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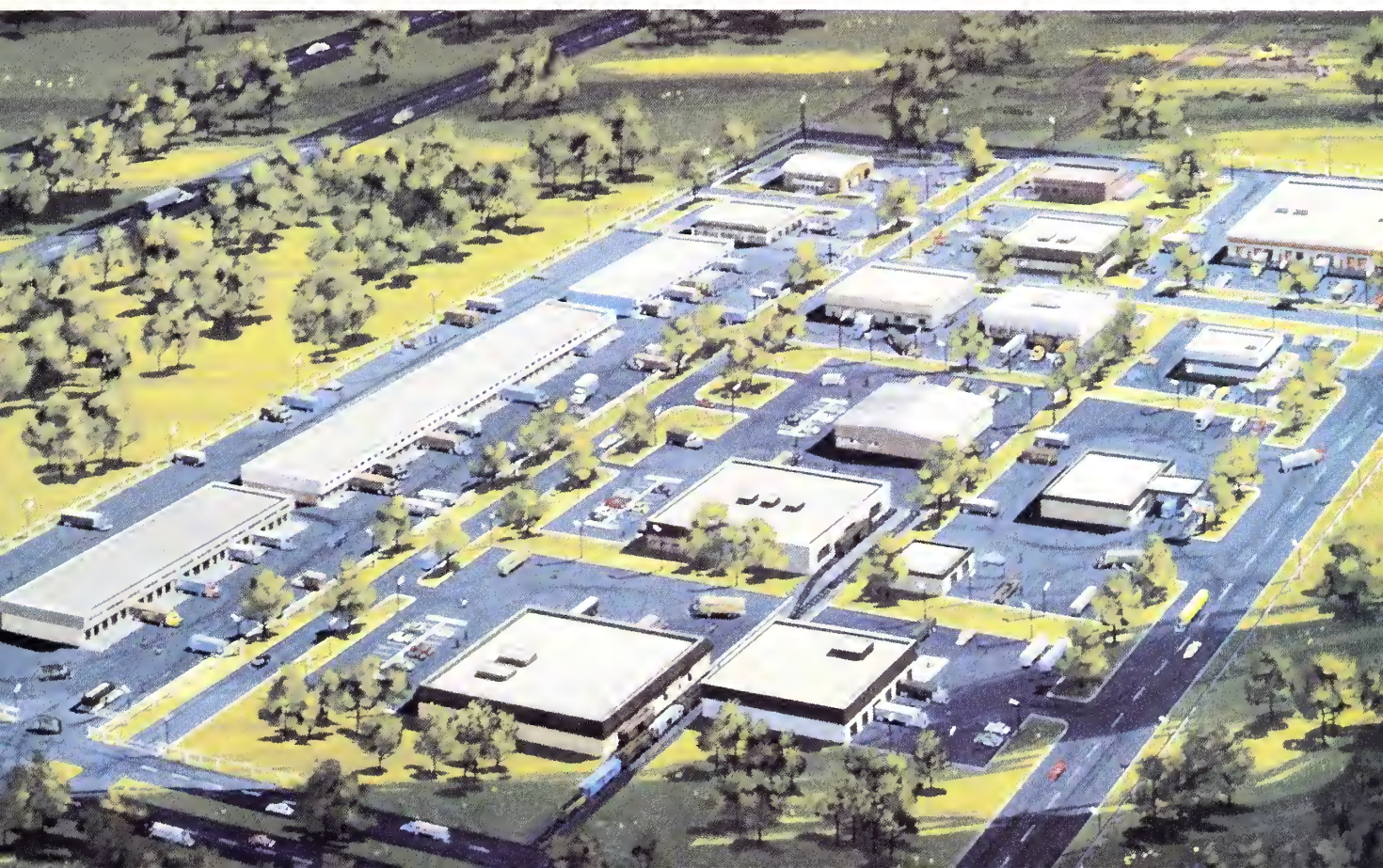
Improved Food Distribution Facilities for Southern New Jersey



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Improved Food Distribution Facilities for Southern New Jersey

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Summary

This study identifies the numbers and kinds of new wholesale and processing facilities required to support efficient distribution of food throughout a 10-county study area in southern New Jersey. This area is made up of Mercer, Monmouth, Ocean, Burlington, Camden, Gloucester, Atlantic, Salem, Cumberland, and Cape May Counties.

A total of 368 wholesale firms operate in the study area. For the purposes of this study, these firms are grouped into 12 categories, based on the most important single food product in each company's overall annual sales. These categories are (1) bakery product firms, (2) beverage companies, (3) candy wholesalers and processors, (4) dairy product firms, (5) egg wholesalers, (6) general-line wholesalers, (7) frozen food wholesalers, (8) fruit and vegetable firms, (9) grocery companies, (10) meat wholesalers and processors, (11) poultry companies, and (12) seafood firms.

Together, these firms use 8 million square feet of primary and secondary space. About 2.7 million tons of food products move through these facilities annually, representing a total annual sales volume of $2.3 billion.

Southern New Jersey food firms are a major employer in the region. Together, they employ almost 12,000 local residents. About half are employed by processing operations of one type or another. Camden County has the single largest number of food firm employees in the study area.

There is an immediate need for new food wholesaling and processing facilities in the region. Thirty-four firms were identified as potential candidates for relocation into new facilities. To avoid revealing confidential information, these 34 firms are grouped into 6 categories. These categories are (1) fruit and vegetable companies, (2) candy and food product wholesalers, (3) dairy and poultry firms, (4) bakery companies, (5) grocery, frozen food, and seafood firms, and (6) meat companies. Presently, these firms occupy over 325,000 square feet of primary and secondary space and handle over 102,000 tons of food products annually.

A new wholesale food distribution center to serve southern New Jersey offers the potential to correct the facility problems of the firms identified in this study as needing to relocate. Such a center—an industrial park designed for food and related firms—would include multiple-occupancy buildings, single-occupancy buildings, and support facilities. Fully developed, the center would provide a total of 452,000 square feet of enclosed space. A 150-acre site would be needed to meet both the immediate and long-term requirements of firms operating on the new center. A total investment of approximately $19 million would be required for the new center, including both facilities and land. For illustrative purposes, investment requirements are included in this report for potential sites in Atlantic, Burlington, and Camden Counties. Total annual revenue requirements for operation, maintenance, and debt servicing of the new center would vary from about $3.2 to $4 million, depending on the specific location of the center and the method of financing its development.

A comparative analysis of projected costs and revenues indicates that the development of a new food distribution center is potentially cost effective. That is, the combination of improved efficiency of operations and increased sales volumes can be expected to generate more net revenue—total revenue minus total costs, including facility costs—if those firms identified as needing facilities were to relocate to the new center rather than maintain their existing bases of operation. Again, the specific location and method of financing can be expected to have a major impact on the relative levels of potential net revenues associated with the planned center. A publicly financed center on a site in Camden County would offer more potential for net revenue gain than other alternatives.

Other benefits which were not specifically measured during the study also can be expected to result from developing a new center. These may include better quality food, less traffic congestion, an increase in the region's tax base, improved working conditions, better enforcement of health and safety regulations, and improved land use.

Introduction

Southern New Jersey wholesalers, industry trade groups, local governments, and the New Jersey Department of Agriculture requested the assistance of the Agricultural Marketing Service (AMS), U.S. Department of Agriculture (USDA), in determining the need for new food wholesale and processing facilities to serve the southern portions of the State. This request was prompted by a general concern that new and more modern facilities were needed to assist the area food industry in maintaining a high level of competitive service to the region.

Based on consultation among study cooperators, the 10 southernmost counties in New Jersey were delineated as the study area. These counties are Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Monmouth, Ocean, and Salem (fig. 1).

For this study, food firms in southern New Jersey were categorized into 12 defined groups. To the extent possible, each firm was identified based on the single most important type of food product in the company's overall annual sales. These categories are: (1) bakery product firms, (2) beverage companies, (3) candy wholesalers and processors, (4) dairy product firms, (5) egg wholesalers, (6) food product companies, (7) frozen food wholesalers, (8) fruit and vegetable firms, (9) grocery companies, (10) meat wholesalers and processors, (11) poultry companies, and (12) seafood firms. Food product firms are food wholesalers specializing in a wide variety of products, such as snack foods, spices, and other items too numerous to categorize separately. All the firms in the study were independent companies; no corporate chainstore warehouse facilities were operating in the study area when data were collected.

The objectives of this study were:

- Develop a general overview of the regional food industry in southern New Jersey.
- Identify firms needing new facilities.
- Develop designs for new facilities to solve the identified deficiencies in existing facilities.
- Evaluate potential locations for new facilities.
- Estimate the potential benefits and costs associated with both existing and planned facilities to evaluate some of the merits of relocating firms to more modern facilities.

Basic information about the present marketing system and existing operations was obtained through personal interviews with owners or managers of each firm in the study area. This survey material, augmented by other material from State offices, published material, and trade publications, provides an overview of food product movement within the region. The source of food moving into the area, the types of customers served by the regional food industry, and a description of how food facilities are used by the firms are included in the study. All data were combined to avoid revealing confidential information about specific firms. Surveys were completed in 1983.

Figure 1.—Wholesale food study area, southern New Jersey.

Marketing System

The wholesale food marketing system operating in the study area can be described from several perspectives. One such perspective, the subject of this report, dealing with facility needs and alternatives, is described in four major dimensions: (1) The number and kinds of wholesale firms operating at various locations, (2) the size, ownership, and use of space in the buildings used by the firms, (3) the quantity and movement of products handled by the firms through their buildings, and (4) the number and kinds of employees employed by the firms.

Number and Locations of Wholesale Firms

Number

A total of 368 food wholesale and processing firms currently operate within the study area. Each is classified in this report according to the single largest commodity handled by the company. Figure 2 illustrates the number of each kind of wholesale firm operating in the study area; appendix table 1 breaks down this material in greater detail.

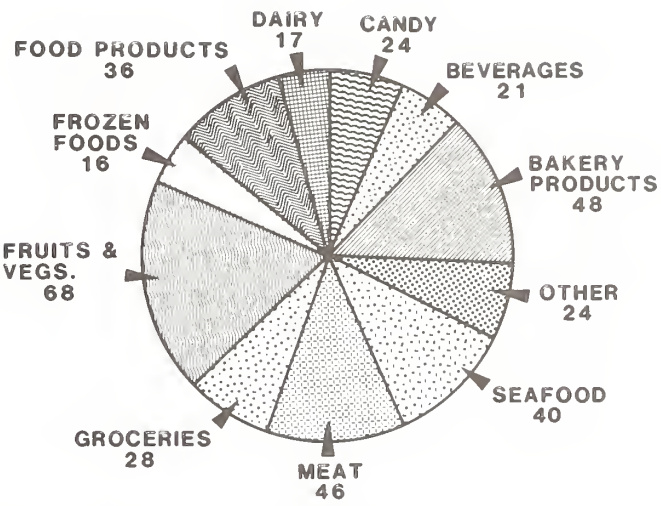


Figure 2.—Number and kinds of wholesale firms, by type of firm.

Produce wholesalers, including growers in the study area maintaining wholesale facilities, are a very important part of the overall food industry, accounting for about 18 percent of the total. Bakery and meat firms are also major components of the region's wholesale food industry. These categories each make up about 13 percent of the total number of wholesale firms in the area. Seafood firms account for about 11 percent of the total. Dairy firms, poultry wholesalers, egg companies, and frozen food companies each make up 5 percent or less of the total.

Location

Wholesale food firms are located in each of the 10 counties of the study area. Most of the wholesale facilities were located to serve efficiently a particular firm's customers at the time of their construction; as time has passed new customers have been found and existing locations may be far from current centers of distribution. Figure 3 illustrates the location of wholesale firms, by county. The location of each wholesale firm was determined by the principal place of operation, excluding offices.

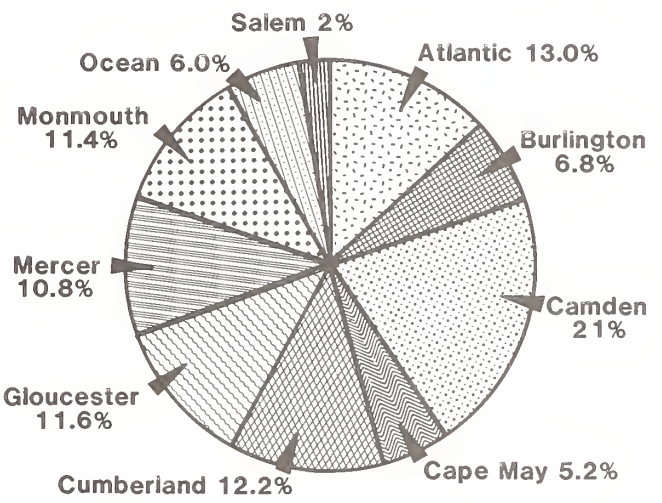


Figure 3.—Location of wholesale firms, by county.

Camden County is a major factor in the region's wholesale food industry. Of the total number of wholesale firms identified in this study, 76 firms, or 21 percent of the total, have their major place of business in Camden County. Atlantic County is also a major center, with 48 companies, or 13 percent of the total. Only 2 percent of the wholesale firms area are in Salem County.

Each county has a different mixture of wholesale firms. As an example, figure 4 illustrates the different kinds of wholesale firms in Camden County. Of the total 76 firms operating in the county, bakery product firms, candy wholesalers, and food product firms make up about half, or 47 percent. Frozen food and meat firms are also important elements in the Camden County wholesale food trade.

Atlantic County has a different mix of wholesale firms. Of the total 48 wholesale firms in the county, about 21 percent are bakery product firms and 23 percent are fruit and vegetable wholesalers. Figure 5 illustrates the number of different kinds of wholesale firms operating in the county.

Burlington County is a good example of a portion of the study area with a moderate number of wholesale firms. Fruit and vegetable and meat firms make up the two largest segments of the county's wholesale food industry, with about 24 and 20 percent, respectively, of the total 25 wholesale firms. Figure 6 illustrates the different kinds and types of wholesale food firms operating in Burlington County.

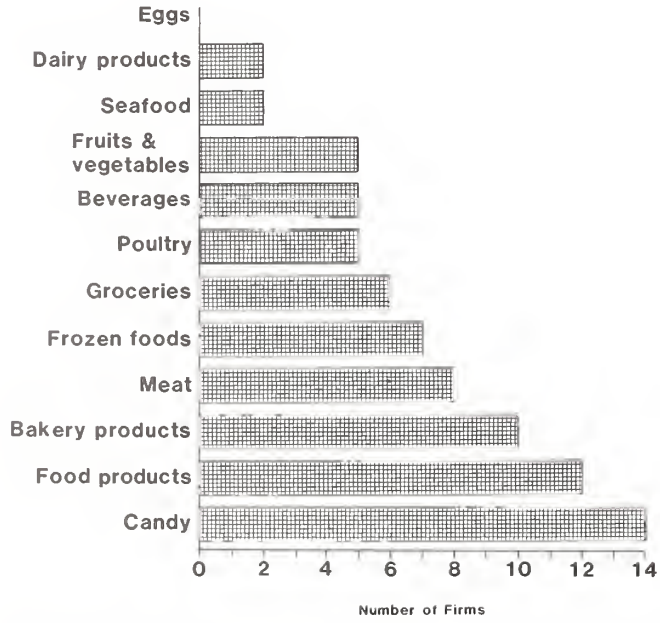


Figure 4.—Number of wholesale firms, by type, Camden County.

Figure 5.—Number of wholesale firms, by type, Atlantic County.

Figure 6.—Number of wholesale firms, by type, Burlington County.

Types of Facilities and Space

Existing types and condition of wholesale facilities are an important consideration in determining the need for new wholesale buildings.

Types of Facilities

The wholesale facilities in use in southern New Jersey can be grouped into three main categories: (1) modern, well-designed buildings custom built or well modified for the present use of the facility; (2) older buildings originally built as food warehousing or processing facilities but representative of now obsolete technologies; and (3) structures that have been adapted from completely different purposes to serve as food warehousing or processing facilities. Many buildings of each type can be found throughout southern New Jersey.

Some of the modern food warehousing facilities in southern New Jersey are used to warehouse a wide variety of food products. Using an example from another city to avoid identifying local firms, figure 7 illustrates a modern warehousing facility. This building is single level and has organized truck docks and maneuvering areas, separate support structures, a defined site with security provisions, car parking, and offices located on the site but away from the principal building. Processing operations can be carried out in a similar building but the shape and size of the structure would reflect the design characteristics of the particular manufacturing process carried on in the structure. Ceiling heights may be lower in a modern processing facility and some operations may be located on a mezzanine or partial second floor. Modern buildings are usually designed with adequate amounts of extra land for expansion.

Some modern buildings are designed for redistributing products without intermediate storage. These facilities are usually on ground level with a truck parking area adjacent to the building. Some of these buildings feature special receiving areas where tractor-trailers can be located and products stored for a few hours. Often, salespeople's trucks are backed directly into the building. Some of the buildings used for redistributing bakery products also feature truck washing and repair facilities. A retail outlet may be attached to these facilities to promote the products handled in the building as well as to sell quickly perishable merchandise nearing the end of anticipated shelf life.

Buildings representative of obsolete technology are often multistory structures with small or very limited truck parking and maneuvering areas. Figure 8 illustrates a building representative of modern technology in food handling and warehousing at the time of its construction but now obsolete. The movement in handling and storage technology from handtrucks and floor stacking of merchandise to

Figure 7.—Modern warehousing facility.

Figure 8.—Wholesale food distribution facility of obsolete design.

Figure 9.—Food warehouse building adapted from other use.

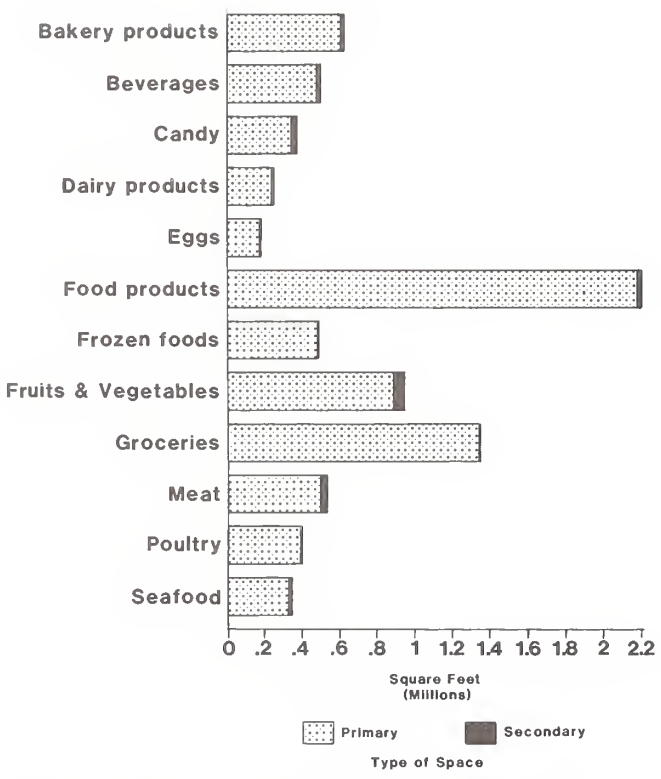
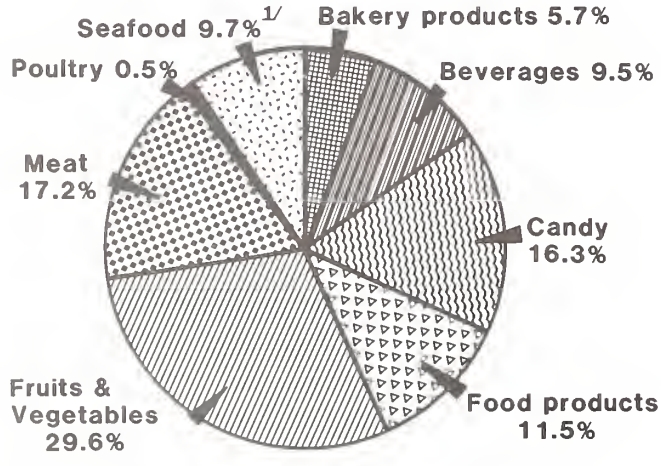


Figure 10.—Primary and secondary space, by type of firm.



1/ Percentages relate to total amount of secondary space occupied by all firms

Figure 11.—Secondary space by type of firm.

powered forklifts and high-level, palletized storage systems has contributed to this facility's obsolescence.

The buildings used for food warehousing and processing operations that are adapted from other uses often pose serious hardships on the users of the facility. Figure 9 illustrates such a building in another city. The structural characteristics of these buildings often dictate handling, storage, and layout arrangements that limit the efficiency of the company's warehousing or processing activities.

Size, Ownership, and Types of Space in Wholesale Buildings

Size.—Southern New Jersey food firms use a total of over 8 million square feet of enclosed building space. Two different types of space included in the scope of this report are defined by the role this space plays in the activities of the companies. These types of space are (1) primary space, the principal place of business of a company where most of its commercial activities take place; and (2) secondary space, auxiliary space some distance away from the primary space. Figure 10 illustrates the amount of space used by the different kinds of firms in this study and the relative amounts of primary and secondary space used by each of these types of wholesale and processing firms. Appendix table 2 describes this space in substantial detail.

Most of the firms maintain only one place of business within the study area. Of the 12 types of firms, 4 have no secondary space—dairy firms, eggs wholesalers, frozen food wholesalers and processors, and grocery companies. The single largest amount of secondary space, about 65,000 square feet, is used by fruit and vegetable wholesalers, mainly representing onfarm storage and processing facilities. Candy wholesalers are also significant users of secondary space. Figure 11 illustrates in more detail the use of secondary space by the different types of wholesale firms.

Ownership.—Ownership of primary facilities is a major measure of the stability of the southern New Jersey wholesale food industry. Figure 12 illustrates the total amount of space owned by the different types of firms. Of this total space, fruit and vegetable wholesalers, meat companies, seafood firms, and bakery product companies represent the largest percentages. These companies also represent major sources of ownership capital for potential new facilities.

Use.—The different types of wholesale firms included in the study use their facilities in different ways. Figure 13 and appendix table 2 illustrate both how the firms use their space, and provide some measure of how this space is arranged in existing facilities. The largest portion of space is used for nonrefrigerated storage, mostly on the

first floor but with some in basements and on upper floors. In contrast, the next largest use of space, for processing and related activities, is either on the first or second floor. Cooler and freezer space also represents a major component of the total, with almost all of the space located on the first floor. Offices also are mainly on the first floor, with some on the second floor.

