

**Food Stamp
EBT Systems
and Program-
Eligible vs.
Non-Eligible
Food Items**

**REPORT TO
CONGRESS**

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Table of Contents

Summary	1
Introduction.....	3
The EBT System Environment at the Point of Sale.....	4
POS Terminal Configurations	4
Identifying Eligible Food Items	5
Linking EBT Terminals to Retailers' ECRs	7
Integrated Terminals and ECRs.....	7
Stand-Alone POS Terminals	8
Estimated Costs.....	11
Linking EBT and Scanner Systems in the WIC Program	17
Preventing the Purchase of Ineligible Items	18

Exhibits

Exhibit 1: Stores with Scanning Capabilities, by Store Type	12
Exhibit 2: Estimated Costs for Stores with Scanning Systems	14
Exhibit 3: Estimated Costs for Stores without Scanning Systems	16
Exhibit 4: Total Estimated Costs, by Store Type.....	16

Food Stamp EBT Systems and Program-Eligible vs. Non-Eligible Food Items

Summary

The Food Stamp Program (FSP) is designed to alleviate poverty-related hunger by increasing the food purchasing power of low-income households. Program benefits are therefore restricted to the purchase of eligible food items, as defined by program regulations. As a result, the use of program benefits to buy non-eligible items and the exchange of benefits for cash (trafficking) represent major areas of concern within the program. In an effort to reduce the incidence of these problems, the U.S. Congress desires to know whether electronic benefits transfer (EBT) systems can be configured to differentiate between program-eligible and non-eligible items.

The only technology currently able to differentiate between eligible and non-eligible items is food retailers' optical scanning systems, which identify items based on bar-coded information affixed to their packaging. An estimated 32 percent of all program-authorized retailers currently use scanning systems, and these stores—which are mostly supermarkets—redeem approximately 74 percent of all food stamp benefits. Because many scanning systems are programmed to identify FSP-eligible items, the accidental purchase of non-eligible items with FSP benefits should be reduced in these stores.

The mere presence of an optical scanning system, however, is not sufficient to prevent the purchase of non-eligible items with FSP benefits. For an EBT system to differentiate between eligible and non-eligible items, two factors must be present in program-authorized stores. First, the store must use a scanning system. Second, the store's EBT terminals must be linked to the store's electronic cash registers at the point of sale (POS) so that information on scanned and eligible items can be passed to the EBT system. Only then can EBT purchase amounts be limited to the total dollar value of program-eligible items.

Achieving this linkage is technically feasible in about 95 percent of all authorized retailers. Indeed, the required linkage already exists in a relatively small percentage of FSP stores using newer, integrated POS systems and in stores participating in an EBT demonstration for the Special Supplemental Food Program for Women, Infants and Children (WIC). Introducing the required hardware and software in all FSP-

authorized stores, however, will be quite expensive. The estimated initial cost is \$4.60 billion, of which \$3.30 billion is for the estimated 68 percent of program-authorized stores that currently do not scan. To maintain this functionality over time would require an additional expenditure of \$752 million per year to equip new stores entering the FSP and to establish service agreements for equipment in stores that currently do not use scanning equipment. These cost estimates are not indicative of the costs the WIC Program would face in implementing EBT, where costs would likely be lower due to a smaller retailer base, a larger percentage of WIC stores already scanning, and differences in technical requirements between the two programs.

No assumptions are made regarding how the estimated cost of \$4.60 billion might be shared between the public and private sectors. Although many of the equipment upgrades envisioned would benefit retailers as well as help achieve the desired EBT functionality, most smaller food retailers have been unwilling to make the investment to date. Further, when considering non-scanning stores, the hurdles to be overcome in introducing a scanning system within a store extend well beyond price. Implementing a scanning system requires much more than simply installing new hardware and software. The store must be committed to creating an accurate computerized price file, working with suppliers to keep the price file up-to-date, training staff on how to use scanners, and generally dealing with and working through the problems and hassles that often accompany the introduction of a new technology. Therefore, in order to achieve Congress's desired intent across all program-authorized stores, a strong commitment would be needed in terms of both financial resources and an effort to encourage program-authorized stores to adopt newer technologies and equipment.

Finally, investing in new hardware and software will not eliminate trafficking or the purchase of ineligible items with food stamp benefits. First, scanning is either not feasible or not practicable in about 5 percent of all program-authorized stores (mostly route vendors, produce stands, and residential facilities), so no controls would be added there. Second, even where scanners are used, the new technological controls could be circumvented by retailers who wish to traffic or scan non-eligible food items as eligible in order to access food stamp benefits.

Introduction

The Food Stamp Program (FSP) is currently transitioning to a new method for issuing and redeeming food stamp benefits. Paper food stamp coupons are being replaced with electronic benefits transfer (EBT) systems. In an EBT system, food stamp recipients receive an EBT card that provides access to a computerized account in which program benefits are stored. When the card and its associated security code are used at a special EBT terminal at a store's checkout lane, the dollar amount of the food stamp purchase is electronically subtracted from the recipient's EBT account and credited to the store's account.

