

# *Reusable Transport Packaging Market Research Report*

*Prepared for the  
Solid Waste Management Coordinating Board*

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FOR WASTE REDUCTION & RECYCLING

# REUSABLE TRANSPORT PACKAGING MARKET RESEARCH REPORT

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# REUSABLE TRANSPORT PACKAGING MARKET RESEARCH REPORT

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## EXECUTIVE SUMMARY

The mission of the Solid Waste Management Coordinating Board (SWMCB) representing the Minnesota counties of Anoka, Carver, Dakota, Hennepin, Ramsey and Washington, is to increase the efficiency and environmental effectiveness of the region's solid waste management system. The SWMCB's Regional Solid Waste Master Plan for managing the six-county Twin Cities metropolitan area's solid waste through the year 2017 calls for a reduction of 75,000 tons of commercial transport packaging waste per year by 2003. The Plan targets the reduction of old corrugated cardboard shipping containers (OCC) and wood pallets.

The purpose of the Project was to develop a marketing plan to encourage businesses to reduce OCC and wood pallets. National and local (SWMCB region) market research identified industry leaders that have replaced OCC and wood pallets with reusable transport packaging. The first phase of the project was to conduct market research to develop national benchmarking information by: (1) identifying the industry leaders that have replaced OCC and wood pallets with reusable transport packaging; and (2) determining the measurable benefits of replacing OCC and wood pallets with reusable transport packaging.

The national research identified 31 national companies as having replaced either OCC with reusable plastic containers or wood pallets with pallet pooling systems or plastic pallets. In all cases, the companies applied reusable transport packaging to a closed loop distribution system where the return of the packaging to the company could be controlled. The research identified the measurable benefits of reusable transport packaging as:

- Reduction in supply chain costs
- More productive flow of goods through the company's distribution channels
- Less product damage
- Improved ergonomics and enhanced worker safety
- Longer useful life of the packaging
- Reduced labor costs
- More efficient trucking and loading dock productivity

The second phase of the project was to profile Twin Cities businesses in the SWMCB region that can be matched to the national benchmarking information. Manufacturing, wholesale and retail businesses in the food, automotive, high tech (e.g., computer and semiconductor), retail stores and medical products industries were identified.

The third phase of the project was to conduct a needs assessment to identify target audiences by matching benchmarking information to the profile of businesses in the SWMCB region. Eighty (80) Twin Cities businesses were contacted by phone, fax and email to request interviews. Twenty-two (22) interviews were completed, and half of the companies indicated that they had made the change to reusable transport packaging. The local research mirrored the national research by identifying the measurable benefits of reusable transport packaging as:

- Operational efficiencies
- Less product damage
- Improved ergonomics and worker safety
- Longer useful life of the packaging
- Reduced labor costs
- More efficient use of truck space
- Customer satisfaction

Based on the market research information obtained from the needs assessment of Twin Cities businesses, challenges and opportunities exist in promoting transport packaging reduction. Challenges include:

- There appear to be more pressing issues for the private sector, and the reusable transport packaging issue is not immediately impacting private companies.
- It is not readily apparent which department in a company is responsible for making transport packaging decisions since people holding many position titles responded to the market research interviews.
- There seem to be industries that are not interested in making this change at this time.
- Before a company can be positioned to make the change to reusable transport packaging, it must be made aware of reusable transport packaging, educated on the issues of reusable transport packaging and sold on the concept of reusable transport packaging.

Opportunities include:

- There are motivating factors for the food and beverage and high tech industries in the Twin Cities to have made this change such as financial incentives to save money, sanitation issues and customer satisfaction.

- Target the same industries where Twin Cities businesses have successfully made this change because of similar motivating factors, industry issues and industry language.
- Because of the significant up-front investment required to make this change, target the approximately 100 medium- to large-size companies (annual sales of \$20 million to over \$1 billion) in the food and beverage and high tech industries in the Twin Cities.

## I. PROJECT BACKGROUND

The Solid Waste Management Coordinating Board (SWMCB), formed in 1990, is a joint powers board comprised of two county commissioners from the Minnesota counties of Anoka, Carver, Dakota, Hennepin, Ramsey and Washington. To enhance intergovernmental coordination, the Board also includes the Director of the Minnesota Office of Environmental Assistance and the Minnesota Pollution Control Agency Metro Division Manager. The mission of the SWMCB is to increase the efficiency and environmental effectiveness of the region's solid waste management system.

The SWMCB's Regional Solid Waste Master Plan for managing the six-county Twin Cities metropolitan area's solid waste through the year 2017 outlines aggressive outcomes for the reduction of commercial transport packaging waste. The Plan calls for a reduction of 75,000 tons of these materials per year by 2003. The purpose of this project is to reduce commercial transport packaging waste in the two target areas of old corrugated cardboard shipping containers (OCC) and wood pallets.

Eleven percent of the MSW generated in Minnesota is OCC. In 1996, Minnesotans generated approximately 701,500 tons of OCC of which 440,000 tons were recycled and 261,500 tons disposed. The Minnesota Office of Environmental Assistance (OEA) estimates the potential for OCC reduction is 99,215 tons statewide. Of that amount, the SWMCB estimates that the Twin Cities metropolitan reduction potential is 60 percent or 59,529 tons (1997 base year). Wood pallets comprise two percent of MSW disposed or 62,000 tons statewide in 1996. The OEA estimates the potential to reduce pallet waste generation is 32,600 tons. The Twin Cities metropolitan reduction potential is estimated to be 19,560 tons or 60 percent of the statewide total.

The SWMCB's original scope of work was to target the reduction of OCC and wood pallets in three phases:

1. Demonstration projects: SWMCB, with the assistance of a transport packaging consultant, will work with two Twin Cities metropolitan area businesses to identify reduction opportunities within their transport packaging systems. These businesses will serve as demonstration projects and will be featured in promotional materials developed in Phase III.
2. Marketing plan: SWMCB, with the assistance of a consultant, will develop a marketing plan to promote transport packaging reduction. This plan will include identifying key messages, target audiences, educational opportunities to effectively reach them and determine what resources would be most effective to promote transport packaging reduction.
3. Development of resources: SWMCB, with the assistance of a consultant, will develop the resources recommended in Phase II and the strategy to disseminate these resources. These resources will be based on results of the demonstration projects completed in Phase I and the recommendations in Phase II.

The SWMCB contracted with JL Taitt & Associates to develop a marketing plan to encourage businesses to reduce commercial transport packaging waste (Phase II). However, due to extenuating circumstances, Phase I of the project was not totally completed. Consequently, the scope of work for Phase II of the project was refocused to:

1. Conduct market research: to develop benchmarking information
  - a. Identify the industry leaders that have replaced OCC and wood pallets with reusable transport packaging
  - b. Determine the measurable benefits of replacing OCC and wood pallets with reusable transport packaging
2. Profile businesses in the SWMCB region: that can be matched to the national research findings
3. Identify target audiences: by matching the national benchmarks to the profile of businesses in the SWMCB region
4. Develop key messages: by conducting a needs assessment of target audiences
  - a. Develop a needs assessment questionnaire
  - b. Conduct telephone interviews of target audiences
5. Develop a marketing plan: to recommend goals, target audiences, key messages, communications objectives and tactics

The Contractor conducted market research to identify national and local (SWMCB region) industry leaders that have replaced OCC and wood pallets with reusable transport packaging. The results of this market research were used to identify target audiences and develop key messages that were integrated into the development of a marketing plan.

This is the first of two reports summarizing the Contractor's work:

1. Reusable Transport Packaging Market Research Report
2. Reusable Transport Packaging Marketing Plan

The Reusable Transport Packaging Market Research Report is divided into the following four sections. Section II describes the national research to develop benchmarking information. Section III contains the profile of Twin Cities businesses in the SWMCB region. Section IV contains the needs assessment of Twin Cities business. Section V describes the local market research conclusions including challenges and opportunities in promoting transport packaging reduction.



## II. BENCHMARKING INFORMATION

### A. Market Research

The first phase of the project as outlined in the new scope of work was to conduct market research to develop benchmarking information. The Contractor proceeded to conduct internet, library and telephone research to:

- Identify the industry leaders that have replaced OCC and wood pallets with reusable transport packaging.
- Determine the measurable benefits of replacing OCC and wood pallets with reusable transport packaging.