Different types of wholesale firms arrange their space in unique patterns, reflecting both the development and technology of their industry. Grocery firms use facilities that also reflect the nonperishable nature of many of their products. Figure 14 illustrates how grocery firms in southern New Jersey use and arrange their space. In contrast to the regional food industry as a whole, grocery firms have only a limited amount of cooler and freezer space. Meat firms are major users of refrigerated storage, as illustrated by figure 15. Also, some nonrefrigerated storage space, mainly used for supplies, is on the second floor or basement. Meat firms place about 30 percent of

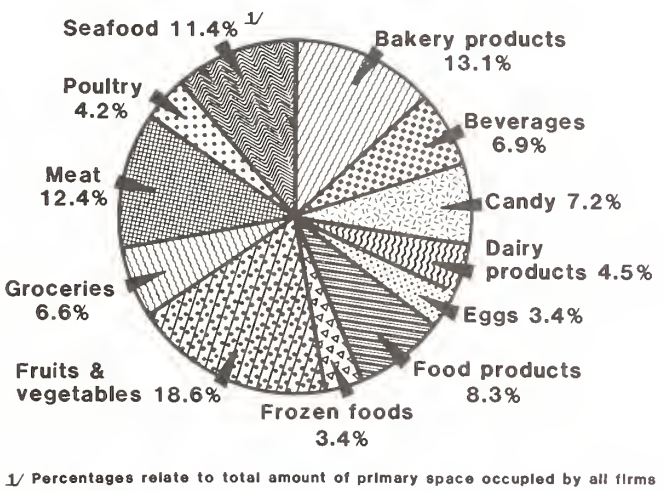


Figure 12.—Owned primary space by type of wholesale firm.

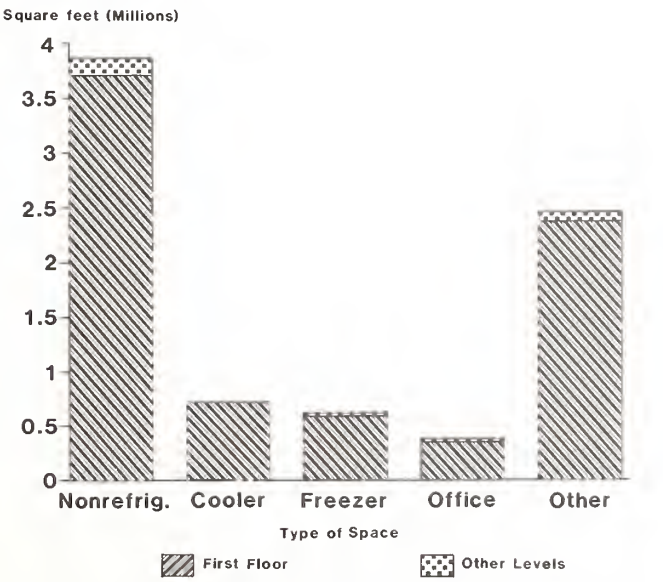


Figure 13.—Floorspace by use.

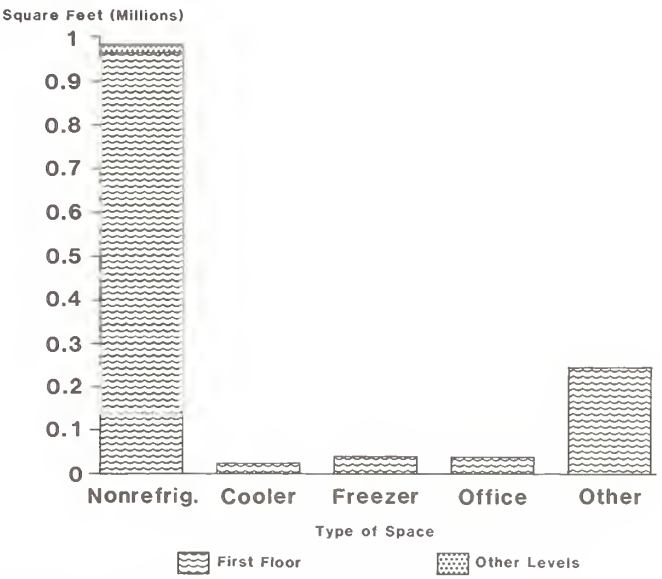


Figure 14.—Floorspace by use, grocery firms.

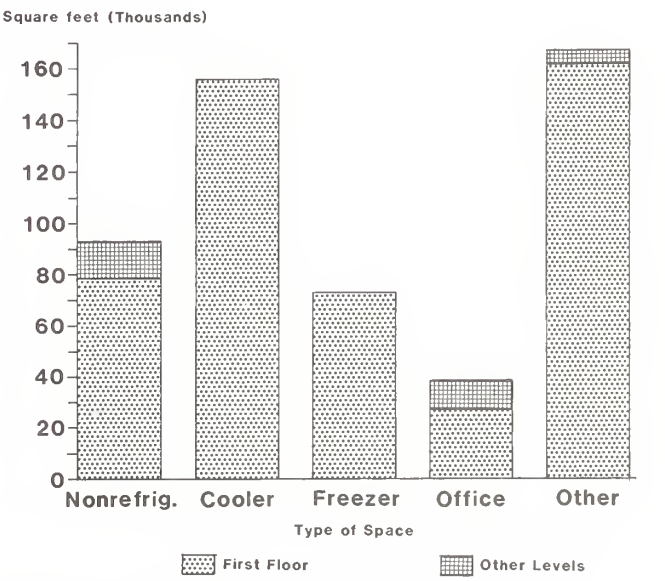


Figure 15.—Floorspace by use, meat firms.

their office space on the second floor, frequently mezzanines or partial second floors built over processing space. Most of the meat processing space is located on the first floor but a limited amount of such space is on a second floor.

Volume Handled and Product Movement

Volume

The wholesalers in this study handle about 2.7 million tons of food annually, representing about $2.3 billion in yearly sales. Food product companies handle the largest percentage of total volume, about 18 percent. Grocery and beverage firms each represent about 16 percent, and fruit and vegetable wholesale companies about 14 percent. Figure 16 illustrates the volume, in tons, handled by the firms in this study. Candy, egg, and poultry firms are grouped together as "other firms" in figure 16.

Sales volume also differs substantially among the different types of wholesale firms. Food product firms represent 18 percent of the total sales volume, followed by meat firms with 17 percent. Grocery firms, with the wide variety of products handled, account for 13 percent. Figure 17 illustrates sales by type of firm. Fruit and vegetable firms and egg firms are grouped together in figure 17 as "other firms."

Product Movement

Volume movement in both tons and dollars reflects the total product movement through wholesale facilities located within the study area. Some nonfood products handled by the food firms in southern New Jersey are also included in the volumes in figures 16 and 17. Volume figures in tons also reflect wholesale weight of products and include the weight of packaging materials and master containers. Product movements also include volumes moving outside the study area and may not reflect products moving into the study area from wholesale firms outside southern New Jersey.

The movement of food products through the study area is one of the major considerations in this study. This movement of food products is broken into a number of separate categories, each representing a major point of interest that may bear upon an evaluation of the need for new facilities and the potential location of such new facilities. These categories are (1) method and type of receipt, (2) origin of receipt, (3) sales by type of customer, (4) method of delivery, and (5) destination of the products sold. The method and type of receipt define the type of vehicle used to move incoming products from the last point of storage to the wholesale facilities. The origin of receipt defines the geographical location of the last point of storage of the food products prior to sale to the wholesaler. Sales by type of customer define the nature of business of the wholesalers' customers. For the purposes of this study, all sales included in this product movement analysis represent wholesale transfers. Retail sales are not included. Method of delivery defines how products are moved

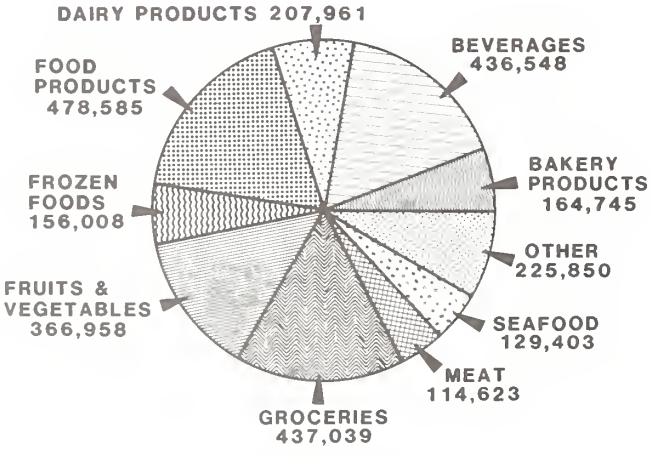


Figure 16.—Volume (tons) handled by southern New Jersey wholesale food firms.

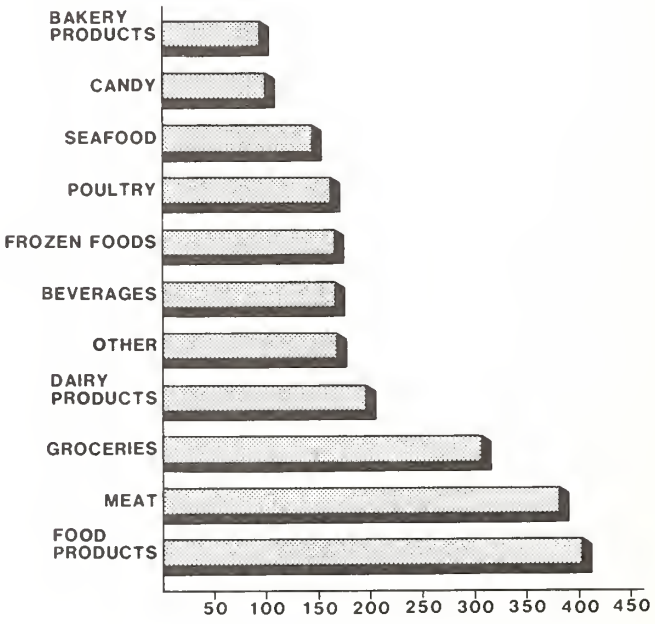


Figure 17.—Sales by type of wholesale food firm, southern New Jersey.

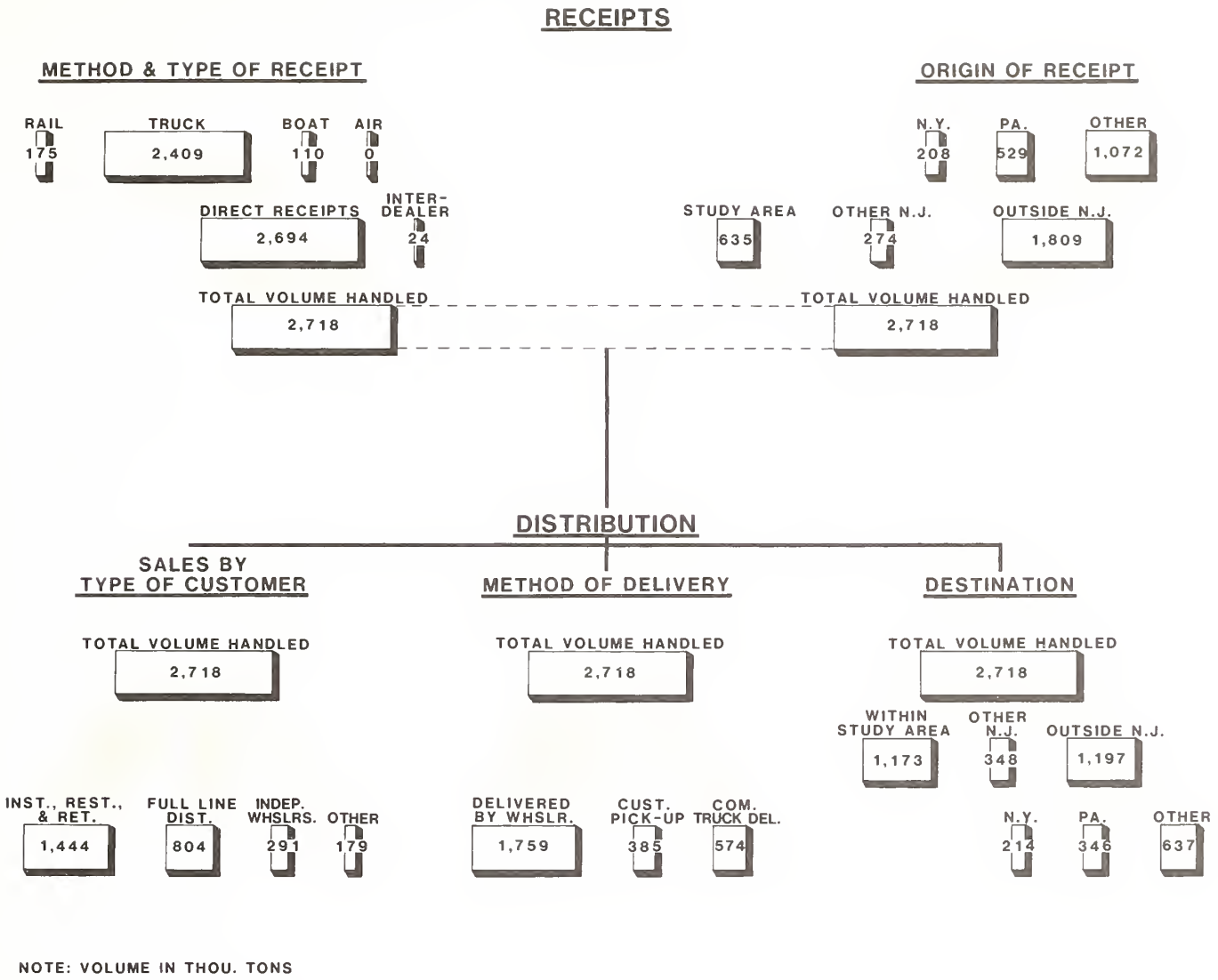


Figure 18.—Movement of products through wholesale facilities.

from wholesale facilities to the retail or other customers of the food firms. Destination defines the geographical location of the customers.

Figure 18 illustrates the wholesale movement of food through the study area, in tons of products handled. All product movement is in thousands of tons.

Of the total 2.7 million tons of food moving through southern New Jersey wholesale and processing facilities to the companies' customers, 1 percent represents "interdealer transfers," or sales to similar wholesale firms. Interdealer transfers usually represent items that might be temporarily out of stock or of such a special nature that the buyer feels the product should not be maintained in a regular inventory. The remaining 99 percent of the food movement outlined in figure 20 represents "direct receipts" or sales from manufacturers or growers to the wholesalers included in this study.

Method of receipt.—Different means are used to bring incoming products to southern New Jersey food wholesalers. Truck receipts make up more than 89 percent of the total movement of food into the region, reflecting difficulties in obtaining rail service suitable for handling food products at a competitive price. Rail receipts account for about 6 percent of incoming product movement volume. Receipts by boat, mainly landings of seafood products at company-owned docks, account for almost 5 percent of total receipts. Other receipts by boat include imports that are moved from dock facilities to wholesale facilities by truck. None of the firms report air receipts. All interdealer transfers are by truck.

Figure 19.—Method of receipt, by county.

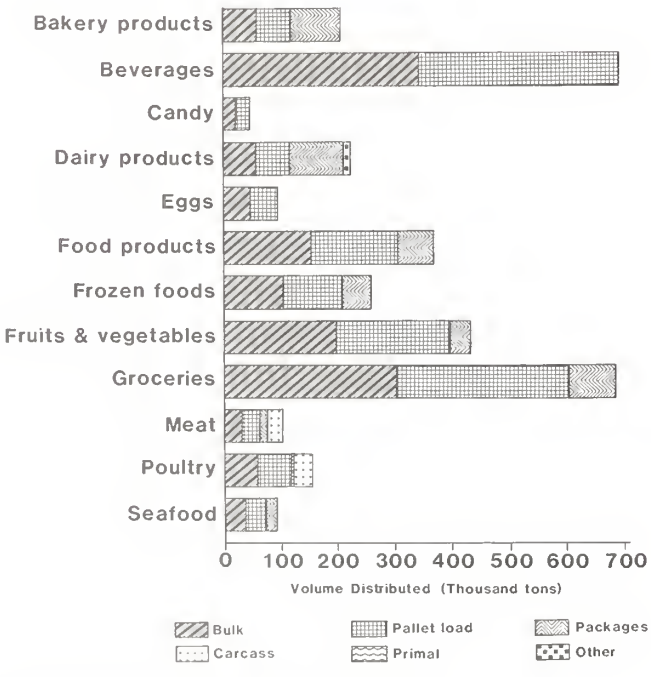


Figure 20.—Form of receipt, by type of firm.

The means by which food products move to the various counties of the study area reflect the kinds of food firms in each county, as well as the nature of the transportation system serving each part of the study area. Figure 19 illustrates how food products arrive in each county. Camden and Cumberland Counties account for the largest volume of rail receipts; Cape May and Cumberland, the largest volume of boat movement from dock to wholesale facility. Seafood firms using dock landing facilities often have docks and buildings in separate locations.

Of the total volume handled, including interdealer transfer, more than half, or about 52 percent, come to wholesale facilities as some form of unitized shipment, such as products stacked on wooden pallets and slipsheets. Some products come to wholesale facilities in bulk, mainly food products used in some manufacturing process. Bulk shipments comprise about 29 percent of the total volume moving to wholesale facilities. Most of the remaining products are received at wholesale facilities in containers stacked loose on the floor of incoming trucks and railcars; shipments of this kind account for about 17 percent of total incoming volume. The remaining products are shipped to wholesale facilities in some processing industries in a specialized form, such as carcasses moving to meat firms. Figure 20 illustrates how the different types of wholesale firms receive their products.

Origin of receipts.—Products moving to southern New Jersey come from many different parts of the United States and the world, as well as from within the study area. About 23 percent originate with manufacturers, processors, and growers in southern New Jersey. About 11 percent come from northern New Jersey; the remaining 66 percent come from outside the State.

Nearby geographical areas are important suppliers to southern New Jersey wholesale firms. Of the total 1.8 million tons of products received from outside the study area, about 11 percent come from New York and an additional 29 percent come from Pennsylvania, mainly Philadelphia. The remaining volume originating outside New Jersey includes both imports and purchases from throughout the United States.

Some of the products originating within the study area are grown in the area; other products are manufactured elsewhere but warehoused nearby in commercial facilities prior to sale to the wholesalers included in the study.

Different types of wholesale firms vary in the source of supply of their products. Table 1 illustrates this variation. Bakery product firms receive almost no products from within the study area but are large purchasers of products from northern New Jersey, New York, and Pennsylvania. National suppliers are also important to bakery firms as sources of supply. In contrast, about 37 percent of total receipts moving to fruit and vegetable wholesalers originate within the study area, and 33 percent of these firms' volume comes from nearby New York and Pennsylvania. Some types of firms, such as grocery firms, draw almost evenly from within the study area and other geographical areas. Of the total volume handled by grocery firms, about 21 percent originates from within the study area, 11 percent from New York, 19 percent from Pennsylvania, and 45 percent from national sources.

Types of customers.—Southern New Jersey wholesale firms serve a wide range of customers. In this study, these customers are classified by type: (1) Retail outlets where food is sold directly to customers, including retail stores, institutional feeding establishments, and restaurants; (2) full-line distributors, which include chainstore warehouses, cooperatives, and very large independent wholesalers having some ownership or contractual relationship with the stores they serve; (3) independent wholesale firms; and (4) all other types of customers.

Institutional feeding establishments, restaurants, and retail outlets account for 53 percent, by volume, of total sales. Sales to other, very large wholesale outlets are also an important source of business for the region's wholesale food industry, about 30 percent of total sales, by volume.

Product movement to other independent, wholesale firms account for 11 percent of total sales. Sales to the different types of food wholesalers reflect the processing activities that are so important in southern New Jersey and represent the sale of manufactured products produced by the firms included in this study.

Some types of sales are difficult to classify. Such sales may include wholesale distribution to groups or organizations that do not maintain a regular place of business, or products picked up at wholesale facilities for later distribution to other buyers. These types of sales account for about 7 percent of the total volume moving through wholesale facilities.

Each of the different kinds of wholesale firms included in this study serves a different range of customers, reflecting the diversity of businesses and products. The perishable nature of their products proves to be a powerful incentive for bakery firms to concentrate on sales to retail outlets; over 92 percent of the sales by this type of wholesaler move to institutions, restaurants, and retail outlets. In contrast, grocery firms serve a wider variety of customers and move about 42 percent of their total volume to other wholesalers for later resale (full-line distribution warehouses and independent wholesalers). Meat firms also

Table 1.—Sources of supply by type of firm, southern New Jersey

Type of firm	Within study area		Outside study area (within State)		Outside State						Total
					New York		Pennsylvania		Other		
	Tons	*Percent*	*Tons*	*Percent*	*Tons*	*Percent*	*Tons*	*Percent*	*Tons*	*Percent*	*Tons*
Bakery products	166	[1]	35,776	21	25,891	16	55,591	34	47,321	29	164,745
Beverages	145,632	33	97,346	22	56,227	13	119,417	27	17,926	5	436,548
Candy	696	4	331	1	190	[1]	1,487	6	21,824	89	24,528
Dairy products	14,133	7	84,676	41	2,435	1	37,670	18	69,047	33	207,961
Eggs	4,038	4	399	[1]	276	[1]	11,269	12	81,684	84	97,666
Food products	139,090	29	9,278	2	16,003	3	66,619	14	247,595	52	478,585
Frozen foods	13,371	9	511	[1]	8,136	5	17,960	12	116,030	74	156,008
Fruits and vegetables	136,064	37	3,721	1	36,581	10	84,082	23	106,510	29	366,958
Groceries	91,088	21	16,837	4	48,349	11	82,150	19	198,615	45	437,039
Meat	4,397	4	4,247	3	7,997	7	26,948	24	71,034	62	114,623
Poultry	2,469	3	16,900	16	3,575	3	21,282	21	59,430	57	103,656
Seafood	83,990	65	3,426	3	2,096	1	4,623	4	35,268	27	129,403
Total	635,134	23	273,448	11	207,756	8	529,098	19	1,072,284	39	2,717,720

[1]Less than 1 percent.

serve a wide variety of customers, reflecting their ability to preserve their products for extensive periods through refrigeration and other means. Of the total volume handled by meat firms, about 46 percent is sold to restaurants, institutions, and retail outlets. An additional 40 percent moves to other wholesalers for later resale. Figure 21 illustrates the volume from each type of wholesale firm to the various types of customers.

Method of delivery.—Southern New Jersey wholesale firms depend mainly on their own vehicles to deliver their products to their customers but they also move their products by other means. Of the total volume handled by the region's wholesale firms, about 65 percent is delivered on wholesalers' trucks. About 14 percent is picked up by customers at the firms' wholesale facilities. The remaining 21 percent is delivered by commercial trucking firms. This 21 percent includes both products delivered to local customers and deliveries to distant points of manufactured products produced by the firms.

As with other operating characteristics, wholesale firms differ widely in the way they move their products to customers. Many bakery companies combine delivery with selling; over 82 percent of the volume of products move to local customers by company trucks. Bakery firms also maintain sales outlets at the manufacturing plant; a significant 17 percent of the total volume handled is picked up by customers at the wholesale facility. Less than 1 percent of the total volume of bakery firms is distributed by commercial carriers. A similar method of sales and distribution by beverage firms results in almost 99 percent of total volume distributed by company trucks to the firms' customers.

In contrast, grocery firms use a variety of methods to deliver their products, reflecting the diversity within this portion of the southern New Jersey wholesale food industry. Of the total volume handled by the region's grocery industry, almost half, or 46 percent, is delivered to customers on company trucks. About 25 percent is picked up at the wholesale facilities by customers, mainly cash-and-carry operations. An additional 29 percent is distributed by commercial carriers; this portion of the overall volume distributed by grocery firms represents both contract arrangements with wholesalers for serving local customers and distribution of manufactured products produced by these firms. Figure 22 illustrates how the different types of area wholesale firms distribute their products to their customers.

