



# PET Thermoform Recycling: Current Markets & Outlook

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# Presentation Outline

## ■ Overview

- Introduction to NAPCOR
- Context: The PET Supply Problem
- New Sources: Thermoform Recycling

## ■ NAPCOR Thermoform Recycling Program

- Canadian Grocer's Initiative
- NAPCOR/SPI Grant Program

## ■ US Market Status

## ■ Moving Forward

# Introduction to NAPCOR?

- NAPCOR is the trade association for the PET packaging industry in the United States and Canada
- 47 members encompass all parts of the PET value chain from resin production to end of life/recycling
- NAPCOR's priorities are to:
  - Promote the introduction and use of PET packaging
  - Facilitate PET recycling
  - Communicate the attributes of the PET container as an environmentally sustainable package

# NAPCOR Membership 2013

## PET Container Manufacturers

Amtcor Rigid Plastics  
Nestle Waters of N. America  
Plastipak Packaging, Inc.  
Yoshino America Corporation

## PET Resin Manufacturers

DAK Americas LLC  
Indorama Ventures USA Inc  
Selenis Canada

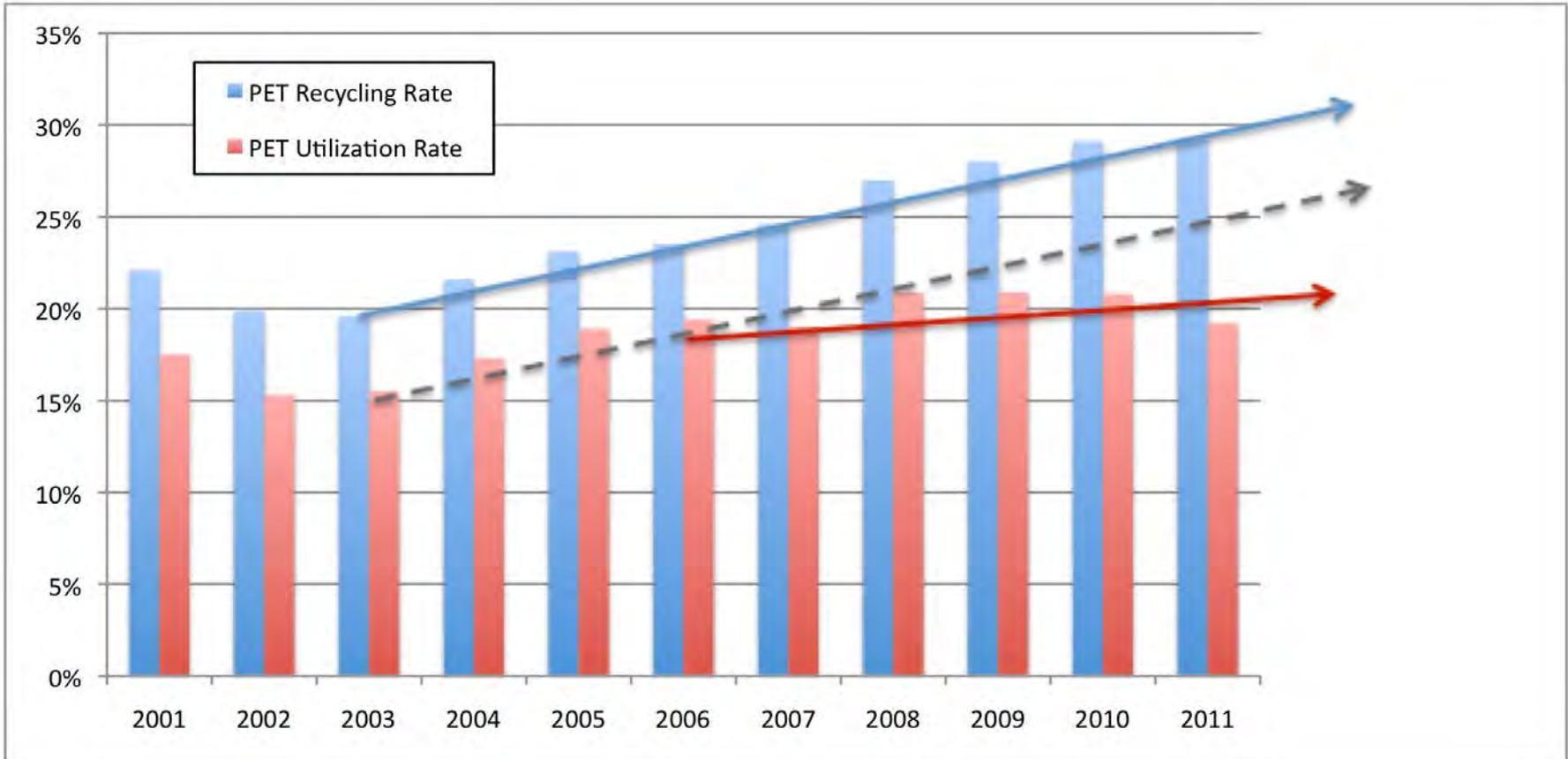
## PET Sheet / Thermoformers

Dart Container Corp.  
Direct Pack, Inc.  
Earthbound Farm  
Fabri-Kal  
Genpak LLC  
Global PET  
Nu-B, Inc.  
Par-Pak, Ltd.  
Peninsula Packaging Company  
Plastic Ingenuity, Inc  
Sabert Corporation

## PET Industry Suppliers

Avery Dennison  
BP  
Buhler  
CarbonLite Industries  
Clear Path Recycling  
ColorMatrix  
Custom Polymers PET  
Erema North America  
Evergreen Plastics  
Husky Injection Molding  
KHS USA  
Krones  
MHT USA  
Marglen Industries  
Muehlstein  
Mohawk Industries  
Peninsula Plastics Recycling  
Perpetual Recycling Solutions  
Plastrec  
Polyquest, Inc.  
Reterra  
Sidel  
Signode  
Sorema Plastic Recycling  
Starlinger and Co.  
TOMRA No. America  
UltrePet LLC  
Uniform Color Company

# Context: PET Recycling & Utilization Rates



# Context: Demand for rPET Content & Reclamation Capacity Exceeds Supply

	Number of Plants in the US	Reclamation Capacity (Billion Lbs)	Clean Flake from US PET Bottles Collected* (MMLbs)
2009	18	1.247	1.078
2010	19	1.465	1.115
2011	23	1.755	1.052

