderly for whom various school systems wished to provide meals. No school or school district would be required to join the CFPF system. Participation in the program would be voluntary in order to receive full support from local participating school systems.

Total school participation in the CFPF system under a universal school lunch program could create an average daily participation rate of 230,000 individuals by 1980. The present ADPR is approximately 115,000. A central kitchen constructed to meet present demand as well as the demand in schools without kitchens and food service would serve roughly 125,000 meals per day.

Maine's central kitchen facility, therefore, would be unique in the United States. No state has a central kitchen that manufactures meals for all the public schools in the state and no state has a central kitchen that produces meals for schools

in several different school districts. Thus, a central kitchen in most of the states may be defined as a central base kitchen which provides meals for schools and other groups in one particular urban community.

In order to insure an administratively efficient operation, a central kitchen must be as divorced from politics as possible. Like the Maine Turnpike Authority, the Maine Port Authority, and the University of Maine, which are quasi-independent agencies under the direction of a board of trustees, a central school food service authority under direction of a board of trustees appointed by the Governor for specified terms would maintain the agency's accountability to the public without injecting political complications into the organization.

According to Robert Taub, an application and design engineer as well as a warehousing specialist for ACCO Integrated Handling Systems, the best location for a central kitchen in Maine is in Portland. Since many food items would have to be imported into Maine, it is best to locate a plant in a geographical position which can intercept the imports as close to the major regional distribution center (Boston) as possible.

Portland is not only closer to the Bay State capital than other major urban areas in the state, it is also the hub of the largest population region in the state. A Portland based plant can also draw upon the city's labor supply for its own needs as well as upon Boston's labor market. Since many positions in a central kitchen require outstanding technical expertise and managerial ability which are difficult to find throughout the nation, the Portland area would provide a better opportunity to obtain technical and management experts than would the Augusta, Lewiston or Bangor areas.

In addition to distance, population and labor supply, Portland has a distinct advantage over other Maine cities in terms of storage facilities. There are no frozen food storage facilities in Bangor or Augusta, whereas Portland has two large commercial facilities which could handle the central kitchen's products. Furthermore, the city has good commercial trucking facilities to transport supplies to and finished products from the central kitchen and warehouse.

Warehouse facilities can be very costly to operate and maintain, especially as a consequence of the energy crisis.

One large warehouse is preferable to two or three smaller facilities located in different parts of the state (such as Portland, Bangor and Presque Isle). According to ACCO Integrated Handling Systems and St. Onge, Ruff and Associates, two firms which specialize in warehousing operations, additional transportation equipment and frequent shipments are preferable to several warehouses in regard to operating costs. Increased shipping charges are far less costly than the maintenance of three warehouse facilities. Transportation of frozen meals throughout the state will still be required despite warehouse facilities in Bangor and Presque Isle. By not constructing the facilities in central and northern Maine, the only added transportation costs will be the ones incurred by more frequent shipments of goods to Bangor and Presque Isle (excluding the trips that would have been made to stock the warehouses in those cities).

GOALS OF THE CENTRAL FOOD PRODUCTION FACILITY

One goal of the CFPF is to produce a large quantity of

nutritious school meals in an efficient manner for schools without kitchen facilities or for schools with inadequate and obsolete kitchen facilities.

Approximately 120 schools in Maine have no food service programs, and most of the schools are located in rural areas. These schools would be the major beneficiaries of the central kitchen. Another group of beneficiaries consists of schools with obsolete kitchen equipment and inadequate facilities along with small schools in which food service operating costs are high. Most Maine school kitchens have obsolete equipment, but the percentage of schools that would realize a reduction in food service costs as a result of a central kitchen operation is indeterminable at the present time.

Another goal of a central kitchen is to function as a mass feeding operation and to provide meals for other groups, such as the elderly, and other institutions, such as hospitals and prisons. A central kitchen can produce meals which are delivered to a Senior Citizens Center, to elderly shut-ins, and to institutions.

In order to evaluate the central kitchen operation, it must be measured against the goals of a CFPF and Maine's food service needs. The strengths and weaknesses of a central kitchen operation, therefore, depend upon the scale upon which it will operate and the types of programs in which it will be involved.

ADVANTAGES OF A CFPF

There are a number of advantages that a central food production facility possesses compared to other systems. Most of the advantages are related to control over production and the reduction in the number of facilities and amount of equipment and labor to operate the program.

ADMINISTRATION

1. Provides central control over the quality and nutritional value of the food used in the meals.
   a. It is easier to supervise and to maintain quality control in one food manufacturing plant than in 750 plants.

2. Provides better supervision over school lunch personnel than the public decentralized system which places control into a very large population. As a result, it is more difficult to make changes under the present system than under a central operation.

3. Provides strict controls over operational costs and maximizes efficiency of operation in terms of goals of the program.

4. Establishes uniformity of standards and operation which may upgrade food service for schools which now have low standards.

COSTS AND OPERATION

1. There may be a reduction of overhead and operating costs. One central kitchen removes the duplication and costs involved in 750 kitchens.
   a. There will be greater savings in a pre-plated operation than in a bulk food operation. In the latter, more labor, equipment, kitchen space and utilities are needed than in a pre-plated system.

2. Permits food purchase savings. Bulk items can be ordered from and shipped directly to the central kitchen at a reduced rate.
   a. The airlines order certain cuts of meat and entrees from Armour, Swift and Oscar Meyer on contract. These firms will make price contracts for a one year period and ship directly to the airline kitchens
   b. Wholesale firms in Maine will make no contracts, and prices vary from week to week.

3. Will reduce overhead costs, especially labor costs, for schools with a small ADPR.

4. Enables schools lacking kitchens to provide hot meals without significant capital investment. Approximately $6,000 of equipment and 121 square feet are all that is needed for a satellite kitchen in a school serving 350 meals per day.

GENERAL CHARACTERISTICS

1. Very versatile in regard to various age groups.
   a. Can provide portions for elementary school children, high school students, pre-schoolers, and the elderly.

2. Will hire and use Maine labor. There will be a labor reduction of the present system, but some of the production employees can be obtained from the state's work force.

3. Will purchase Maine products such as fish, vegetables, fruits, and potatoes.
   a. Excluding beef, the costs of the above items could average $350,000 per month.

DIETARY

1. Will provide all the nutrition that each pupil needs. The centrally prepared pre-plated meal does not allow the child to by-pass a server who serves food that the child may never have had or which he thinks has a bad taste.

2. The pre-plated frozen meals produced in a central kitchen would not have to be supplemented with additional food items to make them basically nutritious as would commercial frozen meals.

DISADVANTAGES OF A CFPF

The disadvantages of the central food production facility are directly related to the size of the operation and the highly technical nature of the food processing industry. The disadvantages may be enumerated as follows:

ADMINISTRATIVE AND GENERAL

1. Requires very highly skilled and technical people who are experienced in the food processing industry.
   a. The airlines have found that the labor supply they require for aircraft kitchens is very limited across the nation.
   b. Managerial talent with experience and background in food and nutrition as well as in food processing is in great demand and very difficult to find.
   c. The blast freezing process is a highly technical operation which requires an administrator who has had considerable experience in this field. According to the manager of

the Denver Sky Chef plant, experts in blast-freezing are very rare.

d. Skilled and technical labor are very costly.

2. There is no state which has adopted a CFPF on a statewide scale which can be used as a pilot test project. In areas where there is a CFPF, the facility is often involved in food packaging and not processing.
   a. New York, Boston, Cleveland and Detroit are examples where food packaging CFPFs operate.

3. Creates a very complex transportation-distribution problem.
   a. There are 21,000 miles of public highways and 800 schools that need service. As a result, the CFPF system would need a traffic design engineer to develop the most efficient transportation-distribution system possible.
      1) Excluding I95, all Maine roads are secondary roads and large tractor trailers may not be able to operate over some of the roads.

4. Locks a school into a system that may not be convertable to any other food service system. Certain equipment in satellite kitchens cannot be used for on-site production of meals. A conventional kitchen requires much more space for operation than a satellite kitchen.

5. May create local opposition which opposes centralization of school food service under the direction of the state. Decentralization of service and authority has been the basis of the existing system for 35 years.

COSTS AND OPERATION

1. Requires substantial sums of investment capital to be invested at one time. Investment in a CFPF cannot be done in a gradual manner. At the present time, the state would have to borrow money at high interest rates. See Table
   a. Central kitchen serving 125,000 meals per day will require at least 42,000 square feet at a construction cost of more than $5,000,000, as well as a warehouse of 10,000 square feet at a construction cost of $700,000 equipment costs could be as high as $2,000,000.

2. Requires large refrigerator and frozen food storage facilities which, as a result of the energy crisis, are very expensive to operate and maintain or to rent.
   a. Massachusetts has discovered that commercial frozen food storage adds 7¢ to each meal produced.
   b. Construction costs for a central warehouse could range from $500,000 to $750,000. Maintenance and overhead could be as much as $90,000 per year.

3. Will displace many conventional kitchen facilities (as many as 650 should every community choose to participate in a central kitchen system) and equipment without any return or compensation for the facilities.
   a. It is impossible to estimate the actual worth of every school kitchen facility, but the figure would be in the millions of dollars.

DIETARY

1. Established uniformity in meals which does not permit any variation to provide for local and regional differences in tastes.

2. May possibly fail to provide enough meal variation and produce student boredom with school meals.
   a. This problem could be overcome by establishing a month's menu cycle with several different choices for each meal.

RECOMMENDATIONS

1. A central kitchen should not be adopted for the entire state unless there is sufficient representation from every part of the state in the program.
   a. It would be extremely costly, for example, to provide school meals for a few schools in Aroostook County, a small number of schools in Somerset County, and/or one or two schools in Washington County in addition to a limited number of schools in other counties.

2. An in-depth study of the transportation-distribution system is required to be precise about distribution costs and to obtain a better total cost figure. Additional information is required in regard to the maximum effective range of territory that a CFPF can serve.

3. A study should be undertaken to analyze the labor supply and type of labor that would be available for a CFPF to operate in the Portland area.

4. An in-depth study is needed to consider the availability of top-quality management and technical expertise required to operate a CFPF.

5. More material is required in regard to the types and quantities of food products that Maine food producers could provide a CFPF. In addition, a system of the means by which these food supplies can be purchased and delivered to the CFPF needs to be developed.

A MODEL OF A CENTRAL FOOD PRODUCTION FACILITY FOR MAINE'S PUBLIC SCHOOLS

MODEL OF A CENTRAL FOOD PRODUCTION FACILITY FOR MAINE'S PUBLIC SCHOOLS

A central food production facility(CFPF) consists of one kitchen and a central warehouse with a two-week storage capacity. The central kitchen can produce 230,000 meals per day which is the estimated average daily lunch participation rate for Maine in 1980, or 125,000 meals per day which is roughly the present average daily lunch particapation(ADPR) in the state.

According to the model, the central kitchen is located in Portland. Portland is the best location for the facility for a number of reasons. It is close to the Boston labor market upon which the facility can draw for very skilled production people and technical managerial expertise. There are commercial frozen food storage facilities and transportation companies in the Portland area, and the city is situated amidst the largest populated region in the state. Bangor would not be a good location for a CFPF because more than one-half of all the meals produced in the central kitchen would have to be transported down the turnpike to Portland. Thus, Portland's location reduces the trucking mileage considerably in comparison with Bangor.

A central kitchen which prepares 230,000 meals per day requires a facility of at least 100,000 square feet. The processing building includes the central kitchen, shipping and receiving docks, offices, and rest rooms. In addition to the central kitchen, a central warehouse of approximately 12,500 square feet and 600,000 cubic feet(240' x 52' x 60') is required to store a two week's supply of

frozen meals. A central kitchen which prepares 125,000 meals per day requires a facility of roughly 55,000 square feet and a central warehouse of 7,280 square feet and 280,000 cubic feet of storage space.

The central kitchen prepares a complete meal with the exception of milk. The meals are sent on a weekly or bi-weekly basis to 257 base kitchens throughout the state of Maine. The base kitchens (See Tables 2 & 3), located in each school district in Maine, reconstitute(reheat) the meals and ship them hot to the several schools in the district. In many cases there are two or more base kitchens in a school district which provide hot meals to satellite schools. There are also several schools which have self-contained kitchens because the size of the school population as well as the geographical location of the school do not warrant transporting hot meals to the school.

The model is based primarily upon bi-weekly deliveries of frozen meals to each base school, and each base school kitchen possesses a two week storage facility. One of the theories that is being tested in the model is that large frozen meal storage facilities and bi-weekly deliveries reduce total operating costs compared to smaller storage facilities and weekly deliveries. Another theory that is also being investigated in the model is that a central warehouse facility reduces total operating costs compared to smaller regional warehouses and fewer shipments from a central warehouse in Portland to other sections of the state.

Within each of the 257 base school kitchens there are convection ovens, frozen food storage facilities, walk-in refrigerators, and other equipment which are used to reconstitute the meals.

The satellite schools, however, contain no equipment and do not need kitchens or cafeterias. The students can be served in a gymnasium-auditorium or in their classrooms. The theories tested in this part of the model concern transportation, equipment, and labor. One theory is that the shipment of hot meals to satellite schools from base schools reduces operating costs compared to on-site preparation and/or serving by eliminating food preparation and reconstitution in most schools in the district. Another theory under analysis is that the base kitchen operation reduces capital investment in equipment and construction as well as costs of labor.

On the following page is a table that presents capital investment figures and operating costs for two central kitchens. One central kitchen produces 230,000 meals per day and the other produces 125,000 meals per day. The 230,000 figure represents a universal free lunch system and the 125,000 figure represents the average daily lunch participation rate expected in 1976.

A number of assumptions, upon which the model in this report has been based, have been proved to be valid. For example, statistics indicate that freezer storage facilities with a two week supply capacity and bi-weekly deliveries of frozen meals to base schools are less costly to operate than smaller storage facilities and weekly deliveries to the schools. The difference between the two systems is 20 percent. In addition, a central warehouse is 50 percent less costly to operate than three regional warehouses, but the inclusion of transportation costs in both systems reduces the advantage of a central warehouse to 10 percent.

The dramatic reduction in the advantage of a central warehouse

TABLE 1

CONSTRUCTION AND OPERATING COSTS OF TWO CENTRAL FOOD PRODUCTION FACILITIES

	230,000 meals/day	125,000 meals/day
Square Feet of Structure	100,000	55,000
Land Costs	$ 220,000	110,000
Building Construction Costs	6,000,000	3,300,000
Equipment Costs	2,500,000	2,000,000
Warehouse Construction Costs	1,336,600	742,600
Base Kitchen Equipment Costs	8,890,559	5,250,000
Construction Insurance	10,000	6,050
Architect Fees	1,312,500	787,150
Fund Raising Costs	4,000	4,000
DIRECT OPERATING COSTS		
Direct Labor - CFPF	1,356,927	776,907
Indirect Labor - CFPF	300,000	200,000
Administration(.00214 per ml)	90,000	48,150
Labor-Management benefits	623,539	461,536
Utilities - CFPF	140,000	83,000
Warehouse Labor/Management	75,000	45,000
Warehouse Utilities	15,564	11,208
Food	18,772,000	9,386,000
Transportation from CFPF	800,000	551,500
Equipment Repair	51,700	48,150
Non-Food Supplies	848,000	450,000
Base Kitchen Labor	2,500,000	2,100,000
Base Kitchen Utilities	750,000	375,000
Transportation from Base Schl	1,242,000	675,000
Alternative-Commercial Warehse	310,500	168,750
INDIRECT OPERATING COSTS		
Depreciation	1,400,000	885,000
Bond Payments	1,028,250	609,608
Interest	1,115,538	670,568
Equipment/Building Insurance	10,000	6,050
Frozen Food Insurance	90,000	45,000
Base School Equipment Insurnc	9,000	5,250
TOTAL CONSTRUCTION COSTS	20,373,659	12,254,800
TOTAL OPERATING COSTS	31,260,516	17,574,799

CHART 1

CENTRAL FOOD PRODUCTION FACILITY
CENTRAL WAREHOUSES:
CONSTRUCTION AND POWER COSTS

	230,000 meals/day 2 Week Storage Facility	125,000 meals/day 2 Week Storage Facility
DIMENSIONS OF BUILDING	240'x 52'x 60'	142'x 52'x 50'
TOTAL SQUARE FEET	14,400	7,280
ACTUAL CUBIC FEET OF STORAGE SPACE	576,000	280,000
RACKS	$400,000	$200,000
CRANES	$200,000	$100,000
CONTROLS	$100,000	$80,000
PALLETS	$50,000	$25,000
MISCELLANEOUS EQUIPMENT AND CONVEYORS	$25,000	$10,000
COST OF BUILDING	$561,600	$327,600
TOTAL CAPITAL INVESTMENT	$1,336,600	$742,600
ENERGY CONSUMPTION		
TONS OF REFRIGERATION USED PER DAY	48	25
COMPRESSOR HORSEPOWER	65	50
FAN HORSEPOWER	12.5	10
KILLOWATT HOURS PER MONTH	44,100	34,200
COST OF KILLOWATT HOURS	$782.42	$612.50
FUEL ADJUSTMENT COST	$414.50	$321.48
TOTAL ENERGY COST PER YEAR	$15,564	$11,207.76

system is not the result of a significant transportation cost saving associated with the regional warehouse system. The regional transportation-distribution system accounts for a 10 percent cost saving compared to the centralized system. Transportation costs comprise 90 percent of the storage-distribution costs and thereby reduce the advantage of the central warehouse which creates substantial storage savings(See Chart 1, Table IV, Chapter III).

In addition to the advantage of a central warehouse in regard to operating costs, there are significant capital investment advantages associated with the centralized system compared to the regionalized warehouse system. Capital investment in the former is 58.5 percent less than capital investment in the latter.

A state owned central frozen food warehouse facility has a distinct advantage compared to a commercially operated facility. The state owned facility realizes a 39 percent per annum saving (includes annual bond interest for warehouse construction and equipment) compared to the use of commercial facilities. Furthermore, following the liquidation of state bonds in 20 years, the saving associated with the state facility will increase to 78 percent per year, provided that state warehouse operating costs and commercial warehouse fees rise at the same rate.

Another theory that is supported by crude statistical data concerns the cost savings associated with the base school operation as opposed to the reconstitution of frozen meals in every Maine school. Base school reconstitution and distribution of frozen meals to satellite schools produces a minimum operating cost saving of 5 per cent compared to the reconstitution of meals in every satelite school. Furthermore, capital investment in

equipment is approximately 6 percent greater in the satellite system compared to the base school operation. Base school kitchen space is 50 to 66 2/3 percent less than the space required to operate kitchens in every school.

A central kitchen can produce a school lunch for 79 cents. The crude calculations used to compute the average cost per meal include all indirect costs excluding waste removal and sewerage. Furthermore, many of the statistics are based upon current figures and the present rate of inflation. The public decentralized system in Maine produced a school lunch that ranged between 60 and 70 cents per meal in 1973-74. The figures associated with the present system, however, do not reflect a number of indirect costs or the present rate of inflation. Another difference between the operating costs of the two systems is that the central kitchen operation serves more meals to smaller schools which are more costly to operate than does the present system. Thus, the two systems may not be as different in regard to cost per meal as a superficial view indicates. Despite the cost differences, the present system has advantages that cannot be measured in dollars and cents.

In the opinion of many food service professionals, the price of the present system is worth the advantages that are associated with it. A CFPF lacks the flexibility of operation, the potential to provide the most nurtitional and attractive meals, and the input of the local communities which are part of the present system.

STATISTICAL DATA AND ANALYSIS

CENTRAL FOOD PRODUCTION FACILITY

EXPLANATION OF STATISTICS

1. Square Feet of Structure

Cini Grissom Associates, a consulting firm in Cleveland, Ohio, estimated the space required for five kitchens which are presented in the models for central and regional kitchens. Each kitchen in the Grissom plan is based upon a single shift of operation. The two central kitchens in the model of this report are based upon a two shift operation and thereby require only one-half the space that is shown in the Grissom plan.

2. Land Costs

Land costs for a central kitchen operation located in Portland were obtained from two Portland real estate firms. According to the two city firms, land which is easily accessible to the Maine Turnpike and has water, sewerage and utility facilities costs between $15,000 and $22,000 per acre. A 230,000 meal per day facility requires approximately 10 acres of land, and a 125,000 meal per day facility requires approximately 5 acres of land.

3. Building Construction Costs

Central kitchen construction costs were computed from Cini Grissom's estimates of the number of square feet required and from the United States Department of Agriculture figures of 360 per square foot of construction.

4. Equipment Costs

CFPF equipment costs were computed from the figures of two professional consulting firms, Flambert & Flambert of San Francisco and Cini Grissom of Cleveland.

5. Warehouse Construction Costs

Warehouse construction costs were obtained from two professional consulting firms - Acco Integrated Handling Systems of Frederick, Maryland, and StOnge & Ruff and Associates of York, Pennsylvania.

6. Base Kitchen Equipment Costs

Base kitchen equipment costs were computed from figures given by professional kitchen equipment experts in the United States Department of Agriculture and by Crown XL Crescor Corporation. A model for reconstitution and distribution of meals to Maine's Public Schools (Tables) estimates the total equipment needed for all the base schools.

7. Construction Insurance - : Equipment/Building Insurance; Frozen Food Insurance

Base School Equipment

Insurance costs were obtained from the Maine State Insurance Advisory Board.

Construction Insurance - 10¢ per $100; $100 per $100,000 of construction and equipment
Equipment/Building Insurance - $100 per $100,000 of construction and equipment
Frozen Food Insurance - 50¢ per $100 of frozen foods
Base School Equipment Insurance - $100 per $100,000 of equipment

8. Architect Fees

Architect fees were based upn 7 percent of total construction and equipment costs which is the current rate charged by several architects in Maine.

9. Fund Raising Costs

Fund raising costs include advertising, printing and other associated costs.

10. Direct Labor

Direct labor includes supervisory and production personnel in the central food production facility.

a. 230,000 meals per day - 22 supervisors; 255 production personnel

b. 125,000 meals per day - 20 supervisors; 146 production personnel

11. Indirect Labor Costs

Indirect labor includes management, clerical staff and quality control.

12. Administration Costs

Administration costs include payroll service, computer service, accounting and audit. The administration costs were estimated at .00214 cents per meal and were computed from figures in a model used by the United States Department of Agriculture for the Anser Project.

13. Labor/Management Benefits

Labor/management benefits are estimated at 15 percent of total salaries and wages which is the current rate for state employees.

14. CFPF Utilities and Base School Kitchen Utilities

The utilities are estimated at .0200 cents per meal. A regional CFPF model for Florida, 1972, estimated utility costs at .0170 cents per meal. At that time Florida Power and Light costs were 7 percent higher than Maine electric rates. In 1974 Central Maine Power fuel adjustment rates rose 1600 percent. In November, 1974, a temporary rate increase of 33 1/3 percent was levied on commercial establishments to compensate for the temporary shut-down of Maine Yankee. Consequently,.0200 cents per meal covers the increase in electric rates that have occured in the past two years along with other utilities.

15. Warehouse Utilities

Warehouse utilities were computed from the kilowatt demand estimated by an expert in frozen food storage. Central Maine Power Company rates were applied to the kilowatt hours used per month.

16. Food Costs

Food costs were computed from the 1973-74 food costs for Maine public schools. An additional $1,500,000 has been added to compensate for the $1,500,000 in USDA commodities that Maine schools receive each year. Five percent of the total food cost has been deducted as the saving incurred from centralized food purchasing. Howard Tengquist, Chief of Centralized Supply and Support, New York State, estimates that his office saves at least 5% in food costs by centralized food purchasing.

A standard menu such as the one used in Florida could cost as much as $24,000,000 per year for a CFPF producing 230,000 meals per day and $12,000,000 per year for a CFPF producing 125,000 meals per day.

17. Equipment Repair; Non Food Supplies

Equipment repair is estimated at .00138 cents per meal and non-food supplies have been calculated at .0200 cents per meal. These figures were used by the USDA in its Anser Project.

18. Base Kitchen Labor Costs

Base kitchen labor costs were based upon an average calculated on the following bases:

Total number of schools - 890
Total number of base schools - 287
Total number of food servers - 1,000
Additional kitchen labor for food reconstitution in base schools - 700
Total hours worked each day - 3
Total days worked each year - 180
Wage per hour - $2.50

19. Transportation from Base Schools to Satellite Schools

Lee Greene, traffic manager at Cole's Express, a Maine trucking firm, estimated the cost of shipment of meals from base schools to satellite schools to be 3 cents per meal.

20. Depreciation

New equipment was depreciated over a ten year period and new buildings have been depreciated over a 25 year period.