### B. National Case Studies

To identify national case studies of industry leaders that have replaced OCC and wood pallets with reusable transport packaging, the Contractor consulted the following solid waste organizations, trade and industry associations, reusable transport packaging suppliers and consultants, trade journals and reports:

#### 1. *Solid Waste Organizations*

- National Recycling Coalition
- California Integrated Waste Management Board at [www.ciwmb.ca.gov](http://www.ciwmb.ca.gov)
- King County Solid Waste Division, Washington at [www.metrokc.gov](http://www.metrokc.gov)
- Indiana Institute on Recycling at [www.web.indstate.edu/recycle/caselist.html](http://www.web.indstate.edu/recycle/caselist.html)
- Minnesota Office of Environmental Assistance

#### 2. *Trade and Industry Associations*

- Institute of Packaging Professionals at [www.iopp.org](http://www.iopp.org)
- Environmental Packaging International at [www.enviro-pac.com](http://www.enviro-pac.com)
- American Society of Transportation & Logistics at [www.astl.org](http://www.astl.org)
- Council of Logistics Management at [www.clml.org](http://www.clml.org)
- Materials Handling & Management Society at [www.mhia.org](http://www.mhia.org)
- Reusable Industrial Packaging Association at [www.reusablepackaging.org](http://www.reusablepackaging.org)
- WERC (Warehousing Education and Research Council) at [www.werc.org](http://www.werc.org)
- Reusable Pallet & Container Coalition at [www.rpccreusable.org](http://www.rpccreusable.org)

#### 3. *Reusable Transport Packaging Manufacturers and Consultants*

- Recyclable Containers Company at [www.recyclablecontainers.com](http://www.recyclablecontainers.com)
- CHEP (pallet pooling service) at [www.us.chep.com](http://www.us.chep.com)
- IFCO (pallet pooling service) at [www.ifco-us.com](http://www.ifco-us.com)
- Returnable Packaging Network Corporation at [www.returnables.com](http://www.returnables.com)

- A.C. Buckhorn (manufacturer) at [www.acbuckhorn.com](http://www.acbuckhorn.com)
- Amatech (manufacturer) at [www.amatechinc.com](http://www.amatechinc.com)
- H.B. Tollette & Associates (consultant) at [www.hbtandassociates.org](http://www.hbtandassociates.org)
- Kiva International (manufacturer) at [www.kiva-intl.com](http://www.kiva-intl.com)
- ORBIS (manufacturer) at [www.orbis-menasha.com](http://www.orbis-menasha.com)
- Westpak, Inc. (consultant) at [www.westpak.com](http://www.westpak.com)
- Shuert Industries (manufacturer) at [www.thomco.com/shuert.htm](http://www.thomco.com/shuert.htm)

#### 4. *Trade Journals*

- Packaging Digest
- Transportation and Distribution
- Modern Materials Handling
- Packaging
- Pallet Enterprise

#### 5. *Reports*

- *Delivering the Goods: Benefits of Reusable Shipping Containers* by INFORM
- *Feasibility of Reusable Plastic Containers for Shipping and Displaying Produce* sponsored by Alameda County, California Source Reduction and Recycling Board
- *Case Studies in Source Reduced and Reusable Transport Packaging* by National Recycling Coalition
- *Transport Packaging Savings: Strategies to Source Reduce and Reuse Transport Packaging* by National Recycling Coalition
- *Transport Packaging: Cost-Effective Strategies for Reducing, Reusing, and Recycling in the Grocery Industry* by Headley Pratt Consulting for the Minnesota Office of Environmental Assistance and the American Plastics Council
- *A Case Study of Three Transport Packaging Alternatives for Fresh Produce* presentation notes by Franklin Associates
- *Source Reduction in Action: Techniques to Extend the Life of Pallets* presentation notes by Franklin Associates

### **C. Prevailing Models for OCC Shipping Containers and Pallets**

Based on the research, the Contractor identified the following prevailing models for OCC shipping containers and pallets in the United States:

#### 1. *OCC Shipping Containers*

- One-way OCC: OCC shipping containers are either used once and disposed of or used once and recycled.
- Reusable OCC: reusable OCC shipping containers are used multiple times and are either disposed of or recycled.

- Reusable Plastic Containers: plastic shipping containers (e.g., plastic totes, boxes, bins) are reused hundreds of times. Reusable plastic containers often collapse and are nestable for storage.

## 2. *Pallets*

- One-Way Pallets (wood): are the least expensive pallets available. One-way pallets are made of low quality “green” wood. One-way pallets usually fall apart after one cross-country trip. A one-way pallet weighs approximately eight pounds and costs about \$5.00 to purchase.
- Exchange Pallets (wood): are medium grade pallets that can make three to four cross-country trips. A company will purchase a quantity of exchange pallets, ship palletized products through its supply chain, and its customers are responsible for returning the pallets back to the company. However, the company often receives lesser quality pallets in return. An exchange pallet weighs approximately 20 pounds and costs about \$8.00 to purchase.
- Pallet Pooling (wood): is a pallet rental service where companies outsource the logistics of pallet management to an international pooling network of high quality pallets. Pallets are delivered to a company, palletized products are shipped through its supply chain and the rental service picks up the pallets and returns them to service centers for inspection and repair. Pooling pallets are made of high quality wood, and their life expectancy is ten years. A pooling pallet weighs approximately 50 pounds and costs about \$5.00 to rent.
- Plastic Pallets: replace wood pallets. The three major markets for plastic pallets are automotive, food distribution and paper products. At this time, there are engineering issues regarding these pallets that need improvement such as load bearing capacity, bowing or bending under the weight of the load and deflection (slippery surfaces). Improvements to plastic pallets are currently in the research and development stage and are expected to be complete within the next two to three years. A plastic pallet costs about five to ten times more than a wood pallet.

## D. National Industry Leaders

The Contractor identified the following national industry leaders that have replaced OCC shipping containers with reusable plastic containers and wood pallets with pallet pooling and plastic pallets. These case studies are described in Appendix A.

### 1. Reusable Plastic Containers

Company	Company Location	Type of Business
Toyota Motor Manufacturing	Georgetown, KY	Camry Sedan manufacturer
Cook, Inc.	Ellettsville, IN	Medical instruments manufacturer
Saturn	Wilmington, DE	Automobile assembly plant
NUMMI	Fremont, CA	General Motors & Toyota automobile assembly plant
Motorola	Libertyville, IL	Cellular phones manufacturer
Pepsi-Cola Company	Nationwide	Soft drink production
Puget Consumers' Co-op	Seattle, WA	Food co-op, 8 stores, 36,000 members
United Technologies Automotive	Berne, IN	Automotive parts industry
Prima Frutta Packing Co.	Linden, CA	Produce grower
H.E.B. Grocery Company	San Antonio, TX	Grocery store chain (235 stores)
United States Postal Service	Nationwide	Mail delivery
Bergen Brunswig Drug Company	Orange, CA	Retail drug stores
In-N-Out Burgers	Baldwin, CA	Fast food restaurants
Saratoga Dairy	Saratoga Springs, NY	Milk producer
Wakefern Food Corporation	Eastern United States	Food distributor in 5 states
Hannaford Brothers	Eastern United States	Food distributor in 5 states
Kentucky Fried Chicken	Nationwide	Retail food stores
Wal-mart	Nationwide	Retail stores

### 2. Pallet Pooling

Company	Company Location	Type of Business
Lipton	Englewood Cliffs, NJ	Food manufacturer
Bordon Foods Corporation	Columbus, OH	Food manufacturer
Perrier Group	Orlando, FL	Bottled water manufacturer
Monfort, Inc.	Greeley, CO	Food processing company
ConAgra Grocery Products Co.	Fullerton, CA	Food manufacturer
Pursell Industries	Birmingham, AL	Lawn & garden fertilizer manufacturer
BJ's Wholesale Club, Inc.	Natick, MA	Wholesale club chain
Home Depot	Nationwide	Retail stores
Wal-Mart	Nationwide	Retail stores

### 3. Plastic Pallets

Company	Company Location	Type of Business
Meyer Corporation	Fairfield, CA	Cookware manufacturer
Rocco Enterprises	Shenandoah Valley, VA	Poultry processing company
Pesi-Cola Bottling of Phoenix	Phoenix, AZ	Soft drink production
American National Can Company	Phoenix, AZ	Aluminum can manufacturer

## E. Summary of National Case Studies

The Contractor's research information obtained from national case studies is grouped in the following categories:

1. Application: is the type of distribution system that the reusable transport packaging is applied. Typically, a distribution system is either closed loop (where the distribution system is circular and the return of the packaging to the company can be controlled) or open loop (where the distribution system is open-ended and the return of the packaging to the company cannot be controlled).
2. Measurable benefits: are the quantifiable benefits of using reusable transport packaging.
3. Disadvantages: are the negative trade-offs for using reusable transport packaging.
4. Types of businesses: are the type of manufacturing, wholesale and retail businesses interviewed that have changed to reusable transport packaging.

A summary of the information the Contractor obtained from national case studies on reusable plastic containers, pallet pooling and plastic containers follows:

1. ***Reusable Plastic Containers***: are plastic shipping containers (e.g., plastic totes, boxes, bins) that are reused hundreds of times. Reusable plastic containers often collapse or are nestable for storage.

### Types of Businesses

#### **Manufacturing**

- Automobile manufacturers (3)
- Medical instruments manufacturer (1)
- Cellular phone manufacturer (1)
- Soft drink manufacturer (1)

#### **Wholesale**

- Food co-op (1)
- Automobile parts supplier (1)
- Fruit/produce grower (1)
- Grocery company (1)
- Food distributor (1)
- Mail delivery-USPS (1)

#### **Retail**

- Retail stores (2)
- Fast food restaurants (1)
- Dairy (1)

- Supermarkets (2)

**Application:** closed loop distribution system

- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant
- Manufacturing plant to distribution center
- Distribution center to customers

### **Measurable Benefits**

- Less dust and contaminants
- More efficient interface with production lines
- More efficient storage with higher stacking
- Ergonomics & worker safety: less muscle strain, decreased lifting and repetitive motion injuries
- Reduced transportation and storage costs
- Improved use of floor and storage space
- Improved inventory management
- Avoided waste disposal costs
- Easier to sanitize
- Longer useful life
- More efficient use of truck space
- Maximize load stability due to column and cross stacking
- Less product damage

### **Disadvantages**

- Added weight to the box
- Higher up-front costs

2. ***Pallet Pooling:*** is a pallet rental service where companies outsource the logistics of pallet management to an international pooling network of high quality pallets.