In March 1993, just over 1 percent of food stamp households nationwide received benefits through EBT systems. By March 1998, 37 percent of all food stamp households were receiving benefits through EBT systems in 30 states. As part of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), Congress has mandated that all states issue and redeem food stamp benefits with EBT by October 1, 2002.

One provision within PRWORA indicates Congress' desire that EBT systems be able to differentiate between program-eligible and ineligible food items. The specific language requires that state EBT systems include:

(ii) effective not later than 2 years after the date of enactment of this clause, to the extent practicable, measures that permit a system to differentiate items of food that may be acquired with an allotment from items of food that may not be acquired with an allotment;¹

The FSP currently relies on cashiers to determine eligible from ineligible food items. Neither coupons nor existing EBT systems indicate what is being purchased and paid for with food stamp benefits. Thus, they cannot limit what is being paid for with program benefits.

The only automated systems in place in the retail food industry that can identify the items purchased are optical scanner systems. Using special bar codes placed on food items, scanner systems can identify what is being brought to the checkout lane for purchase. Scanner systems, however, are not configured to place limits on the value of EBT transactions. Indeed, in most retail stores in EBT states and counties, there is no direct link between the EBT system and the retailer's optical scanner system.

This report explores the feasibility and potential cost of enabling EBT systems to differentiate between program-eligible and ineligible items. It considers the cost of upgrading systems in stores that now have

¹ Public Law 104-193, Section 825 (a)(2)(D)(ii).

scanners and the cost of installing new systems in stores without scanners. The report also examines the potential for the purchase of ineligible items even with the introduction of new technological controls.

The EBT System Environment at the Point of Sale

Before identifying ways in which a link between an optical scanning system and an EBT system might be achieved, it is necessary to understand how retailers' point-of-sale (POS) systems at the checkout lane currently operate. We therefore discuss below POS terminal configurations and how retailers currently identify food stamp-eligible food items.

POS Terminal Configurations

EBT transactions, together with credit card and debit card transactions, form part of a class of electronic financial transactions known as electronic funds transfers, or EFT. Any retail food store wishing to accept a credit, debit, or EBT card for payment must have a terminal at the point of sale with EFT capabilities. The POS terminal (or a separate "backroom" computer controlling multiple terminals) formats a message to the EFT processor seeking payment authorization for individual transactions initiated with the credit, debit, or EBT card.

Excluding for the moment terminals that can handle EBT transactions, retailers have two general types of POS terminals capable of handling EFT transactions. The most common is a "stand-alone" terminal, separate from the store's cash register. To use a stand-alone terminal, the cashier needs to manually key-enter the purchase amount on the terminal's keypad. Far less common are "integrated" POS terminals, in which all EFT transactions are processed directly by the store's electronic cash register (ECR). With an integrated terminal no manual entry of purchase amount is required; the total amount of the sale is automatically incorporated into the EFT transaction request.

With the addition of EBT, three different terminal configurations are possible:

- stand-alone terminals that process only EBT transactions;
- stand-alone terminals that process credit and debit card transactions, as well as EBT transactions; and
- integrated terminals, in which all electronic funds transactions are processed by the store's ECR.

The configuration in place in any given store depends on several factors. FSP-authorized stores using

government-supplied equipment may participate in an EBT system without paying any program-related fees or charges. That is, when a state implements an EBT system, stores without electronic payment terminals (i.e., those stores not accepting credit or debit cards) can elect to receive stand-alone, EBT-only terminals from the state free of charge. Unless the store's food stamp redemptions exceed 15 percent of total food sales, however, the number of lanes that will be equipped with free EBT terminals is limited to one free terminal for each \$8,000 or \$11,000 in monthly food stamp redemptions.²

Stores having no EFT capabilities can negotiate if they wish with the EBT vendor (or another vendor) for installation of stand-alone EFT terminals that can accept EBT, credit, and debit cards. Unlike the EBT-only stand-alone terminals, retail stores need to pay for fully-functional EFT terminals. They may, however, be able to recover some or all costs through per-EBT-transaction charges negotiated with the EBT vendor.

Finally, EBT functionality can often be added to stores with existing credit and debit card capability, whether their existing POS terminals stand alone or are integrated with the lane's ECR. Typically, the software controlling the debit and credit transactions must be modified so that EBT transactions are routed to the state's selected EBT vendor, either directly or through the store's selected EFT processor.³ It is the store's or processor's responsibility to see that terminal software is upgraded to handle EBT transactions. Again, per-transaction charges may be applied to EBT transactions handled by the terminal. These charges would be paid by the EBT vendor.

Identifying Eligible Food Items

Before turning to the issue of how EBT systems might be able to differentiate between program-eligible and ineligible items, we discuss how scanning systems identify eligible items.