21. Interest and Bond Payments

In the CFPF model, bond payments have been projected over a 20 year period. The interest on the bonds has been established at 5.5 percent which is the interest rate on the most recent bond issues in Maine.

TABLE 2

EQUIPMENT ANALYSIS - BASE SCHOOL KITCHENS

Equipment	Less than 300 meals per day	300 Meals per day	500 Meals per day	750 meals per day
Convection Oven Conventional-C.C.O. Roll-In -R.I.	C.C.O. Reconstitutes 140-200 Meals	C.C.O. Reconstitutes 140-200 Mls	C.C.O. Reconstitute 140-200 Meals Ea CO	R.I. Model. Reconstitutes 300 meals
	1 Oven= $1200	1 Oven= $1200	2 Ovens= $2400	1 Oven= $3500
Freezer Storage Walk-In Model	Less than 500 Cu Ft of storage	540 Cu.Ft. of Storage	900 Cu.Ft. Storage	1350 Cu.Ft. Storage
	$1,000 - $3,000	10'x10'x6' $4,500	$7,200	$10,400
Refrigeration Walk-In Model	100-300 Cu. Ft.	320 Cu. Ft. Storge	520 Cu Ft. Storage	790 Cu Ft Storage
	$1,000 - $3,000	$3200	$5200	$7,900
Transportation Vans	Meal Capacity - Up to 500 Meals	Meal Capacity- Up to 500 Meals	Meal Capacity- Up to 500 Meals	Meal Capacity- 500 - 1000 Meals
	1 Small Van =$4000	1 Small Van=$4000	1 Van (Small) = $4,000	1 lge Van=7-8,000 or 2 small vans
	1000 Meals per Day	1500 Meals per Day	2,000 Meals per Day	2500 Meals per Day
Convection Oven Roll-In Model	Reconstitutes 300 Meals in ½ hour	Reconstitutes 300 Meals in ½ hour	Reconstutes 300 Meals in ½ hr-ea CO	Ea Oven reconstitutes 300 Meals
	1-2 Ovens= $3500 - $7,000	2-3 Ovens =$7,000 -$10,500	2-4 Ovens= $7,000- $14,000	2-4 Ovens= $7000- $14,000
Freezer Storage Walk-In Model	1800 Cu Ft Storage	2700 Cu Ft Storage	3600 Cu Ft Storage	4500 Cu Ft.Storage
	$14,400	$21,600	28,800	$36,000
Refrigeration Walk-In Model	1030 Cu Ft Storage	1350 Cu Ft Storage	1800 Cu Ft Storage	2250 Cu Ft Storage
	$10,300	$13,500	$18,000	$22,500
Transportation Vans	1 Large Van =$8000 or	1 large van=$8000 and	2 Large Vans= $14,000 - $16,000	2 Large Vans = $14,000 - $16,000
	1 Small Van=$4,000	1 Small Van=$4,000		Or 1 Carry All = $12000

TABLE 3
MODEL OF A CENTRAL/BASE SCHOOL KITCHEN
EQUIPMENT AND PRODUCTION SYSTEM
FOR MAINE'S PUBLIC SCHOOLS

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
.A.D. #2 REENVILLE	Consolidated	Convection Oven	1	$3500	624
		Freezer Storage	1	8500	
		Refrigeration	1	6600	
		Tote Boxes	7	700	
		Transportation Vans	1	4000	
.A.D. #3 NITY	High School				
		Convection Oven	3	10,500	1,596
		Freezer Storage	1	22,000	
		Refrigeration	1	14,000	
		Tote Boxes	16	1,600	
		Transportation Vans	2	15,000	
	Liberty	Convection Oven*	1	1200	115
		Freezer Storage	1	2000	
		Refrigeration	1	1100	
		Tote Boxes			
		Transportation Vans			
.A.D. #4 UILFORD	High School	Convection Oven	2	7000	939
		Freezer Storage	1	14,400	
		Refrigeration	1	10,300	
		Tote Boxes	10	1000	
		Transportation Vans	2	8000	
	Parkman	Convection Oven*	1	1200	137
		Freezer Storage	1	2000	
		Refrigeration	1	1400	
		Tote Boxes	2	130	
		Transportation Vans	1	4000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
.A.D. #5 OCKLAND	High School	Convection Oven	3	$10,500	1,783
		Freezer Storage	1	24,100	
		Refrigeration	1	16,000	
		Tote Boxes	17	1,700	
		Transportation Vans	1	4,000	
	Owl's Head	Convection Oven *	1	1,200	262
		Freezer Storage	1	4,500	
		Refrigeration	1	2,700	
		Tote Boxes	3	250	
		Transportation Vans	1	4,000	
.A.D. #6 UXTON	Jr. High School	Convection Oven	4	14,000	2,421
		Freezer Storage	1	36,000	
		Refrigeration	1	22,000	
		Tote Boxes	25	2,500	
		Transportation Vans	2	8,000	
	Emery	Convection Oven *	1	1,200	187
		Freezer Storage	1	3,000	
		Refrigeration	1	2,000	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	Hollis Consolidated	Convection Oven *	2	2,400	376
		Freezer Storage	1	5,600	
		Refrigeration	1	3,900	
		Tote Boxes	4	400	
		Transportation Vans	1	5,500	
.A.D.#7 ORTH HAVEN	North Haven	Convection Oven *	1	1,000	87
		Freezer Storage	1	1,200	
		Refrigeration	1	1,000	
		Tote Boxes			
		Tra portation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
.A.D.#9					
	Wilton Central	Convection Oven	2	$7,000	815
		Freezer Storage	1	11,296	
		Refrigeration	1	8,500	
		Tote Boxes	9	830	
		Transportation Vans	2	8,000	
	High School	Convection Oven	3	10,500	2,467
		Freezer Storage	1	36,000	
		Refrigeration	1	22,500	
		Tote Boxes	25	2,500	
		Transportation Vans	2	15,000	
.A.D.#10					
	High School	Convection Oven *	1	1,200	135
		Freezer Storage	1	2,000	
		Refrigeration	1	1,450	
		Tote Boxes	2	130	
		Transportation Vans	1	4,000	
.A.D.#11 ARDINER	High School	Convection Oven	4	14,000	2,574
		Freezer Storage	1	37,036	
		Refrigeration	1	22,500	
		Tote Boxes	26	2,600	
		Transportation Vans	2	15,000	
	Pittston	Convection Oven	1	3,500	578
		Freezer Storage	1	8,300	
		Refrigeration	1	6,300	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
.A.D.#12 ACKMAN	Consolidated	Convection Oven *	1	1,200	299
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
.A.D. #13 INGHAM	High School	Convection Oven	1	$3,500	592
		Freezer Storage	1	8,500	
		Refrigeration	1	6,400	
		Tote Boxes	6	600	
		Transportation Vans	2	8,000	
.A.D. #14 ANFORTH	East Grand	Convection Oven *	1	1,200	355
		Freezer Storage	1	5,300	
		Refrigeration	1	3,800	
		Tote Boxes			
		Transportation Vans			
.A.D.#15 RAY	Russell	Convection Oven	3	10,500	1,906
		Freezer Storage	1	28,800	
		Refrigeration	1	17,000	
		Tote Boxes	20	2,000	
		Transportation Vans	2	8,000	
.A.D.#16 ARMINGDALE	Elementary	Convection Oven	2	7,000	1,299
		Freezer Storage	1	18,600	
		Refrigeration	1	12,000	
		Tote Boxes	13	1,300	
		Transportation Vans	2	8,000	
.A.D. #17 OUTH PARIS	High School	Convection Oven	6	21,000	3,691
		Freezer Storage	2	57,600	
		Refrigeration	2	32,800	
		Tote Boxes	37	3,700	
		Transportation Vans	3	24,000	
.A.D. #19 ILLTOP	Hilltop	Convection Oven	1	3,500	496
		Freezer Storage	1	7,200	
		Refrigeration	1	5,200	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
.A.D. #20					
	High School	Convection Oven	2	$7,000	985
		Freezer Storage	1	14,400	
		Refrigeration	1	10,000	
		Tote Boxes	10	1,000	
		Transportation Vans	1	7,500	
	Easton Elementary	Convection Oven	1	3,500	369
		Freezer Storage	1	6,000	
		Refrigeration	1	3,900	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
.A.D. #21					
	High School	Convection Oven	2	7,000	968
		Freezer Storage	1	14,400	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	2	8,000	
.A.D.#22 AMPDEN	Earl McGraw	Convection Oven	4	14,000	2,2285
		Freezer Storage	1	34,200	
		Refrigeration	1	20,500	
		Tote Boxes	22	2,200	
		Transportation Vans	2	16,000	
.A.D. #23 ARMEL	Jr. High School	Convection Oven	1	3,500	482
		Freezer Storage	1	7,200	
		Refrigeration	1	5,000	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
.A.D.#24					
	High School	Convection Oven	4	14,000	1,761
		Freezer Storage	1	25,200	
		Refrigeration	1	16,000	
		Tote Boxes	17	1,700	
		Transportation Vans	3	12,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
.A.D.#25 HERMAN	High School	Convection Oven	2	$ 7,000	1,003
		Freezer Storage	1	14,500	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	2	8,000	
.A.D.#26	Cave Hill Elementary	Convection Oven			26
		Freezer Storage			
		Refrigeration			
		Tote Boxes			
		Transportation Vans			
.A.D.#27 ORT KENT	Elementary	Convection Oven	4	14,000	2,248
		Freezer Storage	1	34,200	
		Refrigeration	1	20,300	
		Tote Boxes	22	2,200	
		Transportation Vans	2	16,000	
	Eagle Lake	Convection Oven	1	1,200	187
		Freezer Storage	1	3,000	
		Refrigeration	1	1,900	
		Tote Boxes			
		Transportation Vans			
.A.D.#28 AMDEN	High School	Convection Oven	3	10,500	1.620
		Freezer Storage	1	23,280	
		Refrigeration	1	14,000	
		Tote Boxes	15	1,500	
		Transportation Vans	2	16,000	
	Lincolnville	Convection Oven	2	2,400	300
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
.A.D. #29					
	High School	Convection Oven	3	$10,500	1,523
		Freezer Storage	1	22,000	
		Refrigeration	1	13,500	
		Tote Boxes	12	1,200	
		Transportation Vans	2	12,000	
	Elementary	Convection Oven	1	3,500	792
		Freezer Storage	1	11,100	
		Refrigeration	1	8,400	
		Tote Boxes	7	700	
		Transportation Vans	1	4,000	
.A.D.#30 EE	Lee Jr. High School	Convection Oven*	1	1,200	413
		Freezer Storage	1	6,100	
		Refrigeration	1	4,200	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
.A.D.#31 OWLAND	High School	Convection Oven	2	7,000	831
		Freezer Storage	1	11,100	
		Refrigeration	1	8,900	
		Tote Boxes	8	800	
		Transportation Vans	2	6,000	
	Enfield	Convection Oven*	1	1,200	303
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
.A.D.# 32 ASHLAND	High School	Convection Oven*	3	3,600	775
		Freezer Storage	1	10,500	
		Refrigeration	1	7,900	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Portage	Convection Oven *	1	$ 1,200	71
		Freezer Storage	1	3,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
'.A.D.#34					
BELFAST	High School	Convection Oven	3	10,500	1,637
		Freezer Storage	1	23,600	
		Refrigeration	1	14,000	
		Tote Boxes	16	1,600	
		Transportation Vans	2	12,000	
	East Belfast	Convection Oven *	1	1,200	268
		Freezer Storage	1	4,500	
		Refrigeration	1	2,600	
		Tote Boxes			
		Transportation Vans			
	Searsmont	Convection Oven *	1	1,200	257
		Freezer Storage	1	4,500	
		Refrigeration	1	2,600	
		Tote Boxes			
		Transportation Vans			
.A.D.#35					
ELLIOTT	High School	Convection Oven	3	10,500	2,004
		Freezer Storage	1	28,800	
		Refrigeration	1	18,000	
		Tote Boxes	20	2,000	
		Transportation Vans	2	16,000	
.A.D.#36					
	High School	Convection Oven	3	10,500	1,997
		Freezer Storage	1	28,800	
		Refrigeration	1	18,000	
		Tote Boxes	18	1,800	
		Transportation Vans	2	16,000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
AD#37					
	High School	Convection Oven	2	$ 7,000	1,153
		Freezer Storage	1	16,542	
		Refrigeration	1	10,500	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	
AD #38					
	Etna	Convection Oven *	1	1,200	284
		Freezer Storage	1	4,000	
		Refrigeration	1	2,900	
		Tote Boxes	2	200	
		Transportation Vans	1	3,000	
AD #39					
	High School	Convection Oven *	2	2,400	533
		Freezer Storage	1	7,600	
		Refrigeration	1	5,200	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
AD #40					
	High School	Convection Oven	2	7,000	1,009
		Freezer Storage	1	14,500	
		Refrigeration	1	10,000	
		Tote Boxes	10	1,000	
		Transportation Vans	1	8,000	
	Middle	Convection Oven	1	3,500	782
		Freezer Storage	1	10,750	
		Refrigeration	1	7,900	
		Tote Boxes	7	700	
		Transportation Vans	1	4,000	
	Washington	Convection Oven *	2	2,400	461
		Freezer Storage	1	7,200	
		Refrigeration	1	4,700	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
AD #41					
	High School	Convection Oven	2	$ 7,000	1,313
		Freezer Storage	1	18,782	
		Refrigeration	1	11,000	
		Tote Boxes	13	1,300	
		Transportation Vans	3	12,000	
AD#42					
	High School	Convection Oven	2	7,000	983
		Freezer Storage	1	14,000	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	1	8,000	
AD #43					
	High School	Convection Oven	3	10,500	1,405
		Freezer Storage	1	21,000	
		Refrigeration	1	13,000	
		Tote Boxes	14	1,400	
		Transportation Vans	2	12,000	
AD #44					
	High School	Convection Oven	2	7,000	1,242
		Freezer Storage	1	17,800	
		Refrigeration	1	11,000	
		Tote Boxes	12	1,200	
		Transportation Vans	2	8,000	
AD #45					
	Washburn Elementary	Convection Oven	1	3,500	800
		Freezer Storage	1	11,000	
		Refrigeration	1	8,000	
		Tote Boxes	7	700	
		Transportation Vans	1	4,000	
AD #46					
	High School	Convection Oven	3	10,500	1,500
		Freezer Storage	1	21,600	
		Refrigeration	1	13,500	
		Tote Boxes	15	1,500	
		Transportation Vans	3	12,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
AD # 47	High School				1,521
		Convection Oven	3	$10,500	
		Freezer Storage	1	21,800	
		Refrigeration	1	13,500	
		Tote Boxes	13	1,300	
		Transportation Vans	1	8,000	
	Belgrade	Convection Oven *	1	1,200	237
		Freezer Storage	1	4,000	
		Refrigeration	1	2,400	
		Tote Boxes			
		Transportation Vans			
	Sidney	Convection Oven *	1	1,200	211
		Freezer Storage	1	4,000	
		Refrigeration	1	2,100	
		Tote Boxes			
		Transportation Vans			
SAD #48					
	High School	Convection Oven	3	10,500	1,521
		Freezer Storage	1	21,800	
		Refrigeration	1	13,500	
		Tote Boxes	14	1,400	
		Transportation Vans	2	12,000	
	Palmyra	Convection Oven	1	3,500	778
		Freezer Storage	1	10,800	
		Refrigeration	1	7,900	
		Tote Boxes	6	6,000	
		Transportation Vans	1	4,000	
AD #49					
	High School	Convection Oven	2	7,000	1,152
		Freezer Storage	1	16,528	
		Refrigeration	1	10,800	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
	S.Grammar Complex	Convection Oven	2	$ 7,000	1,038
		Freezer Storage	1	14,850	
		Refrigeration	1	10,300	
		Tote Boxes	8	800	
		Transportation Vans	1	8,000	
	Clinton Elementary	Convection Oven	2	7,000	982
		Freezer Storage	1	14,000	
		Refrigeration	1	10,300	
		Tote Boxes	9	900	
		Transportation Vans	2	8,000	
AD #50					
	St. George Elementary	Convection Oven *	1	1,200	284
		Freezer Storage	1	4,000	
		Refrigeration	1	2,900	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	High School	Convection Oven	2	7,000	838
		Freezer Storage	1	12,550	
		Refrigeration	1	8,700	
		Tote Boxes	7	700	
		Transportation Vans	1	4,000	
AD #51					
	Chebeaque	Convection Oven	1	1,000	39
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Mabel Wilson	Convection Oven	3	10,500	1,837
		Freezer Storage	1	23,800	
		Refrigeration	1	16,000	
		Tote Boxes	17	1,700	
		Transportation Vans	2	12,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
AD #52					
	High School	Convection Oven	2	$ 7,000	1,120
		Freezer Storage	1	16,100	
		Refrigeration	1	10,500	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	
	Grane	Convection Oven *	2	2,400	561
		Freezer Storage	1	5,500	
		Refrigeration	1	5,700	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
AD #53					
	Vickery	Convection Oven	2	7,000	1,056
		Freezer Storage	1	15,000	
		Refrigeration	1	10,300	
		Tote Boxes	9	900	
		Transportation Vans	2	8,000	
	Burnham	Convection Oven *	1	1,200	77
		Freezer Storage	1	2,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Detroit	Convection Oven *	1	1,200	67
		Freezer Storage	1	2,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
AD #54					
	High School	Convection Oven	4	14,000	2,324
		Freezer Storage	1	35,000	
		Refrigeration	1	20,000	
		Tote Boxes	23	2,300	
		Transportation Vans	2	16,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Smith	Convection Oven	2	$ 7,000	1,003
		Freezer Storage	1	14,400	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	1	8,000	
AD #55					
	High School	Convection Oven	2	7,000	1,253
		Freezer Storage	1	18,000	
		Refrigeration	1	11,000	
		Tote Boxes	12	1,200	
		Transportation Vans	2	8,000	
AD #56					
	Stockton Springs	Convection Oven	2	7,000	1,127
		Freezer Storage	1	16,200	
		Refrigeration	1	11,000	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	
AD #57					
	Newfield	Convection Oven *	1	1,200	396
		Freezer Storage	1	6,000	
		Refrigeration	1	4,000	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
	High School	Convection Oven	2	7,000	396
		Freezer Storage	1	14,000	
		Refrigeration	1	10,000	
		Tote Boxes	8	800	
		Transportation Vans	2	8,000	
	Alfred	Convection Oven *	1	1,200	418
		Freezer Storage	1	6,000	
		Refrigeration	1	4,000	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
D#58					
	Eustis	Convection Oven *	1	$ 1,200	116
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	High School	Convection Oven	2	7,000	1,124
		Freezer Storage	1	16,100	
		Refrigeration	1	11,000	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	
AD #59 ADISON	High School	Convection Oven	2	7,000	1,373
		Freezer Storage	1	19,650	
		Refrigeration	1	12,000	
		Tote Boxes	12	1,200	
		Transportation Vans	2	8,000	
AD #60					
	High School	Convection Oven	4	14,000	2,266
		Freezer Storage	1	33,000	
		Refrigeration	1	20,500	
		Tote Boxes	20	2,000	
		Transportation Vans	2	16,000	
AD #61					
	High School	Convection Oven	3	10,500	1,848
		Freezer Storage	1	26,500	
		Refrigeration	1	17,500	
		Tote Boxes	18	1,800	
		Transportation Vans	3	12,000	
AD #62					
	Pownal	Convection Oven *	1	1,200	209
		Freezer Storage	1	1,500	
		Refrigeration	1	2,100	
		To[illegible] Boxes			
		Ti[illegible]sportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
SAD #63					
	Holbrook	Convection Oven *	2	$ 2,400	517
		Freezer Storage	1	7,200	
		Refrigeration	1	5,000	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
	Eddington	Convection Oven *	1	1,200	242
		Freezer Storage	1	2,500	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
SAD #64					
	Cornish Jr. High School	Convection Oven *	3	3,600	724
		Freezer Storage	1	10,500	
		Refrigeration	1	7,500	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
	Kenduskeag	Convection Oven *	1	1,200	456
		Freezer Storage	1	7,200	
		Refrigeration	1	4,500	
		Tote Boxes	4	400	
		Transportation Vans	2	8,000	
SAD #67					
	Mattanawcook Academy	Convection Oven	3	10,500	1,662
		Freezer Storage	1	23,900	
		Refrigeration	1	14,500	
		Tote Boxes	16	1,600	
		Transportation Vans	2	16,000	
SAD #68					
	Junior High	Convection Oven	2	7,000	1,027
		Freezer Storage	1	14,750	
		Refrigeration	1	10,000	
		Tote Boxes	10	1,000	
		Transportation Vans	2	8,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
SAD #70					
	New Elementary	Convection Oven	2	$ 7,000	811
		Freezer Storage	1	11,250	
		Refrigeration	1	8,500	
		Tote Boxes	6	600	
		Transportation Vans	1	4,000	
SAD #71					
	High School	Convection Oven	2	7,000	1,416
		Freezer Storage	1	20,400	
		Refrigeration	1	13,000	
		Tote Boxes	12	1,200	
		Transportation Vans	2	8,000	
	Port	Convection Oven *	1	1,200	484
		Freezer Storage	1	7,200	
		Refrigeration	1	4,500	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
SAD #72					
	Brownfield	Convection Oven *	1	1,200	171
		Freezer Storage	1	2,500	
		Refrigeration	1	1,800	
		Tote Boxes	1	100	
		Transportation Vans	1	4,000	
	C.A.Snow	Convection Oven *	1	1,200	474
		Freezer Storage	1	7,200	
		Refrigeration	1	4,500	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
	Lovell	Convection Oven *	1	1,200	178
		Freezer Storage	1	2,500	
		Refrigeration	1	1,800	
		T e Boxes			
		Transportation Vans			