\*Includes bottles currently exported

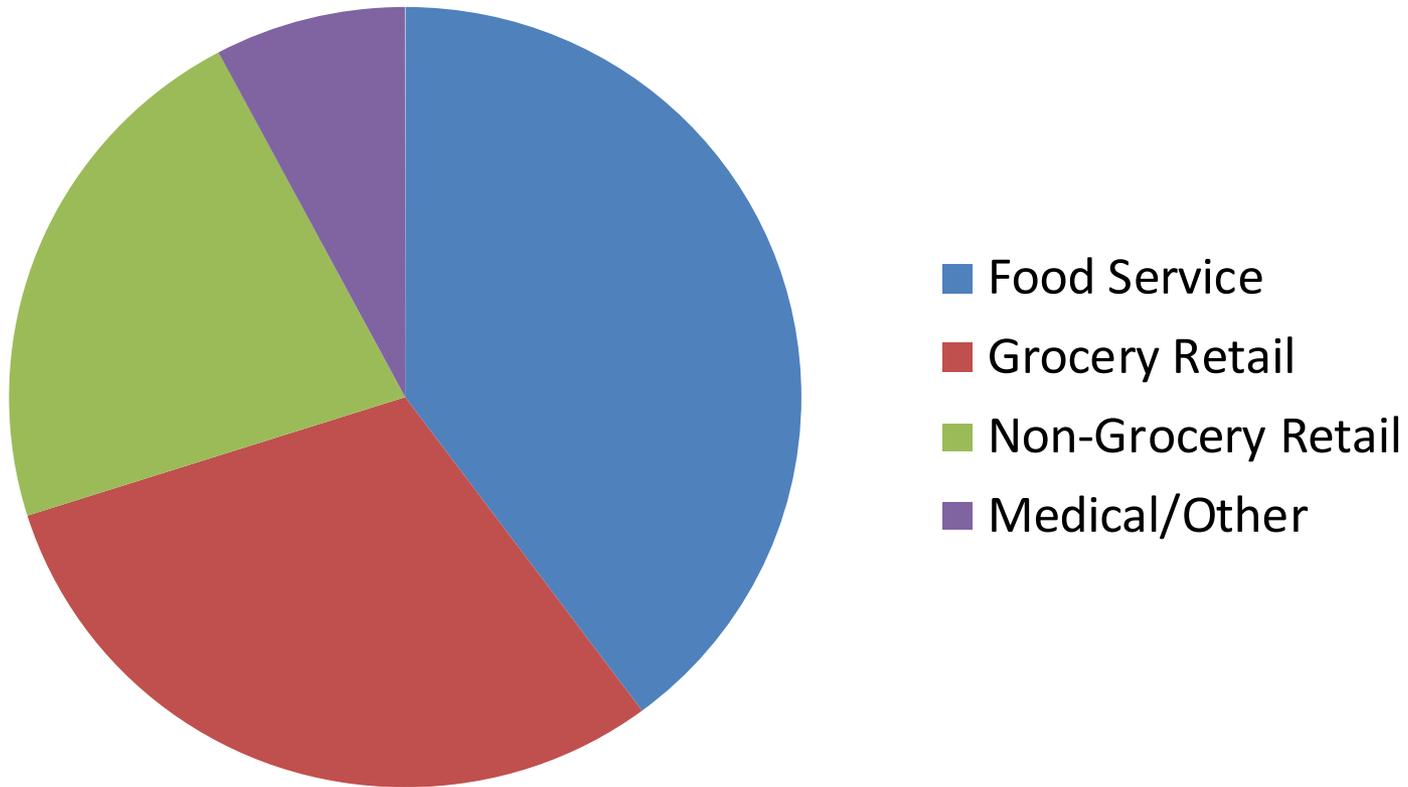
# New Sources: PET Thermoforms

## What are thermoformed packages?

- Cups, clamshells, trays, tubs, boxes, lids, egg cartons and similar packages made from plastic sheet
- Can be PET, OPS, PETG, PP, PVC, PLA, etc.
- Growing package
  - 20% of PET packaging generated in North America 2011
  - >15 % growth rate projected

# Overview: Thermoform Recycling

## Thermoform Uses – All Resins



# NAPCOR PET Thermoform Recycling Program Objectives

- Identify and remove the obstacles throughout the system (collection to end use) that prevent PET thermoformed packaging from being recycled
- Recycle thermoforms without harming PET bottle reclaiming infrastructure
- Increase the availability of post consumer RPET

# NAPCOR PET Thermoform Recycling Program Plan

## ■ Laboratory research

- Identify technical issues that would impede or prevent PET thermoform recycling as a dedicated stream, or with bottles

## ■ Field trials

- Work with collectors and processors to move truckload quantities through operating systems to identify and remedy technical, mechanical and logistical issues

## ■ Partnerships wherever possible

# Obstacles to PET Thermoform Recycling...

- Look-alike containers made from other resins
- Non-recycling friendly adhesives
- Fluorescing packages
- Variable IVs
- Mechanical engineering issues

# Key Partnership: Canadian Grocers Initiative

- Loblaw; Sobeys; Walmart; Metro; Safeway (under Retail Council of Canada organizational umbrella)
- Conversion out of unrecyclable packaging
- Conversion to PET of all in-store and private label, followed by those products that are shipped in thermoforms
- Adoption of APR compatibility protocol and encouraged supplier adherence,  
<http://plasticsrecycling.org/pet-thermoforms>

# NAPCOR / SPI Grant Program

NAPCOR/SPI funding supplemented by Placon, Plastic Ingenuity & Solo Cup to fund three programs. Test various education messages, collection strategies and processing approaches.