It is unlawful to use FSP benefits to purchase anything other than "eligible foods." According to regulation, eligible foods include:

- Any food or food product intended for human consumption except alcoholic beverages, tobacco, and hot foods and hot food products prepared for immediate consumption; and
- Seeds and plants to grow foods for the personal consumption of eligible households.⁴

2 The monthly redemption figure for supermarkets is \$11,000; for all other stores it is \$8,000.

3 Some stores process their own EFT transactions, whereas others contract with a third party for this service.

4 CFR Section 271.2 (Definitions). "Eligible foods" also includes meals prepared and delivered or served by various institutions, as specified in the regulation.

Food stamps cannot be used to buy:

- Any non-food items, such as:
 - pet foods
 - soaps, paper products, and household supplies
 - grooming items and cosmetics
- Alcoholic beverages and tobacco
- Vitamins and medicines
- Any food that will be eaten in the store
- Hot foods that are ready to eat
- Any food marketed to be heated in the store

In many stores it is up to the cashier to enforce these limits on program-eligible food items. That is, if the customer says that food stamp benefits will be used to pay for all or a portion of the items brought to the register, the cashier is supposed to ensure that food stamp benefits are not used to pay for ineligible items. Although many cashiers are diligent about ensuring that food stamps are used only for eligible items, the possibility clearly exists that ineligible items will sometimes be purchased with program benefits, either intentionally or accidentally. This is the case regardless of whether the customer is using food stamp coupons or an EBT card.

In more and more food stores, however, optical scanning devices are being used to scan bar codes on purchased items to ring up the item's price. Bar codes on most pre-packaged items (e.g., cereal, milk, canned fruits and vegetables, frozen dinners) adhere to a Universal Product Code (UPC) format that enables the store's POS system to uniquely identify the item.⁵ Food retailers with scanning systems also create their own unique bar codes for non-UPC items such as meat, cheese, or fruits and vegetables supplied by local independent suppliers. These latter bar codes are referred to as price look up (PLU) codes. PLU codes generally contain coded information about the item's category or department (e.g., meat) and its unit price.

A store's primary purpose for installing a scanning system is to improve productivity at the checkout counter. When the store maintains a computerized "price file" that lists each UPC in its inventory and its associated price, the store's POS system can automatically ring up an item's price when the item's UPC code is scanned.⁶ Scanning systems also provide a means of tracking inventory. More important for this

5 The UPC is typically a 12-digit number composed of a six-digit manufacturer's code, a five-digit item number (selected by the manufacturer), and a single check digit. Some versions of the code remove embedded zeros; the remaining portion of the code follows an accepted pattern for indicating where the zeros are located within the overall code.

6 Prices for items with PLU codes are computed by multiplying the item's unit price, coded within the PLU, by its weight or size, as determined at the checkout counter.

report, however, is the fact that most stores with scanning systems also have a means of tracking which items being purchased are food stamp-eligible. The same computer file that contains a price associated with each UPC code also can be programmed to contain a food stamp eligibility “flag” associated with each item. As the store builds and maintains its price file, the flag is set whenever the item is eligible. The same process occurs for items with PLU codes. Then, as items are scanned, the store’s POS system tracks both total price and the price of all food-stamp-eligible items. After all items are rung up, the POS system can display a food stamp subtotal if the customer plans to use food stamp benefits to pay for all or part of the purchase. This process reduces potential cashier error or confusion as to whether an item is FSP-eligible or not.⁷

Linking EBT Terminals to Retailers’ ECRs

To enable EBT systems to distinguish between eligible and ineligible items, two conditions must be met. First, the store must have an optical scanning system in place, with a price file that flags food stamp-eligible items. Second, because the scanning system is linked to the store’s ECR, the EBT terminal must communicate with the ECR as well. Operationally, with such linkage the ECR would first determine the food stamp total based on the total price of all food stamp-eligible items scanned. Then, the ECR would generate the EBT transaction request **without** requiring manual entry of the food stamp total. Limiting the transaction request total to the summed value of FSP items would ensure that food stamp benefits were not used to buy ineligible items.⁸

Integrated Terminals and ECRs

The desire that food stamp benefits be limited to food stamp-eligible items is already being met in stores with integrated POS terminals.⁹ In such systems, the POS terminal may be integrated with a store’s ECR through cabling, or the terminal and ECR may be built together as a single unit. In either situation, the ECR’s EFT software module will normally be configured to prevent a food stamp EBT transaction amount from exceeding the subtotal of food stamp-eligible items. For example, once the cashier presses

7 The POS software that identifies FSP-eligible items has been created independent of USDA involvement. Programming and updating the software to identify which items are eligible are the responsibility of the retailer and product suppliers. USDA has made no effort to monitor or verify the accuracy or timeliness of this software to ensure that items are properly flagged.

8 This, of course, assumes no overt fraudulent activity, such as scanning eligible items that the customer does not intend to purchase. The potential for fraud is examined further later in this report.