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
SAD #74					
	Carrabec	Convection Oven	2	$ 7,000	979
		Freezer Storage	1	14,000	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	2	8,000	
	New Portland	Convection Oven *	1	1,200	121
		Freezer Storage	1	2,000	
		Refrigeration	1	1,100	
		Tote Boxes			
		Transportation Vans			
SAD #1					
	High School	Convection Oven	7	24,500	3,839
		Freezer Storage	2	72,000	
		Refrigeration	2	36,000	
		Tote Boxes	38	3,800	
		Transportation Vans	3	24,000	
JNION 2					
	Acton	Convection Oven *	1	1,200	112
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Jr.&Sr. High School	Convection Oven	2	7,000	1,182
		Freezer Storage	1	16,950	
		Refrigeration	1	11,000	
		Tote Boxes	18	1,800	
		Transportation Vans	2	8,000	
JNION 3					
	Saco Commercial School	Convection Oven	2	7,000	905
		Freezer Storage	1	14,000	
		Refrigeration	1	9,400	
		Tote Boxes	9	900	
		Transportation Vans	1	8,000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Burns	Convection Oven	2	$7,000	1,133
		Freezer Storage	1	16,275	
		Refrigeration	1	10,800	
		Tote Boxes	10	1,000	
		Transportation Vans	1	8,000	
	Dayton	Convection Oven *	1	1,200	106
		Freezer Storage	1	2,000	
		Refrigeration	1	1,100	
		Tote Boxes			
		Transportation Vans			
JNION15					
	Raymond	Convection Oven	1	3,500	325
		Freezer Storage	1	5,000	
		Refrigeration	1	3,400	
		Tote Boxes			
		Transportation Vans			
	High School	Convection Oven	2	7,000	1,317
		Freezer Storage	1	17,850	
		Refrigeration	1	12,000	
		Tote Boxes	12	1,200	
		Transportation Vans	1	8,000	
	Elementary	Convection Oven	2	7,000	919
		Freezer Storage	1	14,400	
		Refrigeration	1	10,000	
		Tote Boxes	8	800	
		Transportation Vans	1	8,000	
UNION 25					
	Middle	Convection Oven	2	7,000	1,087
		Freezer Storage	1	15,600	
		Refrigeration	1	10,300	
		Tote Boxes	9	900	
		T[illegible] sportation Vans	1	8,000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	High School	Convection Oven	2	$ 7,000	1,213
		Freezer Storage	1	17,400	
		Refrigeration	1	11,000	
		Tote Boxes	12	1,200	
		Transportation Vans	2	8,000	
	Virginia	Convection Oven *	1	1,200	324
		Freezer Storage	1	5,000	
		Refrigeration	1	3,400	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
UNION 29					
	Elm Street	Convection Oven *	2	2,400	518
		Freezer Storage	1	7,200	
		Refrigeration	1	5,200	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
	Minot	Convection Oven *	1	1,200	181
		Freezer Storage	1	3,000	
		Refrigeration	1	1,900	
		Tote Boxes			
		Transportation Vans			
	Poland	Convection Oven *	2	2,400	532
		Freezer Storage	1	7,750	
		Refrigeration	1	5,200	
		Tote Boxes			
		Transportation Vans			
UNION 30					
	Durham	Convection Oven *	1	1,200	279
		Freezer Storage	1	4,500	
		Refrigeration	1	3,000	
		Tote Boxes			
		nsportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Sabattus	Convection Oven *	1	$ 1,200	367
		Freezer Storage	1	5,500	
		Refrigeration	1	3,800	
		Tote Boxes			
		Transportation Vans			
	High School	Convection Oven	3	10,500	1,542
		Freezer Storage	1	22,200	
		Refrigeration	1	13,500	
		Tote Boxes	1	8,000	
		Transportation Vans			
UNION 34					
	Elementary	Convection Oven	2	7,000	1,087
		Freezer Storage	1	15,625	
		Refrigeration	1	10,800	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
	Glenburn	Convection Oven *	1	1,200	308
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes			
		Transportation Vans			
UNION 37					
	Elementary	Convection Oven	1	3,500	291
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes	1	100	
		Transportation Vans	1	4,000	
UNION 48					
	Dresden Elementary	Convection Oven *	1	1,200	127
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes	1	100	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Woolwich	Convection Oven *	1	$ 1,200	378
		Freezer Storage	1	5,600	
		Refrigeration	1	3,900	
		Tote Boxes			
		Transportation Vans			
	Georgetown	Convection Oven *	1	1,000	59
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Phippsburg	Convection Oven *	1	1,200	249
		Freezer Storage	1	4,500	
		Refrigeration	1	2,500	
		Tote Boxes			
		Transportation Vans			
	Wiscasset Elementary	Convection Oven	2	7,000	950
		Freezer Storage	1	14,000	
		Refrigeration	1	9,800	
		Tote Boxes	9	900	
		Transportation Vans	1	4,000	
UNION #42	CSD. Jr.-Sr. H.S.	Convection Oven	2	7,000	838
		Freezer Storage	1	11,650	
		Refrigeration	1	8,900	
		Tote Boxes	8	800	
		Transportation Vans	2	8,000	
	Rome	Convection Oven	1	1,000	67
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
NION #43					
	Litchfield Central	Convection Oven	1	$ 3,500	327
		Freezer Storage	1	4,900	
		Refrigeration	1	3,400	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	Cottrell	Convection Oven	1	3,500	518
		Freezer Storage	1	7,400	
		Refrigeration	1	5,000	
		Tote Boxes	1	4,000	
		Transportation Vans			
	Jr. High	Convection Oven	1	3,500	591
		Freezer Storage	1	8,500	
		Refrigeration	1	6,400	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
	Wales	Convection Oven *	1	1,200	142
		Freezer Storage	1	2,500	
		Refrigeration	1	1,600	
		Tote Boxes			
		Transportation Vans			
JNION#47					
	Primary	Convection Oven	3	10,500	1,258
		Freezer Storage	1	18,000	
		Refrigeration	1	11,300	
		Tote Boxes	10	1,000	
		Transportation Vans	1	8,000	
	Fisher	Convection Oven	1	3,500	348
		Freezer Storage	1	5,200	
		Refrigeration	1	3,700	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
	Newell	Convection Oven	1	$ 3,500	391
		Freezer Storage	1	5,900	
		Refrigeration	1	4,200	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
	Jr. High School	Convection Oven *	2	2,400	648
		Freezer Storage	1	9,300	
		Refrigeration	1	6,900	
		Tote Boxes			
		Transportation Vans			
	West Bath	Convection Oven *	1	1,200	165
		Freezer Storage	1	3,500	
		Refrigeration	1	1,750	
		Tote Boxes			
		Transportation Vans			
UNION #49					
	Boothbay Harbor Elementary	Convection Oven *	1	1,200	440
		Freezer Storage	1	7,000	
		Refrigeration	1	4,500	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	High School	Convection Oven *	1	1,200	463
		Freezer Storage	1	7,100	
		Refrigeration	1	4,700	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	Edgecomb	Convection Oven *	1	1,000	85
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
	South Post	Convection Oven *	1	$ 1,000	63
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
JNION #52					
	Carl B. Lord	Convection Oven	1	3,500	328
		Freezer Storage	1	5,000	
		Refrigeration	1	3,500	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	High School	Convection Oven	2	7,000	1,045
		Freezer Storage	1	15,000	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	1	8,000	
	Jr. High	Convection Oven	2	7,000	1,066
		Freezer Storage	1	15,325	
		Refrigeration	1	10,000	
		Tote Boxes	9	900	
		Transportation Vans	1	8,000	
	China	Convection Oven *	1	1,200	418
		Freezer Storage	1	7,000	
		Refrigeration	1	4,200	
		Tote Boxes			
		Transportation Vans			
JNION #69					
	Isleboro	Convection Oven *	1	1,200	86
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		T isportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
UNION #74					
	Bremen	Convection Oven *	1	$ 1,000	66
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	CSD GS Bay	Convection Oven	1	3,500	459
		Freezer Storage	1	7,100	
		Refrigeration	1	4,700	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
	Bristol CSD	Convection Oven *	1	1,200	265
		Freezer Storage	1	4,300	
		Refrigeration	1	2,700	
		Tote Boxes	2	200	
		Transportation Vans	1	4,000	
	S. Bristol	Convection Oven *	1	1,200	114
		Freezer Storage	1	2,000	
		Refrigeration	1	1,100	
		Tote Boxes			
		Transportation Vans			
UNION #76					
	Brooklin Jr. H.S.	Convection Oven *	1	1,200	126
		Freezer Storage	1	2,200	
		Refrigeration	1	1,200	
		Tote Boxes	1	50	
		Transportation Vans	1	4,000	
	Sedgewick Primary	Convection Oven *	1	1,000	39
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAI
	Deer Isle Elementary	Convection Oven *	2	$ 2,400	595
		Freezer Storage	1	8,600	
		Refrigeration	1	6,400	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
JNION #87					
	Adams Jr.-Sr. High School	Convection Oven *	3	7,500	1,287
		Freezer Storage	1	18,500	
		Refrigeration	1	11,300	
		Tote Boxes			
		Transportation Vans			
	Veazie	Convection Oven *	1	1,200	266
		Freezer Storage	1	4,500	
		Refrigeration	1	2,700	
		Tote Boxes			
		Transportation Vans			
JNION #88					
	Dedham	Convection Oven *	1	1,200	111
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Buchill	Convection Oven *	1	1,000	70
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Aurora	Convection Oven *	1	1,000	60
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		T nsportation Vans			

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
JNION #90					
	Alton	Convection Oven *	1	$ 1,200	54
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Bradley	Convection Oven	1	1,200	219
		Freezer Storage	1	4,000	
		Refrigeration	1	2,300	
		Tote Boxes			
		Transportation Vans			
	Greenbush	Convection Oven *	1	1,200	147
		Freezer Storage	1	2,500	
		Refrigeration	1	1,600	
		Tote Boxes			
		Transportation Vans			
	Milford	Convection Oven *	2	2,400	425
		Freezer Storage	1	7,000	
		Refrigeration	1	4,500	
		Tote Boxes			
		Transportation Vans			
UNION #91					
	Bucksport H.S.	Convection Oven	3	10,500	1,459
		Freezer Storage	1	21,000	
		Refrigeration	1	13,000	
		Tote Boxes	12	1,200	
		Transportation Vans	1	8,000	
	Orland	Convection Oven *	1	1,200	254
		Freezer Storage	1	4,500	
		Refrigeration	1	2,600	
		Tote Boxes			
		T nsportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTA MEAL
	Center Drive	Convection Oven	1	$ 3,500	542
		Freezer Storage	1	7,500	
		Refrigeration	1	5,500	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
NION #92					
	Ellsworth Jr.Sr. H.S.	Convection Oven	3	10,500	1,342
		Freezer Storage	1	19,200	
		Refrigeration	1	12,000	
		Tote Boxes	12	1,200	
		Transportation Vans	1	8,000	
	Hancock	Convection Oven *	1	1,200	245
		Freezer Storage	1	4,000	
		Refrigeration	1	2,600	
		Tote Boxes			
		Transportation Vans			
	Lamoine	Convection Oven *	1	1,200	138
		Freezer Storage	1	2,000	
		Refrigeration	1	1,400	
		Tote Boxes			
		Transportation Vans			
	Bonsey	Convection Oven *	1	1,200	118
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Trenton	Convection Oven *	1	1,200	90
		Freezer Storage	1	2,000	
		Refrigeration	1	1,100	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
UNION #93					
	Blue Hill	Convection Oven *	1	$ 1,200	216
		Freezer Storage	1	3,500	
		Refrigeration	1	2,250	
		Tote Boxes			
		Transportation Vans			
	Brooksville	Convection Oven *	1	1,200	104
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Castine	Convection Oven *	1	1,200	82
		Freezer Storage	1	1,800	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Penobscot	Convection Oven *	1	1,200	150
		Freezer Storage	1	3,000	
		Refrigeration	1	1,600	
		Tote Boxes			
		Transportation Vans			
UNION #96					
	Gouldsboro	Convection Oven *	1	1,200	216
		Freezer Storage	1	4,000	
		Refrigeration	1	2,200	
		Tote Boxes			
		Transportation Vans			
	Steuben	Convection Oven *	1	1,200	200
		Freezer Storage	1	3,500	
		Refrigeration	1	2,200	
		Tote Boxes			
		T nsportation Vans			

HOOL STRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOTAL MEALS
	Schoodic Consol.	Convection Oven	2	$ 7,000	782
		Freezer Storage	1	10,750	
		Refrigeration	1	8,000	
		Tote Boxes	6	600	
		Transportation Vans	1	7,000	
	High School	Convection Oven			782
		Freezer Storage			
		Refrigeration			
		Tote Boxes			
		Transportation Vans			
IION #98					
	B.H. Emerson	Convection Oven	1	3,500	535
		Freezer Storage	1	7,600	
		Refrigeration	1	5,200	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
	Consolidated	Convection Oven	1	3,500	641
		Freezer Storage	1	9,175	
		Refrigeration	1	6,900	
		Tote Boxes	5	500	
		Transportation Vans	1	4,000	
	Cranberry Isles	Convection Oven			22
		Freezer Storage			
		Refrigeration			
		Tote Boxes			
		Transportation Vans			
	Frenchbow	Convection Oven			9
		Freezer Storage			
		Refrigeration			
		Tote Boxes			
		Transportation Vans			

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
	Mt. Desert Elementary	Convection Oven*	1	$ 1,200	294
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes			
		Transportation Vans			
	S. West Harbor	Convection Oven *	1	1,200	297
		Freezer Storage	1	4,500	
		Refrigeration	1	3,200	
		Tote Boxes			
		Transportation Vans			
	Tremont	Convection Oven *	1	1,200	175
		Freezer Storage	1	3,500	
		Refrigeration	1	1,850	
		Tote Boxes			
		Transportation Vans			
NION #102					
	J. Beal High School	Convection Oven*	2	2,400	498
		Freezer Storage	1	7,200	
		Refrigeration	1	5,200	
		Tote Boxes	3	300	
		Transportation Vans	1	4,000	
	Jonesport Cove	Convection Oven*	2	2,400	216
		Freezer Storage	1	4,000	
		Refrigeration	1	2,200	
		Tote Boxes	1	100	
		Transportation Vans	1	4,000	
NION #104					
	Charlotte	Convection Oven			19
		Freezer Storage			
		Refrigeration			
		Tote Boxes			
		T nsportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
	Eastport Grammar	Convection Oven	1	$ 3,500	559
		Freezer Storage	1	8,000	
		Refrigeration	1	5,600	
		Tote Boxes	4	400	
		Transportation Vans	1	4,000	
	Pembroke	Convection Oven*	1	1,200	131
		Freezer Storage	1	2,000	
		Refrigeration	1	1,400	
		Tote Boxes			
		Transportation Vans			
	Perry	Convection Oven*	1	1,200	109
		Freezer Storage	1	2,000	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Robbinston	Convection Oven*	1	1,000	46
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
NION #106					
	Alexander	Convection Oven*	1	1,000	34
		Freezer Storage	1	1,500	
		Refrigeration	1	1,200	
		Tote Boxes			
		Transportation Vans			
	Calais High School	Convection Oven	3	10,500	1,166
		Freezer Storage	1	16,725	
		Refrigeration	1	11,000	
		[illegible]e Boxes	10	1,000	
		Transportation Vans	1	8,000	

CHOOL ISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
NION #107					
	Woodland High School	Convection Oven	1	$ 3,500	734
		Freezer Storage	1	10,300	
		Refrigeration	1	7,750	
		Tote Boxes	6	600	
		Transportation Vans	1	4,000	
	Princeton	Convection Oven*	1	1,200	229
		Freezer Storage	1	3,500	
		Refrigeration	1	2,400	
		Tote Boxes	1	100	
		Transportation Vans	1	4,000	
NION #108					
	Vanceboro	Convection Oven*	1	1,000	71
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Topsfield	Convection Oven*	1	1,000	35
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
NION #113					
	Schenck	Convection Oven*	2	5,000	1,016
		Freezer Storage	1	14,500	
		Refrigeration	1	10,300	
		Tote Boxes	9	900	
		Transportation Vans	1	7,000	
	Medway	Convection Oven*	2	2,400	366
		Freezer Storage	1	5,424	
		Refrigeration	1	3,850	
		T e Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
NION #115					
	Benedicta	Convection Oven*	1	$ 1,200	72
		Freezer Storage	1	2,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
NION #122					
	New Sweden	Convection Oven*	1	1,200	133
		Freezer Storage	1	2,500	
		Refrigeration	1	1,400	
		Tote Boxes			
		Transportation Vans			
	Stockholm	Convection Oven*	1	1,000	75
		Freezer Storage	1	1,700	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Woodland Consolidated	Convection Oven*	1	1,200	226
		Freezer Storage	1	3,800	
		Refrigeration	1	2,300	
		Tote Boxes			
		Transportation Vans			
NION #151					
	Chelsea	Convection Oven*	2	2,400	333
		Freezer Storage	1	5,000	
		Refrigeration	1	3,400	
		Tote Boxes			
		Transportation Vans			
	Jefferson	Convection Oven*	1	1,200	231
		Freezer Storage	1	4,500	
		Refrigeration	1	2,400	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
UBURN					
	Central	Convection Oven	5	$17,500	3,890
		Freezer Storage	2	56,000	
		Refrigeration	2	36,000	
		Tote Boxes	38	3,800	
		Transportation Vans	2	20,000	
	Walton	Convection Oven	4	14,000	2,414
		Freezer Storage	1	36,000	
		Refrigeration	1	22,000	
		Tote Boxes	24	2,400	
		Transportation Vans	2	20,000	
UGUSTA					
	Vocational	Convection Oven	7	24,500	4,476
		Freezer Storage	2	72,000	
		Refrigeration	2	40,600	
		Tote Boxes	45	4,500	
		Transportation Vans	2	20,000	
ANGOR					
	High School	Convection Oven	6	21,000	3,484
		Freezer Storage	2	50,000	
		Refrigeration	2	32,800	
		Tote Boxes	35	3,500	
		Transportation Vans	2	20,000	
	Down East	Convection Oven	4	14,000	2,266
		Freezer Storage	1	33,000	
		Refrigeration	1	20,300	
		Tote Boxes	22	2,200	
		Transportation Vans	2	14,000	
IDDEFORD					
	High School	Convection Oven	5	17,500	3,300
		Freezer Storage	2	49,800	
		Refrigeration	2	31,500	
		Tote Boxes	32	3,200	
		Transportation Vans	2	20,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
ACHIAS					
	High School	Convection Oven	2	$ 7,000	737
		Freezer Storage	1	10,400	
		Refrigeration	1	7,750	
		Tote Boxes	7	700	
		Transportation Vans	1	7,000	
	Whitneyville	Convection Oven *	1	1,200	28
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
ADAWASKA					
	Sr. High	Convection Oven	3	10,500	1,846
		Freezer Storage	1	27,500	
		Refrigeration	1	18,000	
		Tote Boxes	15	1,500	
		Transportation Vans	1	8,000	
ILLINOCKET					
	Jr. High	Convection Oven	3	10,500	2,238
		Freezer Storage	1	32,150	
		Refrigeration	1	20,300	
		Tote Boxes	20	2,000	
		Transportation Vans	1	8,000	
LD TOWN					
	High School	Convection Oven	2	7,000	1,484
		Freezer Storage	1	21,600	
		Refrigeration	1	13,500	
		Tote Boxes	12	1,200	
		Transportation Vans	1	7,000	
	Jr. High	Convection Oven	2	7,000	969
		Freezer Storage	1	14,000	
		Refrigeration	1	10,300	
		Tote Boxes	8	800	
		Transportation Vans	1	7,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
ORHAM					
	High School	Convection Oven	3	$10,500	2,056
		Freezer Storage	1	29,000	
		Refrigeration	1	18,000	
		Tote Boxes	18	1,800	
		Transportation Vans	2	14,000	
ITTERY					
	Kittery Point	Convection Oven	7	24,500	4,013
		Freezer Storage	2	58,000	
		Refrigeration	2	36,000	
		Tote Boxes	40	4,000	
		Transportation Vans	2	20,000	
AY					
	High School	Convection Oven	3	10,500	1,279
		Freezer Storage	1	18,350	
		Refrigeration	1	13,000	
		Tote Boxes	10	1,000	
		Transportation Vans	1	7,000	
EWISTON					
	Comprehensive	Convection Oven	9	31,500	5,298
		Freezer Storage	3	79,200	
		Refrigeration	3	49,600	
		Tote Boxes	50	5,000	
		Transportation Vans	2	22,000	
	All Purpose	Convection Oven	4	14,000	2,493
		Freezer Storage	1	36,000	
		Refrigeration	1	22,500	
		Tote Boxes	24	2,400	
		Transportation Vans	2	14,000	
IMESTONE					
	High School	Convection Oven	4	14,000	2,400
		Freezer Storage	1	36,000	
		Refrigeration	1	22,500	
		Tote Boxes	20	2,000	
		T nsportation Vans	1	10,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
REWER					
	Jr. High	Convection Oven	5	$17,500	2,920
		Freezer Storage	2	43,200	
		Refrigeration	2	27,000	
		Tote Boxes	25	2,500	
		Transportation Vans	2	20,000	
RUNSWICK					
	Jordan Acres	Convection Oven	6	21,000	3,637
		Freezer Storage	2	53,200	
		Refrigeration	2	36,000	
		Tote Boxes	35	3,500	
		Transportation Vans	2	20,000	
APE ELIZABETH					
	High School	Convection Oven	4	14,000	2,253
		Freezer Storage	1	32,300	
		Refrigeration	1	20,300	
		Tote Boxes	20	2,000	
		Transportation Vans	2	14,000	
ARIBOU					
	High School	Convection Oven	5	17,500	3,299
		Freezer Storage	2	47,400	
		Refrigeration	2	31,600	
		Tote Boxes	30	3,000	
		Transportation Vans	2	20,000	
ALMOUTH					
	High School	Convection Oven	3	10,500	1,660
		Freezer Storage	1	23,850	
		Refrigeration	1	15,800	
		Tote Boxes	15	1,500	
		Transportation Vans	2	8,000	
REEPORT					
	High School	Convection Oven	4	14,000	1,348
		Freezer Storage	1	19,300	
		Refrigeration	1	13,500	
		Tote Boxes	12	1,200	
		T nsportation Vans	2	11,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
	Palermo	Convection Oven*	1	$ 1,000	148
		Freezer Storage	1	3,000	
		Refrigeration	1	1,600	
		Tote Boxes			
		Transportation Vans			
	Somerville	Convection Oven*	1	1,000	56
		Freezer Storage	1	1,500	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Whitefield	Convection Oven*	1	1,200	244
		Freezer Storage	1	4,000	
		Refrigeration	1	2,600	
		Tote Boxes			
		Transportation Vans			
	Windsor	Convection Oven*	2	2,400	338
		Freezer Storage	1	4,500	
		Refrigeration	1	3,500	
		Tote Boxes			
		Transportation Vans			
NION #8					
	Arundel	Convection Oven*	2	2,400	316
		Freezer Storage	1	4,750	
		Refrigeration	1	3,300	
		Tote Boxes			
		Transportation Vans			
	Jr. High School	Convection Oven	3	10,500	1,359
		Freezer Storage	1	19,500	
		Refrigeration	1	12,000	
		Tote Boxes	12	1,200	
		T nsportation Vans	1	8,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TO ME
ORTLAND					
	Clifford	Convection Oven	2	$7,000	1,156
		Freezer Storage	1	18,600	
		Refrigeration	1	12,000	
		Tote Boxes	10	1,000	
		Transportation Vans	4	16,000	
	Jack	Convection Oven	6	21,000	3,868
		Freezer Storage	2	56,000	
		Refrigeration	2	36,000	
		Tote Boxes	35	3,500	
		Transportation Vans	2	20.000	
	Lyseth	Convection Oven	3	10,500	1,966
		Freezer Storage	1	28,800	
		Refrigeration	1	18,000	
		Tote Boxes	17	1,700	
		Transportation Vans	1	7,500	
	King	Convection Oven	3	10,500	1,197
		Freezer Storage	1	17,200	
		Refrigeration	1	11,000	
		Tote Boxes	10	1,000	
		Transportation Vans	1	7,500	
	Hall	Convection Oven	1	3,500	697
		Freezer Storage	1	10,000	
		Refrigeration	1	7,400	
		Tote Boxes			
		Transportation Vans			
	Lincoln	Convection Oven	5	17,500	3,289
		Freezer Storage	2	49,000	
		Refrigeration	2	31,600	
		Tote Boxes	30	3,000	
		Transportation Vans	2	20,000	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
ANFORD					
	Middle School	Convection Oven	6	$21,000	3,749
		Freezer Storage	2	55,000	
		Refrigeration	2	36,000	
		Tote Boxes	35	3,500	
		Transportation Vans	2	20,000	
CARBORO					
	High School	Convection Oven	6	21,000	3,749
		Freezer Storage	2	55,000	
		Refrigeration	2	36,000	
		Tote Boxes	35	3,500	
		Transportation Vans	2	20,000	
O. PORTLAND					
	Memorial	Convection Oven	3	10,500	1,900
		Freezer Storage	1	28,000	
		Refrigeration	1	18,000	
		Tote Boxes	18	1,800	
		Transportation Vans	2	15,000	
	Manhoney	Convection Oven	3	10,500	2,136
		Freezer Storage	1	30,000	
		Refrigeration	1	20,000	
		Tote Boxes	20	2,000	
		Transportation Vans	2	15,000	
ATERVILLE					
	High School	Convection Oven	3	10,500	1,875
		Freezer Storage	1	27,000	
		Refrigeration	1	18,000	
		Tote Boxes	17	1,700	
		Transportation Vans	1	7,500	
	Brookside	Convection Oven	3	10,500	1,948
		Freezer Storage	1	28,000	
		Refrigeration	1	18,000	
		Tote Boxes	18	1,800	
		Transportation Vans	1	7,500	

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
ESTBROOK					
	Jr. High School	Convection Oven	10	$35,000	4,492
		Freezer Storage	2	65,000	
		Refrigeration	2	45,000	
		Tote Boxes	45	4,500	
		Transportation Vans	3	30,000	
	High School	Convection Oven	2	7,000	1,150
		Freezer Storage	1	16,500	
		Refrigeration	1	11,000	
		Tote Boxes			
		Transportation Vans			
MALLER MUNICIPALITIES					
	Brooklyn	Convection Oven*	1	1,200	21
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Connor	Convection Oven*	1	1,200	95
		Freezer Storage	1	1,200	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Edmunds	Convection Oven*	1	1,200	106
		Freezer Storage	1	1,200	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Kingman	Convection Oven*	1	1,000	51
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			

SCHOOL DISTRICT	BASE SCHOOL	EQUIPMENT	NUMBER	TOTAL COST	TOT MEA
	Rockwood	Convection Oven*	1	$1,000	8
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Theriault	Convection Oven*	1	1,000	83
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Indian Island	Convection Oven*	1	1,000	35
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	P.D. Point	Convection Oven*	1	1,000	58
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			
	Rafferty	Convection Oven*	1	1,000	116
		Freezer Storage	1	1,000	
		Refrigeration	1	1,000	
		Tote Boxes			
		Transportation Vans			