- **Montgomery County, MD**
  - Curbside collection, manual sorting
- **Elk & Lebanon Counties (PA)**
  - Rural drop off, separated
- **Omaha, NE**
  - Special events & venues



# SPI / NAPCOR Grant: Lebanon & Elk Counties



## **NEW Program Begins October 1<sup>st</sup>** **Clear PET Thermoform Recycling** **at the GLRA's Recycling Drop-off Center** **at 1610 Russell Road**

Clear PET Thermoform Packaging Items are now being accepted in a separate container located at the Greater Lebanon Refuse Authority Recycling Drop-Off Center.

### What are Clear PET Thermoforms?

Any clear or translucent packaging with a #1 PET plastic resin code. This includes, but is not limited to, clamshells, cups, trays, tubs, lids and clear plastic vacuum



# SPI / NAPCOR Grant: Firststar Fiber

- Working on recycling partnership with Univ. of Nebraska, Omaha
- Planning more social media Facebook contest

Halloween family event at  
Omaha zoo, Oct 26 -28



**PET is the plastic** that most water and soda bottles are made from, and you've probably been recycling those for quite a while. **PET thermoformed containers** are made from the same stuff. They look like the ones in these pictures, and now you can put *them* in the recycling bin, too. (PET containers are usually marked on or near the bottom with the number 1 inside the chasing arrows.)

*More about PET plastic at [www.napcor.com](http://www.napcor.com)*

**PET should be recycled** because the material can be used to make lots of things — a new bottle or thermoform, carpet, a raincoat or jeans, even the fill for a dog bed! It's not only more energy-efficient to reuse PET than to make it from scratch, it also uses fewer natural resources and cuts greenhouse gas emissions. Attached is a sample of a fabric called **REPREVE**™ that's made from recycled PET.

*Learn more at [www.repreve.com](http://www.repreve.com)*



**NOW, RECYCLE THESE**



(along with these)



**TO MAKE THESE!**



**REPREVE**  
IT'S WHAT'S IN IT

Our thanks to Unifi, Inc. for providing samples of their **REPREVE**™ fabric, which they manufacture from recycled PET.

REPREVE and IT'S WHAT'S IN IT are trademarks of Unifi, Inc.

# SPI / NAPCOR Grant: Montgomery Co.

**Yard Trim**  
Christmas trees, grass, leaves, and brush

**Scrap Metal**  
Large scrap metal items, including household appliances and other metal items

**Commingled Materials**



**Mixed Paper**



## Recycle More Now!

It's easy! Just place your recyclable materials in the correct containers.



**New Recyclables**  
#1 PET Thermoform plastic packaging such as plastic clamshell containers, trays, deli containers, lids, domes, and cups