9 It should also be pointed out that, in the EBT demonstration in Wyoming, a small number of stores have integrated POS terminals that limit the purchase of food items in the Special Supplemental Food Program for Women, Infants and Children (WIC) to WIC-prescribed items. The efforts of the WIC Program to link scanner systems and EBT are described later in this report.

the “Food Stamp EBT” tender key on the ECR, the ECR will format a message to the EBT vendor requesting authorization for a food stamp transaction not to exceed the food stamp subtotal of scanned items.

Stand-Alone POS Terminals

Most retail food stores in EBT locations, however, have stand-alone EBT terminals. The EBT terminal is not linked to either the ECR or the optical scanner device. Instead, the cashier key-enters the requested EBT transaction amount into the EBT terminal. In stores with scanners, the appropriate dollar value of food stamp-eligible items is likely to be subtotaled by the ECR. In other locations, the clerk must determine the appropriate subtotal.

For current purposes, stand-alone POS terminals that can process commercial debit or credit transactions as well as EBT transactions are similar to EBT-only terminals; the EBT purchase amount still needs to be manually key-entered into the terminal.¹⁰ The following discussion therefore speaks of both types of terminals as simply “stand-alone” terminals.

The manual key entry of the EBT payment amount on a stand-alone terminal clearly has the potential for key entry error, even in stores with scanner systems. Furthermore, with manual key entry, there is no automatic means to ensure that food stamp benefits are not being used to purchase ineligible items. To achieve the functionality required by Congress, a store owner with a stand-alone terminal would have three options:

- (1) Replace the stand-alone terminal (and the retailer’s current ECR, most likely) with an integrated terminal/ECR with appropriate software;
- (2) Physically connect the existing terminal and ECR and make necessary software modifications; or
- (3) Transfer EFT processing to the existing ECR by making necessary software modifications, and scrap the old stand-alone terminal.

Of course, software modifications would most likely be done by hardware or software vendors, not by the retailer.

The first option takes us to where this section started—an integrated terminal/ECR already programmed to meet Congress’ requirements. Integrated systems, however, are a very expensive solution for the

¹⁰ This is the principal distinction between stand-alone and integrated terminals.

individual retailer.¹¹ As such, it seems a viable option only for retailers who are about to upgrade their POS systems anyway. The remainder of this section discusses the other two options noted: physically connecting the terminal and ECR, and transferring all EFT processing (including EBT) to the ECR.

One way to transfer food stamp subtotal information to an EBT payment terminal is to connect the two devices physically, for example by connecting the EBT terminal to the ECR with an RJ45 or RS232 cable. The ECR would need to be programmed to pass the EBT subtotal amount and program type to the EBT terminal once the ECR's "EBT Payment" key was pressed. The EBT terminal would also require programming to accommodate the EBT tender total and program type information passed from the ECR.

With this reprogramming, the EBT subtotal amount and program type would automatically be present within the EBT terminal when the clerk (or client) pressed the EBT terminal's "send" button, thereby initiating EBT processing of the purchase. The EBT terminal's programming would also need to allow for an "override" function for food stamp or cash assistance purchases, allowing the clerk to manually key-enter a **lower** dollar amount for the EBT transaction, but not a higher amount. The manual override would be used when the client's remaining EBT balance was less than the purchase amount (for cash assistance transactions) or food stamp subtotal (for food stamp transactions), or when the client decided for other reasons to use another payment form (e.g., cash) for part of the food stamp-eligible portion of the total purchase.

To complete the tender process, the customer would enter his or her security code, and the transaction would be sent to the EBT processor for approval. Once the EBT transaction was authorized, the EBT terminal would pass the acknowledgment on to the ECR. Upon receipt of the EBT acknowledgment, the ECR would apply the EBT payment amount to its record of the transaction.

There are several substantial hurdles to be faced in achieving the above physical connection and functionality. First, older ECRs do not have an available communications port for a connecting cable. In addition, software revisions to many of these older ECRs are no longer supported by the ECR vendor. In these situations, retailers would likely need to replace their ECRs with newer, integrated models to meet the goal of linkage.

Even when the EBT terminal and ECR can be connected, both require reprogramming to achieve the desired linkage. Contacts with EBT vendors suggest that EBT terminal software development would cost

¹¹ As discussed later in the report, an integrated system is likely to cost at least \$8,000 per lane.

at least \$35,000 to \$40,000. This estimate, however, does not include the cost of installing the updated software in the EBT terminals. This cost estimate also assumes that the information being passed from the ECR would be in a standard format, regardless of ECR manufacturer or model. Without such a protocol, separate reprogramming would be needed for **each** model of ECR to which EBT terminals are connected. There are at least several dozen popular models of ECRs for which separate programming might be required.

Finally, the ECR needs to be reprogrammed. The programming itself should not be too difficult. It is likely to be time-consuming and difficult, however, to get the numerous manufacturers and retailers involved to undertake the programming. Furthermore, as noted above, the programming specifications should adhere to a standard interface protocol with the EBT terminal.