TOTAL VALUE OF BASE KITCHEN EQUIPMENT-RECONSTITUTE 230,000 MEALS PER DAY= $8,890,559

TOTAL VALUE OF BASE KITCHEN EQUIPMENT-RECONSTITUTE 125,000 MEALS PER DA $5,250,000

TABLE 4

MODEL OF A FOOD SERVICE
TRANSPORTATION AND DISTRIBUTION SYSTEM
FOR MAINE'S PUBLIC SCHOOLS

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPORTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #2 - GREENVILLE					
Consolidated	Nickerson, Shirley, Rockwood	624	X	.0506 =$31.57	.0506 = $31.57
SAD #3 - UNITY					
High School	Mt. View Elem, Jr H.S., Unity, Troy, Brooks, & Monroe	1596	X	.0251 = $40.06	.0207 = $33.04
Liberty		115		F.R. - $5.00	F.R. - $5.00
SAD #4 - GUILFORD					
High School	Abbot, Sangerville, Middle, Primary	939	X	.0307 = $35.40	.0264 = $24.80
Parkman	Cambridge & Wellington	137	X	.0307 = $5.17	.0264 = $3.61
SAD #5 - Rockland					
High School	Jr H.S., North, South, Mc Lain	1783	X	.0251 = $44.75	.0207 = $36.91
Owl's Head	South Thomaston	262	X	.0251 = $6.57	.0207 = $5.42
SAD #6 - BUXTON					
Junior High School	High School, Jack Memorial, George E. Jack, Johnson, Buxton Ctr, Hanson Elemen.	2421	X	.0156 = $37.77	.0126 = $30.51
Emery	Limington Academy	187	X	.0506 = $9.46	.0506 = $9.46
Hollis Consolidated	Hollis Elementary	376	X	.0156 = $5.86	.0126 = $4.73

SCHOOL DISTRICT & BASE SCHOOL	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPORTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #7 - NORTH HAVEN					
North Haven		87	X	F.R. - $5.00	F.R. - $5.00
SAD #9 -					
Wilton Central	Academy, Primary, Cushy, Weld	815	X	.0202 = $16.46	.0140 =$11.41
High School	Jr. H.S., New Sharon, Ingall, Mallet	2467	X	.0202 = $49.83	.0140 = $34.53
SAD #10-					
Consolidated	High School	135	X	.0506 = $6.83	.0506 = $6.83
SAD #11 - GARDINER					
High School	Jr. H.S., Central, N. Mills, Plummer, Pray, S. Gardiner, W. Gardiner	2574	X	.0177 = $45.55	.0121 = $31.14
Pittston	Randolph	578	X	.0177 = $10.23	.0121 = $6.99
SAD # 12- JACKMAN					
Consolidated	Middle	299	X	.0506 = $15.12	.0506 = $15.12
SAD # 13 - BINGHAM					
High School	Quimby, Moscow, Carratunk, West Fall, Pleasant Ridge	592	X	.0377 = $22.31	.0264 = $15.62
SAD #14 - DANFORTH					
East Grand		355	X	.0506 = $17.97	.0506 = $17.97

SCHOOL DISTRICT & BASE SCHOOL	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPORTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #15 - GRAY					
Russell	Jr. H.S., Memorial, High School	1906	X	.0156 = $29.73	.0126 = $24.02
SAD #16 - FARMINGDALE					
Elementary	High School, Hallowell Elem, Jr. H.S., Maria Clark	1299	X	.0177 = $23.00	.0121 = $15.72
SAD #17 - SOUTH PARIS					
High School	Harrison, Waterford, Norway, Welchville, Oxford, Otisfield, Jr. H.S., Fox, Hebron	3,691	X	.0202 = $74.56	.0140 = $51.67
SAD #19 - HILLTOP					
Hilltop	South St., High School	496	X	.0506 = $25.10	.0506 = 25.10
SAD #20-					
High School	Jr. H.S., Jenkins Grammar	985	X	.0433 = $42.74	.0363 = $35.83
Easton Elem	High School	369	X	.0433 = $15.98	.0363 = $13.40
SAD #21-					
High School	Elementary, Grammnar, Carthage, Canton	968	X	.0202 = $19.55	.0140 = $13.55
SAD #22- HAMPDEN					
Earl Mc Graw	Hampden Academy, Weatherbee, Newburgh, Winterport	2285	X	.0259 = $59.18	.0235 = $53.70

SCHOOL DISTRICT & BASE SCHOOL	RECEIVING SCHOOLS	TOTAL MEALS SERVED		1 WEEK DELIVERY TRANSPORTATION RATE AND COST	TRANSPORTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #23- CARMEL					
Junior High School	Carmel Grammar, C.A. Newcomb, Levant	482	X	.0259 = $12.48	.0235 = $11.33
SAD # 24 -					
High School	Jr. H.S., Champlain St, John Kindle, Keegan, Grand Isle	1761	X	.0412 = $72.55	.0363 =$63.93
SAD #25 - SHAERMAN					
High School	Stacyville, Sherman Elem, Jr. H.S., Patten Grammanr, Patten Jr. H.S.	1003	X	.0412 = $41.32	.0363- $36.40
SAD #26 -					
Cave Hill Elementary		26	X	F.R.- $5.00	F.R.- $5.00
SAD #27 - FORT KENT					
Elementary	High School. Market Street, St. Francis, Wallgrass	2248	X	.0407 = $92.62	.0285 = $64.07
Eagle Lake		187	X	.0407 = $7.70	.0285 = $5.32
SAD #28- CAMDEN					
High School	Mary E. Taylor, Elm St, Rockport	1620	X	.0251 = $40.66	.0207 = $33.53
Lincolnville	Hope, Appleton	300	X	.0293 = $8.80	.0247 = $7.41
SAD # 29-					
High School	Bowdoin St, Lambert	1523	X	.0412 = $62.75	.0363 = $55.28
Elementary	Littleton, Monticello	792	X	.0412= $32.63	.0363 = $28.75

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #30 - LEE					
Lee Junior High School-	Elementary, Winn, & Springfield	413	X	.0506 = $20.80	.0506 = $20.80
SAD #31 - HOWLAND					
High School	Ring Street, Middle School	853	X	.0433 = $36.94	.0178 = $1518
Enfield	Burlington	303	X	.0433 = $1312	.0178 = $5.40
SAD #32- ASHLAND					
High School		755	X	.0407 = 30.73	.0285 = $21.52
Portage		71	X	F.R. = $5.00	F.R. - $5.00
SAD #34- BELFAST					
High School	Jr. H.S., Pierce, Robertson, Northport	1637	X	.0293 = $47.97	.0247 = $40.40
East Belfast	Swansville	268	X	.0293 = $7.85	.0247 = $6.62
Searsmont	Morrill, Belmont	257	X	.0293 = $7.53	.0247 = $6.35
SAD #35- ELLIOT					
High School	Elementary, Jr. H.S., Central	2004	X	.0252 = $50.50	.0178 = $35.67
SAD #36-					
High School	Jr. H.S., Grammar, Primary, Fayette, Livermore, Elementary, Payson Smith	1997	X	.0252 = $50.32	.0178 = $35.54

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
SAD #37-					
High School	Village, Addison, Cherry-field, Columbia Falls, Mill-bridge	1153	X	.0506 = $58.34	.0506 = $58.34
SAD #38-					
Etna	Dixmont elementary	284	X	.0336 = $9.54	.0288 = $8.17
SAD #39-					
High School	Buckfield elementary, Hartford, Sumner	533	X	.0336 = $17.91	.0288 = $15.34
SAD #40					
High School	Warren Primary, Intermediate	1009	X	.0251 = $25.33	.0207 = $20.89
Middle	Friendship St, Jr.H.S., Friend-ship Village	782	X	.0251 = $19.63	.0207 = $16.18
Washington	Union	461	X	.0251 = $11.57	.0207 = $9.54
SAD #41-					
High School	Milo Primary, Special Ed., La Grange, Atkinson, Brown-ville Primary, Jct. elem, Jct, Middle	1313	X	.0377 = $49.50	.0264 = $34.66
SAD #42-					
High School	Bridgewater Primary, Grammar, Fort St.	983	X	.0407 = $40.00	.0285 = $28.00
SAD #43-					
High School	Jr.H.S., Middle, Kimball, Abbot	1405	X	.0377 = $52.96	.0264 = $37.09

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #44-					
High School	Andover, Bisbee, Crescent Park, Locke Mills, Newry, Woodstock	1242	X	,0202 = $43.00	.0140 = $23.00
SAD #45-					
Washburn Elementary	Foster, High School, Perham	800	X	.0407 = $32.56	.0285 = $22.80
SAD #46-					
High School	Primary, Middle, Ripley, Exeter, Garland	1500	X	.0377 = $56.50	.0264 = $39.60
SAD #47					
High School	Primary, Tapley, Jr.H.S.	1521	X	.0251 = $53.38	.0200 = $30.42
Belgrade		237	X	.0251 = $5.95	.0200 = $5.29
Sidney		211	X	.0251 = $5.00	.0200 = $5.00
SAD #48					
High School	Elementary, Junior High, Corinna Elem, Jr.H.S.	1521	X	.0377 = $57.34	.0264 = $40.15
Palmyra	St. Albans, Hartland Consol, Hartland Jr. H.S.	778	X	.0377 = $29.33	.0264 = $20.53
SAD #49					
High School	Shawnut, Hinckley	1152	X	.0202 = $23.27	.0140 = $16.13
S. Grammar Complex	Junior High, Central	1038	X	.0202 = $20.96	.0141 = $14.53
Clinton Elementary	Middle, Benton, Albion elem and Albion Middle	982	X	.0202 = $19.93	.0140 = $13.75
SAD #50					
St. George Element.	Annex	284	X	.0407 = $11.56	.0285 = $8.94
High School	Laura Libby, Grammar, Cushing	838	X	.0202 = $16.93	.0140 = $11.73
SAD #51					
Chebeaque		39	X	F.R. - $5.00	F.R. - $5.00
Mabel Wilson	Elementary, Sweetser, Jr.H.S, H.S., North Yarmouth	1837	X	.0133 = $24.43	.0844 = $15.43
SAD #52					
High Sch l	Junior High, Turner Center Turner Elem & Primary	1120	X	.0377 = $42.20	.0264 = $29.57

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
SAD #53-					
Vickery	Grammar, Manson Park, Jr.H.S., Bradford	1056	X	.0377 = $39.81	.0264 = $27.87
Burnham		77	X	F.R.- $5.00	F.R. - $5.00
Detroit		67	X	F.R.- $5.00	F.R. - $5.00
SAD #54					
High School	Smithfield, Mercer, Norridgewock, JR.H.S., Lincoln, Garfield	2324	X	.0202 = $46.95	.0140 = $32.53
Smith	Canaan, Cornville, North, Park St., Academy St.	1003	X	.0202 = $20.26	.0140 = $1404
SAD #55					
High School	Cornish, S. Hiram, Milliken, Primary, Parsonsfield Consol, Porter, Baldwin, Mt. Artee	1253	X	.0202 = $25.31	.0140 = $17.54
SAD #56					
Stockton Springs	Frankfort, Searsport elem, Brick, Central, High School, Jr.H.S.	1127	X	.0251 = $28.29	.0207 = $23.32
SAD #57					
Newfield	Limerick, Shapleigh, Memorial	396	X	.0202 = $8.00	.0140 = $5.54
High School	East Waterboro, Elem, Middle	954	X	.0202= $19.27	.0140 = $13.35
Alfred	Lyman	418	X	.0202 = $8.46	.0140 = $5.85
SAD #58					
Eustis		116		F.R. - $5.00	F.R. - $5.00
High School	Phillips, Elem, Grammar; Strong, Grammar; Kingfield, Primary & Elementary	1124	X	.0506 = $56.87	.0506 = $56.87
SAD #59- Madison					
High School	Old Point Ave, Waston Ave, Jr.H.S., Rasle, Athens, Starks	1373	X	.0377 = $51.76	.0264 = $36.25

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
SAD #60					
High School	Starbrook, JR.H.S., N. Berwick Elem, Lebanon	2266	X	.0252 = $57.10	.0178 = $40.33
SAD #61					
High School	Bridgton Elem, Jr.H.S., Naples, Casco, Memorial, Sebago, Jr.H.S.	1848	X	.0377 = $69.67	.0264 = $48.79
SAD #62					
Pownal		209	X	.0377 = $7.88	.0264 = $5.51
SAD #63					
Holbrook	Consolidated	517	X	.0336 = $18.92	.0288 = $14.89
Eddington		242	X	.0336 = $8.13	.0288 = $6.96
SAD #64					
Cornish JR.H.S.	Memorial	724	X	.0433 = $31.34	.0178 = $12.89
Kenduskeag	Hudson, Bradford, Stetson	456	X	.0433 = $9.75	.0178 = $8.16
SAD #67					
Mattanawcook Acad.	Ella Burr, Jr.H.S., Ballard Hill, Mattawamkeag	1662	X	.0433 = $71.96	.0178 = $29.58
SAD #68					
Junior High	Pleasant Street, Elementary, Mayo Street, Grammar, Monson Primary and Middle, Charleston	1027	X	.0433 = $44.47	.0178 = $18.28
SAD #70					
New Elementary	High School, Linnaeus	811	X	.0506 = $41.03	.0506 = $41.03
SAD #71					
High School	Middle Street, Park Street, Cousens	1416	X	.0252 = $35.68	.0178 = $25.20
Port	S. Church	484	X	.0252 = $1220	.0178 = $8.62
SAD #72					
Brownfield	Denmark	171	X	.0506 = $9.00	.0506 = $9.00
C.A. Sno	Annex, Sadie Adams	474	X	.0252 = $11.94	.0178 = $8.43
Lovell		178	X	.0506 = $9.00	.050 = $9.00

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
SAD #74					
Carrabec	Mary Emery, Garret Schenck, Emden, Solon	979	X	.0377 = $36.91	.0264 = $25.85
New Portland		121	X	F.R. - $5.00	F.R. - $5.00
SAD # 1-Presque Isle					
High School	Skyway, Lippel, Cunningham, Pine Street, Training, Gouldville, Westfield, Mapleton	3839	X	.0407 = $156.25	.0285 = $109.41
UNION 2					
Acton		112	X	.0506 = $5.67	.0506 = $5.67
Jr &Sr.H.S.	Elementary, Ogunquit Village	1182	X	.0206 = $24.34	.0114 = $16.66
UNION 3					
Saco Commercial School	Young A & B	905	X	.0202 = $18.28	.0140 = $12.67
Burns	Fiarfield	1133	X	.0202 = $22.88	.0140 = $15.86
Dayton		106	X	.0506 = $5.36	.0506 = $5.36
UNION 15					
Raymond		325	X	.0252 = $8.19	.0178 = $5.78
High School	Jr.H.S., Field Allen, Newhall	1317	X	.0252 = $33.18	.0178 = $23.57
Elementary	Arlington, Andrew	919	X	.0252 = $23.15	.0178 = $16.36
UNION 25					
Middle	Peru, Junior High	1087	X	.0202 = $21.95	.0140 = $15.21
High School	Franklin, Bisbee, Chisholm	1213	X	.0202 = $24.50	.0140 = $17.00
Virginia	Center	324	X	.0202 = $6.55	.0140 = $5.00
UNION 29					
Elm St.	Water St.	518	X	.0202 = $10.46	.0140 = $7.25
Minot		181	X	.0506 = $9.15	.0140 = $9.15
Poland		532	X	.0202 = $10.75	.0140 = $7.45
UNION 30					
Durham		279	X	.0206 = $5.75	F.R. = $5.00
Sabattus		367	X	.0206 = $7.56	F.R. = $5.00
High School.	Elementary, Middle, Elem	1542	X	.0206 = $31.77	F.R. = $17.58

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
UNION #34					
Elementary	High School	1087	X	.0377 = $40.98	.0264 = $28.70
Glenburn		308	X	.0377 = $11.61	.0264 = $10.24
UNION #37					
Elementary	Rangeley High School Mazalloway Elementary	291	X	.0377 = $10.97	.0264 = $7.68
UNION #48					
Dresden Elem	Bridge	127	X	F.R. = $5.00	F.R. = $5.00
Woolwich		378	X	.0251 = $9.50	.0207= $7.82
Georgetown		59	X	F.R. = $5.00	F.R. = $5.00
Phippsburg		249	X	.0251 = $6.25	.0207= $5.15
Wiscasset Elem	High School, Primary	950	X	.0251 = $23.85	.0207= $19.67
UNION #42					
CSD. Jr-Sr H.S.	Readfield Elem, Wayne, Mt. Vernon, Manchester	838	X	.0202 = $16.93	.0140 =$11.73
Rome		67	X	F.R. = $5.00	F.R. =$5.00
UNION #43					
Litchfield Central	Libby, Tozier	327	X	.0252 = $8.25	.0178 = $5.82
Cottrell	Center	518	X	.0252 = $1305	.0178 = $9.22
Junior High	Marcia Bucker, High School	591	X	.0252 = $14.90	.0178 = $10.52
Wales		142	X	F.R. = $5.00	F.R. = $5.00
UNION #47					
Primary	High School	1258	X	.0156 = $19.63	.0126 = $15.85
Fisher	Mitchell	348	X	.0156 = $5.42	.0126 = $4.38
Newell	Dike	391	X	.0156 = $6.09	.0126 = $4.92
Jr. H.S.		648	X	.0156 = $10.10	.0126 = $8.16
West Bath		165	X	.0506 = $3.50	.0506 = $3.50
UNION #49					
Boothbay Harbor Elem.	East Boothbay	440	X	.0251 = $11.04	.0207 = $9.10
High School	Boothbay Center	463	X	.0251 = $11.62	.0207 = $9.58
Edgecomb		85	X	F.R. = $5.00	F.R. = $5.00
South Post		63	X	F.R. = $5.00	F.R. = $5.00

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
UNION #52					
Carl B. Lord	East Vassalboro, Riverside	328	X	.0377 = $12.37	.0264 = $8.66
High School	Garrard St,. Halifax	1045	X	.0202 = $21.11	.0140 = $14.63
Junior High	St. John, Boston Avenue	1066	X	.0202 = $21.53	.0140 = $14.93
China		418	X	.0377 = $15.76	.0264 = $11.04
UNION #69					
Isleboro		86	X	F.R. = $5.00	F.R. = $5.00
UNION #74					
Bremen		66	X	F.R. = $5.00	F.R. = $5.00
CSD GS Bay	Nobleboro, Newcastle, Damariscotta	459	X	.0251 = $11.88	.0207 = $9.50
Bristol CSD	Lonfellow	265	X	.0251 = $ 6.65	.0207 = $5.49
S. Bristol		114	X	F.R. = $5.00	F.R. = $5.00
UNION #76					
Brooklin Jr.H.S.	Elementary	126	X	.0506 = $6.38	.0506 = $6.38
Sedgewick Primary		39	X	F.R. = $5.00	F.R. = $5.00
Deer Isle Elementary	High School, Stonington Elementary	595	X	.0506 = $30.10	.0506 = $30.10
UNION #87					
Adams Jr-Sr.H.S.		1287	X	.0336 = $43.24	.0288 = $26.77
Veazie		266	X	.0336 = $8.93	.0288 = $7.66
UNION #88					
Dedham		111	X	F.R. = $5.00	F.R. = $5.00
Buchill		70	X	F.R. = $5.00	F.R. = $5.00
Aurora		60	X	F.R. = $5.00	F.R. = $5.00
UNION #90					
Alton		54	X	F.R. = $5.00	F.R. = $5.00
Bradley		219	X	.0433 = $9.48	.0178 = $5.00
Greenbush		147	X	.0433 = $6.36	.0178 = $5.00
Milford		425	X	.0433 = $18.40	.0178 = $7.56
UNION #91					
Bucksport H.S.	Warren, Jewett, Jr.H.S.	1459	X	.0336 = $49.02	.0288 = $42.00
Orland		254	X	.0336 = $8.53	.0288 = $7.31
Center Drive	Blake, N. Orrington	542	X	.0336 = $18.21	.0288 = $15.61

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
UNION #92					
Ellsworth Jr.Sr. H.S.	Knowlton, Moore	1342	X	.0336 = $45.09	.0288 = $38.67
Hancock		245	X	.0336 = $7.89	.0288 = $6.77
Lamoine		138	X	.0336 = $6.10	.0336 = $6.10
Bonsey	Surrey	118	X	.0336 = $5.97	.0336 = $5.97
Trenton		90	X	F.R. = $5.00	F.R. = $5.00
UNION #93					
Blue Hill		216	X	.0412 = $8.90	.0363 = $7.84
Brooksville		104	X	.0412 = $5.26	.0412 = $5.26
Castine		82	X	F.R. = $5.00	F.R. = $5.00
Penobscot		150	X	.0506 = $7.59	.0506 = $7.59
UNION #96					
Gouldsboro		216	X	.0506 = 9.35	.0506 = $9.35
Steuben		173	X	.0506 = $7.49	.0506 = $7.49
Winter Harbor		200	X	.0506 = $8.66	.0506 = $8.66
Schoodic Consol. High School	Flanders Bay Consol Franklin, Sullivan Grammar, Sorrento	782	X	.0336 = $26.30	.0288 = $22.52
UNION #98					
B.H Emerson	Commercial	535	X	.0412 = $22.04	.0363 = $20.00
Consolidated	High School	641	X	.0412 = $26.40	.0363 = $23.27
Cranberry Isles	Longfellow, Islesford	22	X	F.R. = $5.00	F.R. = $5.00
Frenchbow		9	X	F.R. = $5.00	F.R. = $5.00
MT. Desset Element		294	X	.0412 = $12.11	.0363 = $10.67
S. West Harbor Pemetic		297	X	.0412 = $12.23	.0363 = $10.78
Tremont		175	X	.0412 = $7.62	.0363 = $6.35
UNION #102					
J. Beal High School	Beals Elementary,	498	X	.0506 = $25.20	.0506 = $25.20
Jonesport Cove	West Jonesport	216	X	.0506 = $10.92	.0506 = $10.92
UNION #104					
Charlotte		19	X	F.R. = $5.00	F.R. = $5.00
Eastport Grammar	Primary, High School	559	X	.0506 = $28.28	.0506 = $28.28
Pembroke		131	X	.0506 = $6.62	.0506 = $6.62
Perry		109	X	.0506 = $5.51	.0506 = $5.51
Robbinston		46	X	F.R. = $5.00	F.R. = $5.00

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED	TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
UNION 106				
Alexander		34	F.R. = $5.00	F.R. = $5.00
Calais High School	Elementary, Grade	1166	.0506 = $59.00	.0506 = $59.00
UNION #107				
Woodland High School	Elementary	734	.0506 = $37.14	.0506 = $37.14
Princeton		229	.0506 = $11.58	.0506 = $11.58
UNION #108				
Vanceboro		71	.0506 = $5.06	.0506 = $5.06
Topsfield		35		
UNION #113				
Schenck	Elementary	1016	.0433 = $44.00	.0178 = $18.08
Medway		366	.0433 = $15.85	.0433 = $15.85
UNION #115				
Benedicta		72	F.R. = $5.00	F.R. = $5.00
UNION #122				
New Sweden		133	.0506 = $6.73	.0506 = $6.74
Stockholm		75	.0506 = $5.00	F.R. = $5.00
Woodland Consolidated		226	.0506 = $11.45	.0506 = $11.45
UNION #151				
Chelsea		333	.0377 = $12.55	.0264 = $8.79
Jefferson		231	.0377 = $8.70	.0264 = $6.10
Palermo		148	.0506 = $7.48	.0506 = $7.48
Somesville		56	F.R.= $5.00	F.R. = $5.00
Whitefield		244	.0506 = $9.19	.0506 = $9.19
Windsor		338	.0506 = $12.75	.0506 = $12.75
UNION #8				
Arundel		316	.0206 = $6.50	.0206 = $6.50
Hunior High School	High School, Jameson, Elem	1359	.0206 = $28.00	.0114 = $15.50

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
AUBURN					
Central	Chamberlain, St. Louis, Sherwood Heights, Edward Little, Fairview, Stevens Mills,	3890	X	.0177 = $68.85	.0121 = $47.07
Walton	Webster, C.P. Wight, Washburn, Merrill Hill, Lake Street, Franklin, East Auburn	2414	X	.0177 = $42.73	.0121 = $29.20
AUGUSTA					
Vocational	Buker, Nash, Lincoln, Gilbert, Hodgkins, Hussey, Williams, Cony, Farrington	4476	X	.0177 = $79.22	.0121 = $53.71
BANGOR					
High School	Mary Snow, Fruit St, Garland St, Lincoln, Harlow	3484	X	.0182 = $63.41	.0182 = $63.41
Down East	Union, 14th St., Dow Lane, Vine, 5th St.	2266	X	.0182 = $41.24	.0182 = $41.24
BIDDEFORD					
High School	Emery, Birch, Jr. High, Kennedy, Wentworth, St, Andres	3300	X	.0252 = $83.16	.0178 = $58.74
BREWER					
Junior High	State St, Washington, Capri, High School, School St, Dirigo, Pendleton	2920	X	.0330 = $96.36	.0250 = $73.00
BRUNSWICK					
Jordan Acres	Hawthorne, Longfellow, Coffin, Junior High, High School	3637	X	.0156= $56.73	.0126 = $45.82
CAPE ELIZABETH					
High School	Pond Cove, Cottage Farms, Middle	2253	X	.0113 = $25.46	.0084 = $18.93
CARIBOU					
High School	Junior High, Teague Park, Intermediate, Hilltop, Sincock, High St.	3299	X	.0407 = $134.27	.0288 = $93.00