Non-hazardous aerosols

**Yes**  
Wondering about whether a specific item type is accepted in our plastics recycling program?



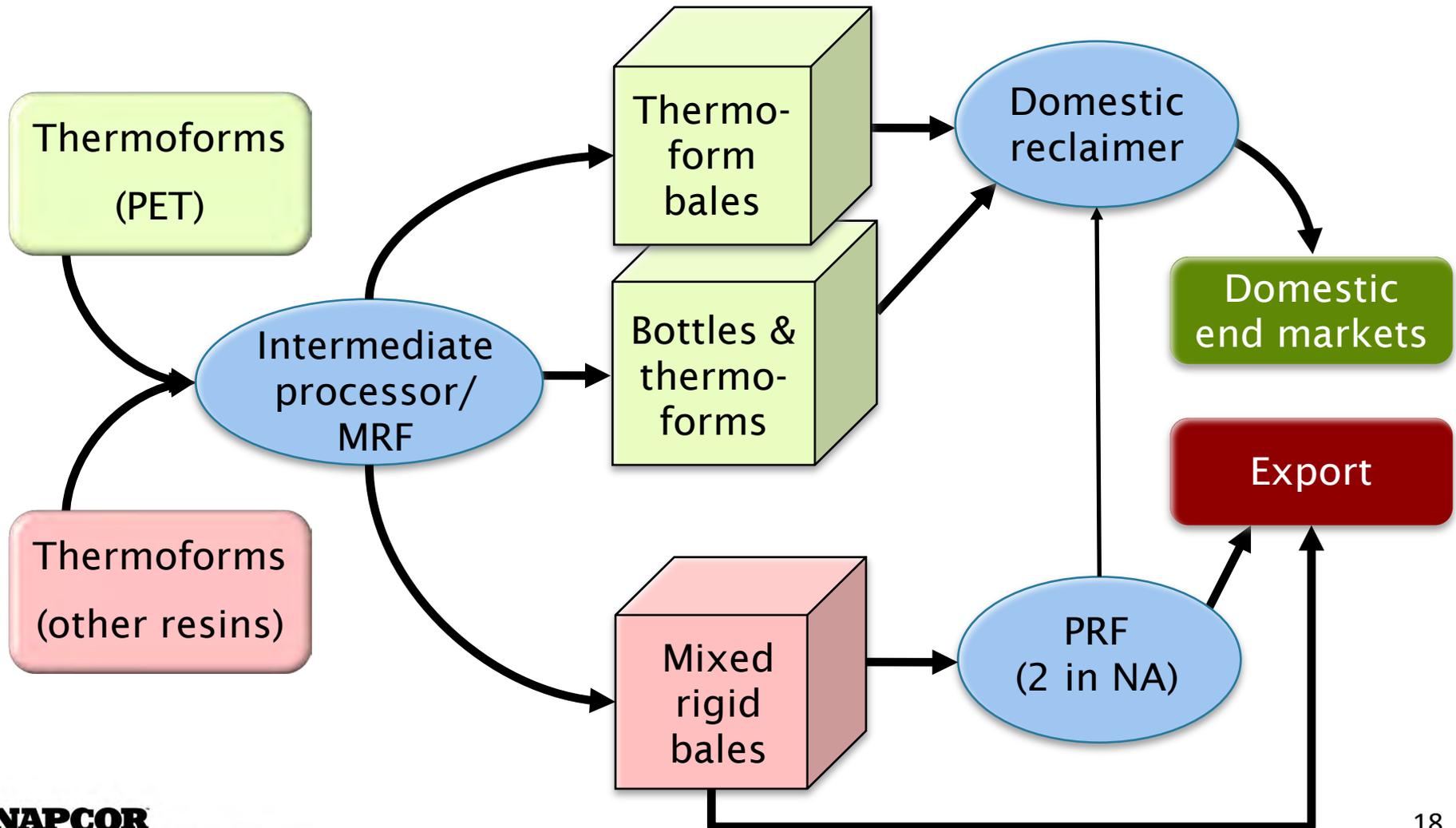
We accept these plastic item types	Resin numbers	Examples
bottles	1, 2, 3, 4, 5, 7	Plastic bottles that contained food, drink and household products, medicine and vitamin bottles
pails and buckets	2, 3, 4, 5, 7 (except items marked biodegradable or compostable)	mayonnaise, peanut butter, yogurt, cream cheese and butter containers; deli and ice cream tubs; yogurt cups; medicine vials; detergent, pet food and kitty litter containers; #1 PET thermoform plastics including: clamshell containers, bakery trays and cake domes, deli containers and trays, fruit and vegetable containers and baskets, cups, tubs and lids

# Current MRF Market Options

- Obstacles have been, or are being, addressed
- Significant concerns remain
  - Look alike packaging; labels/adhesives/inks
- Domestic market acceptance varies
  - Some reclaimers are processing mixed bottle/ thermoform bales (market-specified, percentages ranging from 5-30%)
  - Some reclaimers are accepting PET thermoform-only bales
  - 2 PRFs in North America sort mixed rigid bales and market PET domestically

