Use Reusables

Boost Freight Efficiency with Reusable Packaging

August 6, 2013
Arlington, TX
Alameda County Waste Management Authority and Recycling Board
www.stopwaste.org

EPA Climate Showcase Communities Grant
• Supports national expansion of Use Reusables workshops, free tools and online resources
www.epa.gov/statelocalclimate/local/showcase/

The RPA – Trade association
• Promotes the value and expansion of reusable packaging systems
• 52 member companies - Manufacturers, end users, technology providers and service providers
www.reusables.org
In Partnership with…

North Central Texas Council of Governments

Dallas-Fort Worth CLEAN CITIES

Proud Supporter of SmartWay®
What Is NCTCOG?

The North Central Texas Council of Governments (NCTCOG) is a voluntary association of

Cities
Counties
School districts
Special districts

Established to help local governments with planning for common needs

Serves 16 counties centered around Dallas-Fort Worth
What is Clean Cities?

U.S. Department of Energy Program

Clean Cities Mission
To advance the energy, economic, and environmental security of the U.S. by supporting local decisions to reduce petroleum use in transportation.


Provides a framework for businesses and government agencies to work together

Goal: Reduce U.S. petroleum use by 2.5 billion gallons per year
What is SmartWay℠?

Government-industry collaboration designed with and for the freight sector

The EPA launched SmartWay in 2003
- Reduce transport-related fuel usage
- Reduce emissions
- Provide incentives to improve supply-chain efficiency

Affiliates commit to promoting SmartWay to the freight industry

Partners track operations and commit to improving efficiency

EPA provides technical support, technology verification, and partner recognition
Top 5 Materials Landfilled from Commercial Sector

1. Food Waste

2. Other Paper

3. Uncoated Cardboard *Boxes*

4. Unpainted Wood *Pallets*

5. Film Plastics *Stretch Wrap*
The Use Reusables Campaign

• Helping businesses convert to more sustainable reusable alternatives.

• Reducing greenhouse gas (GHG) emissions and solid waste associated with one-time and limited-use transport packaging materials:
  • Production
  • Use
  • Disposal
How StopWaste can Help

- Training Opportunities – like today’s workshop
- Facilitate Vendor/Supplier Conversation
- Logistics Assistance
- Become a model case study
- Funding Assistance
  - Grant applications due Sept. 10th
  - Requests up to $30,000 for reusables
Our Workshop Goal Today

- Introduce reusable transport packaging
- Explore benefits of reuse in the supply chain
- Provide information and resources
- Review the next steps
- Offer free, one-on-one consultation with a Reusables expert
- Answer your questions
Workshop Agenda

• Intro to Reusables
• Benefits of Reusables
• Attributes of Good Reusable Opportunities
• 7 Steps to Implementation
• Resources & Next Steps
Workshop Materials
Today’s Presenter

Eric Fredrickson
President, Thor Consulting
Email: Thorcrate@gmail.com

30 Years of experience in Reusable Packaging across all industry sectors
Reusables are Not:

- Single use
- Limited use
Merriam Webster defines Reusable as:

**re·us·able adj**\rē-`yü-zə-bəl\:: capable of being used again or repeatedly

Reusable Packaging is comprised of pallets, containers, wraps, bands and dunnage designed for reuse within a supply chain
RPA Definition of Reusable Packaging Product or System

• Typically never disposed of by the end user
• Used to move components, finished products or raw materials
• Durable construction
• Lifetime is measured in years
• Qualifies as source reduction
Opportunistic vs. Planned Reuse
Everyday Reusables in Action
Other Reusables in Action

Reusable Pallet Wrap – Closed Loop Distribution

Planet Organics, Food & Beverage Manufacturer
• Replaced disposable stretch wrap with reusable pallet wraps.
• Reduced stress and strain from wrapping dozens of pallets a day by hand.
• Avoided time and cost required to dispose of stretch wrap.