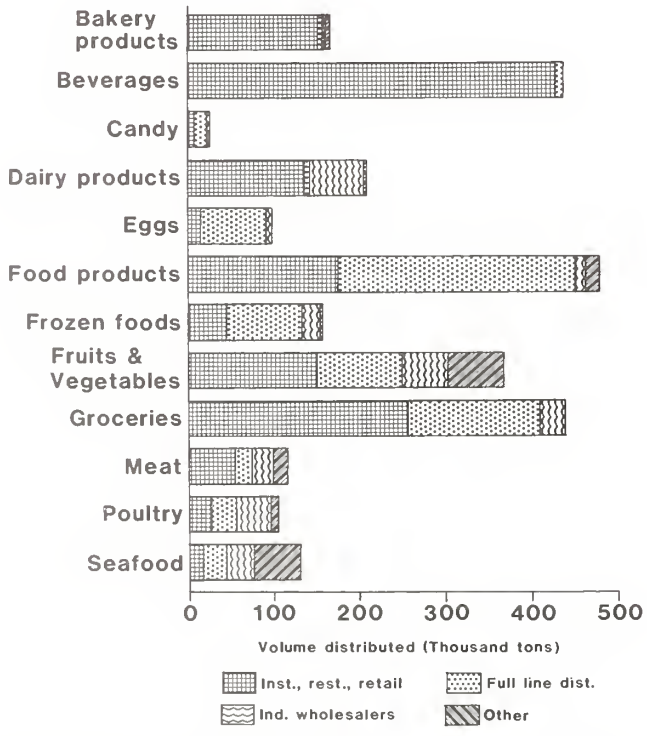


Figure 21.—Volume distributed by type of customers and type of wholesale firm.

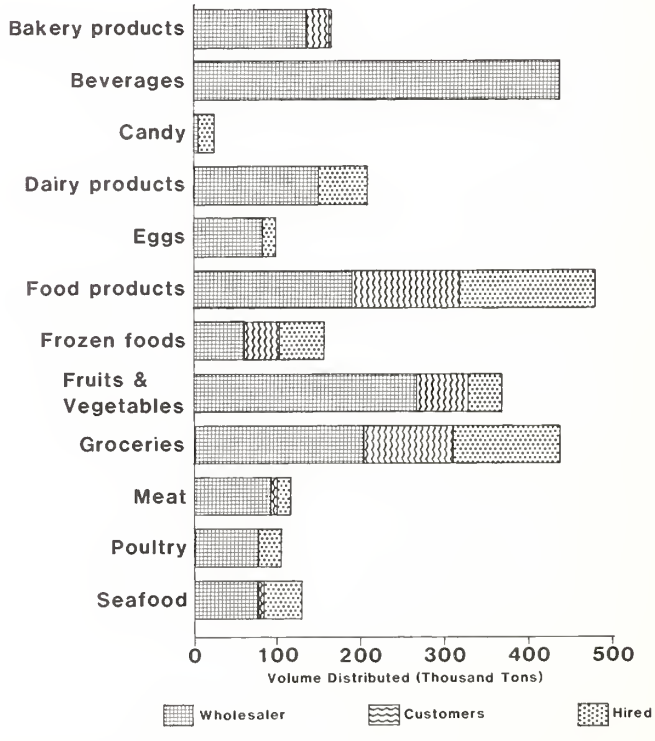


Figure 22.—Method of delivery by type of firms.

Destination.—Southern New Jersey wholesale firms serve the Northeastern United States. Less than half, or 43 percent, of the total volume handled by these firms remains in the study area for distribution to local customers. About 13 percent of the total moves to northern New Jersey. An additional 8 percent moves to New York and 23 percent of the total volume handled is distributed nationwide. Almost 13 percent of the total moves to Pennsylvania, mainly Philadelphia.

Sales practices and the nature of the products they sell have a strong influence on where the various types of wholesale firms seek their customers. Bakery firms, for example, reflect the perishable nature of their products by seeking customers locally, and move about 78 percent of their total volume to outlets within the study area. In contrast, about 74 percent of the total volume handled by candy wholesalers moves out of the immediate area to national distribution.

Some firms handling perishable products are building a nationwide market; for example, seafood firms move about 70 percent of their output out of the region to national distribution. A large share of their sales also go to Boston, Baltimore, and other large cities and markets in the eastern part of the Nation. Most of the other types of wholesale firms included in this study have built a combination of local and national markets for their products. Figure 23 illustrates where the various types of wholesale firms distribute their products.

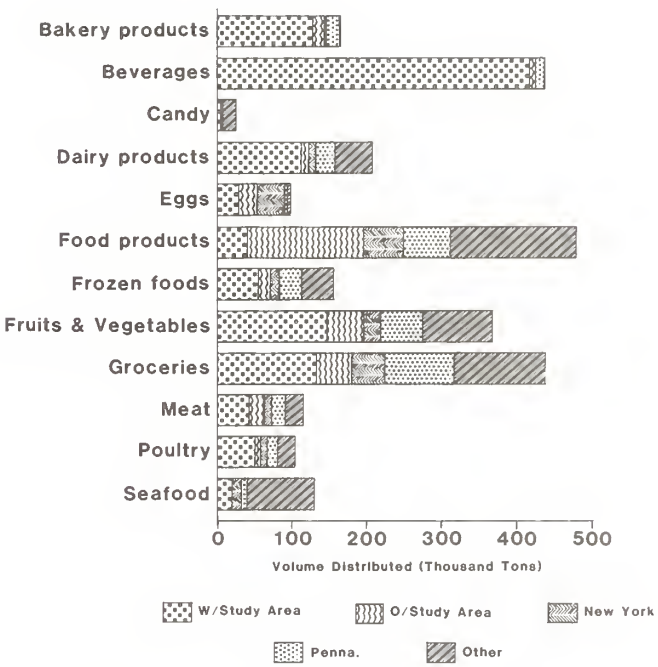


Figure 23.—Destination of products by geographical area and types.

Employment

The wholesale food industry in southern New Jersey is a major employer in the region, with almost 12,000 local employees. Of this total, about 19 percent represent administrative and sales people. An additional 15 percent work in the warehouse or processing facility handling finished products, moving raw materials to and from storage, loading trucks with outgoing orders, handling incoming products between railcars and trucks to storage, selecting orders, restocking, and performing all of the other functions involved with physically handling products. Processing products is the single largest activity, with almost half, or 48 percent, of the total employment engaged in processing activities. Distribution is also a major activity, with about 14 percent of employees working as truck drivers, truck helpers, and otherwise directly involved in moving products from wholesalers' facilities to the companies' customers. The remaining employees include cleanup crews, mechanics, building engineers, and other types of positions that cannot be directly assigned to a function involving the handling of food products. Figure 24 illustrates the different functions involving employment in

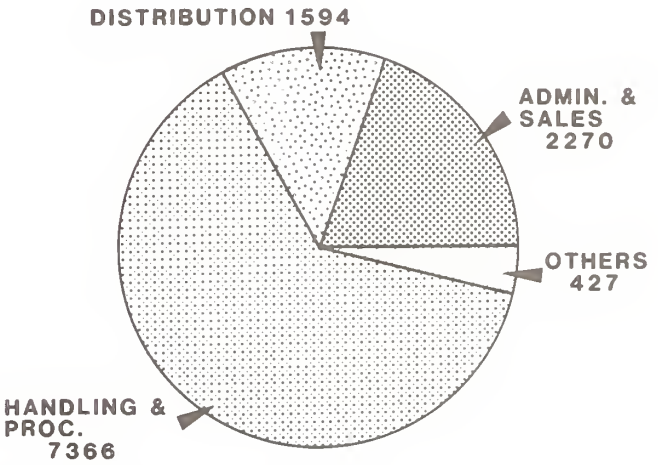


Figure 24.—Employment by function.

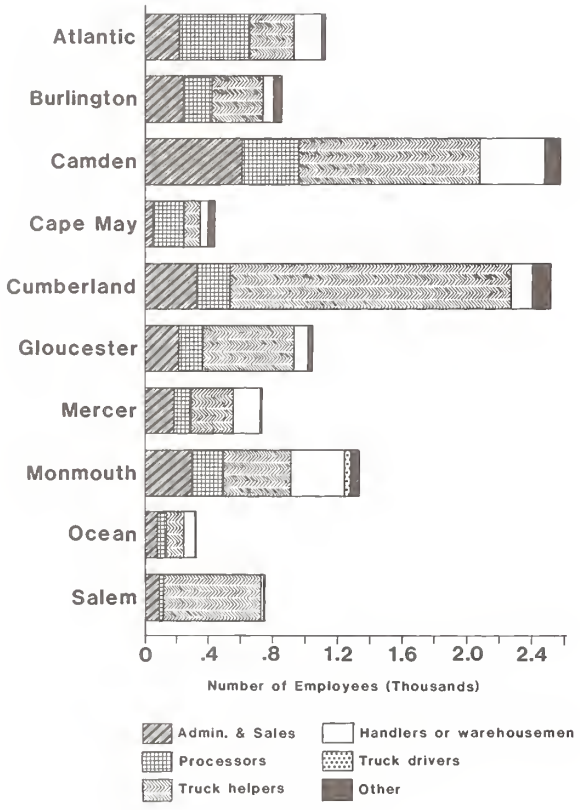


Figure 25.—Employment by county.

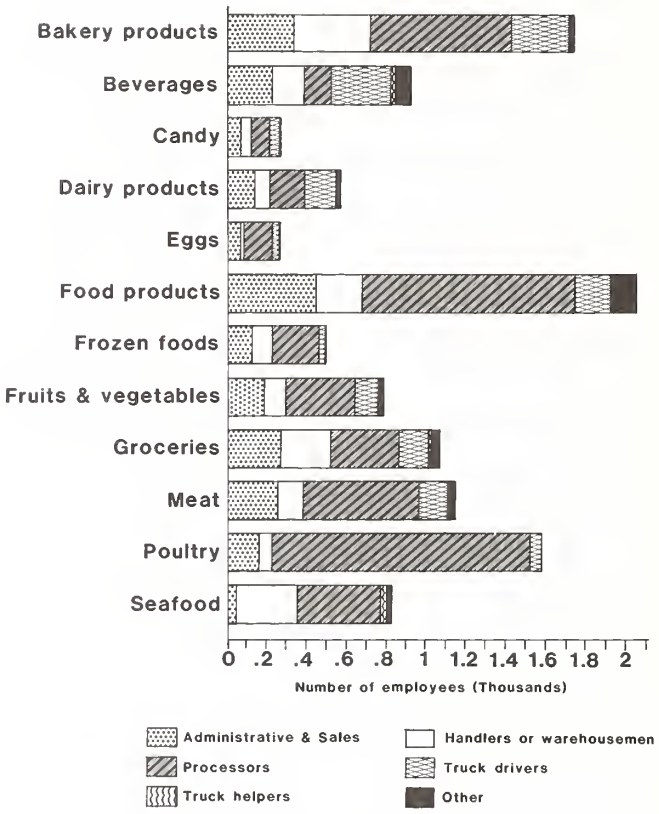


Figure 26.—Employment by function and type of firm.

the southern New Jersey wholesale food industry by type of position. Appendix table 3 describes this material in greater detail.

The importance of food industry employment varies among the different counties of the study area. Figure 25 illustrates the food industry employment in each county of the study area. Camden County, with 22 percent of the total, has the single largest share of overall food industry employment, followed closely by Cumberland County. Atlantic, Burlington, and Monmouth Counties are also well represented among food industry employment. Ocean and Cape May Counties have only limited food industry employment among their citizens.

Figure 26 illustrates how the different functions performed by people employed in the southern New Jersey wholesale food industry vary between the different types of firms.

Bakery product firms reflect their manufacturing nature with the relatively large number of processors employed. In contrast, product handlers are fairly limited in number. Meat wholesalers also employ significant numbers of people in processing activities, with a limited number of people involved only in handling activities. Even grocery companies, normally limited to handling and storage activities, are involved to a considerable degree in processing activities, such as salad making, repacking, and specialized product manufacturing.

All the different types of companies except poultry and seafood firms are involved in distribution activities. Many poultry and seafood wholesalers use other means than company-owned vehicles, reducing the amount of labor needed for distribution activities. In contrast, the food industry as a whole in southern New Jersey uses about 14 percent of its employees to deliver products. Of the differ-

ent types of food wholesalers, beverage companies and bakery product firms combine sales and delivery operations with the drivers playing a major role in selling products, often as independent businessmen earning commissions in addition to salaries. Only three types of wholesale or processing companies use truck helpers—beverage companies, grocery companies, and seafood wholesalers. A truck helper is a second employee assigned to accompany a driver on the road to help unload customers' orders. Many companies have found it efficient to provide mechanical aids to drivers, such as conveyors and hydraulic lifts, in lieu of truck helpers.

All the different types of firms use about the same proportion of their total labor for sales and administration. Some growth is being experienced in this type of employment as more emphasis is being placed on telephone contact or sales contract with potential customers instead of on cash-and-carry operations. Most of the successful companies contacted for this study placed great emphasis on customer relations and maintaining a sustained relationship with those who buy their products.

Of the total employment, less than 4 percent is involved in other activities, too few to show in figure 26. As most of these employees are engaged in support activities directly involved with the facilities, growth in this function should be fairly limited, assuming the relative size of the companies remains about the same.

Employee classification by function in this report is based on the type of work the worker was hired to perform. Efficient use of available labor requires many employees to do more than one type of work each day in a number of the companies. In such instances, the employee was classified by function based on the type of work requiring the largest portion of the worker's overall time.

The major problem identified in this study of the current marketing of food in southern New Jersey concerns inadequate facilities. These facility problems can be divided into two principal areas: (1) poor or inadequate design in obsolete buildings or structures adapted from other uses, and (2) buildings on sites too small to accommodate growing businesses.

Facility-related problems directly affect the day-to-day operations of companies conducting business in the study area. The consequences of these problems are higher operating expenses, reduction of services to customers, and an inability to take full advantages of an ongoing opportunity to serve a growing regional food industry.

Some facilities are operating in buildings that do not permit the use of modern materials-handling and storage equipment. Firms operating in these buildings must "make do" with yesterday's technology in today's world. Manual equipment, old elevators, and modified equipment are prevalent in these facilities.

Other facilities are modern in design but are too small to handle the business secured by aggressive and expanding companies. Expansion space on the sites of these facilities has been occupied as the companies have grown; additional land is not available for further expansion. Often these buildings are crowded far beyond the capacity for which they were designed. Aisles are narrow; storage equiqment is eliminated to increase capacity at the expense of efficiency; and processing areas are crowded into limited space that is available in the buildings. Operating costs are high in such structures and loss of potential business places a still higher burden on companies.

Need for New Facilities

A total of 34 wholesale and food processing firms currently operating in southern New Jersey have an immediate need for new facilities. These firms can form the nucleus for the initial development of a new wholesale food distribution center to serve the region. Other firms from southern New Jersey can be expected to locate on a new center in later stages of development, as their present buildings become unsuitable for efficient operations or as these companies initiate new kinds of wholesaling or processing operations. Food firms from outside the study areas may also consider locating on the new center.

Of the 12 different types of wholesale food firms, 10 are represented among the firms with an immediate need for new facilities, with meat firms the largest category, as

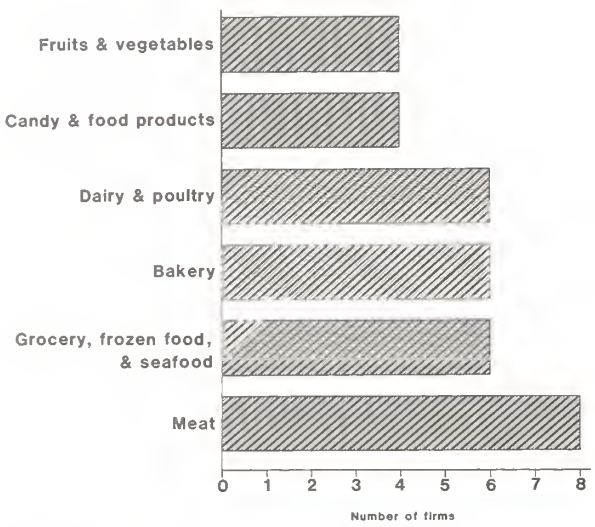


Figure 27.—Firms needing new facilities.

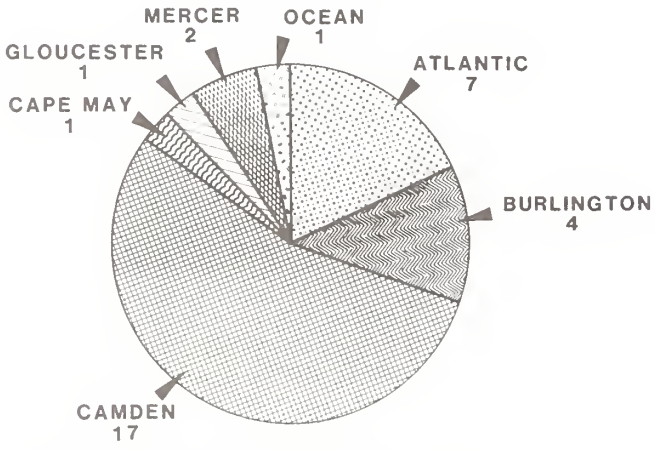


Figure 28.—Location of firms needing new facilties.

shown in figure 27. In order to avoid revealing confidential material about the various firms included in new facility planning, some of the categories defined previously have been combined. The new categories are (1) fruit and vegetable companies, (2) candy and food product wholesalers, (3) dairy and poultry firms, (4) bakery companies, (5) grocery, frozen food, and seafood firms, and (6) meat companies.

The firms needing new facilities come from seven counties in the study area. Figure 28 illustrates the number of firms from Camden, Cape May, Gloucester, Mercer, Ocean, Atlantic, and Burlington Counties; no firms with an immediate need for new facilities currently operate in the remaining counties of the study area. Camden County, with 17 firms identified as needing new facilities, contributes the single largest number of firms included in new facility planning. Table 2 outlines the use of space and volume handled by the different kinds of southern New Jersey firms needing new facilities.

Product Movement

Companies needing new facilities handle a total of approximately 102,000 tons of food products annually. Of this total, less than 1 percent is represented by interdealer transfers between similar wholesale food firms. Of the different types of firms needing to relocate, meat firms handle the single largest percentage (by weight) of the total, or about 33 percent. Fruit and vegetable firms handle about 26 percent of the total. Table 2 outlines the volume handled by various types at companies.

The firms identified as needing new facilities move their products through the study area in a somewhat different pattern from that of the overall southern New Jersey food

Table 2.—Present space and volume of firms identified as needing new facilities

Firm type	Primary space	Secondary space	Total	Direct receipts	Interdealer transfer	Total volume handled
	Square feet			*Tons*		
Fruits and vegetables	44,312	8,400	52,712	26,817	0	26,817
Candy and food products	30,300	0	30,300	6,406	93	6,499
Dairy and poultry	25,575	0	25,575	7,136	0	7,136
Bakery	55,195	0	55,195	13,148	3	13,151
Grocery, frozen food, and seafood	50,990	0	50,990	15,140	386	15,526
Meat	100,000	10,500	110,500	33,597	0	33,597
Total	306,372	18,900	325,272	102,244	482	102,726

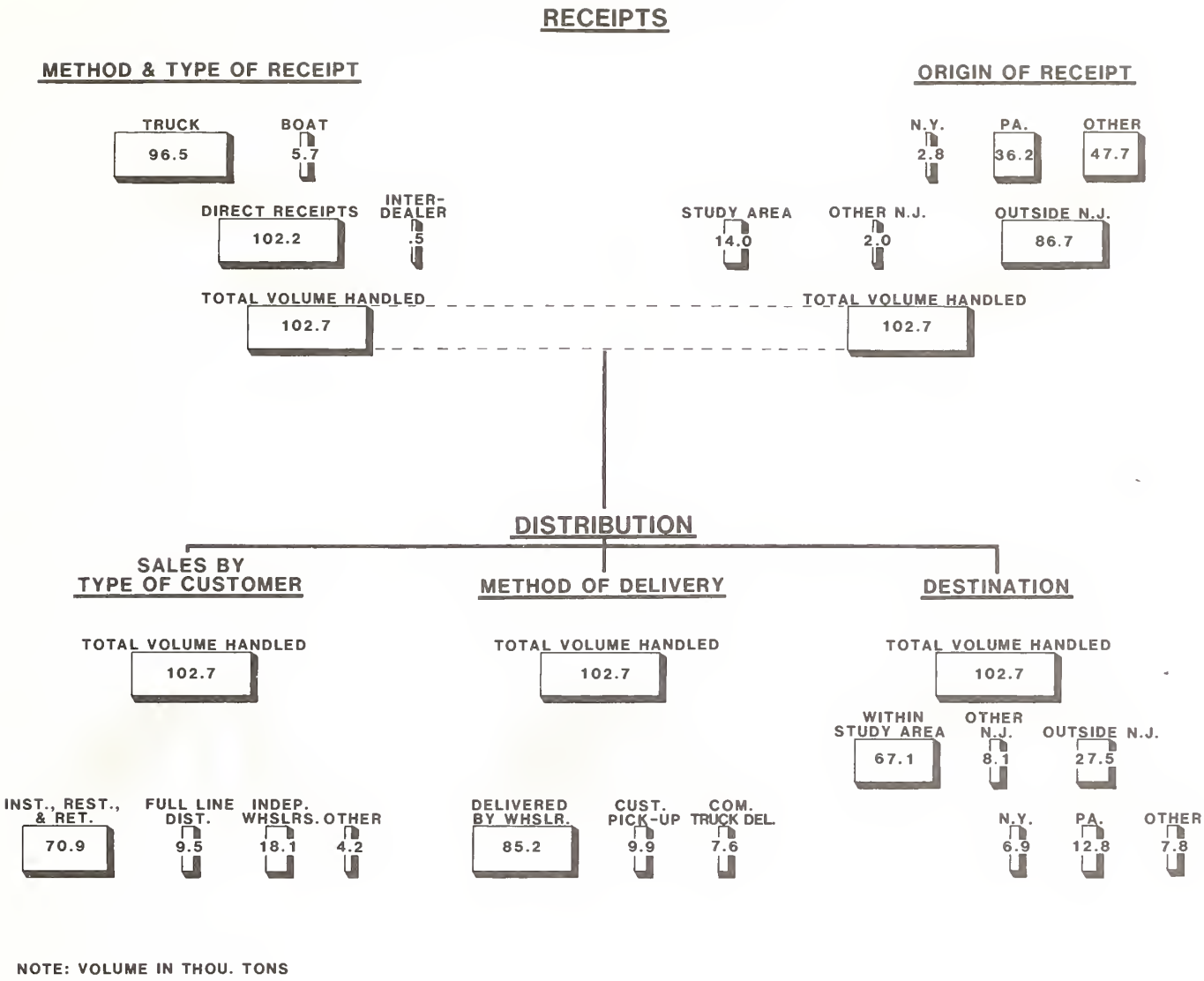


Figure 29.—Product movement through wholesale facilities identified as needing replacement.

industry. Figure 29 illustrates this product movement, using the same major considerations outlined in earlier discussions of overall product movement in the total southern New Jersey food industry: (1) method and type of receipt, (2) origin of receipt, (3) sales by type of customer, (4) method of delivery, and (5) destination of product.

The firms needing new facilities also depend almost entirely upon trucks for incoming product. None of these firms presently receive products by rail. However, some seafood firms report using company-owned docks to unload company boats.