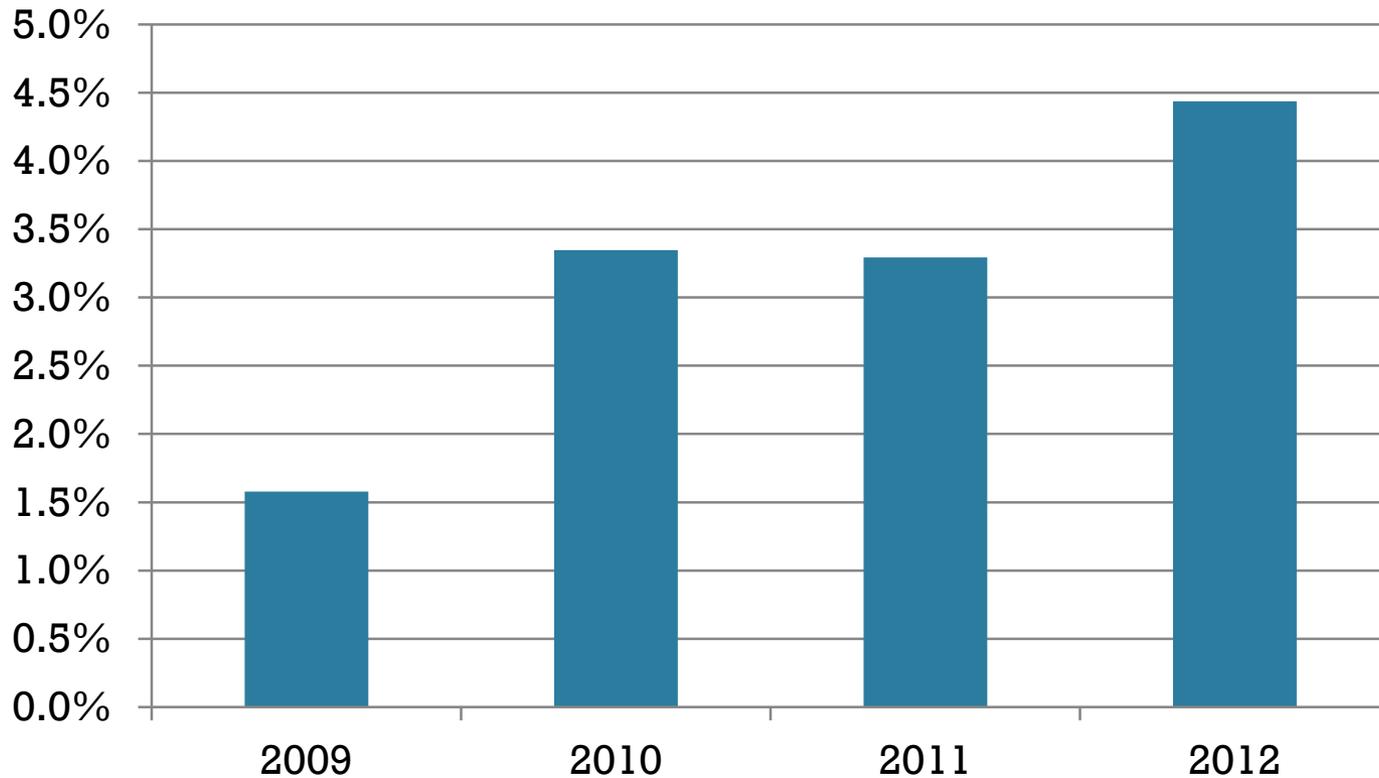
**Protect your bale quality & talk to your buyer!**