Benefit: Lower material costs; eliminated expendable packaging costs
US Foods, San Francisco Division

- Reusable bands secure pallet loads instead of stretch wrap.
- Plastic film waste reduced by 50 tons/yr = $19,200 savings/yr

**Benefit:** Lower material costs – reduce waste costs
Which companies benefit from reusables?

Many Benefits of Reusables

- Financial
- Environmental
- Health & Safety
Financial Benefits

Revenue Enhancement

- Merchandising at Store Level
- Increase brand loyalty – a bond with customers
Financial Benefits

Revenue Enhancement
• Merchandising at Store Level
• Increase brand loyalty – a bond with customers

Capital Utilization – Lower Materials Cost over time
• Excellent ROI on Reusables investment
• Pooling/Rental of Reusables – outsource CapEx
Reusables Benefits in Action

ANG Newspapers (Now Bay Area Newspaper Group – Mercury News)

• Transitioned to reusable plastic pallets (pooled system)
• Prevents 37 tons of wood-waste/year
• Cut labor costs by $46,000
• Color coding facilitates batch identification for accurate delivery

“We’ve enjoyed a good return on the reusable plastic pallets. They’ve cut costs, improved operations and reduced our wood-waste.”

SAM LOVATO, ANG Property and Telecommunications Manager

Benefit: Excellent Return on Investment
PepsiCo’s Gatorade Plant
• Eliminated product loss, ~100s of cases a day, from full pallets of product tipping overdue to inconsistent dimensions or missing boards
• Plastic pallet is 25 lbs lighter, resulted in transportation savings

Benefit: Reduced product damage and Reduced total freight cost
Financial Benefits

Revenue Enhancement
• Merchandising at Store Level
• Increase brand loyalty – a bond with customers

Capital Utilization
• Excellent ROI on Reusables investment.
• Pooling/Rental of Reusables – outsource CapEx

Operating Expense Reduction
• Eliminate expendable packaging expense
• Reduce waste costs
• Reduced product damage or spoilage
• Reduced labor and total freight cost.
Reusables Benefits In Action

Electro-Static Discharge (ESD) Reusable Packaging for Electronics

- ESD reusables handle & transport sensitive electronics like circuit boards.
- Replace single use plastic trays in anti-stat bags and corrugated boxes.
  - Excess handling labor
  - High packaging cost
  - High packaging waste burden
  - Increased risk of component damage.

- ESD Reusable packaging can:
  - Generate ROI by eliminating packaging
  - Eliminate packaging waste
  - Reduce handling labor
  - Reduce damage to valuable components
Reusables Benefits In Action

ESD Reusable Packaging for Electronics - Material Selection

• Material can be tailored to meet application needs:
  – Conductive materials: Surface resistivity $10^2\Omega$/sq. to $10^5\Omega$/sq.
  – Dissipative materials: Surface resistivity $10^5\Omega$/sq. to $10^{11}\Omega$/sq.
  – Insulating materials: Surface resistivity higher than $10^{11}\Omega$/sq.

• Carbon black in polymer matrix provides permanent conductive properties – can’t wash/wear off or vary with environment.
Reusables Benefits In Action

ESD Reusable Packaging for Electronics – Characteristics of Best Fits

- Work-in-process or closed loop applications – manufacturer to assembly
- High volume applications with short shipping distances
- High value components – high consequence of in-transit damage
- Long project life to generate return on reusable investment
- Opportunities to leverage automation at both ends of supply chain
- In conjunction with standardization in processes, storage & shipping.
Reusables Benefits In Action

ESD Reusable Packaging for Electronics – Types of Containers

- Standard Footprint Injection Molded Containers
  - Automotive or Metric – RAKO pallet optimization
  - Can be used for multiple programs

- Standard Thermoformed Trays

- Custom Injection Molded Trays
  - Increase precision for greater pack density

- Custom Thermoformed Trays
  - Lower tooling cost

- Adjustable Printed Circuit Board Holders
Reusables Benefits In Action

ESD Reusable Packaging for Electronics – Return on Investment

- Thermoformed trays – Lower tooling, higher unit cost 2,500 - 5,000 BE
- Injection molded trays – Higher tooling, lower unit cost 10,000 - 15,000 BE

![Graph showing return on investment for different types of trays](image-url)
Reusables Benefits In Action

ESD Reusable Packaging for Electronics – Added Value Opportunities

• Reusable ESD Systems can be integrated into automated load & unload stations – reducing labor and potential for handling damage.
• Trays can also be stacked, de-stacked and nested using automation.
• Trays can provide total product protection, eliminating outer containers.
• Significant increases in packing density and exact part counts can be achieved to reduce logistics costs.