### **Types of Businesses**

#### **Manufacturing**

- Food manufacturers (3)
- Bottled water manufacturer (1)
- Food processing (1)
- Lawn & garden fertilizer manufacturer (1)

#### **Wholesale**

- Wholesale club (1)

## **Retail**

- Retail stores (2)

**Application:** closed loop distribution system

- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant
- Manufacturing plant to distribution center
- Distribution center to customers

## **Measurable Benefits**

- Reduces supply chain costs
- More productive flow of goods through the company's distribution channels
- Elimination of pallet recovery discussions and disputes
- Eliminates pallet repair costs: no ongoing pallet maintenance, cleaning and repair
- Less product damage due to pallet failure
- Ergonomics and worker safety: higher quality pallets, less potential for injury
- Improves load stability
- Increases loading dock productivity

## **Disadvantages**

- Higher administrative costs

3. ***Plastic Pallets:*** are a plastic replacement for wood pallets.

## **Types of Businesses**

### **Manufacturing**

- Poultry processing (1)
- Soft drink production & aluminum can manufacturer (1)
- Cookware manufacturer (1)

**Application:** closed loop distribution system

- Intra-plant (never leaves the facility)
- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant
- Manufacturing plant to distribution center
- Distribution center to customers

## **Measurable Benefits**

- Longer useful life than wooden pallets
- Reduced labor costs: no ongoing pallet maintenance, cleaning and repair

- Less product damage due to pallet failure
- Ergonomics and worker safety
- Easy to sanitize

### **Disadvantages**

- Higher up-front costs
- Research and development not complete: issues with deflection (slippery surface), weight bearing capacity (bowing) and interfacing with warehouses (racking)
- Replacement cost issues: plastic pallets “disappear” in applications where there is not complete control

## **F. National Research Conclusions**

The national research identified 31 industry leaders that have made the change to reusable transport packaging from the following major industries:

- Food and beverage: growers, manufacturers, distribution, retail supermarkets and restaurants
- Automotive: parts and automobile manufacturers
- High tech: medical instruments and cellular phones
- Retail stores

In all cases, the companies were large corporations that applied reusable transport packaging to a closed loop distribution system where the return of the packaging to the company could be controlled.

The research identified the measurable benefits of reusable transport packaging as:

- Reduction in supply chain costs
- More productive flow of goods through the company’s distribution channels
- Less product damage
- Improved ergonomics and enhanced worker safety
- Longer useful life of the packaging
- Reduced labor costs
- More efficient trucking and loading dock productivity



The research identified the disadvantages of reusable transport packaging as:

- Higher up-front costs
- Higher administrative costs
- Research and development ongoing (plastic pallets)

### III. TWIN CITIES BUSINESS PROFILE

The second phase of the project was to profile Twin Cities businesses in the SWMCB region that can be matched to the benchmarking information.

#### A. Business Survey 2000

In 2000, the SWMCB contracted with MarketLine Research to conduct a telephone survey of randomly selected Twin Cities metropolitan area businesses located within the SWMCB region. The survey focused on current day recycling and waste reduction practices of a representative sample of Twin Cities metropolitan area businesses of varying sizes.

The Contractor reviewed the MarketLine Research survey and selected the following survey question to identify the major categories of the Standard Industrial Classification (SIC) to use to profile Twin Cities businesses:

*Are materials or products delivered to  
your business in corrugated cardboard or wooden pallets?*

Businesses from the following SIC categories responded to the survey question:

- Construction (SIC 15 – 17)
- Manufacturing (SIC 20 – 39)
- Transportation (SIC 40 – 49)
- Wholesale (SIC 50 – 51)
- Retail (SIC 52 – 59)
- Finance (SIC 60 – 67)
- Business (SIC 70 – 79)
- Service (SIC 80 – 89)

Of the respondents, the greatest number of businesses from the following SIC categories indicated that they received materials or products delivered in OCC shipping containers and wood pallets:

- Manufacturing (SIC 20 – 39)
- Wholesale (SIC 50 – 51)
- Retail (SIC 52 – 59)

#### B. Twin Cities Business Data

To identify a business data base of opportunity in the SWMCB region that could be matched to the benchmarking information, the Contractor requested that the SWMCB provide data for businesses classified by the SIC categories of manufacturing, wholesale and retail. The SWMCB purchased Twin Cities business data from InfoUSA. The data base provided the following information for each business:

- Company name
- County
- Address
- Contact name & title
- Phone number
- Annual sales volume
- Employee size
- SIC category
- SIC category title

The data base is characterized below by annual sales volume:

<b>Annual Sales Volume</b>	<b>Number of Businesses (Manufacturing, Wholesale, Retail)</b>
\$50 million to \$100 million	233
\$100 million to \$500 million	116
\$500 million to \$1 billion	17
Over \$1 billion	30
<b>Total Number of Businesses</b>	<b>396</b>

Because the national research identified a significant up-front investment for businesses to make the change to reusable transport packaging, the Contractor narrowed down the data base according to annual sales volume and combined the following three categories: \$100 million to \$500 million (116 businesses), \$500 million to \$1 billion (17 businesses) and over \$1 billion (30 businesses):

<b>Annual Sales Volume</b>	<b>Total Number of Businesses (Manufacturing, Wholesale, Retail)</b>
\$100 million to over \$1 billion	163

Among this list of 163 businesses, some business SIC category titles appeared not to generate or receive large volumes of OCC shipping containers and wood pallets. The Contractor deleted 22 businesses from the list based on the following SIC category titles:

- Petroleum products – gasoline & oils
- Sand & gravel
- Importers (brokers)
- Hides

- Service station equipment
- Nurseries (plants & trees)
- Satellite equipment & systems
- Corrugated & solid fiber boxes (manufacturer)
- Automobile auctions
- Grain dealers

The remaining list of 141 businesses served as the Contractor's business data base of opportunity to identify target audiences and develop key messages.

## IV. NEEDS ASSESSMENT

In the third phase of the project, the Contractor conducted a needs assessment to identify target audiences by matching benchmarking information to the profile of businesses in the SWMCB region. The needs assessment consisted of the following:

- Meetings with local businesses
- Market research questionnaire
- Local business interviews
- Local market research results

### A. Meetings with Local Businesses

To research the dynamics of making the change from one-time use transport packaging to reusable transport packaging, the Contractor met with the following local businesses:

- Andersen Corporation: the company worked with its parts supplier to replace one-way OCC shipping containers with reusable plastic boxes. Reusable plastic boxes significantly supported just-in-time manufacturing and reduced costs. The company plans to expand the use of reusable plastic boxes to other areas of its plant. This company participated in Phase I of the project, and the Contractor met with the company to obtain all available information.
- Minnesota Diversified Industries: the company manufactures the reusable plastic boxes that Andersen Corporation's suppliers use to ship window manufacturing parts and all of the plastic totes used by the United States Postal Service that replace OCC boxes. The company requested a meeting with the Contractor to discuss the project.

### B. Market Research Questionnaire

The Contractor developed a "Reusable Transport Packaging Market Research Questionnaire" (see Appendix B) to interview the manufacturing, wholesale and retail businesses identified in the Contractor's business data base of opportunity. To describe the market research project, the Contractor developed a one-page project description that was used as a guide to introduce the project to business contacts on the telephone and to fax or email to business contacts upon request (see Appendix C).

### C. Local Business Interviews

The Contractor grouped the data base of 141 businesses by industry. The industries with the greatest number of companies are listed below:

<b>Industry</b>	<b>Total Number of Businesses (Manufacturing, Wholesale, Retail)</b>
Food	22
Automotive	18
High tech: computer & semiconductors	14
Retail stores	9
Medical products	6
Plastic, rubber, resin products	5
Mail order/catalogs	5
Building materials	3
Telecommunications	3
Miscellaneous (2 companies or less)	56
<b>Total</b>	<b>141</b>

The Contractor contacted a total of 80 businesses by phone, fax and email to request interviews. The 80 businesses were chosen by targeting the industries with the greatest number of local businesses. The industry categories chosen were:

- Food
- Automotive
- High tech: computer & semiconductors
- Retail stores
- Medical products

The responses from the 80 businesses reflected the difficulty in persuading these businesses to make a change to reusable transport packaging, if they have not already done so. Fifty-eight or 73 percent of the businesses did not respond to the Contractor's interview requests. Most businesses did not return the Contractor's phone calls, which reflected, in part, how easy it is to ignore voicemail messages, especially from callers seeking information. Some employees of these businesses, when reached directly, were quite rude and indicated that transport packaging was not an issue of concern to them.

The Contractor completed 22 interviews, a response rate of 27 percent. In these businesses, the Contractor's initial and subsequent phone calls were directed around the company from one department to another trying to find who was responsible for transport packaging. When the Contractor made contact with the correct person in the company, an interview was completed using the questionnaire.

#### **D. Local Market Research Results**

Of the 22 businesses interviewed, half of the companies indicated that they had made the change to reusable transport packaging. These businesses are characterized by industry type below:

## Number of Businesses Interviewed that Use Reusable Transport Packaging

Industry Type	Reusable Plastic Containers	Pallet Pooling	Plastic Pallets	Total Businesses
Food	2	2	4	8
High Tech	1		1	2
Windows	1			1
<b>Total Businesses</b>	4	2	5	11

The information obtained in these interviews is provided in Appendix D. The responses to the Contractor’s interview questions are grouped in the following categories:

1. Application: is the type of distribution system that the reusable transport packaging is applied. Typically, a distribution system is either closed loop (where the distribution system is circular and the return of the packaging to the company can be controlled) or open loop (where the distribution system is open-ended and the return of the packaging to the company cannot be controlled).
2. Measurable benefits: are the quantifiable benefits of using reusable transport packaging.
3. Disadvantages: are the negative trade-offs for using reusable transport packaging.
4. Types of businesses: are the types of manufacturing, wholesale and retail businesses interviewed that have changed to reusable transport packaging.
5. Sources of information: are where the businesses interviewed indicated that they received the technical information to make the change to reusable transport packaging.