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
ALMOUTH					
High School	Underwood, Plummer, Motz, Pine Grove, Houston, Lunt Graves	1660	X	.0113 = $18.85	.0084 = $13.95
FREEPORT					
High School	Grove St, Soule, Morse St, Middle	1348	X	.0156 = $21.03	.0156 = $21.03
GORHAM					
High School	Jr. High, Village, Charlotte, Millet, Little Falls, White Rock	2056	X	.0113 = $23.23	.0084 = $17.17
KITTERY					
Kittery Point	Mitchell, Dennett, Shapleigh, Frisbee, Trap	4013	X	.0252 = $101.12	.0178 = $71.43
JAY					
High School	Elementary, Junior High	1279	X	.0252 = $32.23	.0178 = $22.76
LEWISTON					
Comprehensive	Martel, Farwell, Holy Family, Mc Mahon, Pettingill, Monticello	5298	X	.0182 = $96.42	.0178 = $96.42
All Purpose	Denely, Frye, Wallace, Jordan, Junior High	2493	X	.0182 = $45.37	.0182 = $45.37
LIMESTONE					
High School	Demon, Elementary	2400	X	.0412 = $98.88	.0285 = $68.40
MACHIAS					
High School	Gafney, Campus, Wesley Corner,	737	X	.0506 =$31.92	.0506 = $31.92
Whitney ville		28	X	F.R. = $5.00	F.R. = $5.00
MADAWASKA					
Senior High	St. Thomas Public, Evangeline, Acadia	1846	X	.0412 = $76.05	.0285 = $52.61
MILLINOCKET					
Junior High	Granite St, Katahdin Ave, Aroostook Avenue, Stearns High, Main Ave	2238	X	.0407 = $91.08	.028[illegible] = $52.61

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEE DELIVERY
OLD TOWN					
High School	Gray, Helen Hunt, Jefferson St. St. Joseph	1484	X	.0336 = $49.86	.0288 = $42.73
Junior High	Sargent, Lewis Stairs	969	X	.0336 = $32.56	.0288 = $27.90
PORTLAND					
Clifford	Cliff Island, Peaks, Long Island, Reiche	1156			
Jack	Adams, Emerson, Shailer, North Portland, Portland High., Presumpscott, Cummings	3868			
Lyseth	Moore, Peary, Reed	1966			
King	Sherman St, West	1197			
Hall		697			
Lincoln	Longfellow, Deering, Roosevelt, Baxter, Morrell	3289			
		Total- 12083	X	.0084 = $102.25	.0084 = $102.25
SANFORD					
Middle School	9 Schools	3749	X	.0206 = $42.36	.0114 = $31.50
SCARBORO					
High School	Junior High, Elementary, Pleasant Hill, Dunstain, Eight Corners, Oak Hill, Bessey, Plue Point	3749	X	.0113 = $42.36	.0084 = $31.49
SOUTH PORTLAND					
Memorial	Skillin, Thorston Heights, Redbank Village, Lincoln Dyer	1900	X	.0113 = $21.47	.0084 = $15.96
Mahoney	High School, Kaler, Roosevelt, Henley, Small, Willard, Hamlin, Brown	2136	X	.0113 = $24.14	.0084 = $17.94

BASE SCHOOL & SCHOOL DISTRICT	RECEIVING SCHOOLS	TOTAL MEALS SERVED		TRANSPORTATION RATE AND COST PER 1 WEEK DELIVERY	TRANSPRTATION RATE AND COST PER 2 WEEK DELIVERY
WATERVILLE					
High School	Averill, S. Grammar	1875	X	.0177 = $33.19	.0121 = $22.69
Brookside	Pleasant St, Junior High	1948	X	.0177 = $34.48	.0121 = $23.57
WESTBROOK					
Junior High School	9 schools	4492	X	.0113 = $50.76	.0084 = $37.73
High School		1150	X	.0113 = $13.00	.0084 = $9.66
SMALLER MUNICIPALITIES					
Brooklyn		21	X		
Concor		95	X		
Edmunds		106	X		
Kingman		51	X		
Rockwood		8	X	F.R. = $5.00 for each school	
Theriault		83	X		
Indian Island		35	X		
P.D. Point		58	X		
Rafferty		116	X		

		COST PER YR WEEKLY DELIV.	COST PER YR. BI-WEEKLY DELIV
Total Transportation Costs -	230,000 meals	$1,014,300	$800,000
-	125,000 meals	$700,000	$551,250

COST OF TRANSPORTING FROZEN MEALS FROM PORTLAND, MAINE

TO:	MEALS PER DAY(1)	PERCENT OF TOTAL	TRANSPORTATION COST OF DELIVERING QUANTITIES SHOWN ($/MEAL) (2) 1 WEEK'S SUPPLY	2 WEEKS' SUPPLY
Augusta	2,017	10.3	.0177	.0121
Bangor	6,550	33.5	.0182	.0182
Bath	885	4.5	.0156	.0126
Berwick	913	4.7	.0206	.0114
Calais	160	.8	.0506	.0506
Caribou	2,370	12.1	.0407	.0285
Ellsworth	932	4.8	.0336	.0288
Guilford	754	3.9	.0377	.0264
Houlton	675	3.5	.0412	.0363
Kennebunk	565	2.9	.0252	.0178
Lincoln	565	2.9	.0433	.0178
S. Portland	924	4.7	.0113	.0084
Rockland	896	4.6	.0251	.0207
Rumford	1,358	6.9	.0202	.0140
Weighted Average Cost/Meal For Model =			.0245	.0193

(1) Volume Figures From Map In E. Potter's Correspondence Dated 9/30/74.

(2) Cost Of Delivery Calculated As Follows:
a - Meals/Day X Days/Week X 1LB/Meal = Total Weight Of Delivery.
b - Cost/Meal For Delivery Weight Was Obtained From Class 100 Rates Found In Maine Motor Rate Bureau Tariff M-1-H And Supplements.

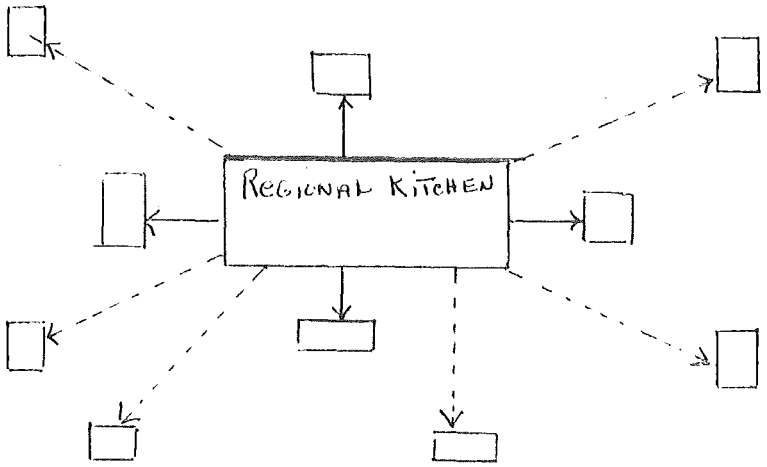
CHAPTER IV

A REGIONAL FOOD SERVICE DELIVERY SYSTEM

CHAPTER IV

THE REGIONAL FOOD SERVICE DELIVERY PROGRAM

A regional food service delivery system consists of several strategically located kitchens throughout a state that prepare school meals and deliver them to schools in specified territories or regions within the state. In general, the kitchens prepare preplated meals and bulk foods which can be delivered hot to nearby schools and served directly to the students, or the meals can be delivered the day prior to the day of consumption and reheated in satellite kitchens in each school. In addition to serving schools in the immediate vicinity, a regional kitchens prepares and freezes preplated and/or bulk meals and delivers them to schools in outlying districts. A regional system, therefore, crosses school district lines and may provide meals for several districts.



Most central kitchen operations in the United States, as noted previously, are located in metropolitan areas, and operate primarily as regional or base kitchens. Regional kitchens have not been developed for rural areas for a variety of reasons. In many states, such as Connecticut, Massachusetts, New York and New Jersey, most of the student population that was excluded from food service was located in metropolitan areas, and these states concentrated on developing school food programs for the urban schools. Furthermore, the feasibility of regional school kitchens has been considered greater for urban areas than for rural regions. No studies of various alternative school food service systems have been conducted for an entire state, and regional kitchens for rural areas is one area that has not been explored by any state or the federal government. Consequently, the lack of knowledge and experience regarding food service systems for rural schools has been one significant reason for the inattention to rural school food service needs.

Another problem confronting the development of a regional food service system has been the historic operation of school food service. Each local community owns and operates its own school and food service program, and in some states there has been resistance to the regionalization of facilities. In

Connecticut, for example, a number of towns such as North Stonington rejected regionalization because the community wanted to maintain its control over the town's educational facilities.

Some rural schools in states which have passed legislation requiring food service in all schools have adopted commercial frozen meals. Lacking kitchen facilities and funds to construct and equip school kitchens, many small communities discovered the commercial frozen meal program to be the easiest solution, but not necessarily the most inexpensive. On-site kitchens and base kitchens can usually provide meals that are more nutritious and less expensive than commercial frozen meals which average 90¢ to $1.00 per meal (includes all direct and indirect costs).

Construction and equipment costs have been serious obstacles to the development of on-site or regional kitchens. A school kitchen providing 100 meals a day will probably cost approximately $14,000 to $22,800 to construct and at least $10,000-$12,000 to equip. A regional kitchen serving 1500 meals per day will cost roughly $157,500 to construct and $75,000-$80,000 to equip. If five

communities are involved in the regional kitchen facility the construction and equipment costs could range from $60,000 to $100,000 per town depending upon the town's school population.

In addition to costs and the unwillingness of small communities to relinquish their autonomy in regard to education, the failure of the state and federal governments to study food service systems specifically for rural areas has prevented small remote schools from developing any food service system. The states have received no federal funds whatsoever to study delivery systems for urban and rural schools. Since a study of several alternative systems could be as much as $100,000 the Food and Nutrition Office of each state has not had sufficient funds to conduct these studies from state food service and education funds.

GOALS OF A REGIONAL FOOD SERVICE SYSTEM

One goal of a regional kitchen is to produce quality school meals at minimum cost for schools without kitchen facilities. To achieve the goal, a regional operation depends upon the support of several communities and school districts. It is most successful in regions where the schools are small (up to 100-150 students) and economically cannot afford to develop and operate an on-site kitchen.

Another goal of a regional kitchen is to provide hot meals for other groups such as low income and elderly persons. The meals can be distributed to the schools and the elderly can be bussed to the schools for a hot meal as well as for activities. A number of towns and cities are already involved in this program. Milwaukee, Cleveland, Boston, as well as smaller towns such as Malden and Quincy are examples of communities providing meals from regional or base kitchens for the elderly.

ADVANTAGES OF THE REGIONAL KITCHEN

There are a number of advantages that a regional kitchen possesses in relation to the other systems. The regional kitchen is primarily a cross between the decentralized system and the central food production facility and thereby can provide many of the benefits of both systems.

ADMINISTRATIVE AND GENERAL

1. Does not require the managerial and technical expertise of a central kitchen operation. A regional kitchen serving 5,000 meals, for example, can operate with one or two managers who are experienced in management and in food and nutrition. The Malden, Massachusetts, school kitchen exemplifies a 5,000 meal per day production unit which has only one manager.

2. Requires less managerial talent than several on-site kitchens in one region would require.

3. Requires less skilled labor than a central kitchen or several on-site kitchens require.

4. There are a large number of base kitchen operations in the U.S. from which a regional kitchen operation can be developed.

5. Provides uniform and standard control over quality and nutritional value of food as well as sanitation.

6. Allows much greater community input into the food service system than a central kitchen.

7. Provides flexibility of service to different age groups. A regional kitchen can produce meals for elementary and secondary school children as well as for preschoolers and the elderly.

8. Utilizes Maine food products such as potatoes, poultry, fish, fruits and vegetables.

COSTS AND OPERATION

1. Maximizes efficiency via economies of scale.
   a. Operating costs of kitchen producing 50 meals per day are 67% greater per child than a kitchen producing 2,000 meals per day. The reduction in the labor force is one of the major cost savings.

2. Reduces duplication of equipment and facilities that are inherent in a decentralized system.
   a. The equipment required to operate 20 school kitchens with an active daily participation rate of 100 for each school will cost approximately $300,000. A regional kitchen serving as many as 4,000 per day requires equipment that costs roughly $200,000. Twenty on-site kitchens each serving 50-100 students per day will cost a

minimum of $720,000 to construct compared to $600,000 for a regional kitchen serving 4,000-6,000 students per day.

3. Permits greater food purchasing savings. Most small rural schools in Maine can purchase food supplies from only one vendor in small quantities. There are choices of vendors available to them. A regional kitchen will purchase much larger quantities of food at lesser prices and from a variety of purveyors.

4. Will increase job opportunities and hire local people especially in regions where there is no food service program at the present time.

DIETARY

1. Will provide meals that are popular in particular regions and communities of the state.

2. Will provide nutritious meals that may be better in quality than in schools which have a low food service budget.

DISADVANTAGES OF A REGIONAL KITCHEN

The disadvantages and problems of a regional kitchen relate

primarily to the impact it will have on the local communities which it serves.

ADMINISTRATIVE AND OPERATIONAL

1. Creates a transportation problem. It is necessary to develop truck routes and trucking schedules.

2. Creates a jurisdictional problem. An administrative model will have to be developed that satisfies all the communities and districts involved.

3. Local opposition may develop to a regional kitchen because of the total control that the community has exerted over the school's operation.

4. Schools which are operating small kitchens may oppose a regional kitchen because their food service personnel may not be usable in the regional kitchen.

5. Requires a higher level of managerial competancy than does an on-site kitchen.

6. Creates problems with regard to breakfast programs in the schools. Satellite schools will have very limited equipment which consists primarily of appliances for the reconstitution of meals and not for the preparation of meals.

7. Will require frozen food storage facilities that may be expensive to operate as a result of the energy crisis.

8. Satellite kitchen labor may be very difficult to find. Individuals in a satellite kitchen would work no more than 3 hours a day. It is difficult to find part-time labor in Maine for the schools.

RECOMMENDATIONS

1. An in-depth study of the number and location of regional kitchens that are required for the State of Maine. Presently there are almost no regional food service models that can be applied to the State of Maine.

2. A study of the labor market in different regions of the state. The type and size of the labor market are essential to a regional kitchen operation.

3. Regional kitchens may be adaptable to a rural state, but the regions must be compact. Although there is no evidence to support this assumption, it appears that a regional kitchen situated in Bangor and serving Washington, Piscataquis, Penobscot and Hancock counties would be too difficult to operate. A very complex transportation-distribution system would have to be developed, the skilled labor and managerial talent required to operate the facility would have to be secured and the capital investment would be substantial (over $4,000,000 for kitchen construction).

a. A smaller kitchen would encounter similar problems, but not to the degree that the regional kitchen described above would pose.

4. Consequently, criteria for a regional kitchen operation must be developed that will insure maximum efficiency without sacrificing quality.

One of the criteria appears to be that regional kitchens are appropriate where central base kitchens cannot operate efficiently (see chapter on base kitchens).

A MODEL OF A REGIONAL FOOD DELIVERY SYSTEM FOR MAINE'S PUBLIC SCHOOLS

A MODEL OF A REGIONAL FOOD DELIVERY SYSTEM FOR MAINE'S PUBLIC SCHOOLS

The model of a regional food delivery system(RFDS) for Maine consists of three regional kitchens located in Portland, Bangor, and Caribou, each of which contains a frozen food storage facility with a two week storage capacity. Portland, Bangor, and Caribou are well suited as regional production centers because each city is centrally located in its region, has relatively easy access to the surrounding towns and communities, possesses commercial storage and transportation facilties, and possesses a sizeable proportion of the regional population within its metropolitan limits.

A line drawn from Jackman to Owl's Head on the coast divides the state into two sections, each of which consumes approximately 62,500 school lunches per day. The Portland regional kitchen serves an area extending from Kittery to Waterville and produces 62,500 meals per day. The Bangor regional kitchen serves an area north of the line, excluding Aroostook County, and produces 40,000 to 45,000 meals per day. The Caribou regional kitchen serves all of Aroostook County and produces 20,000 meals per day.

According to the model, the regional kitchens prepare the meals for all the schools in their respective regions, and make bi-weekly meal shipments to base schools. Each regional kitchen prepares and blast freezes the meals, and the meals are reconstituted in base school kitchens. From the base schools, the hot meals are delivered to all the satellite schools in the school districts. The regional kitchens, therefore, operate primarily in the same manner as the central kitchen. The major difference between a

CFPF and a RFDS is that each regional facility is smaller and serves a smaller geographical area compared to the central kitchen.

There are three theories under investigation in the RFDS model. One theory is that three facilities will reduce transportation costs compared to a central kitchen. Another theory assumes that regional kitchens are easier to operate and offer more regionally accepted foods than central kitchens. A third theory presumes that regional kitchens can produce meals at a lower cost than the conventional system and can provide them for all schools in the region regardless of the size of the school.

On the following page is a table which presents the capital investment costs of a regional food delivery system(RFDS) producing 125,000 meals per day as well as the operating costs of the three regional kitchens. Some of the figures are very precise and include the present rate of inflation, while others are estimates based upon information provided by the United States Department of Agriculture(USDA) and by private consulting firms.

The statistics indicate that the capital investment costs for a regional food production and delivery system are 20 percent greater than those of a central food production facility. The regional system is also approximately 12.5 percent more costly to operate than the centralized system. Food, labor, and warehouse costs comprise the primary areas in which a centralized operation realizes substantial savings compared to the regional operation. For example, compared to a regional system, a centralized system incurs a labor cost saving 12 percent, a food saving cost of 13.8 percent, and a warehouse cost saving of nearly 50 percent. In a regional food production and delivery system, the average per meal

TABLE 5

CONSTRUCTION AND OPERATING COSTS OF A REGIONAL FOOD PRODUCTION AND DELIVERY SYSTEM

	62,500 Meals Per Day	40,000 Meals Per Day	20,000 Meals Per Day
Square feet of Structure	30,000	20,000	15,000
Land Costs	$ 110,000	75,000	45,000
Building Construction Costs	1,810,000	1,200,000	930,000
Equipment Costs	1,300,000	1,200,000	1,000,000
Warehouse Construction Costs	520,900	355,450	300,025
Base Kitchen Equipment Costs		5,250,000	
Construction Insurance	3,630	2,750	2,430
Architect Fees	332,850	242,582	205,102
Fund Raising Costs		4,000	
DIRECT OPERATING COSTS			
Direct Labor - CFPF	441,667	260,000	202,331
Indirect Labor - CFPF	160,000	118,000	109,000
Administration	24,285	15,508	7,804
Labor-Management Benefits		525,300	
Utilities - CFPF	42,000	27,000	14,000
Warehouse Labor/Management	39,000	39,000	33,000
Warehouse Utilities	8,030	5,470	4,423
Food	5,193,000	3,500,000	2,000,000
Transportation from RFPF		496,125	
Equipment Repair	14,050	9,063	4,500
Non Food Supplies	225,000	144,000	72,000
Base Kitchen Labor		2,100,000	
Base Kitchen Utilities		375,000	
TRANSPORTATION From Base Schools to Sattelite Schools		675,000	
Alternative Commercial Warehouse Facilities	84,375	72,000	36,000
INDIRECT OPERATING COSTS			
Depreciation		1,151,255	
Bond Payments		705,000	
Interest		775,500	
Equipment/Building Insurance	3,630	2,750	2,430
Frozen Food Insurance		39,278	
Base School Equipment Insurance		5,250	
TOTAL CONSTRUCTION COSTS		15,184,000	
TOTAL OPERATING COSTS		19,668,753	

CHART 2
REGIONAL FOOD PRODUCTION SYSTEM
REGIONAL WAREHOUSES:
CONSTRUCTION AND POWER COSTS

	62,500 meals per day 2 Week Storage Facility	40,000 meals per day 2 Week Storage Facility	20,000 meals per day 2 Week Storage Facility
DIMENSIONS OF BUILDING	120'x 40'x 30'	60'x40'x 30'	45'x 40'x 20'
TOTAL SQUARE FEET	6,240	3,120	2,340
ACTUAL CUBIC FEET OF STORAGE SPACE	140,000	70,000	36,000
RACKS	$100,000	$50,000	$25,000
CRANES	$100,000	$100,000	$100,000
CONTROLS	$80,000	$80,000	$80,000
PALLETS	$12,500	$6,250	$3,125
MISCELLANEOUS EQUIPMENT AND CONVEYORS	$10,000	$10,000	$10,000
COST OF BUILDING	$218,400	$109,200	$81,900
TOTAL CAPITAL INVESTMENT	$520,900	$355,450	$300,025
ENERGY CONSUMPTION			
PER DAY TONS OF REFRIGERATION	17.25	10	7
COMPRESSOR HORSEPOWER	35	20	15
FAN HORSEPOWER	7.50	5	2.50
KILLOWATT HOURS PER MONTH	24,300	14,400	9,900
COST OF KILLOWATT HOURS	$440.76	$274.56	$255.95
FUEL ADJUSTMENT COST	$228.42	$135.00	$112.68

cost is 84 cents compared to the average per meal cost of 79 cents in a CFPF.

There is only one area in which a RFDS produces a significant cost saving compared to the CFPF. Transportation costs for the delivery of meals from regional kitchens and warehouses to base school kitchens are 10 percent less than the delivery of meals from a central kitchen/warehouse to base school kitchens. The shipment savings incurred by the RFDS, however, are eliminated by the higher labor, food, and storage costs of the system.

Another theory which presumes that state owned and operated warehouses generate lower operating costs compared to commercially operated warehouses appears to be true. Crude estimates indicate that commercial facilities are 12 percent more costly than state owned and operated facilities. The 12 percent saving includes the state warehouses's share of the total per annum bond interest. In 20 years following the last bond payment, and assuming that the operating costs of the public warehouses and the fees of commercially operated facilities rise at the same rate, the state owned facilities will be 48 percent less costly per annum than the fees charged by commercial facilities.

The question regarding the feasibility of instituting food reconstitution kitchens in every Maine school has the same result as the one described in the central kitchen operation. The central kitchen and regional kitchen systems have the same costs in regard to the distribution of meals to base schools. Thus, the regional food delivery system also incurs a 5 percent saving in the distribution of meals to base schools for reconstitution as opposed to the reconstitution of meals in every Maine school.

Despite the 12.5 percent cheaper per annum operating costs of

a central food production and delivery system compared to the regionalfood production and delivery system, the RFDS allows for differences in regional tastes and needs. In addition, the RFDS does not symbolize state control over local communities to the degree that does the CFPF. Nevertheless, the regional operation does not provide much flexibility or local participation compared to the present system, and the higher operating costs of the RFDS does not warrant the creation of regional food production and delivery system.

CHAPTER V

THE CENTRAL BASE KITCHEN CONCEPT

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THE CENTRAL BASE KITCHEN CONCEPT

A base kitchen food service program is a system comprised of a central kitchen located in a school district or community and provides meals to all or many of the schools in the town or district. According to the United States Department of Agriculture definition, a base kitchen is a kitchen which prepares type A lunches for serving within the facility in which the kitchen is located, and delivery and service at the receiving school. For the purpose of this report,however, the base kitchen may be considered one that serves all or many of the schools in a community, regardless of the location of the kitchen. By means of the modified definition, the reader will not be confused by the term central kitchen.

A number of metropolitan areas have adopted the base kitchen concept. Malden and Quincy, Massachusetts are examples [See Chapter VII]. In many towns and cities in which the base kitchen system has been adopted, it has been successful. The base kitchen can provide all the school meals in a community without duplicating facilities and equipment, by employing people, and by distributing the finished product without any significant transportation-distribution problems at less cost than self-contained kitchens can produce meals.

The base kitchen concept is not new in Maine. There are a number of school systems which have adopted the program and it has been successful in some places because the communities have seen the need for it and supported it. School Administrative District #17 which includes Norway, Paris and Oxford has a base kitchen for the district and distributes 1700 meals per day to the schools in the district. Both preplated and bulk food items are sent to the schools. In Sanford, 1900-2100 meals are prepared daily and sent to 7 schools in the district. The Van Buren base kitchen in district 24 provides approximately 1500-1600 meals per day and distributes to three schools. The town of Madison operates a central kitchen that prepares 768 meals per day for 3 schools and trucks them to Athens and Starks which are respectively 15 and 10 miles away from Madison.