Results: Improved Quality. Reduced Labor & Better Inventory Control

Courtesy of:
George UTZ, Inc.
www.utzgroup.com
Environmental Benefits
"Reduce & Reuse" are the Most Sustainable
Disposable Containers & Packaging are 30% of North America’s Municipal Solid Waste

- 56% of these valuable resources are wasted in landfills.
- The remaining 44% are recycled; often downcycled into less valuable products.
U.S. Greenhouse Gas Emissions

Over 1/3 of U.S. Greenhouse Gas Emissions are Attributable to Producing & Transporting Goods


(Provision of Goods: all consumer goods including building components and vehicles.)
Environmental Impact of Disposable Packaging

One Ton of Corrugated Cardboard:
- Generates 5.3 MTCE of greenhouse gases – over 3 times as much as plastic
- Consumes 17 trees
- Consumes 7,000 gal. of fresh water
- Generates 3.3 cubic yards of landfill
- Consumes 4,000 KWH of energy

Wooden Pallets in the US:
- Consume 14 – 17 million trees a year
- Consume 30% of all hardwood used
- Represent 2-3% of all landfills
Reusable Containers for Supplies – Closed Loop

**NUMMI**

- NUMMI reduced cardboard consumption by 60% by purchasing, using and requiring suppliers to use reusable shipping containers.
- Prevented 11,000 tons of solid waste from being generated.
- 58.3 MTCE greenhouse gas reduction.
- Resulted in $2.5 Million/yr savings.

**Benefit:** Waste Prevention, GHG reduction.
Environmental Benefits of Reusables

Reusable transport packaging containers

- generate 29% less total greenhouse gas emissions;
- require 39% less total energy; and
- produce 95% less total solid waste on average.

See Reusables 101 page 9
Health & Safety Benefits
Health & Safety Benefits

- **Reduce injury from overfilling non-uniform boxes.**
Peerless Coffee & Tea Company – Oakland, CA

• Replaced single use cardboard boxes with reusable totes for three of their Bay Area delivery routes
• Saving 1.5 tons of cardboard per year = 18 tons of avoided CO2 emissions

Benefit: Reduced Injury, Lower Material Costs over Time
Health & Safety Benefits

- Reduce injury from overfilling non-uniform boxes.
- Reduce injury from broken pallet debris hazards such as splinters, nails and wood on the floor.
Plastic Pallets for Beverage Distribution – Open Loop

PepsiCo’s Gatorade Plant

- Switched from wood pallets to leased reusable plastic pallets
- Significant savings by eliminating damage to product from pallets
- Reduced equipment jams
- Minimized labor needed to sort out bad pallets
- Cleaner warehouse with less hazard-causing debris

Benefit: Reduced product damage & improved safety
Health & Safety Benefits

- Reduce injury from overfilling non-uniform boxes.
- Reduce injury from broken pallet debris hazards such as splinters, nails and wood on the floor.
- Ergonomically designed reusable totes can reduce bending, lifting and handling injuries.
StopWaste used totes to pack and transport items during their office move.

- Rigid totes offered better protection of contents.
- Dollies eliminated heavy lifting.

- Elimination of cardboard boxes and tape saved set-up and clean-up time.
- Increased moving truck capacity by 40%-50%, cutting GHG emissions.

Benefit: Improved efficiency, Safety & Ergonomics
Health & Safety Benefits

- Reduce injury from overfilling non-uniform boxes.
- Reduce injury from broken pallet debris hazards such as splinters, nails and wood on the floor.
- Ergonomically designed reusable totes can reduce bending, lifting and handling injuries.
- Reduced risk of food contamination with sanitized totes.
- Reduce injuries from rolling drums and chime removal.
Reusables Benefits in Action

Bag-in-Box IBCs for Health & Beauty Products – Closed Loop

Marietta Corp – Major supplier of hotel amenities

- Reusable bag-in-box, foldable IBCs to transport & store bulk liquid
- Eliminated the use of drums and single-use IBCs
- Single use liners eliminated effluent waste, bag wringing reduced residual waste
- Eliminated risk of batch to batch contamination.
- Increased storage space.