The above discussion suggests that the physical connection approach may be quite difficult, achievable only on an interface-by-interface basis. Looking to the future, however, several independent software vendors offer payment system software that will allow the integration of the terminal to the ECR. Even this software would need to be modified, however, to ensure that the EBT total did not exceed the food stamp subtotal for food stamp purchases and to allow manual override when the EBT transaction amount needed to be less than the food stamp subtotal. Due to the expense involved, these software solutions tend to be targeted to multi-lane supermarkets with newer POS systems.

Another option for “linking” the terminal and ECR involves processing all EFT transactions directly from the ECR, eliminating the need for a separate POS (or EBT) terminal. At least two companies provide software that allows the ECR to control all EFT transactions, directly routing debit and credit transactions for approval. Although these software products do not now have the capability to process EBT transactions, this functionality could presumably be added. This approach, however, would seriously narrow retailers’ choice of software vendors unless the other major vendors of ECR software decided to develop and offer similar packages. Unless this happened, the physical connection approach would probably gain wider acceptance among retailers, ECR manufacturers, and software vendors.

Estimated Costs

Approximately 183,300 retailers in the United States are authorized to participate in the FSP. Of these, about 173,700 represent retail food outlets where optical scanning systems could be used to identify program-eligible food items.¹² In January 1998, these stores redeemed \$1.44 billion in food stamp

¹² The remaining locations include about 5,500 route vendors and produce stands—places where optical scanning systems cannot be installed or where installation would make no sense because the product being sold has no affixed UPC codes.

benefits, or over 99 percent of that month's total redemption of \$1.45 billion.

By October 1, 2002, when EBT is mandated for all states, having established in the prior section that it should be technically feasible to link ECRs to EBT terminals, the next question is what costs would be incurred to achieve this linkage. This section assembles available information to provide an estimate of the cost to upgrade EBT systems. The cost calculations are meant to be conservative, providing a lower-bound estimate of the cost to link ECRs, scanners, and EBT terminals in nearly all program-authorized stores. No attempt is made to discuss how these costs, which are substantial, might be allocated or shared between the public and private sectors.

Exhibit 1 presents the distribution of the 173,700 program-authorized food stores in the United States by store type, together with two estimates of the percentage of stores equipped with optical scanning systems. The first estimate is based on USDA's Store Tracking and Redemption Subsystem (STARS) database. This estimate is a known lower-bound estimate; retailers self-report their scanning status when they are authorized, but this information is not updated at re-authorization. Overall, the STARS database indicates that about 18 percent of program-authorized stores use scanners.

The second estimate of stores with scanning systems is based on figures presented in industry trade publications and, where figures are not available, on the judgement of an independent contractor with experience in retail scanning systems.¹³ Trade publications indicate that about 93 percent of chain-based supermarkets use scanning systems, compared to about 83 percent of independent supermarkets. The estimate of 88 percent in Exhibit 1 assumes that chain-based and independent supermarkets are evenly distributed across program-authorized stores. These publications also indicate a substantial recent jump in the percentage of convenience stores with scanners—up to 33 percent. This estimate seems skewed by the small sample of convenience stores responding to an industry survey, however, so we have used a more conservative estimate of 25 percent. For the other store types, no evidence regarding the prevalence of scanning systems is currently available. The assumed values in the exhibit are meant to be conservative while acknowledging that, over time, more stores are installing scanning systems. With these newer figures, the estimated proportion of all program-authorized stores with scanning systems is 32 percent.

Another 3,900 locations are not retail food outlets; they include places like drug and alcohol treatment centers, women's shelters, group living homes, communal dining facilities, and food wholesalers.

13 Consumer Card Marketing, Inc. (CCMI) is a subcontractor to Abt Associates Inc. for the study under which this report has been prepared. CCMI markets card-based "frequent shopper" systems to stores with scanner systems.

Exhibit 1					
Stores with Scanning Capabilities, by Store Type					
Store Type	Number of Authorized Stores	Percentage of Total Stores	Percentage of Total Redemptions	Percent with Scanners (lower-bound) ^a	Percent with Scanners (updated estimate) ^b
Supermarket	31,295	18.0	79.2	78	88
Military commissary	244	0.1	0.1	75	88
Medium to small grocery	44,691	25.7	10.9	5	20
Convenience store	47,665	27.4	3.0	4	25
Grocery/Gas station	21,792	12.5	1.1	5	10
Other grocery combination	4,844	2.8	1.1	47	60
Specialty food	15,619	9.0	3.6	3	10
General store	2,488	1.4	0.3	4	10
Grocery/Restaurant	861	0.5	0.1	2	5
Health/Nutrition food	1,580	0.9	0.1	7	10
Other stores	2,621	1.5	0.4	5	10
ALL STORES	173,700	100.0	100.0	18	32

a Based on STARS data.
b Based on recent trade publications and judgement of independent contractor.

Note: Percentages may not sum of 100.0 due to rounding.