Pennsylvania is very important to firms needing new facilities. More than 35 percent of incoming products originate from warehousing or processing facilities in Pennsylvania. Many of these products are produced in other parts of the country; manufacturers are presently using Pennsylvania as a temporary storage point to service customers in southern New Jersey. The modern wholesale food distribution center in Philadelphia is a particularly important source of supply for the southern New Jersey firms needing new facilities. In contrast, less than 14 percent of the total receipts of these study firms originate in the study area.

Most of the customers of the firms needing new facilities are retail outlets and restaurants. Of the total volume handled, 69 percent moves to feeding establishments, restaurants, and independent retail stores. About 18 percent moves to other independent wholesalers and less than 10 percent moves to chainstores or other full-line distributors.

Following industry trends, most of the firms identified as needing new facilities deliver their products directly to their customers. These firms deliver about 83 percent of their total volume to their customers. Less than 10 percent of this volume is picked up at wholesale facilities and much of this volume originates at cash-and-carry outlets of various types. An additional 7 percent of the total volume is delivered by commercial carriers; much of this volume represents movement from firms manufacturing or processing products for national sale.

The study area is an important source of business for firms needing new facilities. Over 65 percent of the total volume handled by these firms is sold to customers located within southern New Jersey. This percentage is significantly higher than the equivalent portion of product moved to customers by the southern New Jersey food industry taken as a whole. Almost 13 percent of the volume of firms needing new facilities move to Pennsylvania, mainly the Philadelphia Wholesale Food Distribution Center. An additional 6.7 percent move to New York and about 8 percent go to customers in northern New Jersey.

Present Space

The firms identified in the study as needing new facilities currently occupy over 300,000 square feet of first-floor space. Almost all of this space is primary space but fruit and vegetable companies occupy about 20 percent of their space away from their primary facilities. Meat firms also have a significant amount of secondary space, about 10 percent of their total space. Table 2 outlines the present space of the firms identified as needing new facilities.

Employment

Over 800 local residents are employed by the firms needing new facilities. Appendix table 4 illustrates this material in some detail.

Impact of Inadequate Facilities

Antiquated and/or inadequate facilities have a direct impact on both the cost of handling food through southern New Jersey and the quality of such food reaching the consumer. Handling and processing operations are expensive and difficult when products must be stored in crowded conditions or in facilities that require manual handling in lieu of more mechanized operations. Absence of refrigerated storage and lack of proper receiving and shipping facilities contribute to product damage through spoilage and physical damage.

Inadequate facilities may also contribute to a decline of the local food industry as a whole. More modern companies operating outside southern New Jersey may often offer products at lower costs than their local competitors, displacing area employment and business opportunity. Also, as outside firms obtain an increasing share of the local market, efficient local competitors may discover increasing difficulty in matching the business resources of such competitors. As specialized local food firms decline, other southern New Jersey firms that depend on local specialized suppliers and services may find it difficult, in turn, to provide a full range of services and products to their customers.

Figure 30.—Artist's conception of a wholesale food distribution center for southern New Jersey.

A new wholesale food distribution center to serve southern New Jersey represents one of the major alternatives for meeting the facility requirements of the firms needing to relocate to new buildings. Such a center, an industrial park designed for food and related firms, offers the potential for correcting the problems existing in current facilities. Figure 30 illustrates an artist's conception of how the center would appear after all the buildings are expanded to their design limits. Figure 31 breaks down the initial and planned space on the new center.

Space Needed

Types of Buildings

A number of different types of buildings would be required on a new wholesale food distribution center. Among these different kinds of buildings, two major building designs would be used by the food wholesale firms on the center. Other buildings would be required to house firms or operations needed to support the food firms' operations. The two types of food buildings anticipated on the center are (1) multiple-occupancy buildings and (2) single-occupancy buildings.

Multiple-Occupancy Buildings.—Typical buildings of this type are 100 feet long by several hundred feet wide. The buildings can be completely enclosed from front to rear and provide common rail facilities (if needed) and truck maneuvering areas along opposite sides of the structure.

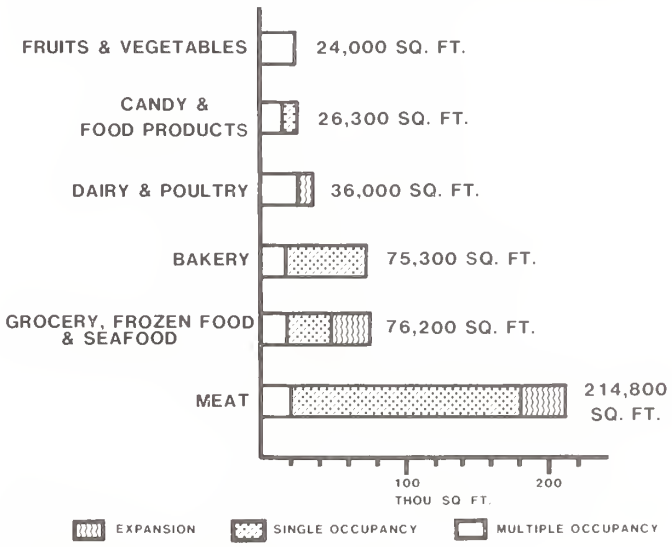


Figure 31.—Planned space by type of firm.

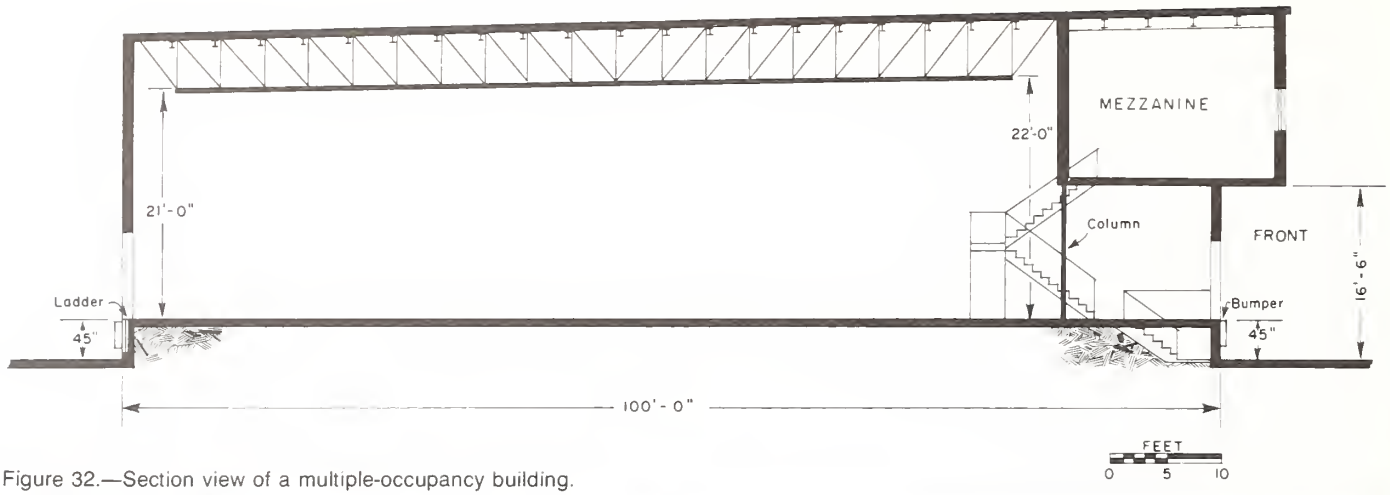


Figure 32.—Section view of a multiple-occupancy building.

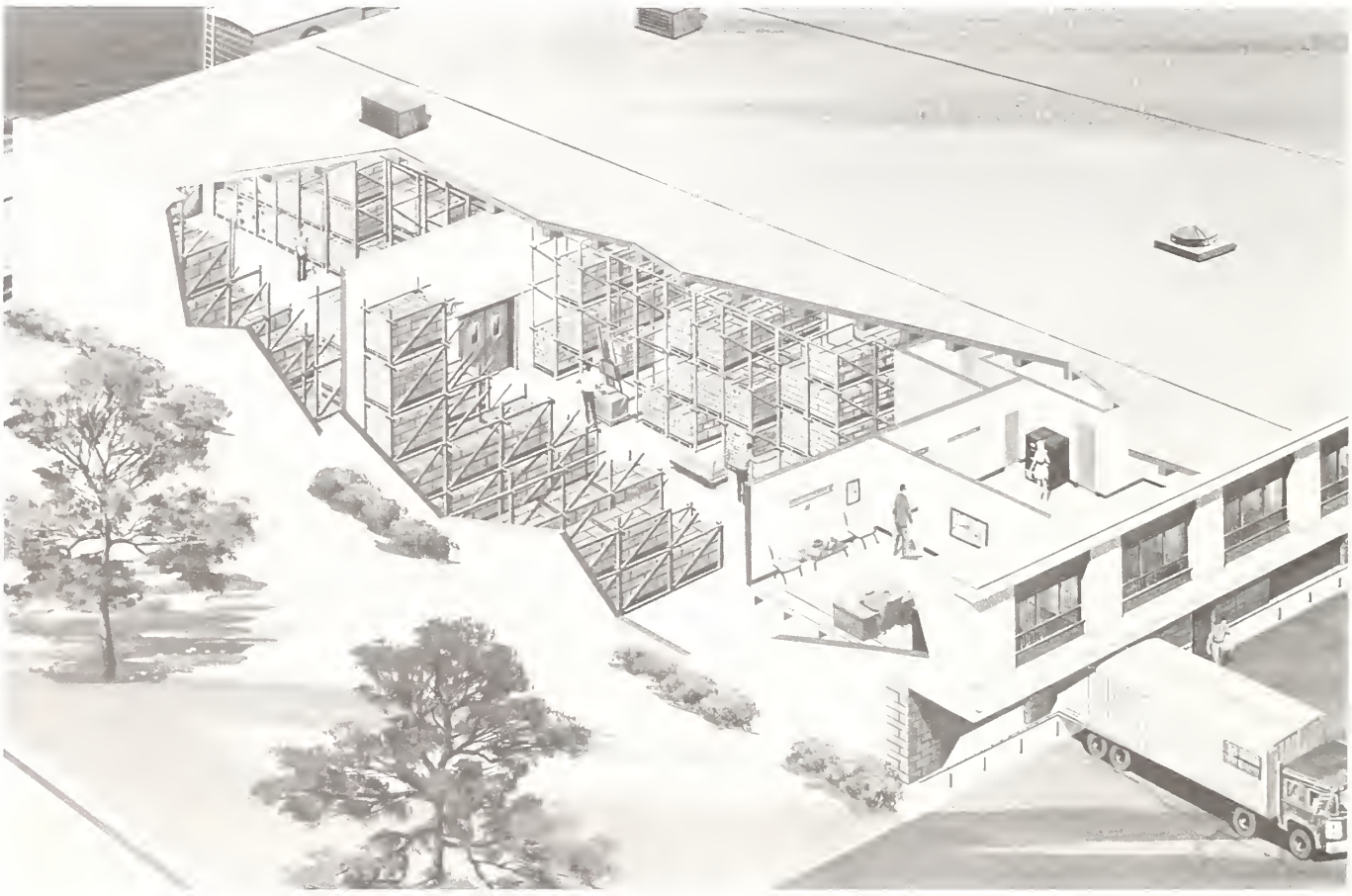


Figure 33.—Artist's conception of the interior of a multiple- occupancy building.

Rail-receiving doors are typically designed to allow an alternate use as truck-receiving areas as well. A section view and artist's conception of a multiple-occupancy building are shown in figures 32 and 33.

Floor heights are compatible with those of railcars and trucks. Exterior door sills for truck receiving and shipping are 45 inches above ground level. Door sills for rail-receiving operations can be either 45 or 55 inches above ground level, depending on the use of nonrefrigerated or refrigerated railcars.

Other design features are incorporated in multiple-occupancy buildings to make the facilities compatible with their intended uses. Drains, where appropriate, are located in the floor to dispose of water and for cleaning. Doors intended for truck operations are protected from backing vehicles by vertical bumper strips. First floors are concrete and designed to bear anticipated loads. Freezer floors require additional subslabs to withstand the constant freezing temperature.

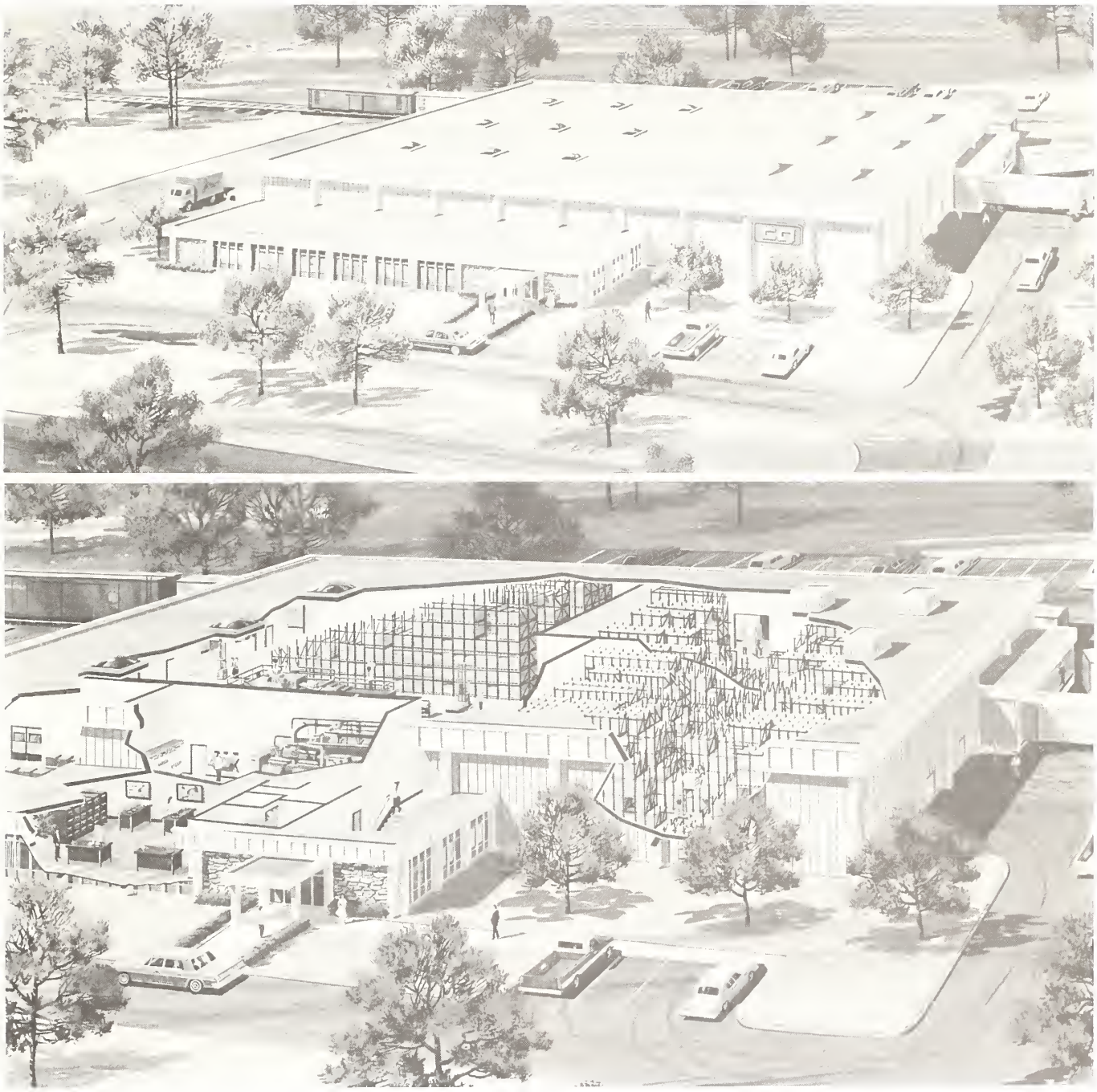


Figure 34.—Artist's conception of the (a) exterior and (b) portions of the interior of a single-occupancy building.

A 20-foot-wide mezzanine extends across the front of the building for offices, restrooms, lunchrooms, lockers, and light storage. Some types of wholesale firms may require mezzanines extended to form complete or partial floors for extensive support facilities or light storage.

Single-occupancy buildings.—These buildings may be used for various combinations and types of warehousing, processing, or packaging. Ceiling heights, floor design, drains, and the relationship of offices, receiving and shipping areas, machinery, and operational equipment, as well as building shape, are determined by the layout most

suitable for the user of the facility. Figure 34 illustrates the exterior and portions of the interior of a single-occupancy building used for a perishable produce warehouse, with provision for limited processing incorporated in the facility design.

Firms choosing single-occupancy buildings to house their operations require individual sites with separate truck maneuvering areas, rail receiving, and parking. Security considerations also prompt some users of this building type to fence the land around the building. With the exception of access streets, rail spurs, sewers, and utilities, users of single-occupancy facilities do not commonly share support facilities with other companies.

Support facilities.—An additional type of facility is needed on the new center. This type of facility includes a number of different kinds of buildings, each intended to house operations that are needed to support the activities of the food companies on the new center. The support facilities include (1) a gatehouse to control entry into the multiple-occupancy portion of the market; (2) an office building for brokers, banks, and other commercial firms doing business on the new center; (3) a truck service center to accommodate the many over-the-road vehicles expected and the many delivery trucks used by firms having buildings on the development; and (4) a central energy plant to provide refrigerant to firms with coolers and freezers.

The gatehouse is a key security element and a major factor of market rules on the new center. This support facility can be used to house a market employee to collect fees from incoming vehicles and to coordinate the hours this portion of the market is open to buyers bringing their own vehicles to the center. Figure 35 illustrates the type of gatehouse planned for the new center.

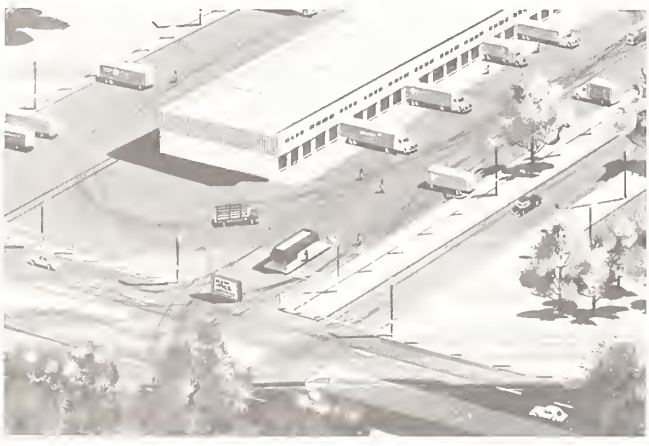


Figure 35.—Gatehouse.

An office building is also an important element for a new market, providing brokers and others frequently on the market with adequate and modern offices near the food firms with which they deal. The office building can also house a restaurant for the market. Figure 36 illustrates the size and kind of office building anticipated on the new market.

A truck service center is often a useful adjunct on wholesale food distribution centers to provide gas and minor repair services to the many vehicles expected to operate on a modern center. Extensive outside use of such a center can create serious traffic congestion problems for the overall development. In such instances, limits may have to be established on the numbers and origins of vehicles using this kind of facility. Figure 37 illustrates one kind of truck service center that may be appropriate for the new southern New Jersey wholesale food distribution center. A storage shed is located on the truck service center to accommodate street cleaning machines and other major equipment needed for the upkeep of the market.

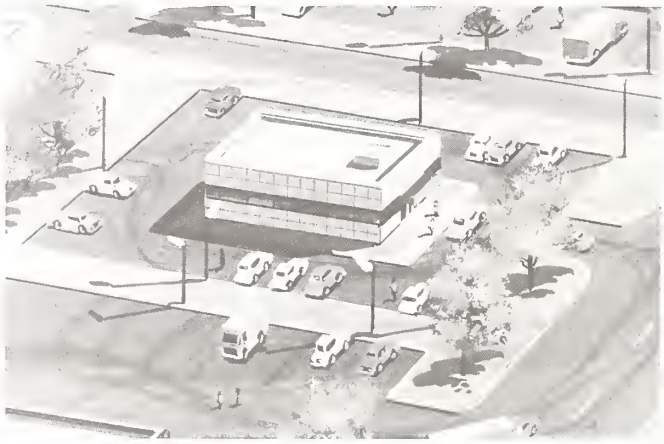


Figure 36.—Office building.

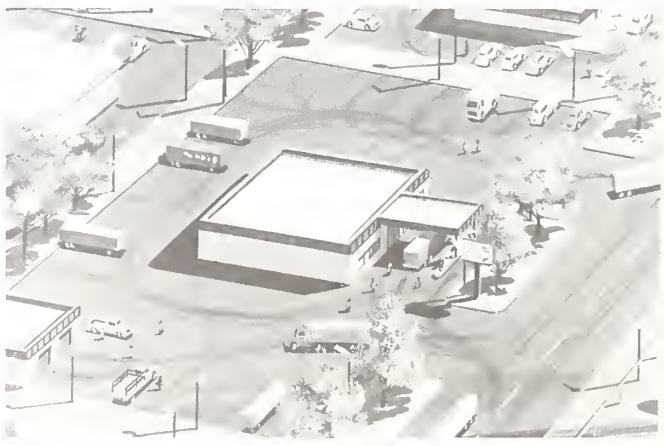


Figure 37.—Truck service center.

One of the most important service units anticipated for the new center is a central energy plant. This facility would provide piped refrigerant for air-conditioning and all of the coolers and freezers on the center, as well as hot water produced from heat recovered from the plant's machinery for heating and processing operations. The central energy plant would be connected to the various appropriate buildings on the center through underground pipes installed at the time of market construction. Research by the USDA indicates that wholesalers and processors on the new center could realize substantial savings in investment and operating costs associated with maintaining refrigerated areas, heated areas, hot water production, and air-conditioning when compared with equivalent costs of owning and operating separate equipment installed at each firm.[1] Figure 38 illustrates how such a central energy plant might appear on a new center.

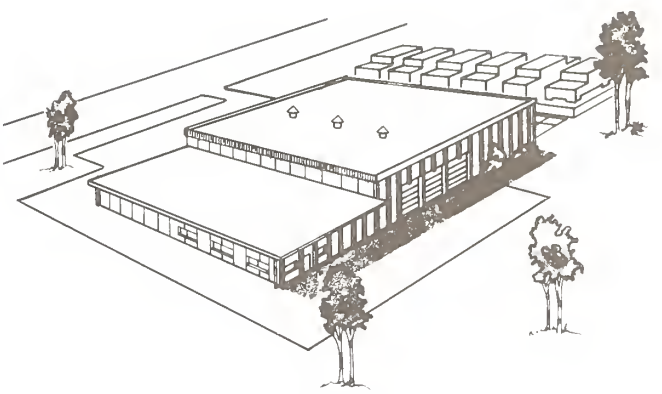


Figure 38.—Central energy plant.

Planned Facilities

The new center is designed not only to accommodate the initial needs of the firms needing relocation but also the anticipated expansion of each building necessary for handling future additional volume. Some firm categories will require a limited amount of expansion; others will require substantial amounts of additional space over the life of the new center. Figure 31 illustrates both the initial space and anticipated expansion. Appendix table 5 also outlines this material in greater detail. The methodology used to estimate these volume increases is outlined in a previous USDA report.[2]

Some firms will move from one type of wholesale structure to another over the life of the center. Some of these firms will begin operations in the multiple-occupancy buildings planned for the center but will subsequently expand beyond the point of practical operation in this type of facility. To accommodate these firms, vacant land has been located on the new center for later construction of new single-occupancy buildings. The vacated multiple-occupancy units would then be available to other, smaller firms.