Benefit: Reduced Contamination and Reduce injury from drums
Questions before we move on?
Attributes of Good Reusables Opportunities

- Within One Facility, Closed Loop, or Managed Open Loop
- Flow of Consistent Products in Large Volumes
- High Turn Rate
- Large and/or Bulky Products, or Easily Damaged Products
- Suppliers or Customers Grouped Near One Another
- High Waste Disposal or Recycling Costs
- Sustainability Goals or Mandates
Reusables Systems: 3 Types

• **Work-in-Process**: Used in-plant for storage and transport within a single facility.

• **Closed-Loop**: Reusables move through supply chain without 3rd party management; this approach is ideal for reusables.

• **Open-Loop**: A 3rd party company manages the return of empty containers and distribution of containers back to the manufacturer; best for consistent flow with high volume.
Attributes of Good Opportunities

Within a Single Facility

Manufacturer

In-plant Storage

In-plant Transport
Ghirardelli Chocolate purchased reusable totes to move products in “work-in-process” for one of their production lines. This switch saves costs and environmental impacts of 228 tons/yr of cardboard boxes that were previously purchased, assembled, handled and recycled – 1,208 MTCE greenhouse gas emissions avoided.
Attributes of Good Opportunities

Closed-Loop System

Manufacturer → Shipper/Transportation Company → Customer/Retailer
CarQuest Auto Parts uses to distribute less-than-case loads of auto parts from its DCs to its customers.

- Durable totes provide better protection to parts reducing damage.
- Ergonomic handles reduced back and wrist injuries.
- Increased stack height increased trailer capacity to reduce freight.
- First generation tote eliminated corrugated waste with rapid ROI.
- Second generation tote nearly eliminated tote damage and injuries associated with handling damaged totes.
Attributes of Good Opportunities

Managed Open-Loop System

- Manufacturer/Shipper
- Customer/Retailer
Open Loop Pools In North America

- RPCs for Produce, Meat and Eggs.
- GMA Pallet for retail distribution.
- IBCs and Bulk Bins for liquids, solids & parts.
- Office Moving Crates.
- Other specialty applications.
Example Open Loop Pooling Model
Value Points of RPCs and Fresh Produce

- Reduced product damage and shrink
- Field heat removed quicker
- Higher produce quality at store level
- Better truck utilization to retail
- Possible use as “one touch merchandising”
- Cost efficient against traditional packaging
- Reduced disposal time at store level
Stability
Unitization and Cube Efficiencies
Disposal vs. Re-collection
Case Study Examples

Tesla, Inc. and Veritable Vegetable - Video

www.UseReusables.com
Attributes of Good Opportunities

• High Waste Disposal or Recycling Costs
• Sustainability Goals or Mandates
Attributes of Good Opportunities

- Flow of Consistent Products in Large Volumes
- High Turn Rate
Attributes of Good Opportunities

- Large or Bulky Products
- Easily Damaged Products
- Example: **Toyota Logistics Services** used to pack their heavy carpet and large truck bed liners in disposable packaging. They switched to reusables and prevented 3,000 tons of combined wood and cardboard waste and saved $3.5 million for all six facilities per year.
Other Factors Affecting Financial Value

- Supply Chain Cycle Time
- Geography of Return Logistics
- Reverse Supply Chain Predictability
- Business Seasonality
- Customization
- Number and dispersion of end users
- Degree of sanitization required after each use
- and…
Other Factors Affecting Financial Value

Container Theft

Pallet Repair
Questions before we move on?
7 Steps to Implementing Reusable Transport Packaging at Your Business
Step 1 - Understanding

What are reusables?
Your decision-makers and other stakeholders need to learn what reusables are and how they help your business.
Step 2: Identify Potential for Reusables

Where are the “Low Hanging” Opportunities?

Internal Work in Process
1. What work in process is creating waste?

Supply Chain
1. What supply chain and/or Customer relationships…. 
   • Are Closed Loop? 
   • Reuse with Other Suppliers/Customers?