Sanford's central kitchen is 21 years old. Presently, the kitchen facilities as well as some of the equipment are inadequate to prepare 2000 meals per day. An adequate kitchen facility to meet Sanford's present school lunch participation needs would require approximately 5,000 square feet at a construction cost of $300,000. The equipment costs of the kitchen facility would be roughly $65,000. A more modern facility would offer a greater variety of meals and thereby increase the ADPR which now averages 50 per cent of the total school enrollment. Nevertheless, the kitchen is very well managed. The average daily meal costs are 51 cents

compared to the state average that ranges between 60 and 70 cents. There are 10 full time personnel and 16 part time employees who operate the central and satellite kitchens.

One of the major cost producers in a central kitchen operation of any type is transportation. In Sanford, each school is no more than a mile from the kitchen. The cost of utilities and transportation is 5 cents per meal, and the cost of labor is 3.17 cents per meal. In Madison, on the other hand, which prepares meals for two schools 15 and 10 miles away from the town, utility and transportation costs average 19 cents per meal. In addition, labor costs average 29 cents per meal. The increased labor costs are most probably the result of the smaller number of meals that the Madison central base kitchen provides compared to the Sanford central kitchen.

Portland is in the process of developing a central base kitchen operation for the schools. The kitchen will produce more than 12,000 meals per day, if the city approves the plan. Presently, the proposal is only in the planning stage.

Although the evidence is weak, it may be safe to assume that a central base kitchen operates most efficiently and at least cost in areas in which the receiving schools are relatively close together and the kitchen prepares more than 1000 meals per day. According to Julius Candella of the Massachusetts Office of Food and Nutrition and George Cole, Quincy food service director, the greater the production rate the lower the cost per meal.

Goals of the Base Kitchen

To reduce operational costs and to increase the nutrition and quality of school meals.

By combining several small food service operations into one, a larger operation can work more efficiently and produce better meals with more variety.

Another objective is to increase daily participation in the school lunch program which is the product of increasing the quality of school lunches

Advantages of the Base Kitchen

The base kitchen has all the advantages and few of the disadvantages of an on-site kitchen and a regional kitchen. It is large enough to benefit from economics of scale, without being too large which creates administrative, distributive and operational problems. The advantages may be enumerated as follows:

ADMINISTRATIVE

1. Consolidates food service management and employees.
   a. Provides for better supervision of personnel with less managerial and supervisory individuals compared to on-site kitchens.
   b. Provides better quality and quantity control compared to on-site kitchens.
   c. Provides better control over operational costs and maximizes efficiency compared to on-site kitchens.
   d. Requires fewermanagers and people with technical expertise than on-site kitchens need.

2. The central base kitchen remains solely under the control of the community which insures local support of the program.

COSTS AND OPERATION

1. Reduces the number of kitchen facilities, equipment and operating costs required to operate on-site kitchens. Five schools each with an ADPR of 50-100 would incur construction costs in excess of $250,000 whereas one kitchen would cost $60,000 - $90,000.

a. The satellite kitchens would cost an additional $20,000.

b. Equipment costs for the base kitchen would cost approximately $75,000 while the equipment costs of the on-site kitchens would be in excess of $100,000.

c. In order to construct and equip 107 conventional kitchens which presently have no facilities, the cost would be $1,200,000 for equipment and $50,000,000 to $90,000,000 for construction.

2. Purchase Maine food items including poultry, fish, potatoes, vegetables and fruits.

3. Utilize local people for production personnel

a. A base kitchen preparing 1500 meals per day will require a minimum of ten individuals and at least two people in each satellite kitchen.

4. Provides flexibility for a system to produce meals for all school age groups and for the elderly.

DIETARY

1. Produces meals that are well accepted in the local area. Permits specialization of lunches. In some schools that have

adopted base kitchens school lunch participation has increased significantly.

2. Provides meals that are more nutritious than schools with a low budget for food service or schools which routinely use convenience items.

3. Provides meals for all age groups from elementary school to the elderly.

The disadvantages of a central base kitchen are enumerated as follows:

ADMINISTRATIVE

1. Requires an administrator or a manager with more managerial experience and food and nutrition knowledge than an on-site kitchen requires.

2. Creates a transportation-distribution problem that increases in complexity as the size of the territory covered by the kitchen increases.

DIETARY

1. Compared to regional and central kitchens, the base kitchen does not incur many food purchase savings. School district supervisors purchase the food for the entire district schools regardless of the number of schools.

a. A regional kitchen purchases food for two or more districts and can thereby realize some food savings compared to a central base or on-site kitchen.

OPERATIONAL

1. A base kitchen that covers a wide school district territory will have to engage in several processes.

   a. Hot preplate / bulk distribution

   b. Frozen preplate / bulk distribution

   c. Cold preplate / bulk distribution

      (1) The smaller the school district territory is the less complicated is the food preparation process.

RECOMMENDATIONS

1. Further research is required to develop a model for the state which indicates the means by which as well as the number of central base kitchens that could be created in Maine.

   a. Costs of construction, renovation, equipment and operation need to be developed for each possible base kitchen.

2. Criteria for the development of base kitchens must be established.

   a. Some of the criteria have been analyzed above. Unsubstantiated evidence indicates that a base kitchen maximizes efficiency by serving a number of schools in a small compact area. Additional criteria is needed, however, to measure the efficiency of a base kitchen.

3. A central base kitchen can only be established in a district for which it is best suited. Therefore, the base kitchen cannot be a solution for all school districts. It must be part of a much larger system.

4. A number of school districts in Maine have inadequate funds to develop and institute a base kitchen concept. At the same time, school food service in some systems is inadequate and in a few cases low in quality. A central base kitchen could reduce food service operating costs, but financially it is impossible for the poor school districts to adopt it. A means of funding a base kitchen operation for small communities must be developed.

A MODEL OF A CENTRAL BASE KITCHEN FOOD SERVICE SYSTEM FOR MAINE'S PUBLIC SCHOOLS

Central Base Kitchen System

The central base kitchen system may be one of the most feasible food service alternatives for Maine's public schools. A cursory poll of four school districts with central kitchens which produce 5 percent of all the school meals produced each day in Maine indicates that the average cost per meal ranges between 51 and 60 cents. The base kitchen system is not the answer for all Maine schools; nevertheless it is applicable to more schools than other systems.

On the following page is a table that analyzes the costs involved in a statewide central base kitchen food service system. The model assumes that 287 base school kitchens prepare either preplated or hot bulk school meals and ship them to other schools in the district. Some of the figures are excessive because the lack of information required an estimation. The estimates have been purposely inflated in order to compute the maximum cost per meal that can be expected in the base kitchen system. The model makes the following assumptions:

1. That the 287 base kitchens have little or no equipment.
2. That there will be no reduction in the school food service labor force as a result of the transition to the base kitchen operation.
3. That the school food service employees will receive the same benefits as state employees.

TABLE 6

BASE KITCHEN FOOD SERVICE SYSTEM

Base Kitchen Equipment Costs	$5,250,000
Direct Labor-Preparation etc	$4,202,000
Indirect Labor-Managerial etc	100,000
Administration	48,150
Labor/Management Benefits	630,000
Food	9,526,000
Transportation	675,000
Equipment Repair	48,150
Non-Food Supplies	450,000
Base Kitchen Utilities	375,000
Depreciation	52,500
Bond Payments	262,500
Interest	14,450
Insurance	5,000
TOTAL OPERATING COSTS	$16,388,750
TOTAL COST PER MEAL	$.72

4.That food costs have risen 15 percent in the past year.

5. That base kitchens require freezer and refrigerator storage facilities with a two week food and frozen meal capacity.

The maximum cost per meal is 72 cents which is 12.5 percent less than the per meal cost of the CFPF, 19.5 percent less than the per meal cost of the RFDS, and 46 percent less than the commercial frozen meal.

The base kitchen requires very little capital investment in equipment compared to the CFPF and RFDS system. In addition, the base kitchen incurrs no construction costs. As a result, depreciation, bond payments, interest and insurance (Indirect operating costs) are 700 percent less than those of a CFPF. While the indirect operating costs of a CFPF are only 15 percent of its total operating costs, a 700 percent increase in these costs is substantial enough to make per meal costs greater than those of the base kitchen.

Despite the 12.5 percent per meal cost advantage of the base kitchen system, the CFPF system may be less expensive to operate in the long run. Following the liquidation of the bonds and interest in 20 years, as well as the greatly reduced rate of depreciation, per meal cost in a CFPF may be less than per meal cost in a base kitchen operation. Nevertheless, the greater flexibility, local participation, and hot bulk food of the base kitchen operation make it more acceptable in general than the CFPF or other systems.

CHAPTER VI

THE COMMERCIAL FROZEN FOOD SERVICE PROGRAM

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Frozen meals have been on the market since the early 1950's. Commercial frozen vegetables and other foods first appeared in 1933 as a result of the freezing techonology perfected by Clarence Birdseye in the 1920's. The demand for frozen meals and convenience items (mixes and ready-to-serve foods) in the 1950's rose and was accelerated by the increased employment of women in the economy, the growth of the national economy and the rise in the standard of living, and the general increase of leisure time activities that were also, in part, stimulated by the development of frozen meals and convenience items.

It was not until the late 1960's that schools and hospitals throughout the nation adopted frozen meals. Institutions adopted frozen meals as a means of avoiding construction and labor costs. The Kaiser chain of hospitals in California adopted frozen meals along with disposable paper and plastic surgical, medical and housekeeping supplies. Other hospitals throughout the country have been adopting the model that Kaiser developed, in whole or in part. Initially there were substantial savings. Food preparation, construction and equipment costs,

labor costs, and utility costs were significantly reduced. Another cost saving that many hospitals experienced was produced by the reduction of food services to hospital employees and concentrating services for the patients.

The energy crisis, along with rising food prices, however, recently increased the costs of frozen meals. Packaging materials which utilize an oil base, frozen storage facilities, and the components of the frozen meals have risen in costs to the point that many hospitals would like to return to the conventional self-contained kitchen. In some cases, the hospitals have locked themselves into a program from which they cannot extricate themselves.

A number of elementary and secondary schools in the United States began to adopt frozen meals in the early 1970's. The basic force behind the adoption of commercial frozen meals has been the pressure exerted by social activist groups to reduce hunger in the United States and to feed all low income children. In states such as Massachusetts and Connecticut, which enacted laws requiring all elementary, junior high and high schools to implement food service programs, a number of towns adopted commercial frozen meals. Firms such as Durkee,

National Portion Control, Morton and Pronto are presently furnishing meals to public and parochial schools.

In general, the commercial frozen food service program has not been adopted on a system wide basis by many school districts. It has been perceived as a quick solution to a situation created by the law and the courts. In Bridgeport, Connecticut, for example, the courts ruled in 1972 that the city's food service programs which were operating in the more affluent schools, ghetto schools and schools with a large percentage of low income students did not possess food services and denied equal rights to the city's total school population. As a result, several Bridgeport schools lacking food service instituted the commercial frozen food program.

Maine has no schools which utilize frozen dinners. Several rural schools such as Calais and New Sweden have asked commercial firms to supply them with frozen meals, but the firms have refused. The commercial enterprises prefer large markets, preferably in urban areas. In addition, school systems outside Maine which have instituted the commercial frozen meal program have not sent material and information concerning frozen school meals that was requested more than two months ago in the name

of the Education Committee. Furthermore, commercial frozen meal producers have not sent information regarding the quality of their meals or their operation that was requested three months ago.

A completely commercial frozen school lunch system would consist of a central warehouse facility from which the schools could draw their supply of meals. By means of commercial or contract carrier, the frozen meals would be distributed to the schools on a weekly or bi-weekly basis. Each school would be equipped to receive and store the meals, reconstitute the meals, and serve them to the students. The equipment required at each satellite kitchen would cost approximately $6,000. In order for schools with an ADPR of 300-350 per day to store meals for more than a week, additional freezer storage space would be needed. The cost of the increased storage space could be as much as $3,000 or $5,000.

One or two people can operate a satellite kitchen in a school with an ADPR of 350 pupils. In addition, the kitchen employees could complete their jobs in 3 hours compared to the 6 or 7 hours that each employee works in the present self-contained kitchens. There would be little need for individuals with managerial or skilled talents.

ADVANTAGES OF THE COMMERCIAL FROZEN FOOD SYSTEM

The commercial frozen food system has some advantages, but the number and type of disadvantages posed by the system do not make it feasible for the entire state of Maine. The strengths and advantages of the commercial system can be enumerated as follows:

1. Eliminates the need for complete kitchen facilities and thereby reduces capital investment costs which would be especially great for schools with a small average daily participation rate (ADPR).
   a. A school with an ADPR of 300-350 requires 121 square feet of space for the reconstitution of meals compared to 1050 square feet for a conventional kitchen producing 300-350 meals daily. The equipment costs for a satellite kitchen serving 350 students per day are $6000 compared to $35,000 for a conventional kitchen.

2. Provides a product of standardized quality.

3. Reduces food preparation waste by providing precisely the number of meals required for each school.

4. Reduces the need for highly trained production personnel and managerial talent. Individuals with ordinary skills and without any background in nutrition can operate the equipment and serve the meals.

5. Reduces labor costs, but the school would still be paying for the labor that produced the commercial meal.

DISADVANTAGES OF THE COMMERCIAL FROZEN FOOD SYSTEM

The disadvantages of commercially prepared frozen meals are described as follows:

GENERAL CHARACTERISTICS

1. Locks the school/state into a system that provides no flexibility or alternatives.
   a. The individual kitchen equipment and space cannot be converted into a conventional kitchen or used for any other purpose than the reconstitution of frozen meals.

2. Provides meals for a very limited group of consumers, specifically, elementary children. There are no commercial frozen meals produced for junior or senior high school students.

3. Creates a very significant disposal problem.
   a. Most schools using the commercial dinner would accumulate large supplies of disposable trays and packages that would require a special service for their disposal.

DIETARY

1. Lacks flexibility and would not provide meals that conformed to regional and local tastes.
   a. All the meals are standardized.

2. Lacks the nutritional value of meals produced in on-site kitchens, regional and central kitchens.
   a. The United States Department of Agriculture, Food Nutrition Service, does not endorse commercial meals for schools except for schools which have no other alternative.

3. Inspection of food quality is questionable.
   a. Federal inspectors inspect quantity and weight of individual portions as well as the bacterial and sanitation count, but the inspectors do not investigate the actual quality and nutritional value of each food item.

4. Provides an inadequate variety of meals. In order to obtain an acceptable variety of meals which represent the best quality and student acceptability, it is necessary to buy from several firms, such as Morton, Pronto, Durkee and National Portion Control.

5. Commercial frozen meals may contain harmful additives and imitation food items that are currently being investigated by Harvard University.

ADMINISTRATION AND OPERATION

1. Reduces the number of local employees working in the school kitchen. This could create community opposition to the new program.

a. In Bridgeport, Connecticut, as well as in Woburn and Waltham, Massachusetts, for example, a school with an ADPR of 350 consuming commercial frozen meals operates with 1 employee while a conventional school kitchen serving 350 students requires at least 5-6 employees.

2. Eliminates local control and operation of the food service program, which is the basis of the present system. Local communities would, therefore, resist the commercial frozen food system.

3. The commercial frozen food system will depend on part-time labor (3 hours per day) to operate the satellite kitchens. It is nearly impossible to find a labor supply that will work for only a few hours.

4. Requires a large storage facility for frozen foods which is costly to operate and maintain.
   a. The energy crisis has made frozen food storage an expensive operation at the present time. In order to service the schools on a weekly basis, a central warehouse should have a week's supply of frozen meals. Commercial frozen storage costs approximately .75¢ per pound per day which would establish a total cost of roughly $9500 per two week period for a central storage facility.

5. Requires a highly organized, efficient and rapid delivery and distribution system of frozen meals over a wide territory.
   a. Presently no commercial or contract carrier has the facilities to distribute 125,000 meals per day or 625,000 meals per week to 718 schools in Maine.

b. Frozen school meals are vulnerable during transportation and need to be kept at -20° Farenheit. The frozen dinners would be particularly vulnerable during the periods when large tractor trailer loads were broken down among smaller vans and during periods when meals were delivered to each school.
c. The meals would have to be transported over 21,000 miles of highway to roughly 750 schools.

6. There is no state which has adopted the commercial frozen school meal on a statewide or regional basis. As a result, no firm has experience providing meals for distribution over a large territory. Furthermore, frozen meal producers have been unwilling to service rural, sparsely populated areas and prefer to supply urban-metropolitan schools.
   a. For example, Calais, New Sweden, and several other small communities have requested service from Morton and other commercial producers. Up to the present time, these firms have been unwilling to supply rural schools. Morton has requested the State's Food and Nutrition Office to institute their meals in the Portland area. The Food and Nutrition Division has refused to promote one system over the others. Nevertheless, it is evident that the Morton firm is not interested in rural Maine.

COSTS AND IMPACT ON THE STATE

1. Commercial frozen meals are more expensive than the average cost per meal produced in self-contained or base kitchens in Maine. Although the average cost per school meal

in Maine does not reflect some indirect costs, the commercial frozen meal is still more expensive.

a. For example, the Morton school type A lunch costs 58¢ per meal. Added to this is milk, distribution costs, labor to operate satellite kitchen and to serve the meals, utility costs in satellite kitchen, additional food to supplement the commercial frozen meal, and other costs. The State of Massachusetts has studied the total cost per commercial meal and estimates that it ranges in cost from 90¢ to $1.00

b. The average cost per school meal in Maine is approximately 60¢. This figure does not reflect all janitorial and clerical costs as well as the time devoted by superintendents and principals to the school lunch progaam. If all these costs were taken into account by every school (some schools do), the average price per meal could be as high as 70-75¢.

2. The commercial frozen meal would not utilize Maine produce such as vegetables, fruits, potatoes, and fish which are used in Maine's school kitchens at the present time.

3. Maine schools could not use government surplus foods in their menus, which do significantly reduce meal costs. In addition, Maine could not receive additional federal monies in lieu of the commodities.

4. The profits and earnings of the Maine school lunch program under a commercial frozen meal program would flow to out-of-state corporations.

a. Food processors, on the average, earn a 12% rate of return which would mean that at least $2,700,000 per year in profits would be drained out of the state.

RECOMMENDATIONS

1. Commercial frozen meals should not be adopted until the results of the Harvard study have been publicized in regard to additives, silicilates and imitation food items.

2. Commercial meals, if adopted by any school system, should be supplemented or drawn from several companies to provide variety and to prevent student boredom with the meals which leads to a decline in the ADPR.

3. No school should lock iteself into the frozen meal concept. As prices rise, a school will not be able to choose alternative food service programs unless it has facilities that are sufficiently large enough and the needed equipment to adopt another program.
   a. Morton, for example, will give only a 3 month price contract. After 90 days, the contract must be renegotiated.

4. Much more information regarding nutritional value, inspection for quality, minerals and vitamins, etc., should be obtained from the commercial firms.

5. A more detailed study of the transportation-distribution system must be undertaken before any commercial frozen meal programs are developed. Presently truck routes, the number of trucks required, delivery times, etc., are completely unknown.

6. The "on-site" kitchen facility and base kitchen are more preferable than the commercial frozen food program. The commercial frozen food system is a quick or temporary solution to the problem and cannot serve a school's needs adequately. It should be adopted only if there is no other possible, workable alternative.

A MODEL OF A COMMERCIAL FROZEN MEAL SYSTEM FOR MAINE'S PUBLIC SCHOOLS

MODEL OF A COMMERCIAL FROZEN FOOD OPERATION FOR MAINE'S PUBLIC SCHOOLS

A commercial frozen school food service system eliminates the need for preparation kitchens in Maine schools. The only major facility required by the system is a central warehouse with a two week storage capacity. The frozen meals are transported to a central warehouse by firms outside the state. The meals are then shipped from the central facility to either base schools in which the dinners are reconstituted for other schools in the district or to each school in the state which reconstitutes its own meals.

The distribution of commercial frozen meals operates in a similar manner as the distribution of frozen meals from a central kitchen. The theories being tested in the commercial system pertain only to costs. One theory assumes that commercial frozen meals reduce operating costs by eliminating food production and packaging. As a result, the cost per meal is reduced below the cost per meal of any other system. Another theory assumes that commercial meals substantially reduce the school food service labor force to a greater degree than any other food service system. A third theory presumes that a commercial frozen food delivery system eliminates the need for equipment and kitchens in every school which not only reduces the costs of capital investment, but also decreases operating costs. A fourth theory assumes that commercial frozen meals can be distributed at less cost compared to central and regional kitchens.

On the following page is a chart that estimates the cost of

TABLE 7

COMMERCIAL FROZEN MEAL SYSTEM

	230,000 meals/day Weekly deliveries to all Maine Schools	125,000 meals/day Bi-weekly deliveries to Base SchoolsKitch
Land	$ 45,000	
Central Warehouse	742,600	
Kitchen Equipment for Sattelite/Base Schools	9,418,000	$ 5,200,000
DIRECT OPERATING COSTS		
Indirect Labor	100,000	100,000
Administration	90,000	48,150
Labor/Management Benefits	288,750	315,000
Warehouse Labor/Management	75,000	
Warehouse Utilities	11,207	
Food and Milk	34,335,000	20,950,000
Transportation fr. Warehouse	1,100,000	
Equipment Repair	51,700	28,100
Base/Sattelite Kitchen labor	1,850,850	2,100,000
Base/Sattelite Kitchen Utilities	750,000	375,000
Transportation fr. Base Schl		675,000
INDIRECT OPERATING COSTS		
Depreciation	970,000	5,200
Bond Payments	510,300	28,000
Interest	28,065	14,300
Insurance- buildings, equipment, frozen food, etc.	100,250	50,000
TOTAL CONSTRUCTION AND EQUIPMENT COSTS	10,205,600	5,200,000
TOTAL OPERATING COSTS	40,181,057	30,019,700

purchasing and distributing commercial frozen meals throughout the State of Maine. One table describes the costs involved in serving 230,000 public school students per day. The model assumes that the commercial meals are stored in a central warehouse and shipped weekly to every school in the state. The average cost per meal is estimated to be 97 cents. Thus, the commercial meal which is shipped directly to every school in Maine is 22.7 percent more costly than the meal produced in a central kitchen and shipped to base schools throughout Maine.

The other table analyzes the costs involved in serving 125,000 meals per day. The model assumes that the commercial meals are shipped directly from the out-of-state commercial producer in full trailer loads to 287 base schools in Maine. As a result, there are no transportation charges. The average cost per meal, however, is $1.05 which is 33 percent more than the average cost per meal produced in a central kitchen, and 75 percent more than the average cost per meal produced in the present system.

The most significant cost producing factor in the commercial system is food. Commercially prepared frozen meals account for roughly two-thirds of the entire operating cost of the system. Since milk is not provided by commercial firms, the cost of milk must be added to the total food cost of which it comprises 15 percent. Another food cost created by the commercial frozen meals concerns the lack of frozen meals for junior high and senior high school students. Commercial meals are available for secondary schools but on a "custom-made" basis. Since one-third

of the school population in Maine is composed of seconday school pupils, one-third of the meals in each model are priced at $1.00 per meal. The price reflects the general fee that a commercial firm would charge to produce meals for secondary schools.

The theory that commercial frozen meals reduce operating costs by the elimination of food processing has been proved false in the model. Another theory which assumes that the commercial frozen meal operation substantially reduces the school food service compared to most of the other food service systems is also valid. Wages and salaries for food service personnel in a commercial frozen meal system are 50 percent less than wages and salaries in a central or regional food production system. Labor reduction, however, cannot compensate for the increased food costs. A 50 percent reduction of the CFPF labor force does not have a substantial effect compared to a 16 percent increase in food costs(created by the commercial operation) which comprise 50 percent of the total operating costs of a CFPF. In a CFPF, labor accounts for only 16.5 percent of total operating costs.

Another theory which presumes that commercial frozen meals can be distributed at less cost compared to central and regional food production systems is valid, provided that each base school accepts a full trailer load. Nevertheless, transportation costs account for only 11.8 percent of the total operating costs of a CFPF system.

In the comparison between the commercial frozen meal system and a central food production system, it is clear that the commercial system reduces operating costs primarily in areas (labor, transportation, frozen food storage) which do not comprise

a substantially large cost factor in the CFPF system. On the other hand, commercial frozen meals substantially increase the cost of the most expensive factor(food) in the CFPF system.

The commercial frozen meal, while considered a food cost in the model, also includes a variety of other costs such as labor, transportation, frozen food storage, etc. which are incurred at the manufacturing plant. In reality, the commercial frozen meal system increases all costs compared to other food service systems.