Overall, the two different types of buildings planned for the new center will expand separately. The initial 123,000 square feet of multiple-occupancy space will be supplemented by an additional 12,000 square feet of new space over the life of the center, providing a total of 135,000 square feet by the time development has been completed. Similarly, the initial 260,597 square feet of single-occupancy space will be followed by an additional 56,944 square feet for a planned total of 317,541 square feet. The relative proportions of space in single-occupancy and multiple-occupancy buildings will remain the same between the initial and final stages of development. Fully developed, the center will provide a total of 452,541 square feet of enclosed food wholesale or processing space.

Some firms will not require any expansion. No additional space is planned on the new center for bakery firms, candy and food products companies, and fruit and vegetable firms. Advances in inventory control and improvements in storage technology are expected to accommodate all of the increases in volume anticipated for these firms.

Other firms will require substantial expansion. Meat, dairy, and poultry companies, grocery, frozen food, and seafood firms will require all the expansion planned for the new center.

Some of the support facilities will also require expansion, but most will be initially constructed to accommodate all the anticipated market growth over the life of the facility.

Design and Arrangement

The design and arrangement of the new center represent the most important elements in building a successful market that will well serve the firms locating on the development. Each building's design should reflect the most modern technology available for the particular operations anticipated in the facility. The various parts of the center should be arranged to complement the overall development and avoid problems that will hamper operations in later stages of the market's growth.

[1]Stahlman, R.L. A study of refrigeration system for urban food distribution centers. MRR-921, USDA, 107 pp., ill., 1972.

[2]Taylor, E.G., et. al. Food distribution facilities for Memphis, Tennessee. MRR-1099, USDA, 93 pp., ill., May 1979.

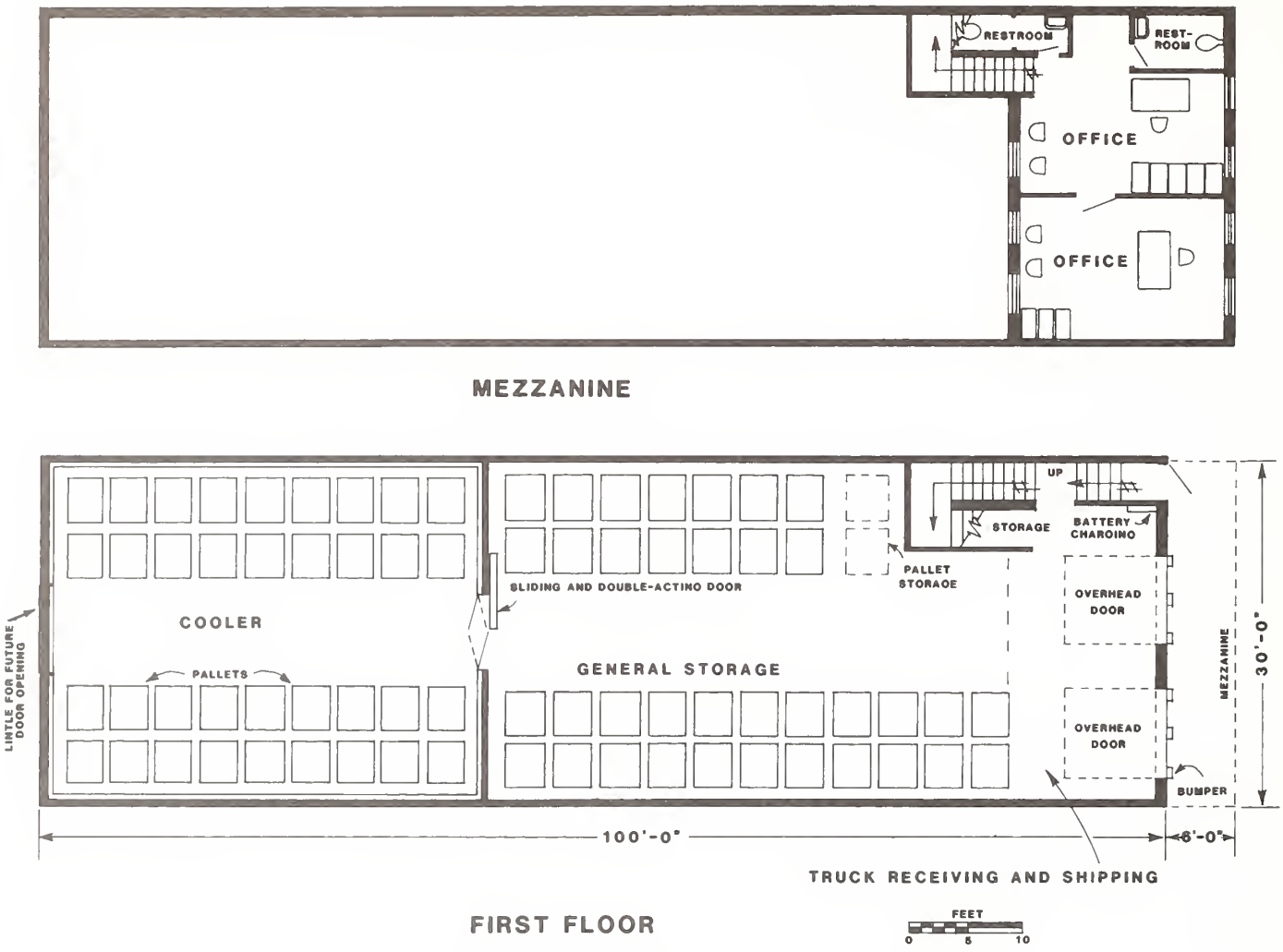


Figure 39.—Layout of a fruit and vegetable wholesaler in one unit of a multiple-occupancy building.

Design

Two basic types of interior arrangements are anticipated for the food wholesale and processing firms for which the new center is designed. While the particular details will differ for the various types of wholesale firms locating on the new center, many general principles are common to most of these companies.

The first type of interior arrangement would accommodate warehousing firms. This type of food wholesaler receives merchandise from suppliers, stores this merchandise, and from established inventories assembles orders for the firm's customers and loads these orders into delivery trucks for shipment.

Figure 39 illustrates an interior arrangement for a fruit and vegetable general-line wholesaler in one unit of a multiple-occupancy building. Offices are located overhead in the unit's mezzanine at the front of the unit with the order assembly area located directly below on the first floor. Windows in the offices provide a view of the interior of the unit as well as the street in front of the facility. Access to the offices is arranged to limit unsecured entry into the main storage and working area of the facility.

Truck loading and receiving are through the two doors at the front of the facility and through a multiple-use door at the rear that can be used for both rail (if available) and truck receiving. All the doors in this arrangement are equipped with seals, reflecting the perishable nature of the product handled by fruit and vegetable wholesalers.

The interior of the building is divided into an air-conditioned general storage area and a low temperature cooler. Specific products are kept in each area, reflecting the particular storage requirements of each product. Pallet racks and narrow aisle handling equipment would be used.

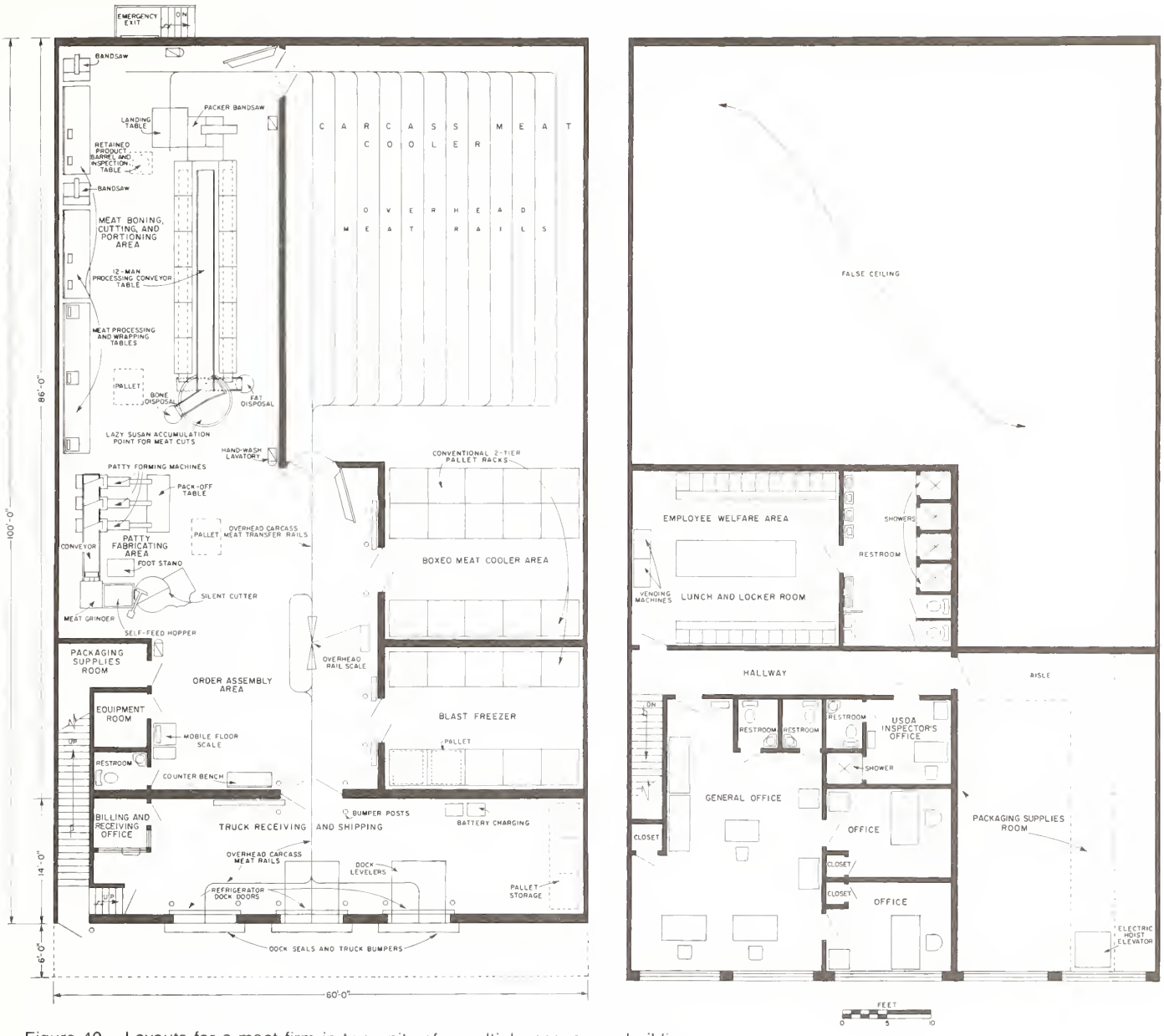
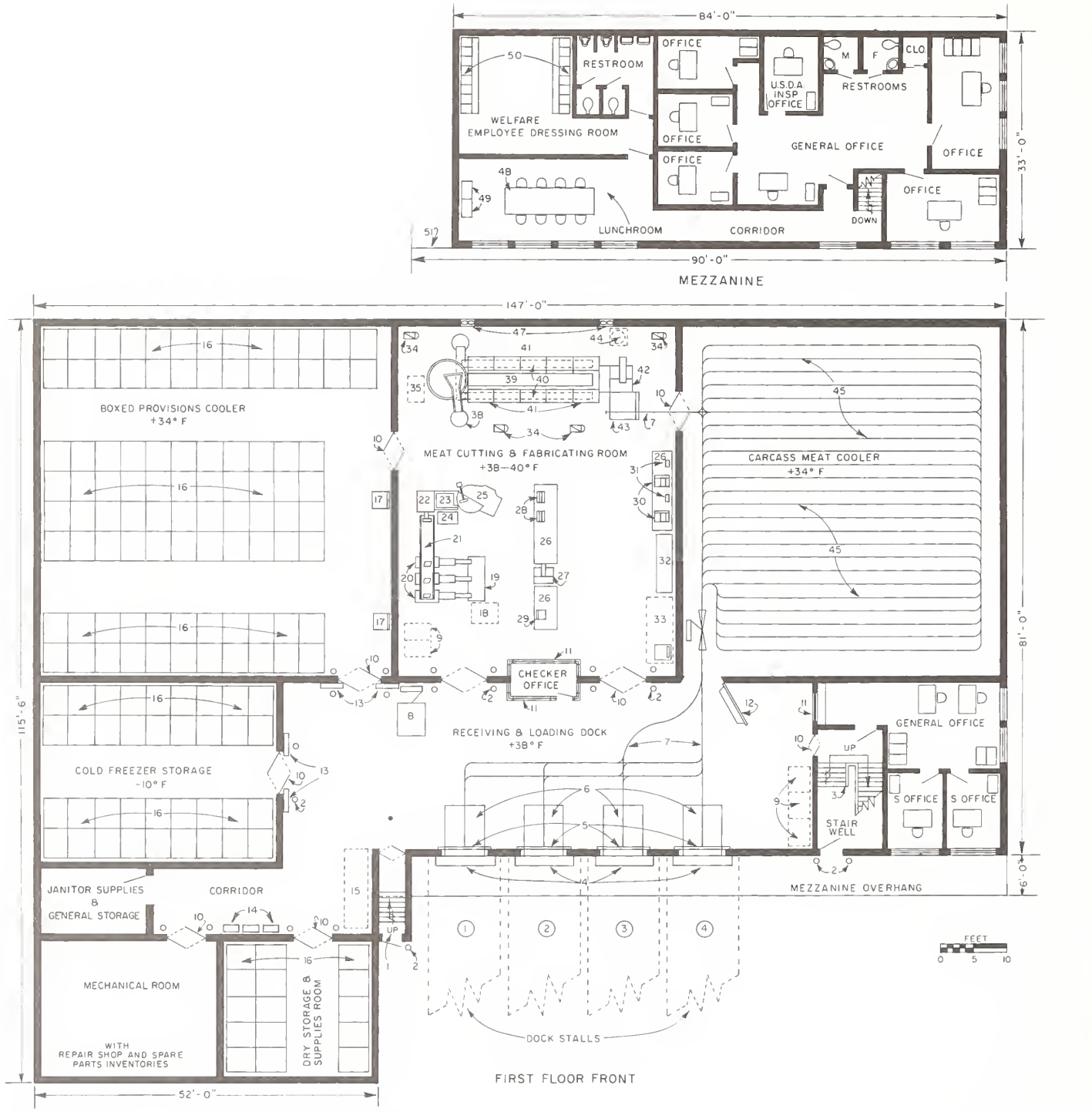


Figure 40.—Layouts for a meat firm in two units of a multiple-occupancy building.

No platforms are shown on this type of building, anticipating delivery type operations in lieu of buyers coming to the market.

Processing firms require a second type of interior arrangement. Some differences can be noted in layouts with these firms, depending on the type of building they occupy on the new center. Figure 40 illustrates the interior arrangement of a meat firm in two units of a multiple-occupancy building. The basic design of this unit is flexible to allow firms to share a single unit in a common expansion effort in later stages of center development. The illustrated layout features an enclosed receiving and shipping area at the front of the building, refrigerated for product protection. Processing and storage areas share the remainder of the facility, with careful attention to locating access between appropriate storage and processing functions. Major storage areas are designed for meat rails but are convertible to boxed beef storage requirements.

Employee safety features are also incorporated. For example, floors must be surfaced with skid-proof finishes to help prevent accidents. The type of construction materials selected must be able to absorb sound to minimize the noise level and comply with other employee protection standards. Much information about such required standards can be found in the Williams-Steiger Occupational Safety and Health Act of 1970 and the regulations issued under that law. Additional regulations govern the construction and design of processing facilities for various products.



1 EMERGENCY EXIT
2 BUMPER POSTS
3 HAND RAILING
4 DOCK INSULATION SEALS & TRUCK BUMPERS
5 REFRIGERATOR DOCK DOORS
6 DOCK PLATFORM LEVELERS
7 OVERHEAD CARCASS MEAT TRANSFER RAILS
8 BUILT-IN DOCK PLATFORM SCALE
9 RESERVE PALLET STORAGE
10 TWO-WAY INSULATED TRAFFIC DOORS
11 GLASSED WINDOW AREA, WITH COUNTER DESK
12 REFRIGERATOR DOOR
13 BI-PARTING, HORIZONTAL SLIDING FREEZER DOORS
14 BATTERY CHARGERS & RESERVE BATTERIES
15 TEMPORARY TRASH-STORAGE ZONE, WITH MOBILE TRASH BINS
16 3-TIER DRIVE-IN PALLET RACKS
17 MOBILE SCALES FOR BOXED MEAT
18 LOADING PALLET
19 PATTY PACKING TABLE
20 THREE-UNIT PATTY FORMING MACHINE SYSTEM
21 BELT CONVEYOR
22 MEAT GRINDER
23 SELF-FEED HOPPER
24 FOOT STAND
25 SILENT CUTTER
26 MEAT PROCESSING & PACKAGING TABLES – PACKAGING MATERIALS OVERHEAD
27 BAND-SAW
28 MEAT-CUBING MACHINES
29 DIAL BENCH SCALE
30 MEAT SLICING MACHINES
31 PORTION CONTROL CHECK-WEIGHT SCALES
32 MULTIVAC-PACKAGING SYSTEM
33 TEMPORARY ORDER-STAGING AREA
34 HAND WASH LAVATORY WITH KNIFE STERILIZING BOX
35 MOBILE MEAT-TRANSFER DOLLY-TUBS, & TIERED SHELF RACKS
36 LAZY SUSAN ACCUMULATION POINT FOR BONED & FABRICATED MEATS
37 FAT DISPOSAL UNIT
38 BONE DISPOSAL UNIT
39 AUXILIARY OVERHEAD CONVEYOR FOR BONES
40 AUXILIARY SUB-LEVEL CONVEYORS FOR FAT
41 TEN-MAN PROCESSING CONVEYOR TABLE
42 PACKER BAND SAW
43 LANDING TABLE
44 RETAINED PRODUCT BARREL AND MOBILE RE-INSPECTION TABLE
45 OVERHEAD MEAT RAILS (STORAGE & TRANSFER)
46 MEAT RAIL SCALE
47 EXHAUST VENT FANS
48 LUNCH TABLE WITH FOLD-UP CHAIRS
49 FOOD DISPENSING MACHINES
50 WELFARE LOCKERS & DRESSING BENCH
51 DOCK PLATFORM OVERHANG

Figure 41.—Layout for a meat firm in a single-occupancy building.

Figure 42.—Arrangement of buildings on a new wholesale food distribution center for southern New Jersey.

Figure 41 illustrates the interior arrangement for a larger meat firm housed in a single-occupancy building. This layout is designed to provide a U-shaped product flow for both carcass and boxed meats. It provides maximum inventory flexibility and product movement free of backtracking, bottlenecks, and excessive labor handling. Each product-storage area has been organized within the overall plan for effective use of labor and materials-handling equipment. This helps lower operating costs and improve job performance efficiency. All work areas are incorporated into the building's first floor to further improve product-handling efficiency.

Offices, restrooms, and lunchrooms are located on the second floor directly above the receiving and shipping platform at the front of the building. These areas are arranged for convenience of the employees and to make use of overhead space above areas on the first floor that do not require high ceiling.

Specialized storage equipment makes efficient use of available space. Boxed-meat coolers and freezer storage areas include three-tiered drive-in pallet racks as well as conventional racks that are aligned and arranged for efficient order selection. Live storage (boxed on inclined rollers) and a separate loading aisle are provided for low-volume items in the boxed-meat cooler. Mobile platform scales also are illustrated in this room.

Other USDA publications examine a wide range of plant layouts for particular commodities locating on new wholesale food distribution centers.[3] Actual internal arrangements and the interior and exterior design of single-occupancy buildings would, of course, depend on the particular needs of individual firms.

Support facilities included in the plans for the new center would follow conventional designs for such buildings. Example plans for the central energy plant can be found in an earlier USDA report (see footnote 1).

Arrangement

The arrangement of buildings, streets, parking, and other facilities is an important consideration in designing a new center for southern New Jersey. Four multiple-occupancy buildings and 12 single-occupancy buildings are included in fully developed new center plans. Figure 42 illustrates the arrangement of the major buildings on the new center. Multiple-occupancy buildings are grouped together for the convenience of customers visiting the market and to control traffic associated with the many smaller wholesale and processing firms likely to locate in this type of facility. Fencing is provided around the multiple-occupancy buildings, with the gatehouse positioned to control entry and serve as a possible point of fee collection. Single-occupancy buildings are located on individual sites with

[3]Overheim, R.K., et. al. Improved food distribution facilities for northeastern New Jersey, MRR-1133, USDA, 118 pp., ill., 1983.

separate truck maneuvering and parking areas. Each single-occupancy building has immediate access to principal market streets. Most buildings are arranged so that rail service can be extended to these facilities, as required.

Care in locating the various support facilities is also important. The office building is located adjacent to the main market access street for the convenience of tenants and traffic control. This building is also located to avoid future conflict with the extension of the market in later stages of development. The central energy plant is located to minimize the distances required for the needed underground pipes to reach heavy refrigeration users on the center. Also, the central energy plant is located to serve efficiently both the initial buildings anticipated on the center and future buildings that may be constructed in later stages of development. The truck service center is adjacent to the main market road for easy access by incoming trucks and to better maintain overall market traffic control.

Site Selection

A site of about 150 acres is needed for the new center, including about 60 acres for the wholesale food firms included in new facility planning. Support facilities will occupy 15 acres. An additional 75 acres are needed to provide for firms from southern New Jersey and from outside the study area that are expected to locate on the new center in later stages of development. Sufficient land is an important consideration in developing the new center because acquiring adjacent suitable land may be very difficult later.

Many individuals and groups are extremely interested in where a new southern New Jersey wholesale food distribution center might be located. The firms included in new facility planning will be affected by changes in operating costs and investment requirements. Employees will be affected by changes in their working conditions and transportation. Indirectly, other groups are interested, especially consumers, who in the long run will help pay for the new center by their purchases of food products. Local producers have an interest because changes in locations could affect the cost of transporting products to the wholesale food firms buying their products. The municipalities involved would have an interest because of the effects a new market might have on urban and industrial development plans, zoning, traffic control, street and highway planning, police and fire protection, and other services. Public service firms, such as transportation companies, utilities, and other service-oriented groups and firms, are also due proper consideration.