# Overview: Thermoform Packaging Recycling



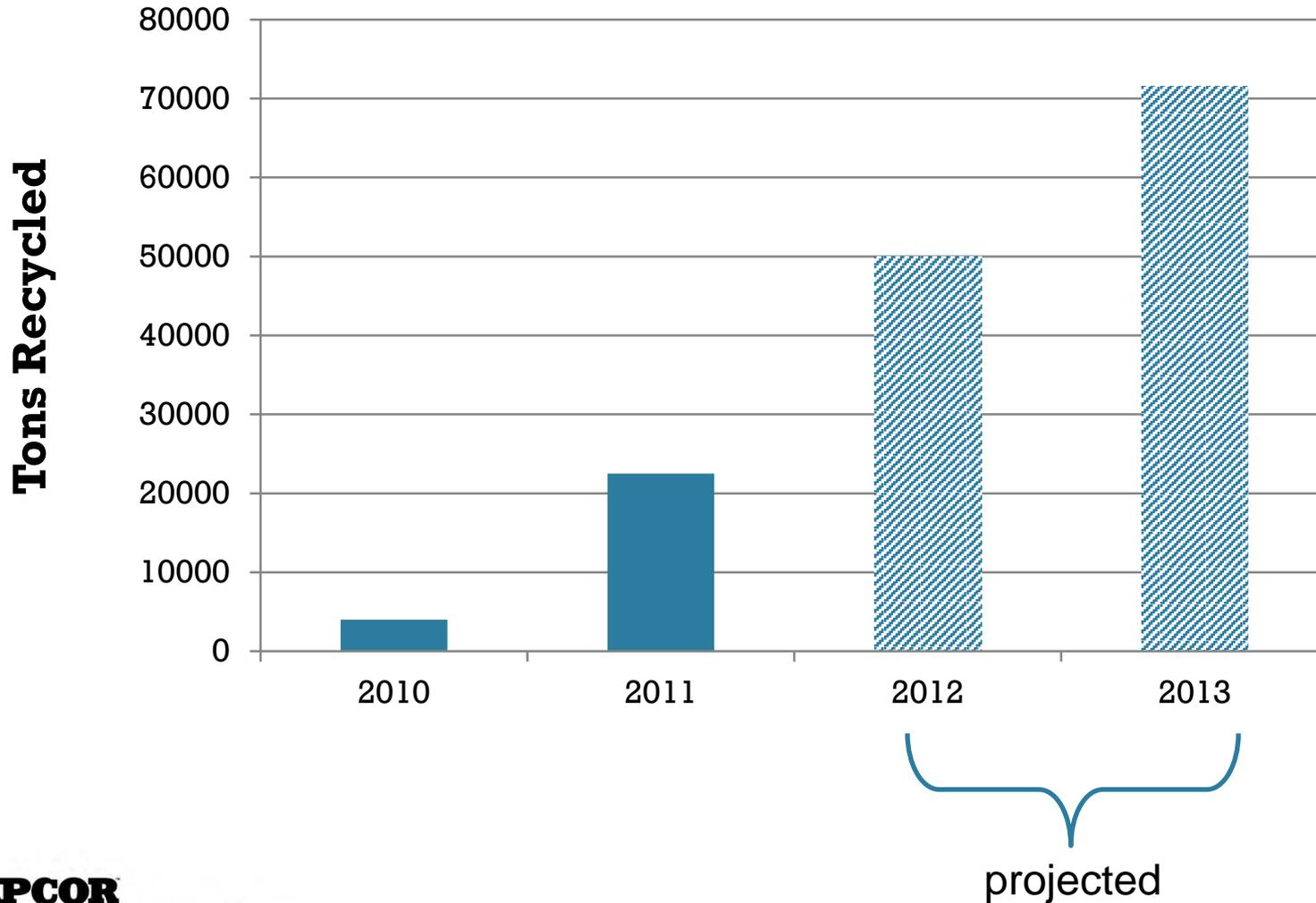
# PET Thermoforms in Bottle Bales are Increasing