The advantage of a commercial frozen meal system lies in the capital investment cost savings that it creates. Compared to a CFPF with a capital investment of $12,000,000, the commercial system requires a capital investment of approximately $5,000,000.

Statistical evidence indicates that commercial frozen meals are not economically feasible for an entire state or large region. The commerical product is more suited for small communities which need a quick, but temporary solution.

CHAPTER VII

THE MASSACHUSETTS' EXPERIENCE;
THE MALDEN AND QUINCY SOLUTIONS

CHAPTER VII

THE MASSACHUSETTS EXPERIENCE; THE MALDEN AND QUINCY SOLUTIONS

During the 1968 legislative session, the Commonwealth of Massachusetts enacted a law that required all schools, both public and private and including kindergarten through grade 12, to institute lunch programs by September 1973. Subsequent legislation also required that schools in which 50% of the student population could be categorized as needy according to federal guidelines establish breakfast programs by the beginning of the 1973 academic year. The legislature of the Commonwealth did not include a waiver proviso in the act as did the Maine legislature which postponed the requirement for a specific period of time in order to alleviate pressure on schools which could not possibly meet the deadline.

In 1968, Massachusetts had approximately 2400 schools, of which 880 had no food service program whatsoever. Most of the 880 schools were located in large towns or in metropolitan areas. In order to comply with the legislature's mandate, the Bay State towns and cities had to act quickly, and in some cases, in an unrealistic manner. A number of the urban schools did not possess any kitchens or kitchen space, and most of them were located in congested areas in which there was no room for any additions. Furthermore, the cost of constructing 880 kitchens would have been prohibitive.

As a result of the Massachusetts food service law, approximately 120 of the State's schools must operate breakfast programs. The Office of Food and Nutrition would like to reduce the criteria for mandatory breakfast programs and provide that any school with a needy school population that comprises 25 percent of the total school enrollment must institute a breakfast program. In such a case, 670 schools would be required to institute school breakfast programs.

In addition to breakfast programs, many Massachusetts schools have programs to feed the elderly and low income pre-schools. Presently, Bay State schools are providing meals to 6500 elderly shut-ins and 100 day care/head start centers per day.

As a result of the Legislative mandate, the Food and Nutrition Division of the Massachusetts Department of Education discussed every possible food service alternative available to the communities affected by the new law. In Massachusetts, as in Maine, each community controls its own food service program. The superintendant and school board act as the officers and board of directors of the program and are the authority in the development and operation of the food service system. The State's Food and Nutrition Office, therefore, tried to help each superintendant and school board develop a system. The state officials described the different food service alternatives to each superintendant, but they preferred to show local communities the various programs in operation. Owing to the lack of time, however, it was impossible to implement the plan, and each community had to make a decision

based upon a description of each alternative.

In addition to the very short period of time provided by the legislature to implement the new state law, the tendency of some communities to employ unqualified or inexperienced food service personnel also posed problems to the Office of Food and Nutrition (OF&N) to meet the legislative mandate. In order to provide efficient, economical, and nutritious school meals, the Bay State OF&N) instructs the local school systems to hire qualified and experienced food services managers and production staff. Many communities, however, do not hire the type of personnel suggested by the OF&N, for a number of reasons. In cases in which communities hire inexperienced or unqualified staff for the sole reason to cut costs, the long run result has actually been significantly increased costs.

Another problem that adversely affected some school systems concerned the lack of knowledge of some of the consultants who were hired to develop a kitchen operation. In order to develop an efficient system, the consultant must not only be knowledgeable in engineering, but also in food and nutrition and in school kitchens. Engineers without any background in nutrition

and state laws governing school kitchen operations can create a considerable number of problems and significantly increase the costs of the program.

Some Bay State schools having to move rapidly into a food service program, adopted commercial frozen meals which were less nutritious and provided less variety than meals served in many on-site kitchens. Consequently, the schools hired additional labor to supplement the commercial dinner with more meal components. By increasing the labor force and serving more food, local communities significantly increased the costs of school meals.

The commercial frozen meal posed another problem. Some school systems signed contracts that locked the system into the program of one particular firm. In order to increase variety and to avoid student boredom with the meals (which led to rapid decline in the ADPR) many schools have contracts with three or more firms which gives the school lunch program not only greater variety, but also provides only those meals that have been child tested and have met with over-all child acceptance.

Another problem connected with the commercial frozen meal involves the additives and imitation supplements and flavorings in the food. A California study was concerned with silicilates in commercial frozen meals and in natural foods, and the effect of silicilates on hyper-active children. A Harvard study is

also studying the same problem as well as additives and food imitations in commercial frozen dinners. Unsubstantiated evidence up to this point indicates that some of these food additives and imitations may be harmful to children.

Schools with on-site kitchens producing good quality food which decided to adopt frozen dinners because they appeared to be cheaper than the meals served by the school kitchen soon discovered that the average daily participation rate (ADPR) dropped significantly. Students who had been eating good meals served on china plates would not accept commercial frozen meals. On the other hand, students who consumed meals produced in on-site kitchens which used many convenience items have often found frozen meals more acceptable.

In addition to politics, indifference, impulsiveness, and cost, labor unions in some communities have fought the transition in school food service and obstructed the implementation of some new programs. In Quincy, Massachusetts, for example, the food service director found that some employees who worked in on-site kitchens and who used many convenience items in their preparation work did not want any change in the system. The labor unions supported the employees, and the director has had an uphill battle with the union to develop his base kitchen. One solution is to involve the employee's union in the planning of the new system rather than present the union and employees with a fait-accompli.

A number of school kitchens that have recently been developed failed to include sufficient storage space within the kitchen complex. In Quincy, Massachusetts, for example, the base kitchen acts as a central commissary for all the other schools with on-site kitchens. The base kitchen can cut inventory costs and food purchasing costs by centralizing stock. The Quincy Commissary facilities, however, are too small. Furthermore, food costs change weekly, and larger storage facilities which could store from a week to a month's supply could help cut costs. None of the kitchen facilities in Massachusetts, however, has storage facilities for more than a week's supply, and some have facilities for only a few days' stock of supplies.

Today in Massachusetts, approximately 1000 schools have on-site kitchens, while roughly 1400 schools have satellite kitchens (to reheat precooked food) and/or base kitchens (which serve pre-plated meals or bulk products to several schools in a small geographic area). There are approximately 35 base kitchens in Massachusetts which serve hot meals to 5 or more schools within a community. Many of the schools lacking kitchen facilities adopted cold lunches to comply with the state law with the intention of gradually converting to another system, such as the base kitchens that prepare pre-plated hot meals for or send food in bulk to various schools to be served to each student. Some schools such as Lawrence and Lynn adopted commercial frozen meals following the institution of cold lunches.

Unlike Maine, most Massachusetts schools which lacked food service programs were located in metropolitan or urban areas. One of the solutions that several of the towns adopted has been the base kitchen concept which acts as a central kitchen and prepares meals for all the schools in the community. Generally speaking, the schools served by the base kitchen are within a short distance from it, and transportation therefore, has not been a problem. Two school systems which have adopted the base kitchen model (Malden and Quincy) are described in the following pages. The most significant feature of the two systems is their versatility. Although their transportation routes are very short, compared to Maine communities, they could ship meals long distances by freezing the meals and shipping them in the frozen state.

THE MALDEN BASE KITCHEN

The Malden base kitchen produces roughly 4,000 meals per day for school children, 300 meals per day for elderly shut-ins, and 800 "brown-bags" or cold lunches for high school students. Approximately 80 percent of all the school meals are manufactured from the raw state into the finished product at the

kitchen, and 20 percent of the meals are prepared from covenience items. A meal utilizing a particular convenience item is served once every 20 days. Convenience items are used only to permit longer periods for the preparation and production of meals from basic staple products. The kitchen operates for approximately 6 hours (excluding lunch and coffee shifts) with approximately 12 production people. By noon time, all the meals that have been prepared on that day have been packaged and are ready for shipment to the schools to be used the next day. The meals are pre-cooked at the Malden base kitchen, and reheated 12-14 minutes in a convection oven at the satellite kitchen.

Meal costs for elementary and junior high students at the Malden Kitchen average 86.7 cents per meal (60 cents per meal in Me) while the "brown bag" high school lunches cost 72¢ to produce and meals for the elderly shut-ins cost $1.19 to produce. The operating cost figures include all direct and indirect costs including labor to serve the meals in each satellite kitchen as well as utilities in the satellite kitchen, gasoline and truck transportation, receiving costs, custodial service, and all clerical work and record keeping time.

The kitchen could produce and package as many as 10,000 meals per day by increasing the labor force by one-third, and increasing the work schedule by another 4 hours. The major problem that would be incurred would be storage space

for supplies. Presently, the base kitchen receives daily deliveries of supplies and has found that it could still use much more storage space.

The present base kitchen occupies approximately 8000 square feet of which actual kitchen production space accounts for approximately slightly more than one-half the total space of the building. The city acquired the building from the Wilbur Catering Service for $43,000, renovated it at a cost of $193,000 and equipped it at a cost of $180,000. The total cost for the building remodelling, equipment, and the truck was $443,000. In comparison to the construction of and equipping of kitchens for nine schools in Malden for a rough cost of $3,000,000 the base kitchen was by far the cheaper in terms of capital investment costs. The operating costs for the base kitchen school lunch program, exclusively, averages 86.7¢ per meal compared to 91¢ per meal in the Malden schools with on-site or self-contained kitchens. One of the many factors involved in the reduced operating costs of the base kitchen is the very low utility costs. The base kitchen uses electricity exclusively, for power and heat (there is an emergency generator). Since it is a public institution, it receives the public utility rate which is the lowest priced rate. Another important factor in reducing costs is the strict control over food preparation and packaging that the system affords and the limited amount of waste in food preparation, labor and time.

THE QUINCY BASE KITCHEN

In 1968, Quincy, with 21 elementary and 8 secondary schools of which more than half of the elementary schools lacked kitchens, had to make a decision about the type of food service system that it would develop. The Quincy school committee decided to institute cold lunches in all the schools and gradually tie the schools into a base kitchen which could send pre-plated meals to the schools. Presently 13 schools with an ADPR of 3500 are tied into the base kitchen. The kitchen began operation in April, 1974, and has slowly added schools until all the schools, excluding the three high schools, will be involved in the system by the end of December, 1974. By early 1975, the base kitchen will be producing as many as 5,000 - 6,000 school meals per day.

The cost of changing a school building into a modern base kitchen and equipping it for operation was $740,000. The cost of constructing kitchen facilities to serve each school was estimated by the firm of Arthur D. Little, a consulting-engineering firm, to range from $7,500,000 to $10,000,000. The base kitchen has approximately 15,000 square feet and serves as a central commissary for all the schools in Quincy.

Initially, city officials were hostile to the concept of a base kitchen and sought to resist the legislature's mandate. Some school committee officials have tried to influence the process of employment and location of school food service

employees, but the city's food service director has maintained his control over the operation and successfully resisted school board politics. Mr. George Cole, the director of the Quincy food service program, is production oriented and new to his position. As a result, in the opinion of the Office of Food and Nutrition, he has maintained an operation free from the world of politics, up to the present day.

It is very difficult to estimate the operating costs of the Quincy base kitchen because it has been in operation for less than 6 months and there has never been a period that meal production has been steady. There has been a continuous increase in the number of meals produced each day since the operation began in April. Estimates have indicated that the total direct costs of meal production are roughly 50¢ per meal. There are many indirect costs that could add significantly to the direct costs. Speculation at this point indicates that per meal costs may range between 70 and 80 cents. By the time meal production reaches the most efficient rate of 5,000 meals per day, per meal costs are expected to be considerably reduced.

The Quincy base kitchen, in the opinion of its food service director, will not produce meals for the high schools, which have self-contained kitchens. Although the base kitchen could produce the meals for less cost than the self-contained kitchens, George Cole believes that high school students will not accept

the pre-plated meals very well. According to Mr. Cole, high school students have very individual tastes and are persistent about their eating habits. As a result, the Quincy school food service considers on-site kitchens as the best type of operation for high schools.

THE FOOD AND NUTRITION OFFICE OF MASSACHUSETTS

The Food and Nutrition Office of the Massachusetts Department of Education, along with the U.S.D.A. Food and Nutrition Service, considers on-site or self-contained kitchens as possessing the greatest potential for producing the best quality, most attractive and most nutritious meals. Following the on-site kitchen in order of quality and nutritional value of food, the Office of Food and Nutrition ranks the base kitchen which prepares and distributes food in bulk to the schools. Bulk food can be distributed hot or it can be reheated in satellite kitchens and then served to each child or student. Pre-plated meals prepared in base kitchens rank next to bulk food preparation, in the opinion of the Nutrition Office, in regard to the potential for food quality and acceptance.

Central and regional kitchens that produce more than 10,000 meals per day, according to Julius Candella in the Massachusetts Office of Food and Nutrition, are too expensive to construct and operate. In addition, distribution over a wide territory poses major problems, and a central/regional kitchen would necessarily serve a very wide territory. In light of the construction costs of self-contained kitchens, the Nutrition Office considers the base kitchen that serves a number of schools in close proximity as the best solution for urban areas to the legislature's mandate. In regard to rural, sparsely populated areas, the Commonwealth of Massachusetts has not developed a solution.

CHAPTER VIII

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER VIII

Conclusions and Recommendations

It is clear that there is no one food service alternative that can best meet Maine's particular and varied needs. Any system that is developed for the state must be a combination of the alternatives. Some alternatives appear to be better for small school systems than urban systems while other alternatives are more urban that rural oriented. Central kitchens, for example, have been established exclusively in urban areas, and unsubstantiated evidence appears to indicate that central kitchens can maximize efficiency and reduce cost primarily in urban areas.

While geography and logistics require several alternative food service operations to serve Maine's schools, the diversified nature of the schools' food service operations require diversified programs. A number of Maine's public schools are involved in food service operations that go beyond providing meals to students, and food service, in general, has become very complex. Public school food service operations require administrators with good background and experience in management, nutrition and school food service. In addition, production personnel and management, in some cases, must have considerable technical expertise to operate the system. Thus, the public school food service program has become as complicated as a business and requires equally competent management as business. Certain business practices have to be followed in order to prevent costs from sky rocketing out of control.

Some of the Pine Tree State's schools have inaugurated food service programs that go beyond some of the objectives of the federal school lunch acts and have outdistanced programs in other states. A number of Maine's schools are feeding the elderly, pre-school children, and low-income pupils. Several school districts have instituted the universal free lunch system and a number of others are giving serious thought to it.

As the food service programs have grown more varied and complicated and have required a business management approach, the skyrocketing costs of food service operations make it necessary for them to be managed as a business. Maine's public school lunch, breakfast, and milk programs comprise nearly 15 per cent of the total cost of public school education in Maine. More than $13,000,000 will be expended in the 1974-75 academic year, which represents a 71 per cent increase from 1971-72. On the other hand, public school education costs rose 37 per cent for the same time period. Some of the increased expenditures in school food service over the past three years have been the result of new programs. School breakfast and milk programs have been inaugurated in these past few years and have required some additional funding. The total number of school lunches served per year have risen from 18,171,000 to 19,443,000 which represents an increase of 1,272,000.

The most significant cost increases, however, have been food and labor. The average hourly rate of earnings has increased 23 per cent ($3.25-$4.00) between 1970-1974. Most school food service

personnel, however, do not earn the average New England hourly wage. Nevertheless, Maine food service costs are affected by out-of-state wages in regard to food, transportation and distribution. The minimum wage is more indicative of Maine food service labor costs which has increased 31% between 1970 and 1974.

Food costs have risen more rapidly than labor costs. The wholesale price index for processed food increased 45.5 per cent during the years 1970-1974, and the retail food prices increased 39 per cent. Furthermore, many of Maine's schools pay the highest food and transportation costs compared to most schools across the nation as a result of their location and size. As food costs continue to rise and as food service personnel are unionized, school food service will become too costly for many schools in the State, especially for schools with a student enrollment of less than 100 students which comprise more than 30 per cent of all the schools in Maine.

In order to comply with federal and state regulations and to provide the food services that are presently being offered, Maine schools need help and direction. Maine school administrators need a vast amount of information concerning alternative food service systems. In addition they require professional expertise to develop the most practicable food service system for their particular community. For example, several school systems or districts may discover that a regional kitchen is the best solution or that a base kitchen can serve their needs.

TABLE 8

COMPARATIVE OPERATING COSTS AND SOURCES OF INCOME:
ALTERNATIVE FOOD SERVICE SYSTEMS

	Central Kitchn 230,000 Meals Per Day	Central Kitchen 125,000 Meals Per Day	Regional Kitchen 125,000 Meals Per Day	Base Kitchen 125,000 Meals Per Day	Commercial Frozen Meals 125,000 Meals Per Day
TOTAL CONSTRUCTION & EQUIPMENT COSTS	$20,373,659	$12,254,800	$15,184,000	$5,250,000	$5,200,000
TOTAL OPERATING COSTS	$31,260,516	$17,574,799	$19,668,753	$16,388,750	$30,019,700
TOTAL COST PER MEAL	$.75	$.79	$.84	$.72	$1.05
SOURCES OF OPERATING FUNDS					
STATE FUNDS	$18,756,310	$10,485,040	$12,801,251	$9,832,890	18,011,820
FEDERAL FUNDS*	$12,504,206	$7,029,920	$7,867,502	$6,555,260	$12,007,880

Federal Reimbursement is based upon the present reimbusement rate which is roughly 40 Percent of the total operating costs, excluding federal farm commodities. In a universal ree lunch system, the State Office of Nu rition expects that the rate of federal im- bursement will be greater than 40 percent. It is also important to note that the commercial frozen meal system cannot take advantage of federal farm commodities which increase federal reimbursement.

The present public decentralized school food service system (self-contained kitchens) and the central base kitchen system rate extremely well compared to the other systems under study in this report. Both systems require a smaller capital investment and cost less to operate than the other food service systems. A central kitchen system costs approximately 13 percent more to to operate than the self-contained and central base kitchen systems. The regional system and commercial frozen meal systems cost respectively 20 and 50 percent more to operate than the self-contained and central base kitchen systems.

In addition to the economic advantage of the self-contained kitchen and central base kitchen systems, there are inherent benefits in the decentralized systems that state controlled and centralized systems do not possess. The former provide more flexibility of operation, offer a greater variety of meals, provide the potential for more attractive and nutritious meals, and involve local communities in the administration and operation of the systems.

There are several measures that could have a beneficial impact upon the public school food service in Maine. The measures that are within the realm of state policy concern increasing the competency of food service administrators and production personnel and

1. Require that food nutrition be part of every school curriculum from kindergarten through grade 12.
2. Increase the personnel of the State Office of Food and Nutrition to include 10 additional certified nutritionists whose duty will be to supervise and train food service personnel in food service technology and technique. The state nutritionists will help supervise school food service operations over a territory including several school districts.
3. Provide courses in food service management at the various campuses of the University of Maine. Food service managers should be required to attend the courses, at state expense, during the summer and complete a specified number of courses.
4. Expand the breakfast program, especially to needy children, in all the schools. The federal breakfast program is an "open-ended" program that could bring as much as $3,000,000 of federal monies into the State of Maine.
5. Encourage school districts to develop food purchase and distribution models. Several rural districts can pool

resources and obtain more varieties at lower cost which will increase food quality and nutrition.

a. School boards and superintendents will need state expertise to develop these models.

6. Encourage community schools to make greater use of their facilities to serve the elderly and low income groups.

a. The schools have large modern kitchens which are used in some cases only once each day.

7. The State of Maine can encourage base kitchen/regional kitchen operations which can cut food service costs significantly for many communities. The school districts need expertise to help develop new food service systems. The Office of Food Nutrition could be expanded to help them.

There are measures within the realm of the federal and state governments that can help resolve community problems with food service.

1. Develop a model and formula for a food service system for a rural state.

a. A combination of state and federal funds to devise a food service program or programs specifically for a rural state in which there are many small communities.

2. Develop standards for school food service personnel in regard to technique, training and program operation.

a. Many food service managers, supervisors, and production personnel do not know federal rules and regulations regarding school meals. A course in federally supported school meal programs, funded

by both the federal and state governments, is needed for most school food service personnel throughout the nation.

3. The State Office of Food and Nutrition needs to be expanded to provide more expertise and supervision to schools in regard to federal rules and regulations.
   a. Federal regulations have been changing every few months and school food service personnel are generally very confused and ignorant of the regulations. As a result, many communities are in violation of the law.
      1) The State Office of Food Nutrition tries to inform every school district about federal and state regulations as frequently as possible. Nevertheless, the office is understaffed and has few funds to undertake an increased supervisory role. There are two nutritionists in the Office and three specialists to work with 888 schools.
4. A universal free lunch program for all school children
   a. A universal free lunch program will remove the stigma attached to needy children. Participation in the program will increase, and the educational process will become more effective.
      1) Federal and state funds are needed for the program.
         a) The present system of state funding of education can be expanded to incorporate the school food service program.

APPENDICES

APPENDIX-A

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Jordans-Ready-To -Eat Meats
38 India Street
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Caw Brothers
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Mr. Joseph Nye
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The Geldback Refrigerator Company
90 Ethel Avenue
Hawthorne, New Jersey

S.I. Handling Systems
Easton, Pennsylvania

The King Company
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Owatonna
Minnesota

ACCO Integrated Handling Systems
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Mayer Refrigerating Engineers Inc.
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Kennebec Ice Arena
Hallowell, Maine

Advance Equipment Co.
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Philadelphia, Pennsylvania

Commercial Frozen Meals

Swanson Frozen Food Div.
Campbell Soup Company
375 Memorial Avenue
Camden, New Jersey

Morton Frozen Foods
Div. ITT Continental Baking Company
Rye, New York

W.J. Thome, President
National Portion Control
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Great Neck, New York

Beatrice Foods Company
120 Lassale Street
Chicago, Illinois

Burnham and Morrill Co.
1 Beanpot Circle
Portland, Maine

Mrs. Paul's Kitchens
5830 Henry Avenue
Philadelphia, Penn.