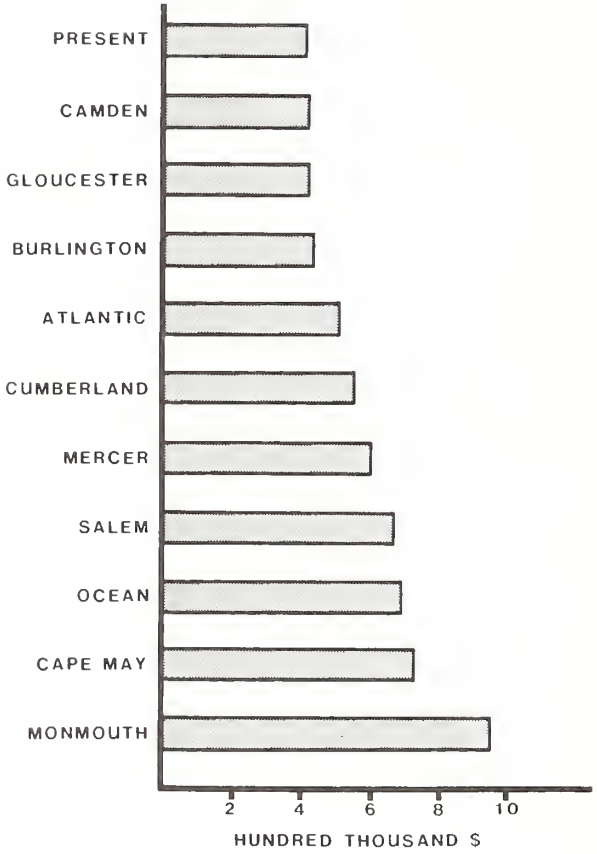


Figure 43.—Distribution costs.

In selecting a site for a food distribution center, the following factors should be considered:

(1) Convenience to retail and other outlets.
(2) Convenience to highways.
(3) Convenience to local and nearby producers.
(4) Availability of adequate land at reasonable cost.
(5) Accessibility to utilities.
(6) Avoidance of outside traffic.
(7) Land use, topography, shape of tract, and air pollution.
(8) Number of owners.

Convenience to Outlets

Transportation or delivery costs can be expected to vary substantially depending on the part of the study area chosen for the location of the new center. Figure 43 illustrates how such costs would vary if the new center were to be constructed in each of the 10 counties of the study area. These distribution costs do not represent charges from specific sites but assume that a center would be constructed on or near the center of population in each county. The methodology used to calculate these costs is outlined in a

previous USDA report.[4] The distances and driving times used in these calculations are summarized in appendix table 5.

Delivery costs from various locations vary considerably. These costs range from a low of $3.8 million, assuming a center located in Camden County, to a high of $7.6 million in Monmouth. Locating a new center in Burlington County would produce average delivery costs of $3.9 million; a site in Atlantic County would increase such costs to $4.6 million. Retaining operations in existing facilities would produce a cost of $4.1 million. While existing delivery costs reflect a previous decision to locate existing facilities as close as possible to present customers, relocation to new facilities also offers an opportunity to realize savings in delivery costs. Experience on some new food centers indicates that consolidated delivery (one truck delivering orders for more than one company) by some of the firms on a new center could offer the opportunity to substantially reduce delivery costs from a well-located center. The transportation costs illustrated in figure 43 and table 3 assume some consolidated delivery operations that would allow savings in both drivers' time and equipment investment.

Table 3.—Delivery costs from centers of population by county

Site	Total delivery cost
	Dollars
Present	4,129,468
Camden	3,857,423
Gloucester	3,874,144
Burlington	3,953,101
Atlantic	4,616,507
Cumberland	4,821,104
Mercer	5,086,617
Salem	5,715,606
Ocean	5,811,683
Cape May	6,133,756
Monmouth	7,611,719

Convenience to Highways
The large volume of products distributed from a modern wholesale food distribution center makes ready access to high-speed highways a necessity. Rail access should also be considered in evaluating various sites, as this type of transportation may be of increasing importance to the food industry in southern New Jersey in later stages of market development. Air transport is also important, but secondary to efficient truck receipt.

Convenience to Local Producers
A farmers' market is not planned for the new center, although some wholesale firms likely to locate on the new center would purchase some products from local growers. These local producers rely upon trucks to deliver merchandise to buyers, creating another imperative to carefully consider locating the market on or near major highways.

Adequate Land at Reasonable Cost
The cost of land is important to the development of a new center. In order for the new center to grow and respond to changing future conditions, it will be necessary to purchase all or most of the land for the complete development at the time of initial construction. Land reserved for expansion will be held until needed, resulting in considerable annual expense. Expensive land may limit space for orderly expansion of the market in late stages of development. Planned expansion will not only benefit firms locating on the market in the future, but will also benefit the firms initially locating on the center. On existing markets, the food firms initially locating there have found that their property has appreciated and their business has improved. This is attributed to the increased attraction of the market as a whole to customers that may purchase products from more than one firm.

In almost every city where a new wholesale food distribution center has been constructed, the value of surrounding land has sharply appreciated. If sufficient acreage is not acquired initially, real estate adjoining the site may price itself out of consideration for expansion.

Accessibility to Utilities
Electricity, gas, water, and sanitary and storm sewer facilities should be sufficient for commercial service and close enough so that they would not be prohibitively expensive.

Avoidance of Nonmarket Traffic
Moving food products through a wholesale food distribution center involves a large number of many kinds of motor vehicles. The routing of normal and necessary traffic, even in a well-planned facility, can be a serious and complicated problem. If vehicles not related to business on the center move through the market area, traffic problems are further complicated. Most food products coming into a food center have already been transported over a considerable distance, and a few extra miles on routes free of congestion will consume less time than travel by a somewhat shorter route in a highly congested area. Similarly, delivery trucks can move quickly over high-speed highways to urban areas without undue delay. The market should be located where there is little or no outside traffic.

[4]Overheim, R.K., et. al. Improved food distribution facilities for central North Carolina, MRR-1140, USDA, 68 pp., ill., 1984.

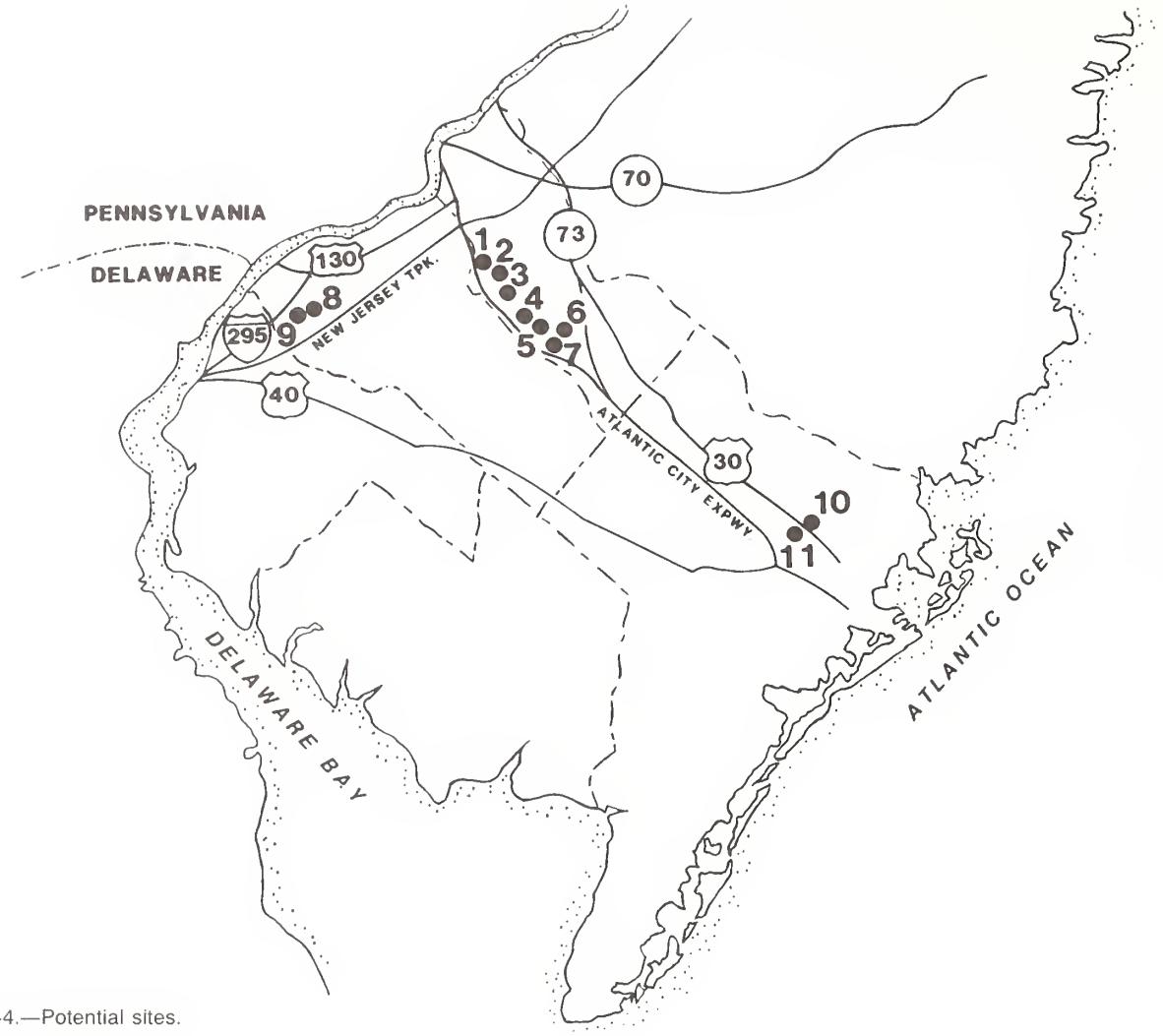


Figure 44.—Potential sites.

Land Use, Topography, Tract Shape, Zoning, and Number of Owners

Current land use is very important in selecting a site for a new wholesale food distribution center to serve southern New Jersey. Sites accessible to both existing customers and nearby population centers may not be easy to find.

The topography of some potential sites could entail costs of filling, leveling, and other site preparation that would make some locations undesirable. The possibility of adapting the facilities to the topography of the site under consideration should be thoroughly investigated before making commitments to purchase or build.

Irregularly shaped sites may not only require more acreage but may also prevent the orderly layout of facilities. This will increase the cost of a new center, require higher investments, and inconvenience users of the market.

A food distribution center should be properly zoned so that the market and the surrounding property do not detract from each other's value.

The problems of acquiring a particular site will be reduced considerably if the entire site is owned by only one organization or a small number of entities.

Potential Sites

Figure 44 illustrates 11 potential sites identified by a site committee of local cooperators. Sites 1 through 7 are located in Camden County; sites 8 and 9 are located in Gloucester County; and 10 and 11 are in Atlantic County. Of the sites in Camden County, 1 through 5 are in Gloucester Township and 6 and 7 are in Winslow Township. Major access roads to the Camden County sites include the North South Freeway and Routes 168 and 705. The Gloucester County sites are in Logan Township; major roads serving these sites include Routes 295 and 130. Atlantic County sites (10 and 11) are located in Galloway and Hamilton and are served, respectively, by the Atlantic City Expressway and Route 575. These sites are included in this illustration as examples of representative locations for a new center; other sites are available for such a development and should be carefully considered prior to initiating actual construction.

Investment Requirements

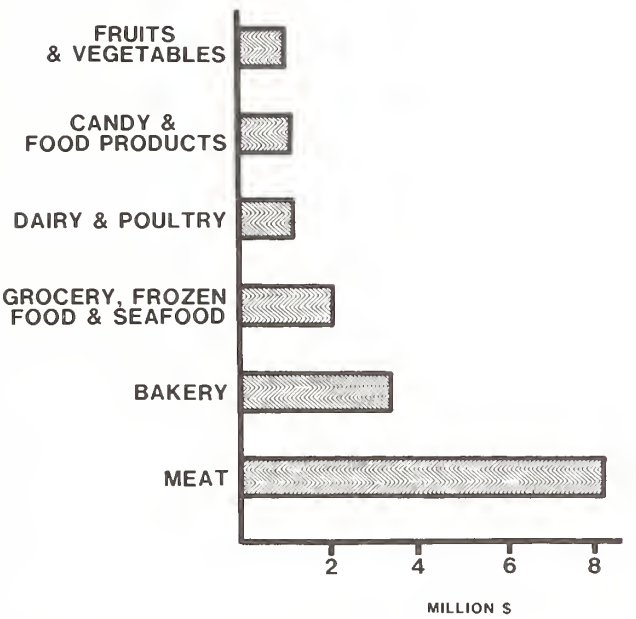


Figure 45.—Facility investment requirements.

Substantial investment requirements are a major part of the development of a new wholesale food distribution center for southern New Jersey. Figure 45 and appendix table 6 both illustrate the investment required to construct the buildings needed to meet initial facility planning. Support facilities are not included in these estimates as such facilities are assumed to be either self-supporting or supported by fees paid by wholesale firms. Land costs are also not included, as such costs vary considerably between sites; estimated land costs for several locations are included in discussions of annual costs outlined later in this report.

Construction estimates include only shell buildings; special finishing or equipment required to meet particular processing or storage requirements are not included and are covered elsewhere in this report. CONSTRUCTION ESTIMATES ARE DEVELOPED ONLY AS GUIDES FOR NEW FACILITY PLANNING AND SHOULD NOT BE SUBSTITUTED FOR FIRM ESTIMATES BY LOCAL ARCHITECTS AND ENGINEERS PRIOR TO ACTUAL CONSTRUCTION. The methodology for developing these estimates is outlined in the appendix and described in greater detail in a previous USDA publication (see footnote 4).

Investment in wholesale facilities on a new center would total approximately $18 million. Of this total, about $12 million represents single-occupancy building construction; the remaining $6 million, multiple-occupancy facilities. The single largest portion of the total investment would be required for meat firms, about $8.4 million, with most of this amount, $7.4 million, for single-occupancy buildings. Fruit and vegetable wholesalers require the least amount of investment, $1.2 million, all for multiple-occupancy buildings.

For illustrative purposes, total investment requirements, including land, are outlined in table 4. For the purposes of this report, potential sites are considered available in Atlantic, Burlington, and Camden Counties. The list of potential sites outlined earlier illustrated such sites in Atlantic and Camden Counties but not in Burlington County.

Land costs in table 4 are based on an informal survey and may be different at the time of actual sale. ACTUAL LAND COSTS ARE DETERMINED BY NEGOTIATION AT THE TIME OF SALE; THE FIGURES SHOWN IN TABLE 4 SHOULD NOT BE CONSIDERED BINDING AND ARE USED ONLY AS ESTIMATES FOR THIS REPORT.

Table 4.—Total investment requirements for selected potential sites for a southern New Jersey wholesale food distribution center

Site	Facility cost	Land for wholesale buildings	Cost per acre	Land cost	Total
	Dollars	*Acres*	*Dollars*	*Dollars*	*Dollars*
Atlantic	17,955,831	60.5	15,000	907,500	18,863,331
Burlington	17,955,831	60.5	10,000	605,000	18,560,831
Camden	17,955,831	60.5	15,000	907,500	18,863,331

The method of developing the new center will directly affect the revenue required to support the new market over its useful life, primarily through affecting the cost of raising capital. Each potential method of development will exhibit a unique set of advantages and disadvantages. These methods of development primarily involve a degree of participation by government or government authorized groups in lieu of strictly private development.

Methods

Private Corporation

The private corporation is a legal entity organized in conformity with State statutes and made up of individuals bound together for a common purpose or objective. The owners of this legal entity have complete control over operational matters, subject only to generalized legal restrictions.

A private corporation may be operated as either a profit-making or a nonprofit organization. When a private corporation is operated for profit, there usually are no restrictions on the sale of voting stock to any individual because of occupation or profession, or on the number of shares of voting stock that may be held by any one individual. Stockholders have one vote incorporate affairs for each share of voting stock held. A number of wholesale food centers are owned and operated by private corporations. In many of these markets, however, the principle holders in these corporations are the tenants on the center. A few markets are privately developed and held by an owner as a real estate venture.

To form a private corporation, the incorporators formulate the articles of incorporation in compliance with State statutes and obtain State approval. This charter defines the powers of the corporation and of its officers and directors, and states the corporations' purpose. It further specifies the stockholder's rights and how control shall be exercised.

Some of the characteristics of private corporations are as follows:

(1) The board of directors has power to make decisions quickly.
(2) State statutes place few restrictions on membership of a private corporation.
(3) Private corporations are usually financed by selling bonds and by issuing stock.
(4) The bylaws of a private corporation may be written so that the tenants who occupy the facilities while the investment is being amortized will be able to recoup some of the rents and service charges paid during this period.

Nonprofit private corporations are represented among privately developed wholesale food distribution centers. A nonprofit private corporation is not an agency of government, but it must be organized in conformity with existing State statutes. As a rule, State statutes place no limitations on participation in the corporation because of business or occupation. However, membership can usually be restricted or limited through bylaws. In a nonprofit private corporation, participation in corporate rights and activities is usually based either on a system of dues, which limits each member (stockholder) to one vote, or on bylaws, which restrict ownership of voting stock to one share per member. It is possible for those who are directly interested in the ownership and operation of a wholesale center to form a nonprofit private corporation to construct and operate a new food center.

Public Benefit Corporation

Public benefit corporations, sometimes called "authorities," offer some features not found in other types of ownership. They differ from nonprofit corporations in that they are publically owned.

A public benefit corporation is a nonprofit agency. This type of market development is common among successful wholesale food distribution centers constructed in the United States since the end of World War II. Rentals and other charges do not exceed the amount needed to pay the costs of operation, amortize the original investment, and maintain a limited contingency fund. Under public ownership, the revenues are considered public funds, and these funds cannot be paid to lessees as dividends. In some States there is a possibility that these funds might be appropriated for other public uses while bonds remain outstanding, unless such funds were specifically committed to redemption of bonds.

Public benefit corporations usually have the power of eminent domain, which can be useful in the acquisition of a site. Such corporations usually finance market improvements through the sale of revenue bonds. Normally, this type of financing is not a full obligation of a State or a political subdivision. These revenue bonds are often tax exempt; therefore the interest costs and associated revenue needed to support a new market are less than if such a center is developed with private funds. A market authority may or may not be required to pay taxes to the community in which it is located; the community may authorize a payment in lieu of taxes.

Market authorities have certain limitations, especially in financing and managing facilities. They find it difficult to raise funds through revenue bonds unless considerable equity funds are provided or the bonds are guaranteed by

some government body. Some State or city governments have appropriated part of the funds needed for some portions of the original construction, and have donated sites for a new market. The continuance of the organizing government may affect the continuity of management. As a whole, authorities cannot operate as freely as private owners.

Direct Public Ownership

Some local governments have financed, constructed, and operate wholesale food distribution centers within their boundaries. Direct government ownership and operation can usually be differentiated from ownership and operation by an authority by the methods of financing used and the delegation of authority made by the State legislature. Although some States have appropriated funds for food center operation, they do not usually underwrite the total cost of a new center constructed by an authority, nor have such States always assumed responsibility for the operations of these markets.

Under direct government ownership, a wholesale food distribution center is financed in whole or in part by appropriated funds. If the financing is not entirely by this method, the government body is obligated for the remainder unless this balance is obtained through grants or donations. Also, the government body is responsible for maintenance and other expenses involved in the day-to-day operations of the center.

Governments may finance, construct, and operate wholesale food distribution centers because legislative bodies believe that improved facilities will serve the public interest by stimulating and/or maintaining an industry important to the local economy.

Southern New Jersey Market Development

The "South Jersey Food Distribution Authority Law" (A2026, enacted into law December 18, 1985) of the State of New Jersey Assembly may provide a suitable vehicle for developing a southern New Jersey wholesale food distribution center. This bill provides for an Authority, appointed by the governor of New Jersey, that would be authorized to raise funds, acquire a site, organize, and operate a new center. Under the provisions of the bill, funds raised by the Authority would not be considered an obligation of the State of New Jersey or any other political subdivision of the State.

Revenue Required

In this report, revenue required is considered to be the funds needed to make the planned wholesale food distribution center for southern New Jersey self-supporting. These funds include debt payment, taxes, insurance, and other costs, including management costs, maintenance and security services, and solid waste disposal. A recent USDA report covers in detail the methodology for calculating these costs (see footnote 4). These costs varied in total from $8.36 per square foot per year, assuming public financing at a site in Camden County, to a high of $10.53 per square foot, assuming private financing at a site in Atlantic County. Total revenue requirements assuming private financing at an Atlantic site were approximately $4 million per year; equivalent costs assuming public development at a Camden County site totaled about $3.7 million. Private financing was assumed to require debt service at an annual interest rate of 15 percent; public financing was assumed to require a debt service interest rate of 12 percent. Figure 46 and appendix table 6 summarize these revenue requirements.

The revenue requirements outlined in figure 46 and appendix table 6 are directly affected by the land costs shown in table 4 and the two interest rates assumed for private and public financing. Changes in these factors may substantially affect revenue requirements for the new center.

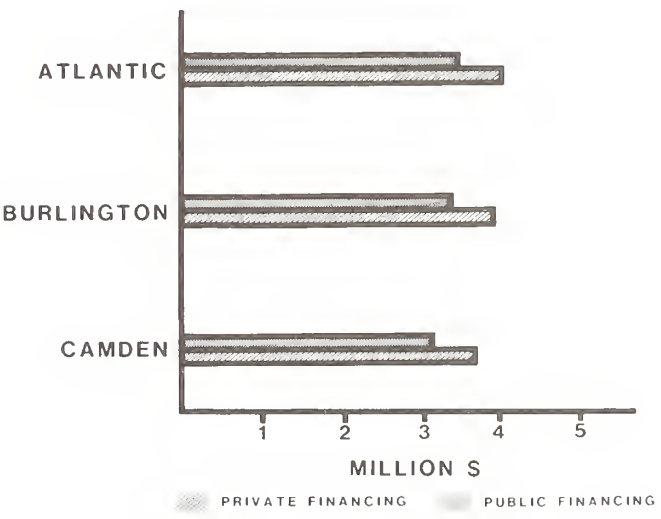


Figure 46.—Total revenue required by site location.

Potential Benefits

Both measurable and nonmeasurable benefits can result from construction of a new wholesale food distribution center to serve southern New Jersey. Measurable benefits would include savings in operating and distributioncosts. Nonmeasurable benefits would accrue both to the wholesalers and to the southern New Jersey communities, business organizations, and the food buying public.

Measurable Benefits

In order to estimate the measurable benefits, operating costs of the firms included in new facility planning are compared in detail with equivalent costs of operation estimated for these firms operating on a new center. Operating costs in both present and new facilities are grouped into (1) costs of goods sold, (2) labor costs, (3) equipment costs, (4) refrigeration costs, (5) occupancy or facility-related costs, (6) energy costs, (7) transportation or distribution costs, and (8) all other costs. These costs are projected for a 30-year period, assuming that (1) the firms remain in their present facilities or (2) move to the new center. Costs are adjusted for assumed inflation rates during the analysis period and represent constant value dollars. The methods used in this projection are outlined in earlier USDA publications (see footnotes 2 and 4).

Different methods are used to develop operating costs in existing and in planned facilities. Costs in existing facilities are based on interviews with company management and other general information. Equivalent costs in new facilities are based on experiences of similar firms recently locating on modern wholesale food distribution centers, U.S. Department of Agriculture and other research, and estimates prepared by commodity specialists participating in this project. All of the initial operating costs and incomes in both present and new facilities reflect volume adjustments to compensate for short-term business plans of some of the firms. Appropriate additional adjustments are also made in estimates of future sales, based on the type of facilities the companies are utilizing.

The plans of many of the firms include investments in new facilities to accommodate anticipated business changes. Such investments will, in turn, affect projected operating costs. Figure 47 illustrates how five of the major cost categories would change uniformly, regardless of the location of a new market, between existing and new facilities. The illustration is based only on first-year expenses. These businesses anticipate increases in their volumes in later years that would offset initial investments. Firms locating on a new center expect some reduction in labor requirements, offset by increased equipment requirements and additional investment in refrigerated space. A central energy plant on the new center is expected to save in energy requirements. Some other costs are also expected to be reduced due to improved efficiencies from a move to new facilities and operating changes made concurrently with relocation. Appendix table 7 summarizes this material.