Stores with scanning systems can be grouped into three categories, depending on what needs to be done in the store to achieve linkage between the POS/EBT terminal and the ECR. Nothing needs to be done in stores whose ECRs and POS terminals are already integrated. In stores with newer ECRs and stand-alone terminals, the terminals and ECRs need to be physically linked, and software needs to be upgraded. Finally, in stores with older ECRs, physical linkage often is impossible because the ECR has no available communications port for a cable to the EBT/POS terminal. Linkage in these stores is possible only by replacing the older systems with newer ones. In estimating the cost of achieving linkage, we have assumed a 20/40/40 distribution across these categories. That is, we assume that 20 percent of stores with scanning systems have integrated POS systems, 40 percent have terminals and ECRs that can be physically linked, and 40 percent have systems requiring complete replacement.¹⁴

¹⁴ No industry source tracks the distribution of scanning systems according to these categories, either for all stores as a group or for specific store types. One EBT vendor stated that, in the states it served, about half of the ECR systems were so old

Exhibit 2 shows the estimated cost of achieving linkage among stores with scanning systems. Total estimated cost for these stores is \$1.30 billion. For the estimated 22,387 stores needing a physical connection between their ECRs and EBT/POS terminals, the total cost is \$15.0 million, or an average of \$670 per store. For the estimated 22,387 stores requiring new equipment, however, the total cost is \$1.29 billion, or an average of \$57,410 per store. These cost estimates are based on the following assumptions developed by the study's subcontractor:

- For stores requiring new equipment
 - For multi-lane stores, cost for a system controller averages \$15,000 per store, including regular POS software.¹⁵
 - Cost for a basic integrated ECR/terminal, with regular POS software and an optical scanner, averages \$8,000 per lane.
 - The cost to modify ECR software averages \$40 per store.
 - The average cost to modify EBT terminal software is \$25 per store.
 - Cost for installation and training averages \$800 per day, with two to five days needed per store, depending on size.
 - All lanes are equipped, even if EBT terminals are not present in all lanes.
- For stores needing an upgrade
 - The cost to modify ECR software averages \$40 per store.
 - The average cost to modify EBT terminal software is \$25 per store.
 - The cost to install software and physically link the ECR and terminal averages \$200 per lane.
 - In stores with one or two lanes, all lanes are upgraded. In stores with three or more lanes, one-half of all lanes, on average, are upgraded.¹⁶

that no communication ports existed. The assumed split of 20/40/40 is a bit more conservative in terms of estimated total costs required to upgrade or replace ECR systems in stores with scanning systems.

15 No controller is needed for single-lane stores.

16 The assumption is that all lanes with EBT terminals are upgraded. Under federal EBT regulations, about 47 percent of all lanes are eligible for free, government-provided EBT terminals. The actual percent is higher because all lanes are equipped in some stores, whether by the EBT vendor or store owner.

Exhibit 2

Estimated Costs for Stores with Scanning Systems

Store Type	Upgrade Required		System Replacement Required		Total Cost (000s)
	Average Cost/Store	Total Cost (000s)	Average Cost/Store	Total Cost (000s)	
Supermarket	\$ 960	\$10,577	\$ 90,323	\$ 994,992	\$1,005,569
Military commissary	1,213	104	109,923	9,449	9,554
Medium/Small grocery	334	1,196	20,767	74,247	75,443
Convenience store	360	1,716	21,137	100,749	102,465
Grocery/Gas station	362	315	21,607	18,835	19,150
Other grocery combination	694	807	61,338	71,303	72,109
Specialty food	307	192	15,047	9,401	9,593
General store	368	37	22,102	2,200	2,236
Grocery/Restaurant	343	6	19,385	334	340
Health/Nutrition food	353	22	22,031	1,393	1,415
Other stores	367	38	22,359	2,344	2,383
ALL STORES	\$ 670	\$15,010	\$ 57,410	\$1,285,245	\$1,300,255

Note: Columns may not sum to reported totals due to rounding.

Note that the assumptions regarding lane coverage differ for the two groups of stores. In stores in which linkage can be achieved with a software upgrade, the ECR software in each lane gets upgraded (at an average cost of \$40 per store), but cabling is required only in those lanes where EBT terminals are present. Thus, costs are reduced to the extent that EBT lane coverage in a store is less than 100 percent. In contrast, for stores needing upgraded ECRs, **all lanes** need to be upgraded even if all lanes are not equipped with EBT terminals. Otherwise, the store would be operating with a mix of both new and old ECRs and software. A store could not operate efficiently with two different POS systems, so we must assume that all lanes are equipped with new ECRs. This accounts for the high cost of totally replacing the store's POS and ECR terminals.

Turning to stores without scanning systems, their equipment and software needs are similar to scanning stores with older POS systems. That is, they need a complete ECR and POS system at each lane. Thus,

the same assumptions are used in estimating equipment costs for these stores. These stores, however, also have to develop an infrastructure to support use of scanners. In particular, a store-specific price file needs to be created and maintained. The price file is a computer file with one record for each type of item in the store's inventory. Each record typically includes a short descriptor for the item, its bar code identifier (which is the item's UPC or PLU code), a food stamp-eligibility flag, and the item's price. Whenever the store wishes to change the price of an item or add a new item to its inventory, the price file needs to be updated. The cost of creating a price file will vary depending on the size of the store and how data are collected and added to the file. In any event, it is typically a labor-intensive process. The estimated cost here varies between \$4,000 and \$7,500 per store, based on information provided by the study's subcontractor.