Banquet Foods Corporation
515 Olive Street
St. Louis, Missouri

Stouffer Foods Corp.
5750 Harper Road
Solon, Ohio

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RESEARCH AIDS

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APPENDIX-B

FORMS AND DATA FROM WHICH STATISTICAL INFORMATION WAS DERIVED

FROZEN FOOD WAREHOUSE FACILITIES FOR MAINE'S PUBLIC SCHOOL SYSTEM

P[illegible]OD	230,000 meals/day 1 WEEK SUPPLY	230,000 meals/day 2 WEEK SUPPLY	230,000 meals/day 1 MONTH SUPPLY	Each pallet measures 48"x40"x50-52"(height) and weighs 500 pounds. 25 cases per pallet.
[illegible]BER OF [illegible]LETS	2,300	4,600	9,200	REMARKS
[illegible] WEIGHT [illegible]LBS.) [illegible]ALLETS	1,150,000	2,300,000	4,600,000	
[illegible] PERIOD	125,000 meals/day 1 WEEK SUPPLY	125,000 meals/day 2 WEEK SUPPLY	125,000 meals/day 1 MONTH SUPPLY	
[illegible]BER OF [illegible]LETS	1,250	2,500	5,000	
[illegible]L WEIGHT [illegible]LBS.) [illegible]ALLETS	625,000	1,250,000	2,500,000	
[illegible] T[illegible]OD	62,500 meals/day 1 WEEK SUPPLY	62,500 meals/day 2 WEEK SUPPLY	62,500 meals/day 1 MONTH SUPPLY	
[illegible]BER OF [illegible]LETS	625	1,250	2,500	
[illegible]L WEIGHT [illegible]BS) [illegible]ALLETS	312,500	625,000	1,250,000	
[illegible] PERIOD	45,000 meals/day 1 WEEK SUPPLY	45,000 meals/day 2 WEEK SUPPLY	45,000 meals/day 1 MONTH SUPPLY	
[illegible]ER OF [illegible]ETS	450	900	1,800	
[illegible] WEIGHT [illegible]BS.) [illegible]ALLETS	225,000	450,000	900,000	
P[illegible]OD	15,000 meals/day 1 WEEK SUPPLY	15,000 meals/day 2 WEEK SUPPLY	15,000 meals/day 1 MONTH SUPPLY	
[illegible]ER OF [illegible]ETS	150	300	600	
[illegible] WEIGHT [illegible]BS)	65,000	130,000	260,000	

TIME PERIOD	230,000 meals/day 1 WEEK'S SUPPLY	230,000 meals/day 2 WEEK'S SUPPLY	230,000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 28,750 CP- 28,750 T- 57,500	HP- 57,500 CP- 57,500 T- 115,000	HP- 115,000 CP- 115,000 T- 230,000	
WEIGHT IN POUNDS	HP- 632,500 CP- 517,500 T- 1,150,000	HP- 1,265,000 CP- 1,035,000 T- 2,300,000	HP- 2,630,000 CP- 1,970,000 T- 4,600,000	
CUBIC FEET	89,125	178,250	356,500	
35 VARIETIES cases/ea. variety	1,700	3,400	6,800	
lbs./ea. variety	34,000	68,000	136,000	
TOTAL COST				

TIME PERIOD	125,000 meals/day 1 WEEK'S SUPPLY	125,000 meals/day 2 WEEK'S SUPPLY	125,000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 15,625 CP- 15,625 T- 31,250	HP- 31,250 CP- 31,250 T- 62,500	HP- 62,500 CP- 62,500 T- 125,000	
WEIGHT IN POUNDS	HP- 343,750 CP- 281,250 T- 625,000	HP- 687,500 CP- 562,500 T- 1,250,000	HP- 1,375,000 CP- 1,125,000 T- 2,500,000	
CUBIC FEET	48,437	96,875	193,750	
35 VARIETIES cases/ea. variety	900	1,800	3,600	
lbs./ea. variety	18,000	36,000	72,000	
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

FROZEN FOOD WAREHOUSE FACILITIES FOR MAINE PUBLIC SCHOOL SYSTEM

TIME PERIOD	62,500 meals/day 1 WEEK'S SUPPLY	62,500 meals/day 2 WEEK'S SUPPLY	62,500 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 7,812 CP- 7,812 T- 15,625	HP- 15,625 CP- 15,625 T- 31,250	HP- 31,250 CP- 31,250 T- 62,500	
WEIGHT IN POUNDS	HP- 171,864 CP- 140,636 T- 312,500	HP- 343,728 CP- 281,272 T- 625,000	HP- 687,456 CP- 562,544 T- 1,250,000	
CUBIC FEET	24,218	48,437	96,875	
35 VARIETIES ases/ea. variety	447	900	1,800	
bs./ea. variety	8,940	18,000	36,000	
TOTAL COST				

TIME PERIOD	45,000 meals/day 1 WEEK'S SUPPLY	45,000 meals/day 2 WEEK'S SUPPLY	45,000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 5,625 CP- 5,625 T- 11,250	HP- 11,250 CP- 11,250 T- 22,500	HP- 22,500 CP- 22,500 T- 45,000	
WEIGHT IN POUNDS	HP- 123,750 CP- 101,250 T- 225,000	HP- 247,500 CP- 202,500 T- 450,000	HP- 495,000 CP- 405,000 T- 900,000	
CUBIC FEET	17,437	34,875	69,750	
35 VARIETIES ases/ea. variety	322	643	1,300	
bs./ea. variety	6,440	12,860	26,000	
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

TIME PERIOD	15,000 meals/day 1 WEEK'S SUPPLY	15,000 meals/day 2 WEEK'S SUPPLY	15,000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP* - 1,875 CP - 1,875 T - 3,750	HP - 3,750 CP - 3,750 T - 7,500	HP - 7,500 CP - 7,500 T - 15,000	
WEIGHT IN POUNDS	HP - 41,250 CP - 33,750 T - 75,000	HP - 82,500 CP - 67,500 T - 150,000	HP - 165,000 CP - 135,000 T - 300,000	
CUBIC FEET	5,812	11,625	23,250	
35 VARIETIES ses/ea. variety	107	214	428	
s./ea. variety	2,140	4,280	8,560	
TOTAL COST				

TIME PERIOD	1 WEEK'S SUPPLY	2 WEEK'S SUPPLY	1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP - CP - T -	HP - CP - T -	HP - CP - T -	
WEIGHT IN POUNDS	HP - CP - T -	HP - CP - T -	HP - CP - T -	
CUBIC FEET				
35 VARIETIES ses/ea. variety				
s./ea. variety				
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

FROZEN FOOD STORAGE UNITS FOR INDIVIDUAL MAINE SCHOOLS

TIME PERIOD	2000 meals/day 1 WEEK'S SUPPLY	2000 meals/day 2 WEEK'S SUPPLY	2000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 250 CP- 250 T- 500	HP- 500 CP- 500 T- 1,000	HP- 1,000 CP- 1,000 T- 2,000	
WEIGHT IN POUNDS	HP- 5,500 CP- 4,500 T- 10,000	HP- 11,000 CP- 9,000 T- 20,000	HP- 22,000 CP- 18,000 T- 40,000	
CUBIC FEET	775	1,550	3,100	
35 VARIETIES ases/ea. variety	14	28	56	
bs./ea. variety	280	560	1,120	
TOTAL COST				

TIME PERIOD	1500 meals/day 1 WEEK'S SUPPLY	1500 meals/day 2 WEEK'S SUPPLY	1500 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 187.5 CP- 187.5 T- 375	HP- 375 CP- 375 T- 750	HP- 750 CP- 750 T- 1,500	
WEIGHT IN POUNDS	HP- 4,114 CP- 3,386 T- 7,500	HP- 8,228 CP- 6,772 T- 15,000	HP- 16,456 CP- 13,544 T- 30,000	
CUBIC FEET	581	1,162	2,325	
35 VARIETIES ases/ea. variety	11	22	44	
bs./ea. variety	220	440	880	
TOTAL COST				

HP = Hot Pack
CP = Cold Pack
T = Total

FROZEN FOOD STORAGE UNITS FOR INDIVIDUAL MAINE SCHOOLS

TIME PERIOD	1000 meals/day 1 WEEK'S SUPPLY	1000 meals/day 2 WEEK'S SUPPLY	1000 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 125 CP- 125 T- 250	HP- 250 CP- 250 T- 500	HP- 500 CP- 500 T- 1,000	
WEIGHT IN POUNDS	HP- 2,750 CP- 2,250 T- 5,000	HP- 5,500 CP- 4,500 T- 10,000	HP- 11,000 CP- 9,000 T- 20,000	
CUBIC FEET	387.5	775	3,100	
35 VARIETIES cases/ea. variety	7	14	28	
lbs./ea. variety	140	280	560	
TOTAL COST				

TIME PERIOD	750 meals/day 1 WEEK'S SUPPLY	750 meals/day 2 WEEK'S SUPPLY	750 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 82.5 CP- 82.5 T- 165	HP- 165 CP- 165 T- 330	HP- 330 CP- 330 T- 660	
WEIGHT IN POUNDS	HP- 1,826 CP- 1,434 T- 3,260	HP- 3,586 CP- 2,934 T- 6,520	HP- 7,260 CP- 5,940 T- 13,200	
CUBIC FEET	252.65	503.75	990	
35 VARIETIES cases/ea. variety	5	10	20	
lbs./ea. variety	100	200	400	
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

FROZEN FOOD STORAGE UNITS FOR INDIVIDUAL MAINE SCHOOLS

TIME PERIOD	500 meals/day 1 WEEK'S SUPPLY	500 meals/day 2 WEEK'S SUPPLY	500 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP* - 62.5 CP - 62.5 T - 125	HP - 125 CP - 125 T - 250	HP - 250 CP - 250 T - 500	
WEIGHT IN POUNDS	HP - 1,375 CP - 1,125 T - 2,500	HP - 2,750 CP - 2,250 T - 5,000	HP - 5,500 CP - 4,500 T - 10,000	
CUBIC FEET	118	387.5	775	
35 VARIETIES ases/ea. variety	4	8	16	
s./ea. variety	80	160	320	
TOTAL COST				

TIME PERIOD	250 meals/day 1 WEEK'S SUPPLY	250 meals/day 2 WEEK'S SUPPLY	250 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP* - 31.25 CP - 31.25 T - 62.5	HP - 62.5 CP - 62.5 T - 125	HP - 125 CP - 125 T - 250	
WEIGHT IN POUNDS	HP - 682 CP - 568 T - 1,250	HP - 1,375 CP - 1,125 T - 2,500	HP - 2,750 CP - 2,250 T - 5,000	
CUBIC FEET	96.875	193.75	387.5	
35 VARIETIES ases/ea. variety	2	4	8	
s./ea. variety	40	80	160	
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

FROZEN FOOD STORAGE UNITS FOR INDIVIDUAL MAINE SCHOOLS

TIME PERIOD	100 meals/day 1 WEEK'S SUPPLY	100 meals/day 2 WEEK'S SUPPLY	100 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 12.5 CP- 12.5 T- 25	HP- 25 CP- 25 T- 50	HP- 50 CP- 50 T- 100	
WEIGHT IN POUNDS	HP- 275 CP- 225 T- 500	HP- 550 CP- 450 T- 1,000	HP- 1,100 CP- 900 T- 2,000	
CUBIC FEET	38.75	77.5	155	
35 VARIETIES cases/ea. variety	1	2	4	
lbs./ea. variety	20	40	80	
TOTAL COST				

TIME PERIOD	50 meals/day 1 WEEK'S SUPPLY	50 meals/day 2 WEEK'S SUPPLY	50 meals/day 1 MONTH'S SUPPLY	REMARKS
NUMBER OF CASES	HP- 6.25 CP- 6.25 T- 12.5	HP- 12.5 CP- 12.5 T- 25	HP- 25 CP- 25 T- 50	
WEIGHT IN POUNDS	HP- 138 CP- 112 T- 250	HP- 275 CP- 225 T- 500	HP- 550 CP- 450 T- 1,000	
CUBIC FEET	19.375	40	80	
35 VARIETIES cases/ea. variety				
lbs./ea. variety				
TOTAL COST				

HP - Hot Pack
CP - Cold Pack
T - Total

	0 - 50 frozen dinners per day	50-100 frozens dinners per day		101-149 frozen dinners per day			150-200 frozen dinners per day		
	1 shift	1 shift	2 shifts	1st shift	2nd shift	3rd shift	1st shift	2nd shift	3rd shift
ize Oven equired									
Ovens Required									
Length Time Reheating Meals									
otal Cost of Ovens									
Utility/ Maintenance Costs/yr.									
Average Life Span of Oven									
# Workers Required for peration/ Serve Meals									

	201-249 frozen dinners per day			250-300 frozen dinners per day			301-350 frozen dinners per day		
	1	2	3	1	2	3	1	2	3
Size Oven Required									
# Ovens Required									
Length of Time Reheating Meals									
Total Cost of Ovens									
Utility/ Maintenance Costs/yr.									
Average Life Span of Oven									
# Workers Required for Operation/ Serve Meals									

	351-500 frozen dinners per day			500-750 frozen dinners per day			750-1000 frozen dinners per day		
	1	2	3	1	2	3	1	2	3
lze Oven Required									
# Ovens Required									
Length of Time Reheating Meals									
Total Cost of Ovens									
Utility/ Maintenance Costs/yr.									
Average Life Span of Oven									
# Workers Required for Operation/ Serve Meals									

	1001-1250 frozen dinners per day			1251-1500 frozen dinners per day			1501-1750 frozen dinners per day		
	1	2	3	1	2	3	1	2	3
Size Oven Required									
# Ovens Required									
Length of Time Reheating Meals									
Total Cost of Ovens									
Utility/ Maintenance Costs/yr.									
Average Life Span of Oven									
# Workers Required for Operation/ Serve Meals									

	1751-2000 frozen dinners per day								
	1	2	3						
ize Oven Required									
# Ovens Required									
Length of Time Reheating Meals									
Total Cost of Ovens									
Utility/ Maintenance Costs/yr.									
Average Life Span of Oven									
# Workers Required for Operation/ Serve Meals									

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
FOOD PRODUCTS						
SPRAY SKIM BLEND. Dry Milk - Non Fat lbs	Q	19.1925	2399.0625	16697.475	32627.25	44142.75
	C					
Margerine Pure Veg - with Vitamin A	Q	48.575	6071.875	42260.25	82577.5	111722.5
	C					
Cheese, American lbs	Q	33	4125	28710	56100	75900
	C					
Eggs, Frozen whole, lbs	Q	12.06	1507.5	10492.2	20502	27738
	C					
Eggs, Frozen Whites, lbs	Q	6 oz	4.6875	32.625	63.75	86.25
	C					
Eggs, Dried whole, lbs	Q	6.0625	757.8	5274.375	10306.25	13943.75
	C					
STAPLE PRODUCTS						
ALL PURPOSE (BREAD) Flour lbs	Q.	319.412	399026.5	277838.44	543000	734647.6
	C.					
Sugar lbs	Q	100.1352	12516.9	87117.624	170222.34	230210.96
	C.					
Lt lbs		17.450662	2181.3327	15181.5	29665	40135
Pure Veg. Shortening lbs	Q.	36.6035	4575.4375	31895.045	62320	84388.05
BLEND - Soya w/ Olive Oil	C.					

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Brown Sugar lbs	Q.	10.5625	1320.3125	9189.375	17956.25	24293.75
	C.					
Baking Powder	Q.	3.015	376.875	2623.05	5125.5	6934.5
	C.					
Salad Oil gal	Q.	.871875	108.983	758.5269	1482.19	2005.3125
60yr W/ olive oil 90% - 10%	C.					
~~10#s~~ = 100 lb Cornstarch lbs	Q	3.312	414	2881.44	5630.4	7617.6
	C.					
Molasses gal	Q	2.25	281.25	1957.5	3825	5175
	C					
Beans, Pea, Dry lbs	Q.	27.750	3468.75	24142.5	47175	63825
	C.					
Pure Peanut butter ~~#10 can~~ 30 lbs	Q.	1.6344	204.25	1421.58	2777.8	3758.2
	C.					
Grits lbs	Q.	4.45	556.25	3871.5	7565	10235
	C.					
Macaroni lbs enriched FNS 218	Q.	10.75	1343.75	9352.5	18275	24725
	C.					
odles lbs ENRICHED FNS 218	Q.	3.91	488.75	3401.7	6647	8993
	C.					
Rolled Oats lbs	Q.	.75	93.75	652.5	1275	1725
	C.					

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Rice lbs	Q.	20.55	2568.75	17873.5	34935	47265
	C.					
Spaghetti lbs ENRICHED FNS 218	Q	12	1500	10440	20400	27600
	C					
SPICES & CONDIMENTS						
Coconut Shred lbs Short Shred	Q.	.75	93.75	652.5	1275	1725
	C.					
Bay Leaves each	Q.	4	500	3480	6800	9200
	C.					
Cinnamon	Q.	8.042 oz	62.828 lbs	437.2838	854.4625	1156.0375
	C.					
Celery seed lbs	Q.	.125	15.625	108.75	212.5	287.5
	C.					
Tobasco Sauce	Q.	16 drops	5.555 oz	38.666 oz	75.548 oz	102.212 oz
	C.					
Worchestershire GALLONS	Q.	5.552 oz	5.4219 gal	37.736 gal	9438.4 gal	12769.6 gal
	C.					
prika	Q.	2.021 oz	15.789 lbs	109.891 lbs	214.73 lbs	290.519 lbs
	C.					
Vanilla Pure	Q.	15.75 oz	15.3909 gal	107.0507 gal	209.18 gal	283.008 gal

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS	100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Pepper, black Q.	1.33 oz	11.015 lbs	17.26 lbs	34.52 lbs	48 lbs
C.					
Pepper, red Q	.069 oz	8.625 oz	3.7519 lbs	7.33125 lbs	9.91875
C					
Mustard, dry Q	5.7425 oz	44.8594 lbs	312.248	610.141	825.48
C.					
Mustard, prepared gal. Q.	2.734	341.75	2378.58	4647.8	6288.2
C.					
Garlic salt lbs Q	.375	46.875	326.25	637.5	862.5
C.					
Garlic Powder Q	.1875 oz	23.4375 oz	10.1953 lbs	318.75 lbs	431.25
C.					
Oregano Q.	.086875 oz	10.8625 oz	4.72383 lbs	9.23	12.488
C.					
Relish gal Q.	2.734	341.75	2378.58	4647.8	6288.2
C.					
MEAT PRODUCTS					
Beef, ground lbs 18-20% FAT Q.	214.15	26768.75	186310.5	364055	492545
C.					
Stew, Beef Q.	38	4750	33060	64600	87400
lbs C					

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS	100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Chicken, Leg Q. (2-3) lbs TO A lb lbs. C.	43.7	5462.5	38019	74290	100510
Chicken, whole LARGE - Q C.	30.8	3850	26796	52360	70840
Franks 8 per pound Q. SKINLESS C.	50	6250	43500	85000	115000
Pork chops Q. 4 oz chop C.	46.6	5825	40542	79220	10718
Sausage links Q. lbs C.	24.6	3075	21402	41820	56480
Ham w/o bone Q. C.	35	4375	106575	59500	80500
20-24 lbs Turkey, whole Q. lbs C.	26.4	3300	22968	44880	60720
FRUIT					
Apples, fresh Q. C.	46.2	5775	40194	78540	106260
pples, slic. Q. canned #10 can C.	3.95	493.75	3436.5	6715	9085
Applesauce #10 can Q. C.	8.4	1050	7308	14280	19329

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Bananas lbs	Q.	66.8	8350	58116	113560	153640
	C.					
Blueberries, canned #10	Q.	1	125	870	1700	2300
	C.					
Citrus sections #10 ~~#303~~ can	Q.	8.85	1106.25	7699.5	15045	20355
	C.					
Oranges, fresh 200's lbs	Q.	33.4	4175	29058	56780	76820
	C.					
Peaches, canned #10	Q.	13.9	1737.5	12093	23630	31970
	C.					
Pears, canned #10	Q.	4.1	512.5	3567	6970	9430
	C.					
Plums, canned #10	Q.	4.2	525	3654	7140	9660
	C.					
Raisins, seedless lbs	Q.	3.188	398.5	2773.56	5419.6	7332.4
	C.					
VEGETABLES						
Beans, Green, canned	Q.	23.7	2962.5	20619	40290	54510
Short Cuts or Extended	C.					
Cabbage, fresh	Q.	98.95	12368.75	86086.5	168215	227585

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Collards, frozen lbs	Q.	42.9	5362.5	37323	72930	98670
	C.					
Corn, W.K. canned #10	Q.	7.45	931.25	6481.5	12665	17135
	C.					
cucumbers fresh, lbs	Q.	26.5	3312.5	23055	45050	60950
	C.					
Lettuce, head lbs	Q.	22	2750	19140	37400	50600
	C.					
Mustard Greens, frozen, lbs	Q.	10.2	1275	8874	17340	23460
	C.					
Onions, fresh lbs	Q.	31.78	3972.5	27648.6	54026	73094
	C.					
Parsley, fresh lbs	Q.	.047	5.875	40.89	79.9	108.1
	C.					
PLANT RUN Peas, frozen lbs	Q.	60	7500	52200	102000	139000
	C.					
Peppers, fresh lb	Q.	2.312	289	2011.44	3930.4	5317.6
	C.					
Pimemtos #2 1/2 can	Q.	1	125	870	1700	2300
	C.					
Potatoes, fresh lbs	Q.	164.75	20593.75	143332.5	280075	378925
	C.					

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Potatoes, french fried, lbs	Q.	54	6750	46980	91800	124200
	C.					
Potato rounds frozen, lbs	Q.	15.3	1912.5	13311	26010	35190
	C.					
radishes, fresh lbs	Q.	8.876	1109.5	7722.12	15089.2	20414.8
	C.					
spinach, fresh lbs	Q.	5.5	687.5	4785	9350	12650
	C.					
Spinach, canned #10	Q.	20.25	2531.25	17617.5	34425	46575
	C.					
Sweet potatoes canned #10	Q.	13.8	1725	12006	23460	31740
	C.					
Tomatoes, fresh, lbs	Q.	31.25	3906.25	27187.5	53125	71875
	C.					
Tomatoes, canned #10	Q.	2.196	274.5	1910.52	3733.2	5050.8
	C.					
Tomato paste #10	Q	3.8	475	3306	6460	8740
	C					
Tomato puree #10	Q	2.64	330	2296.8	4488	6072
	C					
Tomato catsup #10	Q	8.745	1093.13	7608.15	14866.5	20113.5
	C					

FOOD COSTS FOR A CENTRALIZED FOOD

PRODUCTION FACILITY

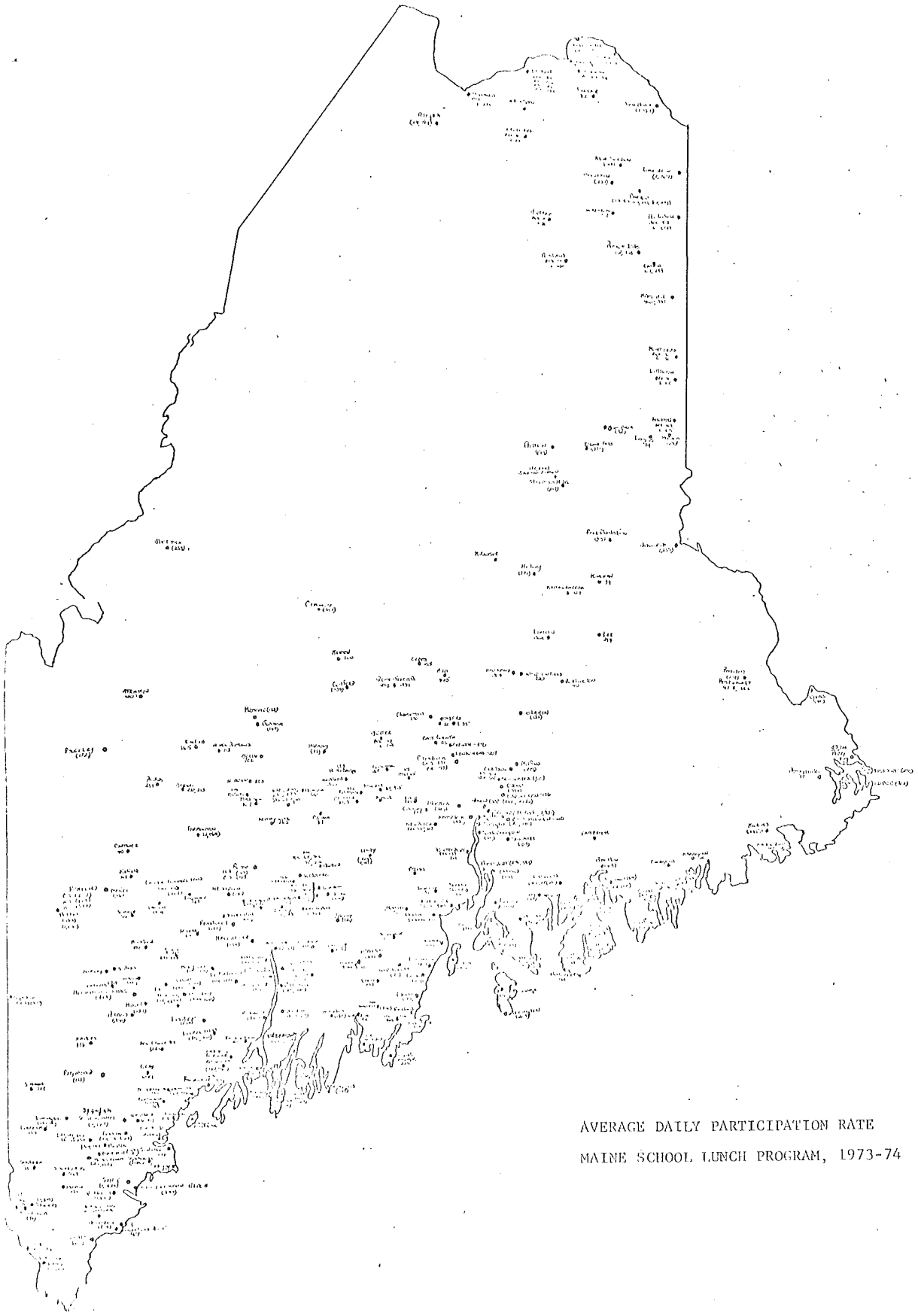
FOOD ITEMS		100 MEALS - per day SUPPLY FOR 30 DAY PERIOD QUANT. & COST	12,500 MEALS per day SUPPLY FOR 30 DAY PERIOD	87,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	170,000 MEALS per day SUPPLY FOR 30 DAY PERIOD	230,000 MEALS per day SUPPLY FOR 30 DAY PERIOD
Carrots, fresh lbs	Q	11.225	1403.125	9765.75	19082.5	25817.5
	C					
Celery, fresh lbs	Q	9.15	1143.75	7960.5	15555	21045
	C					
Vegetables mixed, frozen lbs	Q	63	7875	54810	107100	144900
	C					
Onion, dry lbs	Q	.562	70.25	488.94	955.4	1292.6
	C					

APPENDIX C

AVERAGE DAILY PARTICIPATION RATE

MAINE SCHOOL LUNCH PROGRAM

1973-1974



AVERAGE DAILY PARTICIPATION RATE

MAINE SCHOOL LUNCH PROGRAM, 1973-74