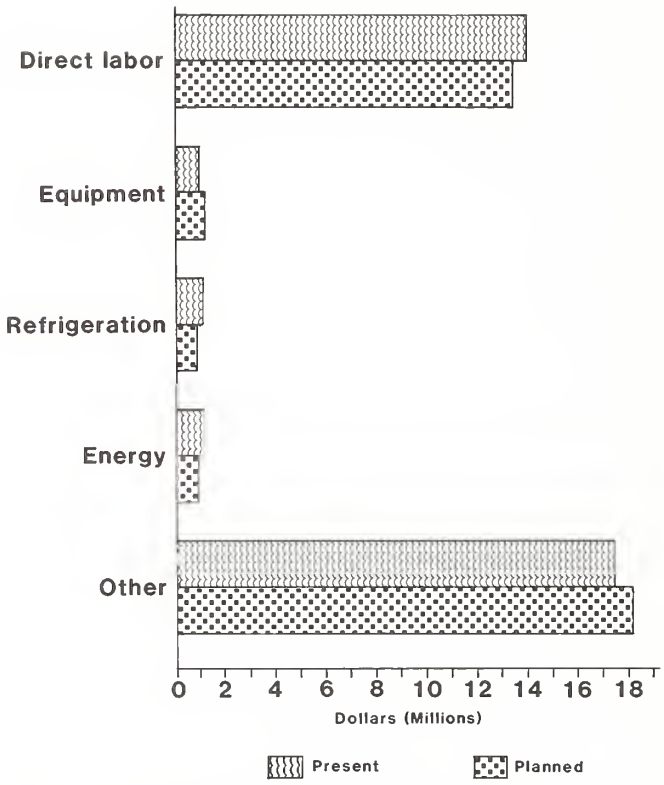


Figure 47.—Selected initial operating costs in existing and planned facilities.

By estimating operating costs and incomes, we can derive projections of the net incomes of these firms in existing or new buildings. For this report, net income is defined as income minus expenses. Figures 48 and 49 illustrate how the change in net income is expected to vary during each year of a 30-year period, assuming both private and public financing. The different interest rates associated with retiring the investments in new facilities account for the differences in the two illustrations. Appendix table 8 summarizes this material in greater detail.

Figures 48 and 49 illustrate that relocation in a new wholesale food distribution center represents an investment in the future. The new center includes land and support facilities intended to provide the means for the firms to expand their business in a planned and efficient manner over the life of the new market. Even though some of these facilities may not be needed immediately, the cost of providing for the future must be incurred immediately. Appendix table 8 covers in more detail the projected net incomes and annual increases outlined in the preceding illustrations.

Costs calculated in earlier sections of the report are also featured in this analysis. Transportation (fig. 43) and occupancy costs (fig. 46) form the basis of the initial projections in new facilities. Initial charges in existing facilities are based on information obtained during interviews. Both of these charges are directly affected by the choice of site.

Occupancy costs are equivalent to revenue requirements. The differences associated with alternative sites reflect variations in land costs, taxes, and other charges dependent on local conditions around particular potential sites for the new center. Regardless of the site selected, these costs are likely to be higher for firms on a new center than they are in present facilities—the price firms must pay for modern, more efficient space.

As indicated earlier, delivery costs assume some consolidated delivery operations. This type of delivery operation, placing the loads of several wholesalers on a single truck, would be facilitated by having a large number of food firms together on a food center.

The timing of potential incomes and expenses during the life of the new center is an important element in the analysis. The net incomes shown in figures 48 and 49 are discounted at various rates and further totaled to produce a single discounted total net income (present worth) for each alternative site and development method. The methodology used in this analysis is similar to that outlined in an earlier USDA publication, except that no annual investments are included in the annual costs (see footnote 4). All facility costs are included as occupancy costs and are used to develop annual net incomes.

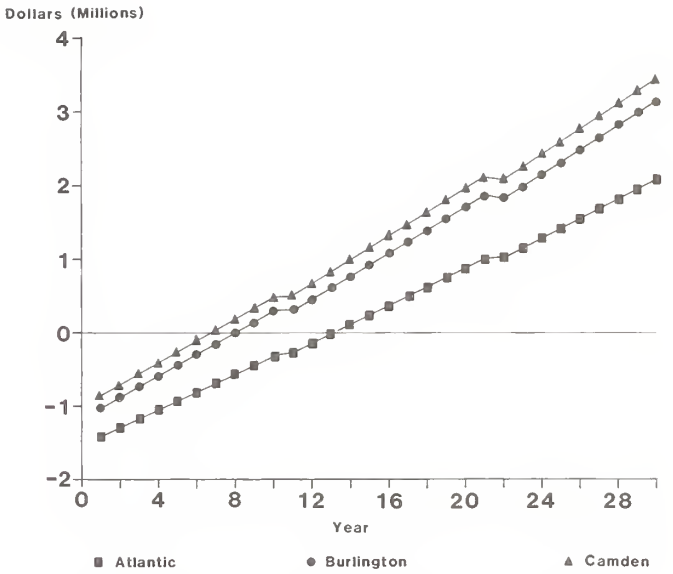


Figure 48.—Annual increases in projected net incomes between present and planned facilities, assuming private financing.

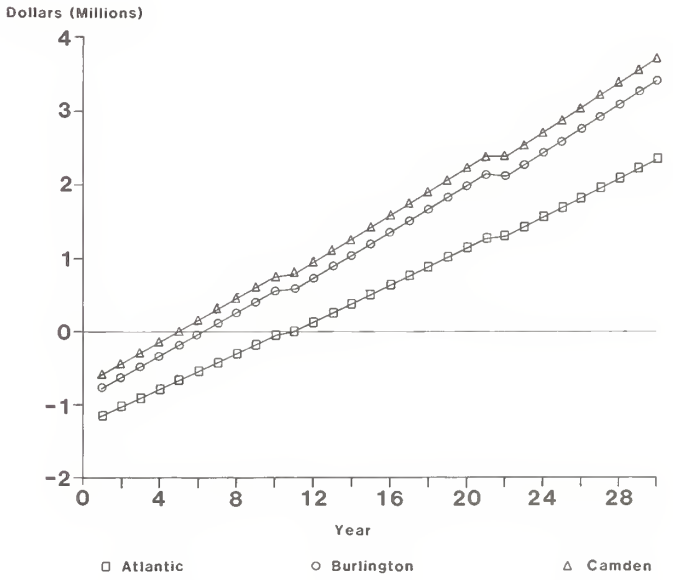


Figure 49.—Annual increases in projected net incomes between present and planned facilities, assuming public financing.

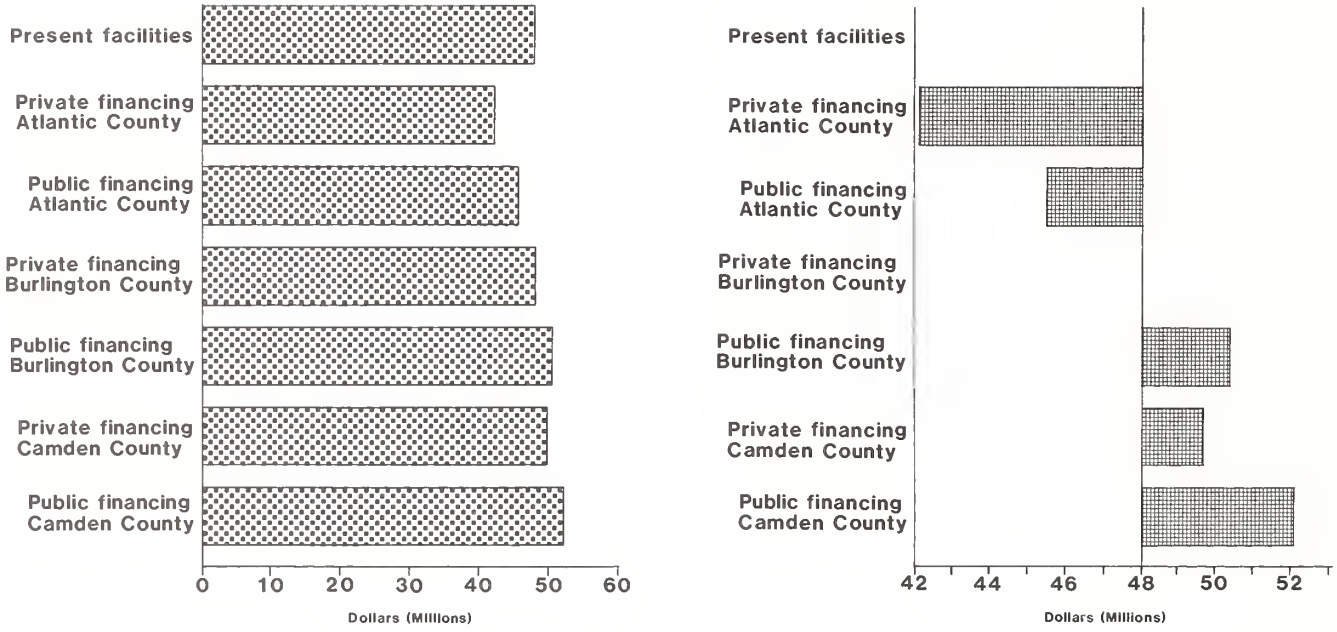


Figure 50.—(a) Present worth of projected net incomes in existing and planned facilities at a 12-percent discount rate and (b) comparison of the present worth of the projected net incomes in existing facilities with equivalent values for planned facilities at a 12-percent discount rate.

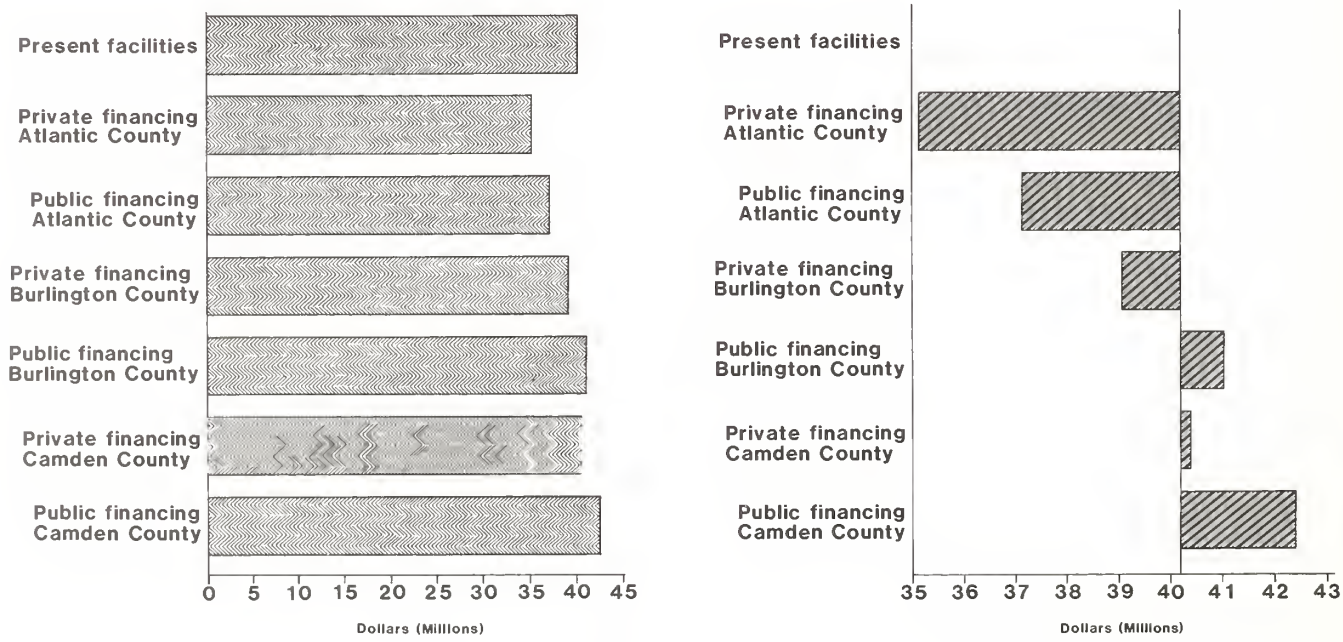


Figure 51.—(a) Present worth of projected net incomes in existing and planned facilities at a 15-percent discount rate and (b) comparison of the present worth of the projected net incomes in existing facilities with equivalent values for planned facilities at a 15-percent discount rate.

The site and development method has a substantial impact on the present worth of the discounted projected net incomes in new facilities. For illustrative purposes, figure 50 (a) and (b) and figure 51 (a) and (b) show the present worth of these discounted net incomes at a discount rate, representing the alternative value of money, of 12 and 15 percent, respectively. Appendix table 9 shows these values over a wider range of discount rates for further comparison.

Regardless of the illustrative discount rate chosen for the analysis, a site in Camden County for the new wholesale food distribution center appears to offer a greater opportunity for successful development of a new center. At a 12-percent discount rate, public financing of a new center at a site in Burlington County and both private and public financing of a new center in Camden County produce a greater present value of discounted net incomes than equivalent values in existing facilities. Similarly, at a 15-percent discount rate, developing a new center in Burlington and Camden Counties offers an alternative to existing facilities. The advantages offered by public development of a new center reflect the lower interest rates available for financing the investment in the new center.

Nonmeasurable Benefits

This study has focused primarily on the need for a new wholesale food distribution center from the standpoint of the individual food firms that are potential tenants or owners of the development. Some of the benefits would flow beyond these firms. Some of these benefits are difficult to quantify and others are beyond the general scope of this study but still merit consideration. Examples of such benefits follow.

Better Quality Food

All the firms included in new facility planning make every effort to maintain high quality in the products they sell to their customers. The design and condition of older buildings, often not suited for modern handling and storage practices, can make this difficult. These older and adapted buildings sometimes lack refrigerated receiving and storage facilities needed for quality maintenance. New facilities supported by a central energy plant on a new market, in contrast, offer the possibility of substantially reducing spoilage and deterioration.

New facilities also offer the opportunity to better maintain products that do not require refrigeration. Products handled in old or crowded facilities often suffer physical damage from manual handling and poor storage practices. New facilities compatible with the latest techniques in materials handling offer the opportunity to move food products through wholesalers' buildings without such damage.

Less Traffic Congestion

A new southern New Jersey wholesale food distribution center would be located on a defined site with internal streets accessible to, but still isolated from, local traffic patterns. Wide market streets and adequate parking would eliminate congestion in public streets by delivery trucks awaiting loading, employee and visitor parking, and suppliers' vehicles.

Increasing the Tax Base

Development of a new center will help increase the tax base of the area by (1) replacing existing facilities in downtown areas, facilitating redevelopment of the vacated sites with structures more suitable to such a location, and (2) developing the new market on a previously undeveloped site.

Increasing Opportunity for Employment

The firms included in plans for the new center are a substantial source of local employment. As many of the firms included in such plans need to expand or modernize to remain active in the industry, the opportunity to continue to offer employment may depend on successfully relocating to new facilities. If these firms fail to achieve this goal, the employment opportunities that such firms now provide may be lost to other companies located outside the area.

Support services for employees also contribute to providing a stable and effective source of employment. The construction of a new wholesale food center will offer the opportunity to provide public transportation to this major source of employment from the area's residential areas. Parking and other employee support services can also be provided efficiently at such a central location. Such public transportation and support services may not be practical if the firms scatter or go out of business.

Construction work on the new center will also be a source of local employment over a significant period of time. Development of the new center, flowing from the expansion of the initial buildings on the market and the construction of additional structures and support facilities, will also provide employment in the construction and service industries.

Better Working Conditions

Most southern New Jersey food firms make every effort to provide safe and pleasant working conditions for their employees, but this may be difficult in buildings that are not suitable for modern food wholesaling and processing operations. New facilities offer an opportunity to "build in" employee welfare areas and other work support facilities that contribute both to safety and a pleasant working environment.

Better Enforcement of Health and Safety Regulations
Concentrating a large number of food firms in one location would assist various government authorities in inspection and regulation. The opportunity would also exist for these agencies to maintain offices on the new market. Travel distances for inspection personnel would be minimized and user fees charged wholesale firms could be reduced. Companies operating in modern facilities would find complying with such regulations easier and less expensive.

Better Land Use
Building a central market for the food firms needing new facilities will facilitate a more efficient and appropriate use of the building sites vacated. Roads and utility systems could be designed appropriately for a new center at a carefully chosen location. Development of the new center could be more easily accommodated to regional development plans and concepts.

The planned wholesale food distribution center would provide an efficient place to help meet the food wholesaling and manufacturing needs of southern New Jersey citizens and businesses.

Appendix I. Present Marketing System

Appendix table 1.—Number, type, and location of wholesale food firms in southern New Jersey

Type of firm	Location by county										
	Atlantic	Burlington	Camden	Cape May	Cumberland	Gloucester	Mercer	Monmouth	Ocean	Salem	Total
	Number										
Bakery products	10	0	10	4	3	1	6	9	5	0	48
Beverages	4	1	5	1	3	0	2	4	1	0	21
Candy	3	0	14	0	1	3	2	0	1	0	24
Dairy products	2	4	2	1	1	1	0	4	1	1	17
Eggs	1	1	0	0	0	0	1	2	6	1	12
Food products	1	4	12	0	7	6	2	3	1	0	36
Frozen foods	3	2	7	0	2	1	1	0	0	0	16
Fruits and vegetables	11	6	5	1	8	24	7	5	0	1	68
Groceries	5	1	6	1	3	2	6	3	0	1	28
Meat	2	5	8	1	6	3	12	7	0	2	46
Poultry	0	0	5	0	2	2	1	0	0	2	12
Seafood	6	1	2	10	9	0	0	5	7	0	40
Total	48	25	76	19	45	43	40	42	22	8	368

Appendix table 2.—Primary, secondary, and total floorspace used by wholesale firms, by level and type of company, southern New Jersey

Type of firms and floor level	Primary floorspace						Total secondary floor space	Total floorspace					
	Nonrefrigerated	Cooler	Freezer	Office	Other	Total		Nonrefrigerated	Cooler	Freezer	Office	Other	Total
							Square feet						
Bakery products:													
Basement	3,750	0	0	0	0	3,750	0	3,750	0	0	0	0	3,750
First floor	255,761	9,159	10,245	14,481	285,059	574,705	12,694	256,161	9,159	10,245	14,481	297,353	587,399
Second floor	500	849	968	1,844	20,730	24,891	0	500	849	968	1,844	20,730	24,891
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	260,011	10,008	11,213	16,325	305,789	603,346	12,694	260,411	10,008	11,213	16,325	318,083	616,040
Beverages:													
Basement	0	0	0	0	0	0	0	0	0	0	0	0	0
First floor	361,320	0	0	42,975	66,105	470,400	21,000	375,320	0	0	42,975	73,105	491,400
Second floor	0	0	0	600	0	600	0	0	0	0	600	0	600
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	361,320	0	0	43,575	66,105	471,000	21,000	375,320	0	0	43,575	73,105	492,000
Candy:													
Basement	8,400	0	0	0	900	9,300	0	8,400	0	0	0	900	9,300
First floor	223,520	31,700	700	13,865	42,870	312,655	18,000	241,520	31,700	700	13,865	42,870	330,655
Second floor	2,500	0	0	3,400	1,200	7,100	18,000	20,500	0	0	3,400	1,200	25,100
Other	300	0	0	0	300	600	0	300	0	0	0	300	600
Subtotal	234,720	31,700	700	17,265	45,270	329,655	36,000	270,720	31,700	700	17,265	45,270	365,655
Dairy:													
Basement	800	0	0	0	0	800	0	800	0	0	0	0	800
First floor	40,340	74,800	18,540	21,430	70,730	225,840	0	40,340	74,800	18,540	21,430	70,730	225,840
Second floor	400	0	0	1,700	0	2,100	0	400	0	0	1,700	0	2,100
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	41,540	74,800	18,540	23,130	70,730	228,740	0	41,540	74,800	18,540	23,130	70,730	228,740
Eggs:													
Basement	900	0	0	0	0	900	0	900	0	0	0	0	900
First floor	25,300	76,265	940	17,350	43,500	163,355	0	25,300	76,265	940	17,350	43,500	163,355
Second floor	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	26,200	76,265	940	17,350	43,500	164,255	0	26,200	76,265	940	17,350	43,500	164,255

Continued

Appendix table 2.—Primary, secondary, and total floorspace used by wholesale firms, by level and type of company, southern New Jersey—Continued

Type of firms and floor level	Primary floorspace						Total secondary floor space	Total floorspace					
	Nonrefrigerated	Cooler	Freezer	Office	Other	Total		Nonrefrigerated	Cooler	Freezer	Office	Other	Total
	Square feet												
Food products:													
Basement	3,000	0	0	0	0	3,000	0	3,000	0	0	0	0	3,000
First floor	1,090,120	22,686	130,938	91,990	769,291	2,105,025	25,375	1,114,495	22,686	130,938	92,990	769,291	2,130,400
Second floor	3,000	0	25,000	14,600	20,000	62,600	0	3,000	0	25,000	14,600	20,000	62,600
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	1,096,120	22,686	155,938	106,590	789,291	2,170,625	25,375	1,120,495	22,686	155,938	107,590	789,291	2,196,000
Frozen foods:													
Basement	12,500	0	0	0	0	12,500	0	12,500	0	0	0	0	12,500
First floor	71,972	23,708	191,402	23,845	83,375	394,302	0	71,972	23,708	191,402	23,845	83,375	394,302
Second floor	31,233	0	2,100	0	0	33,333	0	31,233	0	2,100	0	0	33,333
Other	31,233	0	2,100	0	0	33,333	0	3,233	0	2,100	0	0	33,333
Subtotal	146,938	23,708	195,602	23,845	83,375	473,468	0	146,938	23,708	195,602	23,845	83,375	473,468
Fruits and vegetables:													
Basement	0	0	0	0	0	0	0	0	0	0	0	0	0
First floor	295,355	192,157	18,879	26,154	340,575	873,120	65,400	321,155	202,957	19,279	26,154	368,975	938,520
Second floor	0	100	0	1,472	0	1,572	0	0	100	0	1,472	0	1,572
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	295,355	192,257	18,879	27,626	340,575	874,692	65,400	321,155	203,057	19,279	27,626	368,975	940,092
Groceries:													
Basement	11,000	0	0	0	0	11,000	0	11,000	0	0	0	0	11,000
First floor	964,665	23,975	41,350	38,435	246,615	1,315,040	0	964,665	23,975	41,350	38,435	246,615	1,315,040
Second floor	6,160	0	0	1,000	0	7,160	0	6,160	0	0	1,000	0	7,160
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	981,825	23,975	41,350	39,435	246,615	1,333,200	0	981,825	23,975	41,350	39,435	246,615	1,333,200

Continued

Appendix table 2.—Primary, secondary, and total floorspace used by wholesale firms, by level and type of company, southern New Jersey—Continued