A summary of the market research results follows:

1. **Reusable Plastic Containers**: are plastic shipping containers (e.g., plastic totes, boxes, bins) that are reused hundreds of times. Reusable plastic containers often collapse or are nestable for storage.

### **Types of Businesses**

#### **Manufacturing**

- Computer storage devices (1)
- Food products (1)
- Windows (1)

#### **Wholesale**

- Grocer (1)

**Application:** closed loop distribution system

- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant
- Distribution center to customers

**Measurable Benefits**

- Longer useful life
- Customer satisfaction
- Operational efficiencies: custom-designed containers interface with product and customer's warehousing and manufacturing systems
- More efficient use of truck space
- Less product damage during transit
- Maximizes "just in time" inventory management
- Ergonomics and worker safety

**Disadvantages**

- Higher administrative cost of tracking them
- Replacement costs: containers "disappear"
- Requires more storage space
- Return transportation costs
- Requires more storage space
- Upkeep and general maintenance of containers

**Sources of Information**

- Trade associations
- Manufacturers of plastic containers
- In-house expertise
- Customers
- Suppliers

2. ***Pallet Pooling:*** is a pallet rental service where companies outsource the logistics of pallet management to an international pooling network of high quality pallets.

**Types of Businesses**

**Manufacturing**

- Food manufacturers (2)

**Application:** closed loop distribution system

- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant



- Distribution center to customers

### **Measurable Benefits**

- Higher quality pallet
- Reduced labor costs: no ongoing pallet maintenance, cleaning and repair
- Less product damage due to pallet failure
- Worker safety: higher pallet quality, less injuries
- Customer satisfaction

### **Disadvantages**

- Higher administrative costs of tracking them
- Requires more storage space
- It is perceived that CHEP (a pallet pooling rental service) does not have any competitors, and they are a monopoly
- Quality of pallet maintenance (sanitizing, painting and repair) can be inconsistent across the country

### **Sources of Information**

- Trade information
- CHEP sales representatives
- Customers

3. *Plastic Pallets*: are a plastic replacement for wood pallets.

### **Types of Businesses**

#### **Manufacturing**

- Semiconductor devices (1)

#### **Wholesale**

- Grocer (2)
- Fruits and vegetables (1)
- Food products (1)

**Application**: closed loop distribution system

- Intra-plant (never leaves the facility)
- Inter-plant (between plants of the same company)
- Suppliers to manufacturing plant
- Distribution center to customers

### **Measurable Benefits**

- Longer useful life than wooden pallets
- Reduced labor costs: no ongoing pallet maintenance, cleaning and repair
- Less product damage due to pallet failure
- Ergonomics and worker safety: no splinters, weigh less
- Cleaner: easy to sanitize
- Maximize truck space, decrease number of trips
- Decrease storage space: nestable
- Customer satisfaction

### **Disadvantages**

- Very high up-front cost
- Higher administrative cost of tracking plastic pallets
- Replacement cost issues: plastic pallets “disappear” in applications where there is not complete control

### **Sources of Information**

- Trade shows, publications
- Manufacturers of plastic pallets
- Customers
- Government (food inspector ordered the change)
- Consultant (semiconductor devices)

#### ***4. Reasons Twin Cities Businesses indicated they HAVE NOT Changed to Reusable Transport Packaging***

The following is a summary of the information obtained from the 11 companies that indicated they have not changed to reusable transport packaging:

- Businesses do not see this as a change they need to consider or make
- Suppliers unwillingness to make the change
- Businesses do not have enough market share to demand the change from suppliers
- The perception that reusable plastic containers are difficult to sanitize
- Customers do not want to make the change
- Up-front cost of plastic pallets and reusable plastic containers
- Additional administrative costs of managing reusable transport packaging

- CHEP pallets: one company tried it and discontinued the service due to the administrative costs of managing the CHEP service and the financial liability when the CHEP pallets “disappear” (food processor)
- There is no financial incentive to make the change
- Open loop distribution systems
- Static electricity from plastic is a problem (electronics manufacturer)
- Local fire inspector would not allow the use of plastic pallets due to the toxins that would be emitted from them in a fire
- No long term relationship with suppliers; change suppliers constantly to get the best price

## V. MARKET RESEARCH CONCLUSIONS

Based on the market research information obtained from the needs assessment of local businesses, the following challenges and opportunities exist in promoting transport packaging reduction:

### 1. *Challenges*

- a. In general, there appear to be more pressing issues for the private sector, and the reusable transport packaging issue is not immediately impacting private companies:
  - Very few return phone calls
  - Rude responses from some companies
  - Difficult to get assistance to find the right person to talk to within the company
- b. It is not readily apparent which department in a company is responsible for making transport packaging decisions. People holding the following positions responded to the market research interviews:
  - Transportation managers
  - Purchasing managers
  - Logistics/supply chain managers
  - Waste management/environmental coordinators
  - Shipping and receiving managers
  - Warehouse managers
  - Distribution center operations managers
  - Plant managers
- c. There seem to be industries that are not interested in making this change at this time:
  - Not an issue that companies have considered
  - No financial incentive
  - No customer demand
  - Customer resistance
  - Incompatible distribution system
- d. Before a company can be positioned to make the change to reusable transport packaging, it must:
  - Be made aware of reusable transport packaging
  - Educated on the issues of reusable transport packaging
  - Sold on the concept of reusable transport packaging

## 2. *Opportunities*

- a. There are industries that have made this change:
  - Food and beverage industry
  - High tech industries: computer and semiconductor
- b. Motivating factors for the food and beverage industry to make this change include:
  - Financial incentives to save money
  - Sanitation issues
  - Customer satisfaction
- c. Motivating factors for high tech industries to make this change include:
  - Financial incentives to save money
  - Customer demand for product cleanliness
- d. Target the same industries where Twin Cities businesses have successfully made this change (food and beverage and high tech industries)
  - Share similar motivating factors
  - Talk the same industry language
  - Have similar industry issues
- e. Because of the significant up-front investment required to make this change, target medium- to large-size companies (annual sales of \$20 million to over \$1 billion). In this category, there are:
  - Approximately 70 food and beverage companies in the Twin Cities
  - Approximately 30 high tech companies in the Twin Cities

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<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u> Toyota Motor Manufacturing</p> <p><u>Type of Business</u> Camry Sedan manufacturer</p> <p><u>Location</u> Georgetown, KY</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company receives parts from suppliers, 90% of which are located within 500 miles.</p>	<p><b>Previous system:</b></p> <p>The company previously used corrugated containers.</p> <p><b>New system:</b></p> <p>The company currently uses plastic crates that may last up to 20 years.</p>	<p>The company has reduced freight costs by \$3 million per year and \$18 per car, and has avoided disposal costs.</p>
<p><u>Company Name</u> Cook, Inc.</p> <p><u>Type of business</u> Medical instruments manufacturer</p> <p><u>Location</u> Ellettsville, IN</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company ships raw materials from Illinois to its Indiana manufacturing plant, to an assembly contractor, and back to the plant.</p>	<p><b>Previous system:</b></p> <p>The company previously used single-use corrugated cardboard.</p> <p><b>New system:</b></p> <p>The company currently uses reusable plastic tubs, with 30 tubs replacing 153 cartons per month.</p>	<p>The company has incurred a \$3,000 one-time investment plus a \$6,500 annual expense. The investment was recovered in six months. With the new system, dust levels in the plant have been reduced.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u> Saturn</p> <p><u>Type of business</u> Automobile assembly plant</p> <p><u>Location</u> Wilmington, DE</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company receives parts from suppliers to build automobiles.</p>	<p><b>Previous system:</b></p> <p>The company previously used expendable packaging.</p> <p><b>New system:</b></p> <p>The company currently owns and manages returnable containers for all suppliers.</p>	<p>More than 90% of all incoming parts are shipped in returnables. The company has reduced transportation and storage costs, and has avoided disposal costs.</p>
<p><u>Company Name</u> NUMMI – General Motors and Toyota Motors joint venture</p> <p><u>Type of Business</u> Automobile assembly plant</p> <p><u>Location</u> Fremont, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company receives parts from suppliers to build automobiles.</p>	<p><b>Previous system:</b></p> <p>The company previously used a mixture of returnable and expendable packaging.</p> <p><b>New system:</b></p> <p>The company currently uses a returnable transport packaging system, including plastic folding containers.</p>	<p>The company has attained a goal of 80% of all parts in returnable packaging (2,500 parts from 184 suppliers), and recovered its initial investment in one year. Further benefits include less muscle strain, more parts per container, and more efficient storage with higher stacking.</p>

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<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<u>Company Name</u> Motorola  <u>Type of business</u> <b>Cellular phones manufacturer</b>  <u>Location</u> Libertyville, IL	<b>Type of Distribution system</b>  Closed loop  The company uses containers to hold telephones on the conveyor system.	<b>Previous system:</b>  The company previously used corrugated containers.  <b>New system:</b>  The company currently uses plastic trays stacked in plastic totes.	There appears to be less dust and contaminants in the plant. The plastic trays, which last about 5 years, are durable, compatible with the conveyor system, and stable when stacked.