Exhibit 3 presents the estimated costs for installing scanner systems with the desired linkage in stores that currently do not use scanning systems. The average cost for a single store, \$28,028, is much lower than for scanning stores needing equipment upgrades because stores without scanners tend to be much smaller.¹⁷ Even with a lower per-store cost, however, the total amount is \$3.30 billion. With the number of program-authorized non-scanning stores estimated at nearly 118,000, any attempt to introduce improved technology at the checkout is going to be expensive. When the cost of \$3.30 billion is added to the estimated cost of \$1.30 billion for already-scanning stores needing upgrades or new equipment, the total cost is \$4.60 billion. Exhibit 4 shows how this total cost is distributed across the different store types within the FSP. Even though 88 percent of supermarkets already scan, the cost of upgrades at these stores and new equipment at the remaining supermarkets represents 30 percent of the total estimated cost for all stores. This expense arises because the average number of checkout lanes in supermarkets (nearly nine lanes per store, based on data in the STARS database) is much higher than in other stores. Costs are high at small- to medium-grocery stores and convenience stores because of the large number of these stores participating in the FSP.

17 Based on the STARS database and this report's assumptions regarding the percentage of stores with scanning equipment, non-scanning stores average 1.8 lanes per store. In contrast, stores with scanning systems average 5.2 lanes per store. This arises because supermarkets and military commissaries are both the largest types of store and the most likely to scan.

Exhibit 3		
Estimated Costs for Stores without Scanning Systems		
Store Type	New System Required	
	Average Cost/Store	Total Cost (000s)
Supermarket	\$ 97,823	\$ 367,367
Military commissary	117,423	3,441
Medium/Small grocery	26,767	956,991
Convenience store	25,137	898,609
Grocery/Gas station	25,607	502,228
Other grocery combination	65,338	126,588
Specialty food	19,047	267,743
General store	26,102	58,446
Grocery/Restaurant	23,385	19,124
Health/Nutrition food	26,031	37,022
Other stores	26,359	62,184
ALL STORES	\$ 28,028	\$3,299,743

Exhibit 4		
Total Estimated Costs, by Store Type		
Store Type	Total Cost (000s)	Percentage of Total Cost
Supermarket	\$1,372,936	30
Military commissary	12,995	<1
Medium/Small grocery	1,032,434	22
Convenience store	1,001,074	22
Grocery/Gas station	521,378	11
Other grocery combination	198,697	4
Specialty food	277,335	6
General store	60,682	1
Grocery/Restaurant	19,464	<1
Health/Nutrition food	38,437	1
Other stores	64,567	1
ALL STORES	¹⁶ \$4,599,999	100

The total cost estimate of \$4.60 billion represents the cost to achieve a linkage between EBT terminals and store ECRs in all currently authorized FSP stores. The cost estimate, which equals approximately \$26,000 per store, will change somewhat to the extent that the number of FSP-authorized stores changes in the near future. Over time, estimated costs would be expected to decrease as more stores introduce newer scanner and POS systems on their own. Any expected reduction in total costs is likely to be small, however, unless the percentage of stores adopting scanner systems increases dramatically, especially in supermarkets, medium- to small-grocery stores, and convenience stores.

It is also important to consider any costs which would be required to **maintain** the linkage between EBT and ECR systems in the future. In recent years, an average of about 21,000 new stores have been authorized annually. If one assumes that these new stores have the same distribution of store types and existing scanning equipment as current program-authorized stores, then the estimated cost of linking these stores' EBT terminals with their ECRs would be about \$556 million per year.¹⁸ All stores, both new and old, would also need to establish service agreements to maintain their equipment in working order. Providing service agreements for all stores would cost about \$371 million per year.¹⁹ Of course, stores with existing scanning equipment and ECRs already pay for their own service agreements, so the total cost for service agreements in stores that do not currently scan would be lower—about \$196 million per year. In addition, in future years, the scanning equipment and ECRs in many stores may need to be updated as improved technology becomes available. This report, however, does not attempt to estimate the cost of future upgrades.

Linking EBT and Scanner Systems in the WIC Program

In recent years, the Special Supplemental Food Program for Women, Infants and Children (WIC) has begun to explore EBT as a means to automating its paper-based transaction process. WIC benefits, however, comprise a specific “prescription” of food items tailored to the nutritional needs of the participant. This makes WIC’s requirements much different from those of the FSP. In particular, because the prescribed quantity and list of authorized foods varies from one participant to another, an EBT system for the WIC Program **must** be able to recognize what is being purchased before authorizing payment to the retailer. That is, an automated screening process for eligible foods must be incorporated within the

18 The estimated cost is based on an average cost of \$26,482 per store.

19 This cost estimate assumes that annual service agreement costs would average \$1,000 per lane in small stores, \$750 per lane in medium-sized stores, and \$500 per lane in supermarkets and military commissaries. The costs are based on information supplied by a firm providing POS service agreements.

system. An EBT demonstration in Natrona County, Wyoming showed the technical feasibility of integrating scanner technology with an EBT system, and other states are planning similar demonstration projects.