**% Thermoforms by Weight, Curbside/Drop-off Bales**

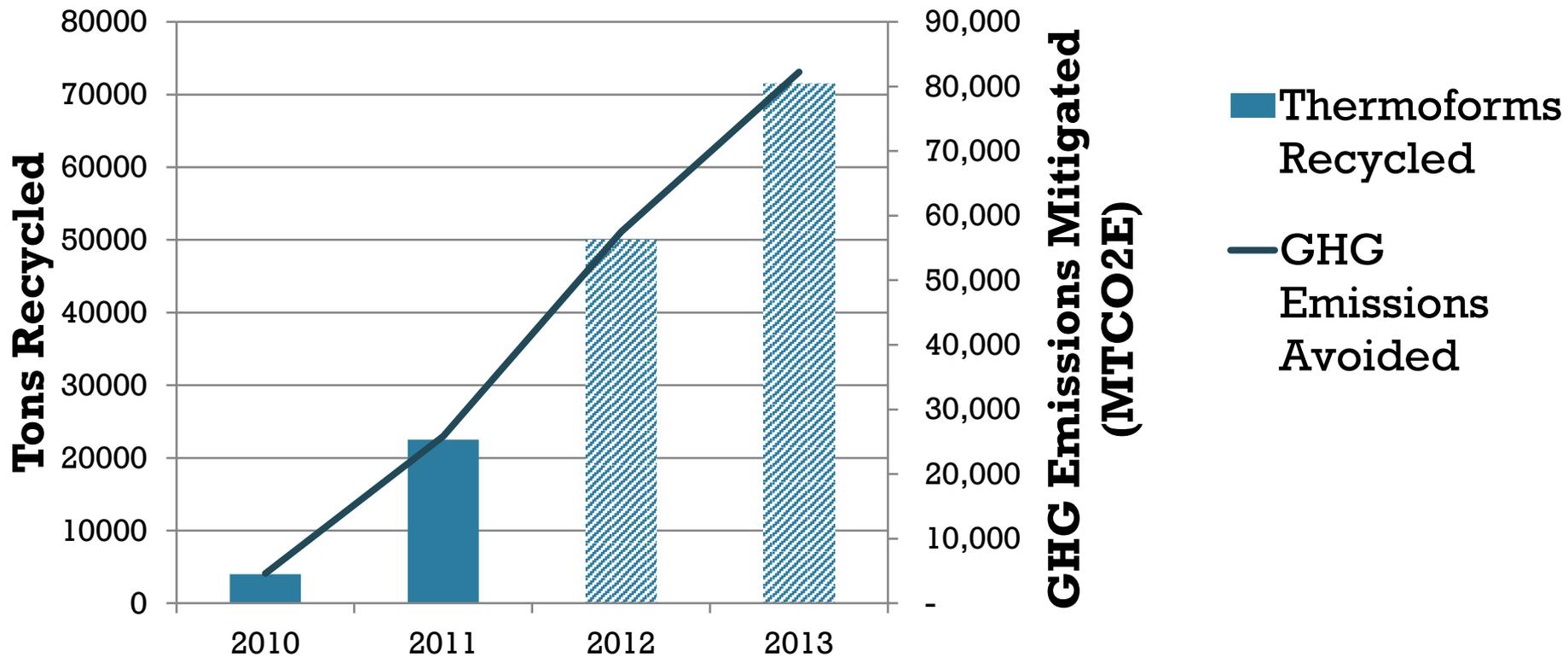


*Source:* NAPCOR commissioned bale analyses, conducted by Moore Recycling Associates

# PET Thermoform Recycling



# PET Thermoform Recycling and GHG Emissions Avoided



Recycling compared to landfilling. Source: EPA WARM Model v.12

# Moving Forward

- Investment in plants and technology capable of efficiently processing PET thermoforms is accelerating
  - Successfully being recycled in fiber, sheet and bottle applications
- Efficient MRF processing = include thermoforms with bottles
  - Must protect bale quality
  - Look alike packaging and other design for recyclability issues must be addressed

# Reality Check

- For plastic packaging, there is NO sustainability without recycling!
- There is no post consumer plastic recycling without public policy!
- There is no such thing, environmentally, as a polymer so good it can just be thrown out!



Thank you!

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