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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b><u>Pepsi-Cola Company</u></b></p> <p><u>Type of business</u>  Soft drink production and distribution</p> <p><u>Location</u>  Nationwide</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company ships from bottling plants to company-owned warehouses to stores.</p>	<p><b>Previous system:</b></p> <p>The company previously used one-way primary packaging.</p> <p><b>New system:</b></p> <p>The company currently uses reusable plastic crates, which stack together to form displays.</p>	<p>The cost per use for the reusable crates is \$0.016 versus the \$0.26 cost for corrugated boxes. The reusable crates can be stacked higher and take less floor space. The company has eliminated 80-90,000 tons of corrugated waste per year.</p>
<p><u>Company Name</u>  <b><u>Puget Consumers' Co-op (PCC)</u></b></p> <p><u>Type of business</u>  36,000-member food cooperative with 8 stores</p> <p><u>Location</u>  Seattle, WA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The co-op buys organic produce from wholesalers.</p>	<p><b>Previous system:</b></p> <p>The co-op previously used non-recyclable wax-coated corrugated boxes.</p> <p><b>New system:</b></p> <p>The co-op currently uses 800 reusable plastic containers that are nestable and have an open, lattice-work bottom.</p>	<p>The expected useful life of the containers is 5 years, in which the co-op will save \$40,000 in packaging costs. They will recoup the initial investment in 4 months. The new system reduces garbage, and the containers offer better protection of the produce and are easier to ship and handle.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b>United Technologies</b>  <b>Automotive</b></p> <p><u>Type of business</u>  Supplier of exterior mirrors, grilles, and other painted products to the automotive industry</p> <p><u>Location</u>  Berne, IN</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company receives large shipments of materials from suppliers, and internally and externally ships components and finished products.</p>	<p><b>Previous system:</b></p> <p>The company previously used corrugated containers.</p> <p><b>New system:</b></p> <p>The company currently makes smaller shipments in returnable, reusable plastic containers (boxes and totes). The totes also are used for shipping, storing, and moving work-in process within the plant.</p>	<p>The company has eliminated 180 tons of incoming corrugated cartons and reduced disposal costs by more than \$1 million.</p>
<p><u>Company Name</u>  <b>Prima Frutta Packing Co.</b></p> <p><u>Type of business</u>  Grows and packages produce, including apples, pears, cherries, and walnuts for shipment to U.S. and Canadian markets and overseas</p> <p><u>Location</u>  Linden, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company ships produce from the orchard to the packing facility and warehouse.</p>	<p><b>Previous system:</b></p> <p>The company previously used wooden crates.</p> <p><b>New system:</b></p> <p>The company currently uses plastic bins.</p>	<p>The plastic bins cost \$80 each and the wooden crates cost \$60 each, but the plastic bins last longer, providing 15-30 years of service. The plastic bins also cool better, provide better protection of the fruit, have a rigid corner column that allows stacking twice as high, increase cold storage capacity by 30-50%, have built-in forklift guides, and are easier to sanitize.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b><u>H.E.B. Grocery Company</u></b></p> <p><u>Type of business</u>  Largest family-owned grocery company in the U.S. (235 stores)</p> <p><u>Location</u>  San Antonio, TX</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company produces or prepares many of its own items. The company's meat processing plant delivers meat and products to stores.</p>	<p><b>Previous system:</b></p> <p>The company previously used shipping containers with no lids.</p> <p><b>New system:</b></p> <p>The company currently uses plastic totes.</p>	<p>The company has reduced its fleet of containers from 35,000 to 24,000, increased inventory turns 400%, and realized a cost savings of \$6 per tote and a 50% increase in storage efficiency.</p>
<p><u>Company Name</u>  <b><u>United States Postal Service</u></b></p> <p><u>Type of business</u>  Mail delivery</p> <p><u>Location</u>  Nationwide</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The USPS mechanically sorts mail and then transports it in containers within post offices.</p>	<p><b>Previous system:</b></p> <p>The USPS previously used expendable corrugated containers.</p> <p><b>New system:</b></p> <p>The USPS currently uses laminated, corrugated plastic tote boxes made by MDI.</p>	<p>The plastic tote boxes can be used approximately 80 times versus 5 times for the corrugated containers. The corrugated containers cost \$1.50 - \$2.00 each.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b><u>Bergen Brunswig Drug Company</u></b></p> <p><u>Type of business</u>  Retail drug stores</p> <p><u>Location</u>  Orange, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company has 10,000 pharmacies in 40 states and 37 distribution centers.</p>	<p><b>Previous system:</b></p> <p>The company previously used one-way corrugated cartons.</p> <p><b>New system:</b></p> <p>The company currently uses 20,000 returnable plastic containers.</p>	<p>The company has realized a savings on packaging and labor, conservation of warehouse space (no assembly of boxes), better truck space utilization (completely filling an 8 ft. box van), reduced merchandise damage, reduced trash, and the containers work better with the automated power conveyor system.</p>
<p><u>Company Name</u>  <b><u>In-N-Out Burgers</u></b></p> <p><u>Type of business</u>  Fast food restaurants</p> <p><u>Location</u>  Baldwin, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company ships from processing facilities to 84 restaurants in Southern California.</p>	<p><b>Previous system:</b></p> <p>The company previously used one-way waxed corrugated boxes for shipping meat patties and bags of dressings.</p> <p><b>New system:</b></p> <p>The company currently uses reusable plastic totes.</p>	<p>The new system has eliminated 200 tons of nonrecyclable waxed cardboard per year. The company has realized a \$24,000 annual savings on disposal and packaging costs and has recovered the initial investment cost (\$140,000) in 11 months.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b>Saratoga Dairy</b>  <b>(Stewarts Processing Corp.)</b></p> <p><u>Type of business</u>  Provides milk to 200 convenience stores</p> <p><u>Location</u>  Saratoga Springs, NY</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company ships milk to 200 convenience stores.</p>	<p><b>Previous system:</b></p> <p>The company previously shipped refillable and one-way milk bottles and cartons to stores and hauled back empty bottles in expendable packaging.</p> <p><b>New system:</b></p> <p>The company currently uses plastic shipping crates.</p>	<p>The new system does not significantly add to transportation costs.</p>
<p><u>Company Name</u>  <b>Wakefern Food Corporation</b></p> <p><u>Type of business</u>  Merchandising and distribution arm of ShopRite supermarkets in CT, DE, NJ, NY, and PA</p> <p><u>Location</u></p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company distributes directly from distribution warehouses to stores.</p>	<p><b>Previous system:</b></p> <p>The company previously used expendable packaging.</p> <p><b>New system:</b></p> <p>The company has used nestable, reusable plastic totes and containers for 15 years to repack (break up) bulk cases.</p>	<p>The company saves money on packaging and labor.</p>

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<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u>  <b>Hannaford Brothers</b></p> <p><u>Type of business</u>            93 supermarkets in MA, ME, NH, NY, and VT</p> <p><u>Location</u></p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company distributes from warehouses to stores.</p>	<p><b>Previous system:</b></p> <p>The company previously used expendable packaging.</p> <p><b>New system:</b></p> <p>The company currently uses reusable totes for repacked health and beauty items.</p>	
<p><u>Company Name</u>  <b>Kentucky Fried Chicken</b></p> <p><u>Type of business</u>            Fast food restaurants</p> <p><u>Location</u>            Nationwide</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The company transports food supplies from suppliers to retail stores.</p>	<p><b>Previous system:</b></p> <p>The company previously used one-way corrugated boxes.</p> <p><b>New system:</b></p> <p>The company currently uses reusable plastic containers that can be tightly sealed so food and supplies can be shipped in the same truck.</p>	<p>The new system allows for consolidation of shipments in a single truck, lower worker's compensation costs, better protection of the product, and provides better ergonomic design which increases handling efficiencies.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b>Wal-mart</b></p> <p><u>Type of business</u>  Retail stores</p> <p><u>Location</u>  Arkansas</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>All of the fresh produce coming into the food distribution centers was packaged in single-use corrugated boxes.</p> <p><b>New system:</b></p> <p>Display Ready Concept: the grower packs fresh produce in a reusable plastic container (RPC). The produce is shipped to Wal-mart's distribution center and then to the retail store where the RPC is placed in a display in the produce department. After the produce is sold, the retail store returns the empty RPC to the distribution center.</p>	<p>RPCs result in logistics advantages. Produce is cooled in one-third the time in RPC's due to maximum air ventilation. Corrugated boxes insulate the produce which increases cooling time. RPCs maximize load stability due to column and cross stacking, which results in less product damage. RPCs are conducive to embedding chips which allow the product to be tracked throughout the distribution system. Disadvantages include added weight to the box, merchandizing impacts due to limited colors of the box, and difficulty in maintaining homeostatic temperatures for produce.</p>