At this point it is too early to determine how the WIC Program's efforts to integrate EBT systems and scanner systems might affect efforts to achieve a similar functionality in the FSP. The two programs are very different. For instance, whereas there are over 173,000 FSP-authorized food retailers, WIC has only about 45,000 retailers authorized nationwide. Furthermore, although detailed information is not available, a larger percentage of WIC versus FSP retailers are supermarkets where scanning systems are already likely to be present.

The technical requirements for integration also differ between the two programs. The total number of WIC-eligible food items across the nation is estimated to be on the order of 10,000, whereas the number of FSP-eligible items is at least ten times greater. Furthermore, within any given state, the number of WIC-eligible items can be as few as 2,000. Thus, it is possible to develop an EBT system for the WIC Program **without** linking the EBT terminal to the retailer's scanner system and associated host price file. Instead, a scanning device can be hooked directly to the EBT terminal, and information about the limited set of WIC-authorized food items can be stored in a separate EBT file. This approach bypasses the difficult task of integrating the EBT terminal with the retailer's ECR.²⁰ Due to these differences in retailer populations and technical requirements, the cost estimates presented in the previous section should not be extended to the WIC Program.

Preventing the Purchase of Ineligible Items

At a total estimated initial cost of \$4.60 billion, plus an additional cost of \$752 million per year, about 95 percent of all FSP-authorized stores could be configured so that EBT benefits could be used to purchase only program-eligible food items. These stores redeem over 99 percent of all food stamp benefits. The final question addressed by this report is how effective this investment might be in limiting the use of program benefits to the purchase of eligible items. Although we are unable to quantify this effectiveness, it must be acknowledged that the technological controls offered by scanning systems can be circumvented in several ways.

The first circumvention arises simply because it is not feasible to link EBT terminals to scanning systems

20 Several retailers participating in the Wyoming WIC demonstration have had their ECRs integrated with the EBT terminal, but the EBT vendor had to custom design and build a separate interface for each different POS system in the demonstration area.

in about 5 percent of the 183,300 establishments authorized by the FSP. Two percent of these establishments are not retail outlets and therefore do not sell bar-coded items.²¹ There is nothing to scan in these establishments. The other 3 percent represent route vendors and produce stands. These establishments either sell large quantities of non-bar-coded items, or they operate in an environment where scanning would be very difficult to implement. All together these route vendors, produce stands, and non-retail establishments redeem about 0.8 percent of all food stamp benefits. Although this percentage is small, it still represents approximately \$135 million in annual food stamp benefits that would not be subject to scanning controls.

For the estimated 173,700 retail food outlets where scanners either are or could be installed and linked to EBT terminals, retailers who wish to circumvent the technological controls would have at least two means to do so. First, we note that the retailer's price file is a critical element to ensuring that only eligible food items are purchased with program benefits. The price file needs to be programmed to include a food stamp eligibility flag for each item in the retailer's inventory of goods sold. If an ineligible item was flagged on the file as eligible, then the EBT system would have no way of limiting the purchase of that item with food stamp benefits. In some cases the flag for an ineligible item could be mistakenly programmed to indicate eligibility, thereby allowing the inadvertent use of program benefits for ineligible items. In other cases, however, a retailer could fraudulently flag one or more ineligible items as eligible. (The programming is straightforward.) Such abuse could be prevented only by government monitoring of the eligibility flags on retailers' price files. This monitoring would require an entirely new set of compliance procedures that would be both intrusive and expensive. For instance, it could entail unannounced, periodic government review of the food stamp eligibility flags on store price files.

Even if monitoring procedures were implemented, trafficking in program benefits would not be eliminated. Retailers who wished to traffic could simply affix a series of UPC codes for eligible food items to a sheet of paper or cardboard kept near the EBT terminal and scanner. When a client wishing to traffic benefits came to the store, the retailer could scan any combination of the UPC codes until the desired total amount of the trafficked benefits was reached. The retailer could then give the client an agreed-upon percentage of the total "sale" in cash and receive the full amount of the sale during the EBT system's normal daily settlement. By using different combinations of valid UPC codes each time, the retailer could avoid having the transactions identified as suspect during any subsequent investigation or agency review of EBT transaction data.

21 These establishments include shelters, rehabilitation centers, group living quarters, and other providers of prepared meals.

It is beyond the scope of this report to estimate how often either of the above means to circumvent scanning controls might be used. The important point to recognize, however, is that trafficking would still be possible after EBT terminals were linked to scanners, as would the actual purchase of ineligible items.