Logistics
1. What type(s) of reusables will work? 
2. Will we Buy or Lease? 
3. Where/how will we store them? 
4. Do we need to clean them? 
5. How will we track them and get them back?
Step 3: Gather Information

Get Cost Estimates for Equipment

Two Options:
- Directly from vendors
- Submit an Reusables Information Request Form

Go to the “Resources” tab for a list of vendors
Step 4: Assess the Costs

www.usereusables.com/cost/cctool.html

1. Perform a cost & sustainability comparison using our free cost calculator

2. Review the ROI to determine if it fits within your company’s threshold
## Step 5: Buy In

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Priorities</th>
<th>Reusables Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance Department</td>
<td>Revenue</td>
<td>Cost Calculator to estimate ROI</td>
</tr>
<tr>
<td>Logistics Managers</td>
<td>Efficiency and Safety</td>
<td>Case Studies and examples of increased unitization and reduction of workplace hazards</td>
</tr>
<tr>
<td>Purchasing Department</td>
<td>Cost Savings</td>
<td>Cost Calculator to identify all costs</td>
</tr>
<tr>
<td>Suppliers/Customers</td>
<td>Product Protection</td>
<td>Case Studies and examples of product protection; Request samples</td>
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</tbody>
</table>
Step 6: Procure Equipment or Services

**Identify Funding**
- Capital Expense from which budget?
- StopWaste/EPA grant funding

**Procure Equipment**
- Order the equipment
- Accessory equipment: Labeling and Storing Items

**Education**
- Train staff
- Educate Logistics partners
  - Benefits
  - Procedure
Step 7: Implementation

Implementation

1. Use your Reusables
2. Track your Assets
3. Measure Results
4. System Cost Improvement & Redesign
5. Retraining & Reinforcement
More Details:
Finance & Asset Tracking Options
Financing Options

**OWNERSHIP**
- Purchase (Cash)
- Financing/Capital Lease

**THIRD PARTY**
- Rental/Operating Lease
- Pooling (rental w/ services)

or
### What Makes the Most Sense?

#### Ownership Options

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| • No financing cost  
• No long-term liability | • Lost opportunity costs  
• Burdens of ownership |

#### Financing/Capital Lease

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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</thead>
</table>
| • Increased cash flow  
• Lower interest rates  
• Typically longer term financing | • Long-term liability commitment  
• Utilizes available credit facilities  
• Burden of ownership |

#### Third Party Options

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
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</table>
| • Variable costing  
• No burdens of ownership  
• Higher utilization  
• Off balance sheet financing  
• Greater flexibility | • Higher costs  
• No asset ownership |

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| • Pay for what you use  
• Off balance sheet  
• No capital up-front | • Duplicates in-house capabilities  
• Potential ancillary charges |
Asset Tracking Options
Tracking: If you can’t measure it, You can’t manage it…
What Makes Dollars and Sense?

Aggregate Tracking

Individual Tracking

Barcode

RFID
## Aggregate vs. Individual Tracking

<table>
<thead>
<tr>
<th>SYSTEM TYPE</th>
<th>ASSET ID</th>
<th>ACCURACY</th>
<th>IMPLEMENTATION/DIFFICULTY</th>
<th>SOLUTION COST</th>
<th>ADDITIONAL HARDWARE</th>
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</thead>
<tbody>
<tr>
<td>Aggregate Asset Tracking</td>
<td>Visual label</td>
<td>Medium</td>
<td>Shorter/Easy</td>
<td>Low - Medium</td>
<td>None</td>
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<tr>
<td>Individual Asset Tracking</td>
<td>Barcode</td>
<td>High</td>
<td>Longer/Intermediate</td>
<td>Medium - High</td>
<td>Scanners (laser/RFID)</td>
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<td>Passive RFID</td>
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<td>Active RFID</td>
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<td>GPS</td>
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More Resources for You
More Information

UseReusables.com

- Download Free Case Studies
- Read Articles
- Watch Short Videos
- Use the Cost Comparison Calculator
- Download the grant application
Next Steps

• After the training consider Reusables
• Complete Information Request Form
• We work together to find solutions for your supply chain
• Apply for a grant by the Sept. 10th deadline
• Become a model case study
Thank You!

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