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Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u> Lipton</p> <p><u>Type of Business</u> Food manufacturer</p> <p><u>Location</u> Englewood Cliffs, NJ</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>Products were delivered to customer’s warehouses on one-way, single-use wood pallets.</p> <p><b>New system:</b></p> <p>Lipton ships unitized loads on CHEP pallets (operator of a nationwide pallet pool, supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to all trade classes.</p>	<p>Benefits include the elimination of pallet repair costs, the reduction of pallet sorting and pallet purchase costs, the elimination of pallet disputes between customers, carriers and Lipton, and eliminates the need for pallet exchanges which makes the overall trade channel more productive. Other benefits include faster unloading, safer trucking, reduced product damage, and true 4-way entry with a pallet jack.</p>
<p><u>Company Name</u> Bordon Foods Corporation</p> <p><u>Type of business</u> Manufacturer of pasta, pasta sauce, and bouillon</p> <p><u>Location</u> Columbus, OH</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>The company previously used a pallet exchange system in its material handling process, which required it to buy, store, and repair wood pallets.</p> <p><b>New system:</b></p> <p>Bordon ships loads on CHEP pallets (operator of a nationwide pallet pool, supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to all trade classes.</p>	<p>The new system eliminates unproductive pallet recovery discussions and debates over pallet quality with customers and allows Bordon to be more aggressive in offering store-ready display modules. The new system also eliminates pallet repair costs. It promotes faster unloading, safer trucking, and reduced product damage.</p>



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<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u> Perrier Group</p> <p><u>Type of Business</u> Manufacturer of bottled water</p> <p><u>Location</u> Orlando, FL</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>The company previously used a pallet exchange system in its material handling process, which required it to buy, store and repair wood pallets.</p> <p><b>New system:</b></p> <p>Perrier ships unitized loads on CHEP pallets (operator of a nationwide pallet pool supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to its customers in the supermarket, mass merchant, wholesale club, and foodservice trade channels.</p>	<p>The new system enhances customer service, reduces transportation costs and product damage, and improves load stability.</p>
<p><u>Company Name</u> Monfort, Inc.</p> <p><u>Type of Business</u> Produces beef products and is one of the world's largest food processing companies</p> <p><u>Location</u> Greeley, CO</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>The company previously floor-stacked its product or used one-way pallets.</p> <p><b>New system:</b></p> <p>The company ships loads on CHEP pallets (operator of a nationwide pallet pool supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to its wholesale and retail customers.</p>	<p>The company has realized a cost savings from eliminating pallet repair and disposal, increases in receiving dock productivity, and a reduction in transportation costs. There are also environmental benefits from waste reduction.</p>

**Appendix A**  
**Reusable Transport Packaging Industry Leaders**  
**Pallet Pooling Case Studies**  
**Manufacturing Companies**

Company Information	Distribution System	Description of the Transport Packaging System	Impacts of the New Transport Packaging System
<p><u>Company Name</u>  <b>ConAgra Grocery Products Company</b></p> <p><u>Type of business</u>            Food manufacturer. Product lines include Hunt's tomato products, Manwich, Wesson Oil, Peter Pan peanut butter, among many others.</p> <p><u>Location</u>            Fullerton, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed and open loop</p> <p>The company has 15 plants, 10 distribution centers, and several co-packers throughout the United States.</p>	<p><b>Previous system:</b></p> <p>Product lines were previously delivered via pallet exchange or slip sheets with slip sheets being utilized for most interplant movements.</p> <p><b>New system:</b></p> <p>The company ships loads on CHEP pallets (operator of a nationwide pallet pool supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to its wholesale and retail customers.</p>	<p>One standard platform throughout the supply chain reduces handling and dwell time on deliveries. It also reduces product touches resulting in less exposure to potential product damage.</p>
<p><u>Company Name</u>  <b>Pursell Industries</b></p> <p><u>Type of business</u>            Manufacturer of lawn and garden fertilizer</p> <p><u>Location</u>            Birmingham, AL</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>Manufacturing facilities in AL, FL, OH, and CA ship products to major lawn and garden retailers throughout the United States.</p>	<p><b>Previous system:</b></p> <p>Product lines were previously delivered via pallet exchange.</p> <p><b>New system:</b></p> <p>The company ships loads on CHEP pallets (operator of a nationwide pallet pool supplying customers with high quality pallets from a comprehensive depot network) from its manufacturing plants and distribution centers to its wholesale and retail customers.</p>	<p>The new system reduces supply chain costs. It offers a stable platform for the handling, storage and distribution of products. It also results in a more productive flow of goods through the company's distribution channels and increased efficiencies for its trading partners.</p>

**Appendix A  
Reusable Transport Packaging Industry Leaders**

**Pallet Pooling Case Studies  
Wholesale Companies**

<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u> <b>BJ's Wholesale Club, Inc.</b></p> <p><u>Type of business</u> Wholesale club chain operating in the eastern U.S.</p> <p><u>Location</u> Natick, MA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>Products are shipped from BJ's Bristol, PA distribution center to 118 club locations.</p>	<p><b>Previous system:</b></p> <p>Products were shipped and delivered in one-way, single-use wood pallets.</p> <p><b>New system:</b></p> <p>Pallet management services (rental pallet pool) are provided by IFCO Systems North America. IFCO recovers large quantities of pallets from 33 of BJ's clubs and the PA distribution center.</p>	<p>Pallet rental pool cost savings over conventional wood pallets allows BJ's to keep prices low for its members.</p>

**Appendix A**  
**Reusable Transport Packaging Industry Leaders**  
**Pallet Pooling Case Studies**  
**Retail Companies**

<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u>  <b>Home Depot</b></p> <p><u>Type of business</u>  Retail stores</p> <p><u>Location</u>  <b>Atlanta, GA</b></p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>A typical Home Depot store uses more than 30,000 pallets a year. On average, nearly 10,000 of those pallets ended up in landfills after only one use mainly because they are of such low quality. Home Depot discarded millions of conventional “one-way” single-use wood pallets after delivery.</p> <p><b>New system:</b></p> <p>Pallets are delivered to Home Depot vendors by CHEP (operator of a nationwide pallet pool), are loaded and shipped to Home Depot retail locations or distribution centers, and then returned to CHEP service centers for inspection and repair.</p>	<p>Pallet pooling enables Home Depot to avoid discarding almost 10 million pallets annually at its current size and more than 18 million per year by the end of 2002.</p> <p>CHEP pallets cost less per shipment than conventional wood pallets. Their higher quality helps minimize shipping damage and their standard 48 x 40 inch size makes it easier for vendors to handle and load trailers.</p>
<p><u>Company Name</u>  <b>Wal-mart</b></p> <p><u>Type of business</u>  Retail stores</p> <p><u>Location</u>  Arkansas</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p>	<p><b>Previous system:</b></p> <p>Products were shipped and delivered on one-way, single-use wood pallets.</p> <p><b>New system:</b></p> <p>Sixty-five (65) to 85 percent of pallets are delivered to Wal-mart vendors by CHEP (operator of a nationwide pallet pool), are loaded and shipped to Wal-mart retail locations or distribution centers, and then returned to CHEP service centers for inspection and repair.</p>	<p>Benefits include increasing the integrity of the pallets, reduced pallet waste, increased worker safety in the distribution centers, and less product damage due to pallet failure.</p>

**Appendix A**  
**Reusable Transport Packaging Industry Leaders**  
**Plastic Pallets Case Studies**  
**Manufacturing Companies**

<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u> Meyer Corporation</p> <p><u>Type of Business</u> Manufacturer of Farberware and Kitchenaid cookware</p> <p><u>Location</u> Fairfield, CA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>Closed-loop system between the company’s distribution center and customers.</p>	<p><b>Previous system:</b></p> <p>The distribution center operated almost entirely using wood pallets and slip sheets.</p> <p><b>New system:</b></p> <p>Lightweight, low-cost plastic pallets have replaced wood pallets and ship sheets.</p>	<p>Plastic pallets have an expected life span of 5 to 7 years as opposed to 2 to 3 years for wood pallets. Return on investment is expected in 3 years. There is 10 to 20 percent less product damage because plastic pallets do not break apart, can be slid on the floor without damage, and do not have protruding nails to catch on the facility’s wire racking. Plastic pallets have 80 percent more surface area than wood pallets and require two-thirds less stretch wrap to unify the load. Ergonomics and safety have benefited because plastic pallets can be manually handled more easily.</p>
<p><u>Company Name</u> Rocco Enterprises</p> <p><u>Type of business</u> Poultry processing company</p> <p><u>Location</u> Shenandoah Valley, VA</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>Closed-loop system between Rocco’s chicken processing plant and distribution center which is subject to extreme temperatures and multiple handlings.</p>	<p><b>Previous system:</b></p> <p>The distribution center operated almost entirely using hundreds of thousands of wood pallets each year. Wood pallets needed repair after every 8 to 10 handlings.</p> <p><b>New system:</b></p> <p>Heavy duty, rackable 40 in. x 48 in. USDA-type plastic pallets specifically designed for durability and sanitation were put into service in the Rocco distribution center.</p>	<p>The bottom line in the plastic versus wood pallet equation is the economics of it. The company pays a higher up-front cost for a plastic pallet but does not have the ongoing maintenance and repair costs associated with wood pallets. The life of the pallet is long enough to show economic benefit. The porous nature of wood makes it difficult to fully sanitize. The smooth finish of plastic cleans well in the sanitizer and dries without trapping moisture. Plastic pallets make product handling much easier than wood pallets.</p>

**Appendix A**  
**Reusable Transport Packaging Industry Leaders**  
**Plastic Pallets Case Studies**  
**Manufacturing Companies**