Type of firms and floor level	Primary floorspace						Total secondary floor space	Total floorspace					
	Nonrefrigerated	Cooler	Freezer	Office	Other	Total		Nonrefrigerated	Cooler	Freezer	Office	Other	Total
							Square feet						
Meat:													
Basement	0	0	0	0	0	0	1,000	1,000	0	0	0	0	1,000
First floor	48,008	155,915	72,793	26,965	156,819	460,500	35,700	78,608	156,015	72,793	26,965	161,819	496,200
Second floor	12,930	0	0	11,370	4,800	29,100	1,200	13,530	0	0	11,370	5,400	30,300
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	60,938	155,915	72,793	38,335	161,619	489,600	37,900	93,138	156,015	72,793	38,335	167,219	527,500
Poultry:													
Basement	0	0	0	0	0	0	0	0	0	0	0	0	0
First floor	58,300	49,475	87,950	15,950	143,000	354,675	1,000	58,300	49,475	87,950	15,950	144,000	355,675
Second floor	4,800	500	0	650	20,000	25,950	0	4,800	500	0	650	20,000	25,950
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	63,100	49,975	87,950	16,600	163,000	380,625	1,000	63,100	49,975	87,950	16,600	164,000	381,625
Seafood:													
Basement	0	0	0	0	0	0	0	0	0	0	0	0	0
First floor	144,933	43,058	15,138	11,463	78,623	293,215	21,460	163,833	45,618	15,138	11,463	78,623	314,675
Second floor	7,300	0	0	400	12,800	20,500	0	7,300	0	0	400	12,800	20,500
Other	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	152,233	43,058	15,138	11,863	91,423	313,715	21,460	171,133	45,618	15,138	11,863	91,423	335,175
Total basement	40,350	0	0	0	900	41,250	1,000	41,350	0	0	0	900	42,250
Total first floor	3,579,594	702,898	588,875	344,903	2,326,562	7,542,832	200,629	3,711,669	716,358	589,275	345,903	2,380,256	7,743,461
Total second floor	68,823	1,449	28,068	37,036	79,530	214,906	19,200	87,423	1,449	28,068	37,036	80,130	234,106
Total other	31,533	0	2,100	0	300	33,933	0	31,533	0	2,100	0	300	33,933
Grand total	3,720,300	704,347	619,043	381,939	2,407,292	7,832,921	220,829	3,871,975	717,807	619,443	382,939	2,461,586	8,053,750

Appendix table 3.—Employee classification by type of firm and county, southern New Jersey

Employment	Administrative and sales	Handlers	Processors	Truck drivers	Truck helpers	Other	Total
				Number			
Type of firm:							
Bakery products	334	376	713	287	0	28	1,738
Beverages	224	154	136	303	25	80	922
Candy	66	45	94	51	0	8	264
Dairy products	134	70	177	162	0	24	567
Eggs	62	11	144	37	0	4	258
Food products	444	225	1,065	183	0	126	2,043
Frozen foods	119	95	237	31	0	3	485
Fruits and vegetables	182	101	349	121	1	30	784
Groceries	264	247	347	146	13	45	1,062
Meat	247	127	579	148	0	41	1,142
Poultry	153	58	1,294	60	0	6	1,571
Seafood	41	296	426	12	14	32	821
Total	2,270	1,805	5,561	1,541	53	427	11,657
County:							
Atlantic	213	431	279	178	0	24	1,125
Burlington	241	165	320	74	0	50	850
Camden	606	345	1,125	403	3	96	2,578
Cape May	44	186	106	53	14	27	430
Cumberland	318	202	1,747	131	0	119	2,517
Gloucester	209	142	570	98	0	20	1,039
Mercer	182	90	269	174	1	11	727
Monmouth	291	186	427	334	35	59	1,332
Ocean	78	44	106	79	0	8	315
Salem	88	14	612	17	0	13	744
Total	2,270	1,805	5,561	1,541	53	427	11,657

Appendix table 4.—Present employees of firms identified as needing new facilities, southern New Jersey

Firm type	Administration and sales	Handlers	Processors	Truck drivers	Truck helpers	Others	Total
				Number			
Fruits and vegetables	15	4	20	10	0	2	51
Candy and food products	18	15	20	17	0	0	70
Dairy and poultry	23	5	133	18	0	1	180
Bakery	21	16	56	17	0	16	126
Grocery, frozen food and seafood	15	21	0	7	0	0	43
Meat	69	48	207	29	0	5	358
Total	161	109	436	98	0	24	828

Appendix table 5.—One-way travel times and distances between centers of population, southern New Jersey[1]

County	County									
	Atlantic	Burlington	Camden	Cape May	Cumberland	Gloucester	Mercer	Monmouth	Salem	Ocean
	Time in minutes									
Atlantic	13	32	29	18	19	26	40	56	34	37
Burlington	32	10	13	51	33	20	5	25	37	22
Camden	29	13	8	41	27	7	29	59	27	35
Cape May	18	51	41	11	25	36	63	69	42	50
Cumberland	19	33	27	25	9	15	44	58	16	55
Gloucester	26	20	7	36	15	8	31	56	17	42
Mercer	40	5	29	63	44	31	8	25	56	32
Monmouth	56	25	59	69	58	56	25	12	75	19
Salem	34	37	27	42	16	17	56	75	8	62
Ocean	37	22	35	50	55	42	32	19	62	13
	Distances in miles									
Atlantic	21	50	45	29	34	39	64	83	50	55
Burlington	50	18	16	78	48	27	28	46	47	38
Camden	45	16	12	62	39	12	36	72	35	51
Cape May	29	78	62	17	38	54	96	105	64	76
Cumberland	34	48	39	38	15	24	69	86	27	87
Gloucester	39	27	12	54	24	13	50	88	27	64
Mercer	64	28	36	96	69	50	15	33	70	45
Monmouth	83	46	72	105	86	88	33	18	94	26
Salem	50	47	35	64	27	27	70	94	14	88
Ocean	55	38	51	76	87	64	45	26	88	20

[1]Travel times and distances within counties calculated as one-half the average of the equivalent values to adjoining counties.

Appendix II. Planned Facilities

Construction Costs

Construction costs for the proposed wholesale food distribution center and farmers' market are comprised of building and associated costs. Costs are estimated from standard references and intended only to be used as a guide in planning facilities. They are not intended to replace estimates by local architects and contractors. Additional charges for specialized land preparation are not included in the initial construction estimates outlined in this report.

The following unit costs are used to develop the investment requirements shown in appendix table 6:

Item	Cost
Buildings:	
Multiple occupancy	$26.20 per square foot
Single occupancy	24.40 per square foot
Offices	40.89 per square foot
Support facilities:	
Paving and lighting:	
Auto stalls	551 each
Truck stalls	990 each
Roadway (30-foot-wide equivalent)	56 per linear foot
Railroad:	
Tracks	52.36 per linear foot
Switches	2,725 each
Fencing	9.75 per linear foot

In the interest of simplification, certain construction costs have been combined in appendix table 6. Buildings costs include all facilities required for occupancy but do not include specialized additions or equipment required for specific wholesale storage or processing operations. Lighting, sewers, and other utilities have been included within other categories in support facilities or within the per-square-foot building charges. Bumpers are included in the linear foot charges for railroad track. All costs are installed or finished. Fencing includes the costs of gates. Costs are adjusted as of 1982.

Appendix table 6.—Space, investment, and revenue requirements for planned new facilities, southern New Jersey

Type of firm and building	Space required			Initial investment requirement	Annual revenue requirements			
					Atlantic County		Burlington County	
	Initial	Expansion	Fully expanded		Private financing	Public financing	Private financing	Public financing
	Square feet			Dollars				
Bakery:								
Multiple occupancy	18,000	0	18,000	883,626	191,922	166,493	187,677	162,679
Single occupancy	57,284	0	57,284	2,619,396	537,830	466,569	525,934	455,881
Subtotal	75,284	0	75,284	3,503,022	729,752	633,062	713,611	618,560
Candy and food products:								
Multiple occupancy	15,000	0	15,000	736,589	159,935	138,744	156,398	135,566
Single occupancy	11,300	0	11,300	516,939	106,094	92,037	103,747	89,928
Subtotal	26,300	0	26,300	1,253,528	266,029	230,781	260,145	225,494
Fruits and vegetables:								
Multiple occupancy	24,000	0	24,000	1,178,260	255,896	221,990	250,236	216,905
Single occupancy	0	0	0	0	0	0	0	0
Subtotal	24,000	0	24,000	1,178,260	255,896	221,990	250,236	216,905
Meat:								
Multiple occupancy	21,000	0	21,000	1,030,944	223,909	194,242	218,957	189,792
Single occupancy	161,473	32,294	193,767	7,383,724	1,640,796	1,423,395	1,604,504	1,390,788
Subtotal	182,473	32,294	214,767	8,414,668	1,864,705	1,617,637	1,823,461	1,580,580
Dairy and poultry:								
Multiple occupancy	27,000	9,000	36,000	1,325,860	334,590	290,257	327,190	283,610
Single occupancy	0	0	0	0	0	0	0	0
Subtotal	27,000	9,000	36,000	1,325,860	334,590	290,257	327,190	283,610
Grocery, frozen food, and seafood:								
Multiple occupancy	18,000	3,000	21,000	883,910	207,491	179,999	202,903	175,876
Single occupancy	30,540	24,650	55,190	1,396,583	381,959	331,350	373,511	323,760
Subtotal	48,540	27,650	76,190	2,280,493	589,450	511,349	576,414	499,636
Total multiple occupany	123,000	12,000	135,000	6,039,189	1,373,743	1,191,725	1,343,361	1,164,428
Total single occupancy	260,597	56,944	317,541	11,916,642	2,666,679	2,313,351	2,607,696	2,260,357
Grand total	383,597	68,944	452,541	17,955,831	4,040,422	3,505,076	3,951,057	3,424,785

Continued

Appendix table 6.—Space, investment, and revenue requirements for planned new facilities, southern New Jersey—Continued

Type of firm and building	Annual revenue requirements							
	Camden County		Atlantic County		Burlington County		Camden County	
	Private financing	Public financing	Private financing	Public financing	Private financing	Public financing	Private financing	Public financing
	Dollars		Dollars/sq ft		Dollars/sq ft		Dollars/sq ft	
Bakery:								
Multiple occupancy	177,713	152,283	10.66	9.25	10.43	9.04	9.87	8.46
Single occupancy	498,010	426,749	9.39	8.14	9.18	7.96	8.69	7.45
Subtotal	675,723	579,032	9.69	8.41	9.48	8.22	8.98	7.69
Candy and food products:								
Multiple occupancy	148,094	126,903	10.66	9.25	10.43	9.04	9.87	8.46
Single occupancy	98,239	84,182	9.39	8.14	9.18	7.96	8.69	7.45
Subtotal	246,333	211,085	10.12	8.77	9.89	8.57	9.37	8.03
Fruits and vegetables:								
Multiple occupancy	236,950	203,044	10.66	9.25	10.43	9.04	9.87	8.46
Single occupancy	0	0	0	0	0	0	0	0
Subtotal	236,950	203,044	10.66	9.25	10.43	9.04	9.87	8.46
Meat:								
Multiple occupancy	207,331	177,664	10.66	9.25	10.43	9.04	9.87	8.46
Single occupancy	1,519,315	1,301,914	10.16	8.82	9.94	8.61	9.41	8.06
Subtotal	1,726,646	1,479,578	10.22	8.87	9.99	8.66	9.46	8.11
Dairy and poultry:								
Multiple occupancy	309,818	265,486	12.39	10.75	12.12	10.50	11.47	9.83
Single occupancy	0	0	0	0	0	0	0	0
Subtotal	309,818	265,486	12.39	10.75	12.12	10.50	11.47	9.83
Grocery, frozen food, and seafood:								
Multiple occupancy	192,129	164,638	11.53	10.00	11.27	9.77	10.67	9.15
Single occupancy	353,680	303,071	12.51	10.85	12.23	10.60	11.58	9.92
Subtotal	545,809	467,709	12.14	10.53	11.88	10.29	11.24	9.64
Total multiple occupany	1,272,035	1,090,018	11.17	9.69	10.92	9.47	10.34	8.86
Total single occupancy	2,469,244	2,115,916	10.23	8.88	10.01	8.67	9.48	8.12
Grand total	3,741,279	3,205,934	10.53	9.14	10.30	8.93	9.75	8.36

Appendix table 7.—Selected annual (year 1) operating costs in existing and planned facilities, southern New Jersey

Type of firm	Existing facilities						Planned facilities					
	Direct labor	Equipment	Refrigeration	Energy	Other	Total	Direct labor	Equipment	Refrigeration	Energy	Other	Total
	1,000 dollars											
Bakery	1,078	168	40	264	265	1,815	826	168	23	198	198	1,413
Candy and food products	658	52	2	58	87	857	624	130	27	44	95	920
Fruits and vegetables	327	52	97	37	134	647	286	55	53	28	175	597
Meat and related products	9,927	544	772	626	14,633	26,651	9,927	653	409	470	15,101	26,560
Dairy and poultry	1,714	64	48	68	757	2,651	1,531	90	130	51	757	2,559
Grocery, frozen food, and seafood	299	17	101	55	1,546	2,018	238	30	161	41	1,825	2,295
Total	14,003	897	1,060	1,108	17,422	34,490	13,432	1,126	803	832	18,151	34,344

Continued

Appendix table 7.—Selected annual (year 1) operating costs in existing and planned facilities, southern New Jersey—Continued

Type of firm	Potential cost reductions						Direct handled	Costs/ ton
	Direct labor	Equipment	Refrigeration	Energy	Other	Total		
	1,000 dollars						*Tons*	*Dollars*
Bakery	252	0	17	66	67	402	13,151	30.57
Candy and food products	34	(78)	(25)	14	(8)	(63)	6,499	(9.69)
Fruits and vegetables	41	(3)	44	9	(41)	50	26,817	1.86
Meat and related products	0	(109)	363	156	(468)	(58)	33,597	(1.73)
Dairy and poultry	183	(26)	(82)	17	0	92	7,136	12.89
Grocery, frozen food, and seafood	61	(13)	(60)	14	(279)	(277)	15,526	(17.84)
Total	571	(229)	257	276	(729)	146	102,726	1.42

( ) Indicates an increase in costs in planned facilities compared with equivalent costs in existing facilities.

Appendix table 8.—Potential projected net incomes in existing and planned facilities, adjusted for inflation factors, southern New Jersey

Year	Projected net incomes						
		Atlantic County		Burlington County		Camden County	
	Present facilities	Private financing	Public financing	Private financing	Public financing	Private financing	Public financing
				1,000 dollars			
1	5,322	3,914	4,181	4,290	4,553	4,442	4,710
2	5,322	4,033	4,300	4,433	4,695	4,589	4,856
3	5,322	4,153	4,419	4,578	4,839	4,737	5,003
4	5,322	4,274	4,539	4,724	4,984	4,886	5,150
5	5,322	4,396	4,659	4,870	5,129	5,036	5,299
6	5,322	4,518	4,780	5,018	5,276	5,186	5,449
7	5,322	4,640	4,902	5,166	5,423	5,338	5,600
8	5,322	4,763	5,024	5,315	5,572	5,491	5,752
9	5,322	4,887	5,147	5,465	5,721	5,644	5,905
10	5,322	5,011	5,270	5,616	5,871	5,799	6,058
11	5,322	5,058	5,325	5,624	5,894	5,819	6,094
12	5,322	5,184	5,450	5,778	6,047	5,976	6,250
13	5,322	5,310	5,575	5,932	6,200	6,134	6,407
14	5,322	5,436	5,701	6,087	6,354	6,293	6,565
15	5,322	5,563	5,827	6,243	6,509	6,453	6,724
16	5,322	5,691	5,954	6,400	6,665	6,614	6,883
17	5,322	5,819	6,081	6,557	6,822	6,775	7,044
18	5,322	5,948	6,209	6,716	6,980	6,937	7,206
19	5,322	6,077	6,337	6,875	7,138	7,101	7,368
20	5,322	6,207	6,466	7,035	7,297	7,265	7,531
21	5,322	6,337	6,595	7,196	7,457	7,430	7,695
22	5,322	6,353	6,620	7,144	7,423	7,394	7,677
23	5,322	6,485	6,751	7,308	7,585	7,561	7,843
24	5,322	6,617	6,882	7,471	7,748	7,730	8,010
25	5,322	6,749	7,013	7,636	7,912	7,898	8,178
26	5,322	6,882	7,145	7,802	8,076	8,068	8,347
27	5,322	7,016	7,278	7,968	8,242	8,239	8,517
28	5,322	7,149	7,411	8,135	8,408	8,410	8,687
29	5,322	7,284	7,544	8,303	8,575	8,582	8,858
30	5,322	7,418	7,678	8,471	8,742	8,755	9,030

Continued

Appendix table 8.—Potential projected net incomes in existing and planned facilities, adjusted for inflation factors, southern New Jersey—Continued

Year	Potential increase in net incomes					
	Atlantic County		Burlington County		Camden County	
	Private financing	Public financing	Private financing	Public financing	Private financing	Public financing
	1,000 dollars					
1	(1,408)	(1,140)	(1,032)	(769)	(879)	(612)
2	(1,288)	(1,022)	(888)	(626)	(732)	(466)
3	(1,168)	(903)	(744)	(483)	(585)	(319)
4	(1,047)	(783)	(598)	(338)	(436)	(171)
5	(926)	(662)	(452)	(192)	(286)	(23)
6	(804)	(541)	(304)	(46)	(135)	127
7	(682)	(420)	(156)	102	16	278
8	(559)	(298)	(7)	250	169	430
9	(435)	(175)	144	399	323	583
10	(311)	(52)	295	549	477	736
11	(264)	3	302	573	498	772
12	(138)	128	456	725	655	928
13	(12)	253	610	878	813	1,085
14	115	379	765	1,033	971	1,243
15	242	505	921	1,188	1,131	1,402
16	369	632	1,078	1,343	1,292	1,562
17	497	759	1,235	1,500	1,453	1,722
18	626	887	1,394	1,658	1,616	1,884
19	755	1,015	1,553	1,816	1,779	2,046
20	885	1,144	1,713	1,975	1,943	2,209
21	1,015	1,273	1,874	2,135	2,108	2,373
22	1,031	1,298	1,822	2,101	2,072	2,355
23	1,163	1,429	1,986	2,263	2,239	2,521
24	1,295	1,560	2,150	2,426	2,408	2,688
25	1,427	1,691	2,314	2,590	2,576	2,856
26	1,560	1,823	2,480	2,754	2,746	3,025
27	1,694	1,956	2,646	2,920	2,917	3,195
28	1,827	2,089	2,813	3,086	3,088	3,365
29	1,962	2,222	2,981	3,253	3,260	3,536
30	2,096	2,356	3,149	3,420	3,433	3,708

( ) Indicates decreases in potential net incomes from projected levels in existing facilities.

Appendix table 9.—Present value of net incomes projected for planned new facilities compared with operations in existing facilities with adjustment for inflation

Discount rate	Present facilities	Site and method of financing					
		Atlantic County		Burlington County		Camden County	
		Private	Public	Private	Public	Private	Public
Percent		*1,000 dollars*					
1	138,696	144,527	151,394	162,261	169,201	167,767	174,825
2	121,555	124,682	130,702	139,863	145,935	144,611	150,786
3	107,423	108,481	113,802	121,587	126,945	125,716	131,165
4	95,691	95,169	99,910	106,577	111,343	110,198	115,044
5	85,887	84,158	88,414	94,168	98,439	97,369	101,712
6	77,637	74,990	78,839	83,843	87,698	86,693	90,614
7	70,650	67,308	70,811	75,195	78,698	77,752	81,315
8	64,695	60,829	64,038	67,905	71,109	70,216	73,475
9	59,586	55,331	58,287	61,722	64,670	63,824	66,822
10	55,176	50,636	53,374	56,445	59,172	58,369	61,142
11	51,348	46,603	49,151	51,914	54,450	53,685	56,263
12	48,005	42,117	45,500	48,001	50,369	49,639	52,047
13	45,069	40,088	42,326	44,601	46,823	46,124	48,384
14	42,477	37,440	39,550	41,632	43,725	43,054	45,183
15	40,178	35,114	37,110	39,024	41,002	40,358	42,370
16	38,128	33,059	34,954	36,722	38,598	37,978	39,887
17	36,291	31,235	33,039	34,680	36,465	35,867	37,683
18	34,639	29,609	31,331	32,859	34,563	33,986	35,718
19	33,146	28,153	29,801	31,230	32,859	32,301	33,958
20	31,791	26,842	28,424	29,764	31,326	30,786	32,374
21	30,558	25,659	27,179	28,441	29,942	29,417	30,944
22	29,431	24,585	26,050	27,241	28,687	28,177	29,647
23	28,398	23,608	25,021	26,150	27,544	27,049	28,467
24	27,448	22,716	24,082	25,153	26,501	26,019	27,389
25	26,572	21,898	23,221	24,240	25,545	25,075	26,402
26	25,761	21,146	22,429	23,401	24,666	24,208	25,494
27	25,009	20,453	21,698	22,628	23,856	23,409	24,657
28	24,310	19,812	21,023	21,914	23,107	22,670	23,883
29	23,658	19,218	20,396	21,251	22,413	21,985	23,166

Continued

Appendix table 9.—Present value of net incomes projected for planned new facilities compared with operations in existing facilities with adjustment for inflation—Continued

Increase in present value after relocation					
Atlantic County		Burlington County		Camden County	
Private	Public	Private	Public	Private	Public
1,000 dollars					
5,831	12,698	23,565	30,505	29,071	36,129
3,127	9,147	18,308	24,380	23,056	29,231
1,058	6,379	14,164	19,522	18,293	23,742
(522)	4,219	10,886	15,652	14,507	19,353
(1,729)	2,527	8,281	12,552	11,482	15,825
(2,647)	1,202	6,206	10,061	9,056	12,977
(3,342)	161	4,545	8,048	7,102	10,665
(3,866)	(657)	3,210	6,414	5,521	8,780
(4,255)	(1,299)	2,136	5,084	4,238	7,236
(4,540)	(1,802)	1,269	3,996	3,193	5,966
(4,745)	(2,197)	566	3,102	2,337	4,915
(5,888)	(2,505)	(4)	2,364	1,634	4,042
(4,981)	(2,743)	(468)	1,754	1,055	3,315
(5,037)	(2,927)	(845)	1,248	577	2,706
(5,064)	(3,068)	(1,154)	824	180	2,192
(5,069)	(3,174)	(1,406)	470	(150)	1,759
(5,056)	(3,252)	(1,611)	174	(424)	1,392
(5,030)	(3,308)	(1,780)	(76)	(653)	1,079
(4,993)	(3,345)	(1,916)	(287)	(845)	812
(4,949)	(3,367)	(2,027)	(465)	(1,005)	583
(4,899)	(3,379)	(2,117)	(616)	(1,141)	386
(4,846)	(3,381)	(2,190)	(744)	(1,254)	216
(4,790)	(3,377)	(2,248)	(854)	(1,349)	69
(4,732)	(3,366)	(2,295)	(947)	(1,429)	(59)
(4,674)	(3,351)	(2,332)	(1,027)	(1,497)	(170)
(4,615)	(3,332)	(2,360)	(1,095)	(1,553)	(267)
(4,556)	(3,311)	(2,381)	(1,153)	(1,600)	(352)
(4,498)	(3,287)	(2,396)	(1,203)	(1,640)	(427)
(4,440)	(3,262)	(2,407)	(1,245)	(1,673)	(492)

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