<b>Company Information</b>	<b>Distribution System</b>	<b>Description of the Transport Packaging System</b>	<b>Impacts of the New Transport Packaging System</b>
<p><u>Company Name</u> American National Can Company</p> <p><u>Type of Business</u> Manufacturer of 12-ounce aluminum cans</p> <p><u>Location</u> Phoenix, AZ</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>Pallets are used to move newly formed cans to Pepsi-Cola in the same city. Empty pallets are returned to the company on its own trucks.</p>	<p><b>Previous system:</b></p> <p>Can stock was loaded and shipped to Pepsi-Cola from American National Can Company on wood pallets. The company experienced maintenance costs and durability problems with wood pallets.</p> <p><b>New system:</b></p> <p>The company now ships half of its deliveries of empty cans to Pepsi-Cola on plastic pallets instead of wood pallets.</p>	<p>Although the initial cost of plastic pallets is more than four times the cost of wood pallets, the company recovered its outlay in two years. A portion of the cost reduction derives from reduced disposal costs: wood pallet waste amounted to about 2 tons per month. The largest savings by far was eliminating labor costs of \$2,000 per month for repairing wood pallets.</p>
<p><u>Company Name</u> Pepsi Cola Bottling of Phoenix</p> <p><u>Type of business</u> Soft drink production and distribution</p> <p><u>Location</u> Phoenix, AZ</p>	<p><b>Type of Distribution system</b></p> <p>Closed loop</p> <p>The can supplier ships empty cans to Pepsi.</p>	<p><b>Previous system:</b></p> <p>Can stock was loaded and shipped to Pepsi from the supplier on wood pallets. Slightly damaged or misshapen pallets sometimes splintered during automated unloading, interrupting production and causing substantial losses of new cans headed for the filling operation.</p> <p><b>New system:</b></p> <p>In cooperation with one of its can suppliers, Pepsi now receives half of its deliveries of empty cans on plastic pallets instead of wood pallets. Plastic pallets are used only within Pepsi's own bottling plant. Plastic pallets are not used for shipment of product outside the plant because they are much more costly than wood pallets and hard to retain and control outside the system.</p>	<p>The labor cost to clean and repair wood pallets was reduced by \$3,000 per year. Wood waste was reduced by 50 percent. Production downtime (machine interruptions as a result of stoppage on the line stemming from defective pallets) was cut from 10 hours a month to about half an hour. The useful life of pallets was extended to 3 years or at least 30 trips, at least 4 times the performance of wood pallets.</p>

**APPENDIX B**  
**Reusable Transport Packaging Market Research**  
**Questionnaire**

1. Company name & address

2. County\_\_\_\_\_

3. Type of business

\_\_\_\_\_ Manufacturing

\_\_\_\_\_ Wholesale

\_\_\_\_\_ Retail

4. SIC code number, if available

5. Contact person & title

6. Phone number & email address

7. Has your company replaced one-way, single-use wood pallets with reusable pallets?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

8. Has your company replaced single-use corrugated boxes with reusable containers?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

9. IF YES to questions 7 and 8: Go to question #12

10. IF NO to questions 7 and 8: Has your company considered replacing single-use transport packaging with reusable transport packaging?

\_\_\_\_\_ Yes, wood pallets

\_\_\_\_\_ Yes, corrugated boxes

11. If not, what factors or what information would help your company consider this decision?



12. What type of single-use transport packaging did your company replace?

\_\_\_\_\_ Wood pallets

\_\_\_\_\_ Corrugated boxes

13. Please describe your company's transport packaging system

\_\_\_\_\_ Open loop

\_\_\_\_\_ Closed loop

14. What are advantages of the new transport packaging system?

15. What are disadvantages of the new transport packaging system?

16. What made you decide to make this change to your transport packaging system?

17. Where did the information come from that helped you make this change to your transport packaging system?

\_\_\_\_\_ Trade association (name \_\_\_\_\_)

\_\_\_\_\_ Manufacturers of reusable transport packaging

\_\_\_\_\_ Consultant (specify type \_\_\_\_\_)

\_\_\_\_\_ Government

\_\_\_\_\_ Customers

\_\_\_\_\_ Other (specify \_\_\_\_\_)

18. What are the measurable benefits of the new transport packaging system?

Examples include:

Costs

Savings

Storage space

Worker Safety

Operational efficiency

Inventory management

Other

19. Would you be willing to share this information as part of a public case study for public relations purposes?



## **Reusable Transport Packaging Market Research**

*We have been hired* by six Twin Cities metropolitan area counties, including Anoka, Carver, Dakota, Hennepin, Ramsey and Washington, to conduct market research on the use of reusable transport packaging by Twin Cities businesses. We are interested in identifying businesses that would be interested in sharing their reusable transport packaging results as case studies for public relations purposes.

*The reusable transport packaging systems* we are studying include:

- Reusable plastic pallets or pallet pooling systems replacing one-time use wooden pallets.
- Reusable plastic containers such as plastic totes, bins, and boxes replacing one-time use corrugated boxes.

*It is estimated that:*

- The volume of garbage generated in the Twin Cities metropolitan area will triple in the next 20 years.
- There are only ten years of landfill space left for garbage in the entire state of Minnesota.
- Wooden pallets and corrugated boxes comprise 15 percent of the garbage generated in Minnesota.

*The goal of the market research* is to develop the data needed to educate Twin Cities businesses on the benefits of changing to reusable transport packaging. The goal of the counties is to reduce the volume of wooden pallets and corrugated boxes in the Twin Cities metropolitan area waste stream.

*Your participation* in the study will help us identify the benefits and barriers of using reusable transport packaging. The information you provide will be used in the aggregate and your company will not be identified by name. If your company's use of reusable transport packaging is deemed to be a good case study for this project, we will discuss the details associated with developing a public relations case study with you.

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Wholesale Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Wholesale grocer</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Pallet pooling Plastic shipping platform Reusable plastic containers</p> <p><b>Distribution System</b> Closed loop application for plastic shipping platforms.</p> <p><b>Case Study Participation</b> Depends on how much extra work it requires. Need to know more about SWMCB</p>	<p><b>Pallet Pooling</b> About 40 percent of the product the company receives is shipped on CHEP pallets. The company is a recipient of CHEP pallets and does not initiate the use of them.</p> <p><b>Plastic Shipping Platforms</b> To fill customer orders, product is removed from CHEP pallets and placed on plastic shipping platforms. Product is shipped to customers on plastic shipping platforms.</p> <p><b>Reusable Plastic Containers</b> For the last 5 years, the company has been studying the application for meat and produce. The problem has been getting the produce growers to standardize their use of reusable plastic containers. As soon as the industry moves in this direction, the company will support it.</p> <p><b>Sources of Information</b> Trade shows, manufacturers of reusable transport packaging, customers.</p>	<p><b>Wooden Pallets</b> CHEP pallets and plastic shipping platforms have replaced wooden pallets.</p> <p><b>Corrugated Boxes</b> Reusable plastic containers will replace corrugated boxes.</p>	<p><b>Measurable Benefits</b> <u>Plastic Shipping Platforms</u> Cost savings: can use them 100 times versus 10 times for wooden pallets. Reduces storage space: they are nestable. Worker safety: they are lighter than pallets. Operational efficiencies: they maximize truck space and decrease number of trips.</p> <p><b>Disadvantages</b> <u>Plastic Shipping Platforms</u> Administrative cost of keeping track of them and not losing them.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Wholesale Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Wholesale fruits and vegetables</p> <p><b>County</b> Ramsey</p> <p><b>Packaging Type(s)</b> Plastic pallets</p> <p><b>Distribution System</b> In-house application.</p> <p><b>Case Study Participation</b> No</p>	<p><b>Plastic Pallets</b> Plastic pallets are used in the processing area for sanitary reasons. They can be sanitized. Wooden pallets can hold bacteria, germs and mold, especially when wet.</p> <p><b>Sources of Information</b> Government food inspector ordered the company to make the change.</p>	<p><b>Plastic Pallets</b> Plastic pallets replaced wooden pallets.</p>	<p><b>Measurable Benefits</b> Cost savings: lasts longer than wooden pallets. Cleaner: can be sanitized. Inventory management: easier to identify product stored on plastic pallets because pallets are blue.</p> <p><b>Disadvantages</b> None</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Wholesale Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Wholesale food products</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Plastic pallets</p> <p><b>Distribution System</b> Closed loop application: totally internal to the company between plants and between supply partners.</p> <p><b>Case Study Participation</b> No</p>	<p><b>Plastic Pallets</b> Less than a year ago changed to plastic pallets for scheduled pick-ups and deliveries between the company's own plants. Because the company does not own a fleet of trucks and has no controls, does not use them down stream to customers.</p> <p><b>Sources of Information</b> Trade magazines</p>	<p><b>Wooden Pallets</b> Plastic pallets have replaced wooden pallets due to the high cost of broken wooden pallets, their limited use and the lack of repair depots for wooden pallets. Decision to change to wooden pallets was driven by the poor quality of wooden pallets the company was receiving.</p>	<p><b>Measurable Benefits</b> Cost savings: longer life of plastic pallets versus wooden pallets.</p> <p><b>Disadvantages</b> Very large up-front investment.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Wholesale Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Wholesale grocer</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Plastic pallets Reusable plastic totes</p> <p><b>Distribution System</b> Closed loop application from distribution centers to customers and back.</p> <p><b>Case Study Participation</b> No. Do not have the staff time to pull the information together.</p>	<p><b>Plastic Pallets</b> Product is shipped to the company’s distribution centers from suppliers on wooden pallets. To fill customer orders, product is removed from wooden pallets into smaller loads and placed on the company’s plastic pallets. Product is shipped to customers on plastic pallets.</p> <p><b>Reusable Plastic Totes</b> Product is shipped to the company’s distribution centers from suppliers in corrugated boxes. To fill customer orders, product is broken down into smaller loads and shipped in plastic totes.</p> <p><b>Sources of Information</b> Manufacturers of plastic pallets and reusable plastic totes.</p>	<p><b>Wooden Pallets</b> Plastic pallets have replaced wooden pallets.</p> <p><b>Corrugated Boxes</b> Reusable plastic totes have replaced corrugated boxes.</p>	<p><b>Measurable Benefits</b></p> <p><u>Plastic Pallets</u> Cost savings: even though plastic pallets are 5 times the cost of wooden pallets, they are more economical in the long run because they last 15 to 20 times longer. Reduces storage space: plastic pallets are nestable. Worker safety: plastic pallets have no splinters, and they weigh less than wooden pallets.</p> <p><u>Plastic Totes</u> Operational efficiencies: more efficient use of truck space and decrease number of trips.</p> <p><b>Disadvantages</b></p> <p><u>Plastic Totes</u> They often “disappear” and need to be replaced. However, it is still cheaper in the long run to replace them.</p>



**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Meat Packer</p> <p><b>County</b> Dakota</p> <p><b>Packaging Type(s)</b> Plastic pallets</p> <p><b>Distribution System</b> Open loop application</p> <p><b>Case Study Participation</b> No</p>	<p><b>Plastic Pallets</b> The company invested \$30,000 in plastic pallets and had difficulty in receiving them back from customers. The company has not replaced them due to the high cost of replacement.</p> <p><b>Sources of Information</b> Trade magazines</p>	<p><b>Wooden Pallets</b> Plastic pallets replaced wooden pallets.</p>	<p><b>Measurable Benefits</b> More sanitary than wooden pallets.</p> <p><b>Disadvantages</b> Very high initial purchase cost and replacement cost.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Manufacturer of semiconductor devices</p> <p><b>County</b> Carver</p> <p><b>Packaging Type(s)</b> Plastic pallets</p> <p><b>Distribution System</b> In-house application.</p> <p><b>Case Study Participation</b> The company may be contacted to discuss this further.</p>	<p><b>Plastic Pallets</b> Due to customer demand for product cleanliness, the company custom-designed about 150 plastic pallets to transport plastic drums used to store chemicals inside its manufacturing plant. Product sanitation in response to customer demand was the company's motivating factor.</p> <p><b>Sources of Information</b> Initial information was provided by a consultant. Then the company referred to trade magazines advertising manufacturers of plastic pallets.</p>	<p><b>Wooden Pallets</b> Plastic pallets have replaced wooden pallets. This is a new production process for the company where plastic pallets were specified as part of the production process. The company did not want to bring wooden pallets into the production area due to sanitation issues.</p>	<p><b>Measurable Benefits</b> Customer satisfaction: the primary motivating factor. Cost savings: they last longer than wooden pallets. Less storage space: they are nestable and maximize the use of storage space.</p> <p><b>Disadvantages</b> Initially, there were deflection issues. The plastic drums slid off the plastic pallets. The company purchased rubber banding to strap the drums to the pallets.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Manufacturer of computer storage devices</p> <p><b>County</b> Washington</p> <p><b>Packaging Type(s)</b> Reusable plastic totes and molded plastic bins with components</p> <p><b>Distribution System</b> Semi-finished product in a closed loop application</p> <p><b>Case Study Participation</b> No. The company's headquarters are located in the Twin Cities. However, there are no local manufacturing or warehousing activities.</p>	<p><b>Plastic Totes and Bins</b> Plastic totes and bins are used to transport semi-finished product from one plant to another in a closed loop distribution system. The company's decision to switch to totes and bins was driven by cost-reduction opportunities.</p> <p><b>Sources of Information</b> The company has its own engineering group, and the plastic totes and bins were designed in-house.</p>	<p><b>Corrugated Boxes</b> Reusable plastic totes and bins have replaced corrugated boxes.</p>	<p><b>Measurable Benefits</b> Cost savings: due to decrease in product damage during transit. Operational efficiencies: totes and bins are designed and configured for ease of entry into the production line.</p> <p><b>Disadvantages</b> Return transportation costs are an issue. There is a cost to shipping them back.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Manufacturer of food products</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Pallet pooling</p> <p><b>Distribution System</b> Closed loop application for interplant deliveries and customer deliveries</p> <p><b>Case Study Participation</b> The company might be interested but needs more information.</p>	<p><b>Pallet Pooling</b> The company was driven to start using the CHEP pallet pooling system 2 years ago due to customer demand. Customers wanted a consistent quality pallet that the company would take back. The company does not charge its customers for the cost of the CHEP pallet service. Starting 6/1/01, all retail customers will receive product on CHEP pallets.</p> <p><b>Sources of Information</b> Trade information from the Grocery Manufacturers of America, CHEP sales representatives and customers.</p>	<p><b>Wooden Pallets</b> The company uses 5 million pallets a year. The CHEP pallet pooling system has replaced a combination of expendable wooden pallets and slip sheets.</p>	<p><b>Measurable Benefits</b> Cost savings: there is a decrease in labor managing pallets throughout the distribution system. However, there is an increase in administrative costs to manage the CHEP system. The net is a cost savings. Worker safety: product quality of the pallets decrease the chance of injuries.</p> <p><b>Disadvantages</b> Requires more storage space.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Manufacturer of food products</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Pallet pooling</p> <p><b>Distribution System</b> Closed and open loop applications</p> <p><b>Case Study Participation</b> No</p>	<p><b>Pallet Pooling</b> The company began using CHEP pallets in 1992 in a closed loop system. After 1993 the company started using CHEP pallets to ship externally. The switch to CHEP pallets was customer driven, and the company's best practice competitors were offering the CHEP pallet service to their customers. It was the company's competitive nature to be an industry leader and one of the first to offer its customers a pallet pooling service.</p> <p><b>Sources of Information</b> Trade association functions, presentations, conferences and seminars; customers; and CHEP sales representatives.</p>	<p><b>Wooden Pallets</b> Internally, the company was shipping on slip sheets, and the CHEP pallet pooling system replaced slip sheets. It is faster to unload off of pallets (1 hour) than slip sheets (4 hours).</p> <p>Externally, the company does not own pallets and hires carriers to provide pallet exchange services. The carrier costs to provide pallet exchange services were steadily increasing due to the costs of managing pallets. The cost of the CHEP pallet pooling system is less than the cost of carrier pallet exchange services.</p>	<p><b>Measurable Benefits</b> Cost savings: the first year it cost the company \$2 million to make the switch. By the end of the second year the company broke even. There have been cost savings every year since. There is a reallocation of costs from paying carriers to manage pallets to the company administering the receipt of CHEP services. The net is a cost savings. Operational efficiencies: it takes less time to unload off pallets than slip sheets.</p> <p><b>Disadvantages</b> CHEP does not have any competitors, and there is a perception that they are a monopoly. Sometimes the quality of pallet maintenance (sanitizing, painting and repair) is not consistent across the country.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Manufacturer of food products</p> <p><b>County</b> Hennepin</p> <p><b>Packaging Type(s)</b> Pallet pooling Reusable plastic bins</p> <p><b>Distribution System</b> Closed loop application.</p> <p><b>Case Study Participation</b> Yes</p>	<p><b>Pallet Pooling</b> The company is currently in the process of studying a pallet pooling system, and it appears to be economically feasible.</p> <p><b>Reusable Plastic Bins</b> The company uses plastic bins to ship 2,000 lbs. of liquid eggs (whole egg whites or yolks) to customers where the bin interfaces with the customer's production line.</p> <p><b>Sources of Information</b> Trade association, manufacturers of plastic bins, customers.</p>	<p><b>Corrugated Boxes</b> Reusable plastic bins replace waxed corrugated boxes.</p>	<p><b>Measurable Benefits</b> Economics: total cost of ownership is less than disposable containers. Operational efficiencies: plastic bins interface with customer's equipment.</p> <p><b>Disadvantages</b> The upfront investment in plastic bins is greater, and bins require more storage space.</p>

**APPENDIX D**  
**Reusable Transport Packaging**  
**Needs Assessment of Twin Cities Businesses**

**Manufacturing Companies**

<b>Company Information</b>	<b>New Packaging System</b>	<b>Previous Packaging System</b>	<b>Impacts of the New Packaging System</b>
<p><b>Type of Business</b> Window manufacturer</p> <p><b>County</b> Washington</p> <p><b>Packaging Type(s)</b> Reusable plastic bins</p> <p><b>Distribution System</b> Closed loop application from suppliers to plant.</p> <p><b>Case Study Participation</b> Participation would require review by legal department and suppliers.</p>	<p><b>Reusable Plastic Boxes</b> Product is shipped to the company’s manufacturing plant from suppliers in custom-designed reusable plastic boxes. To restock product supplies, empty boxes are sent back to suppliers. Improved inventory management initiated the change.</p> <p><b>Sources of Information</b> Team effort between the company and its suppliers. The company’s in-house expertise included engineers, safety officers, purchasing agents, and quality control personnel.</p>	<p><b>Corrugated Boxes</b> Reusable plastic boxes have replaced corrugated boxes.</p>	<p><b>Measurable Benefits</b> Cost savings: maximizes “just in time” inventory management; plastic boxes are more easily tracked, recorded and located. Worker safety: lighter weight. Operational efficiencies: plastic boxes are designed for the product being shipped and to interface with the company’s warehousing systems.</p> <p><b>Disadvantages</b> Up-front investment in the plastic boxes, locked into suppliers, requires more storage space for empty boxes, upkeep and general maintenance of boxes.</p>