



GTAA  
Partners in  
Project Green  
A PEARSON ECO-BUSINESS ZONE

## & Food Processors



# This Morning's Agenda

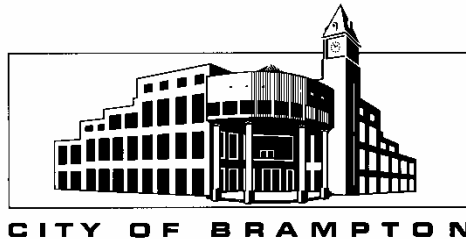
- Introductions & Project Background (40 min)
  - Your achievements / best practices
  - Overview of Partners in Project Green
  - Why focus on food processors?
  - Eco-Industrial approaches for food processing
- Roundtable Discussions (1 hour)
  - Your issues & opportunities
  - How Partners in Project Green might help
  - Possible roles for region businesses and others
- Wrap Up & Next Steps (10 min)

# Overview of Partners in Project Green

A partnership between:



GREATER TORONTO AIRPORTS AUTHORITY



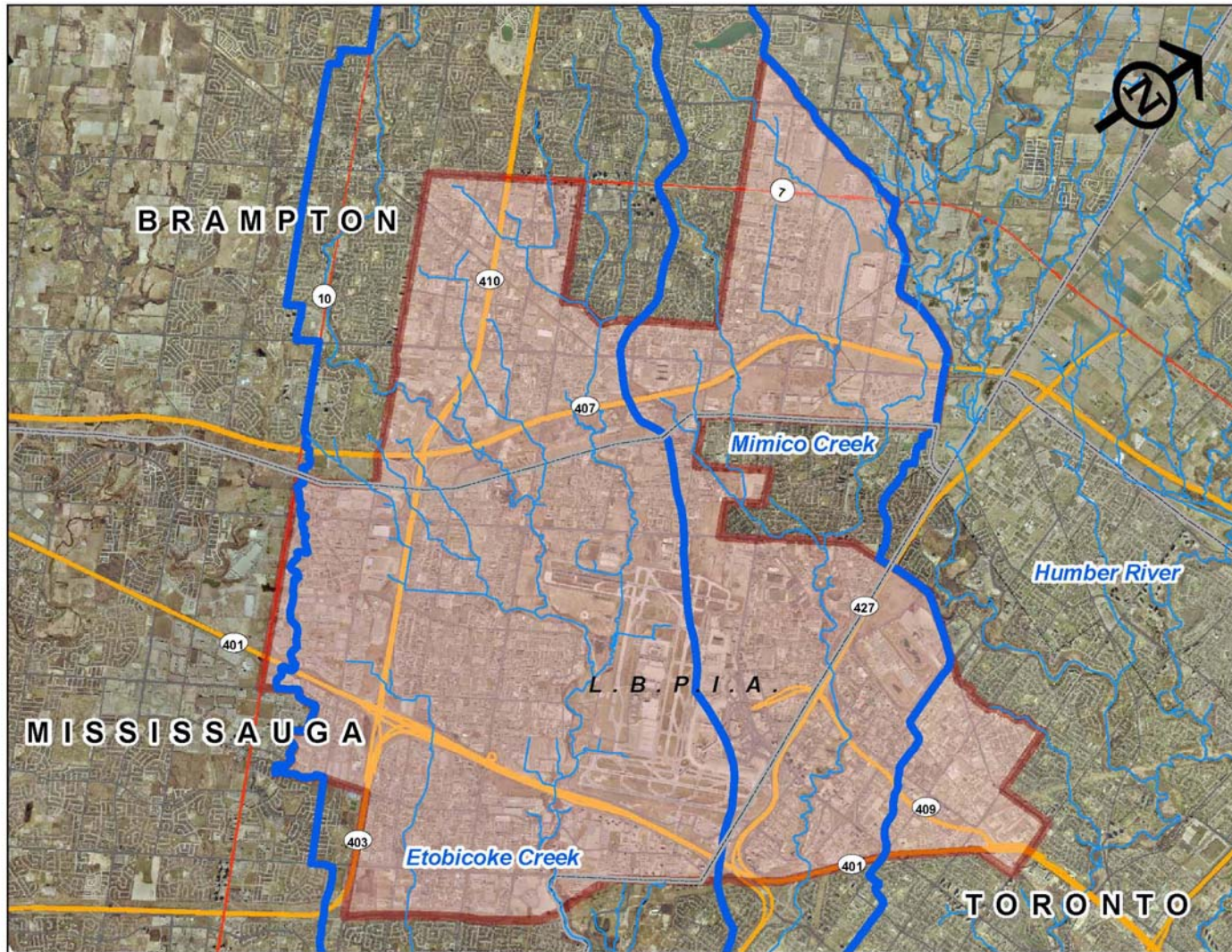


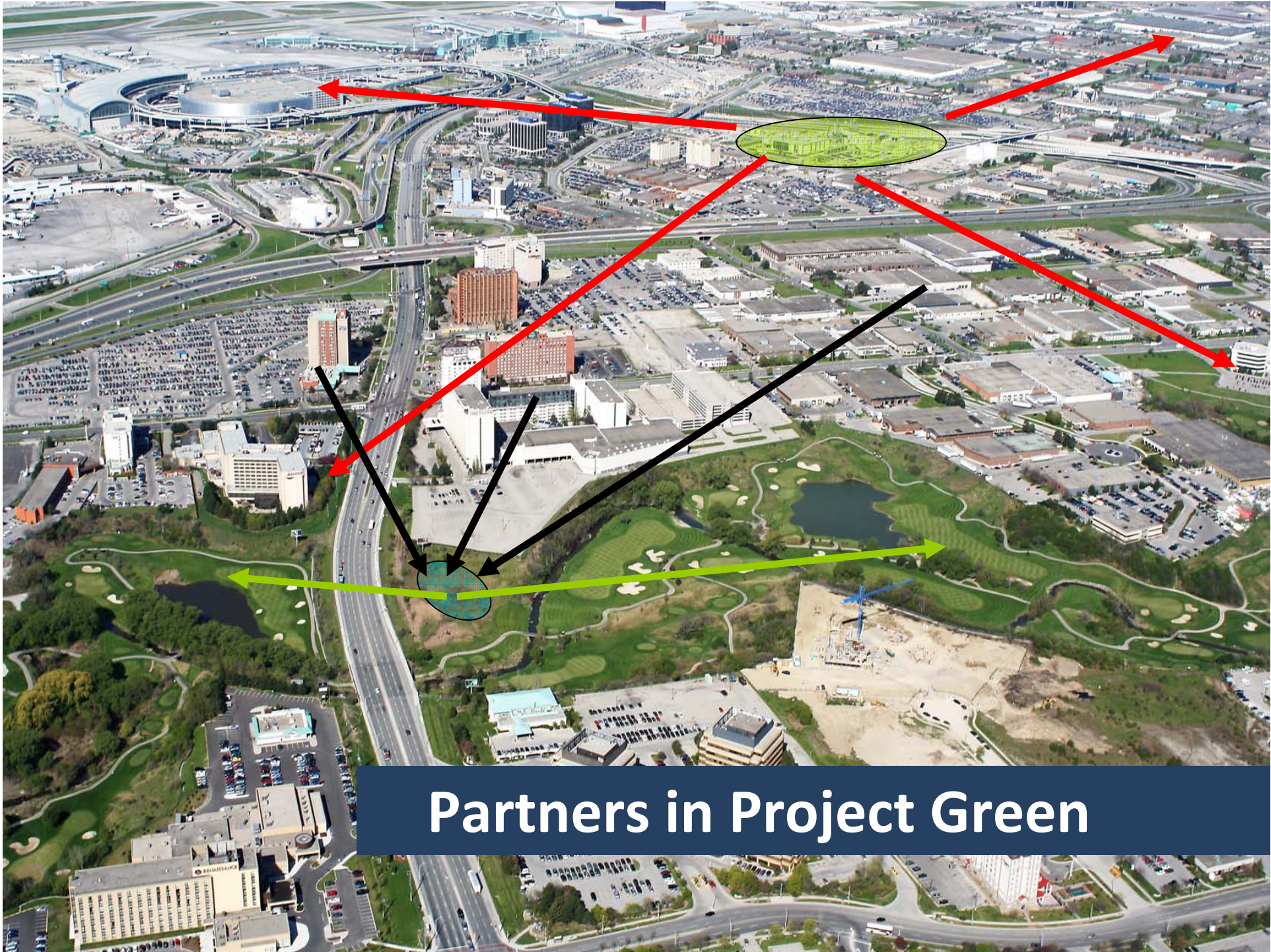
## Purpose

- Improve financial and environmental performance of ICI sector surrounding Toronto Pearson
- Develop new eco-economic development opportunities
- Highlight GTA's leadership in the pursuit of environmental and economic sustainability



## Partners in Project Green Study Area:





**Partners in Project Green**

# Process



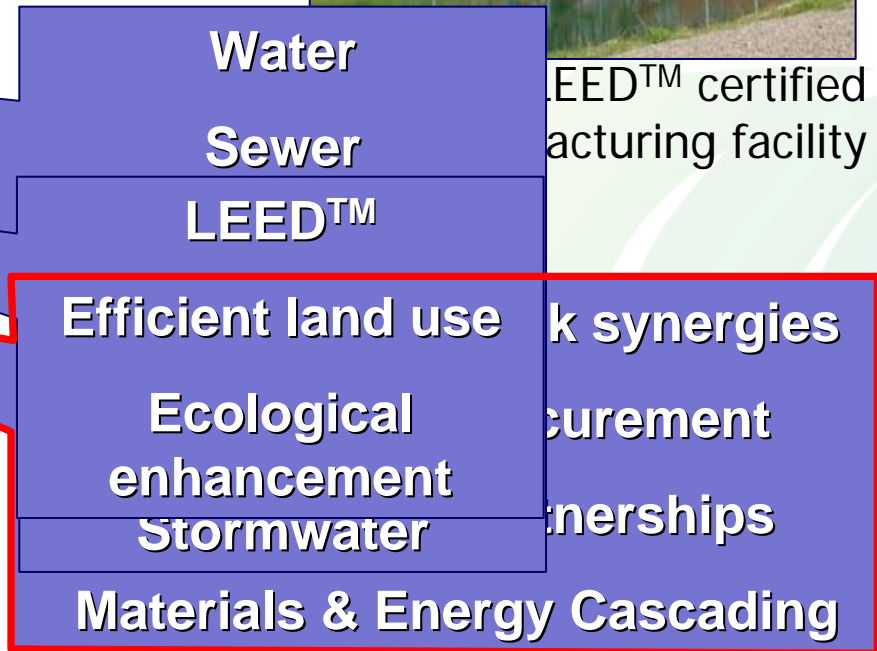


# What is "Eco-Industrial"?

Industrial (and commercial) development featuring high performance, innovative, efficient:

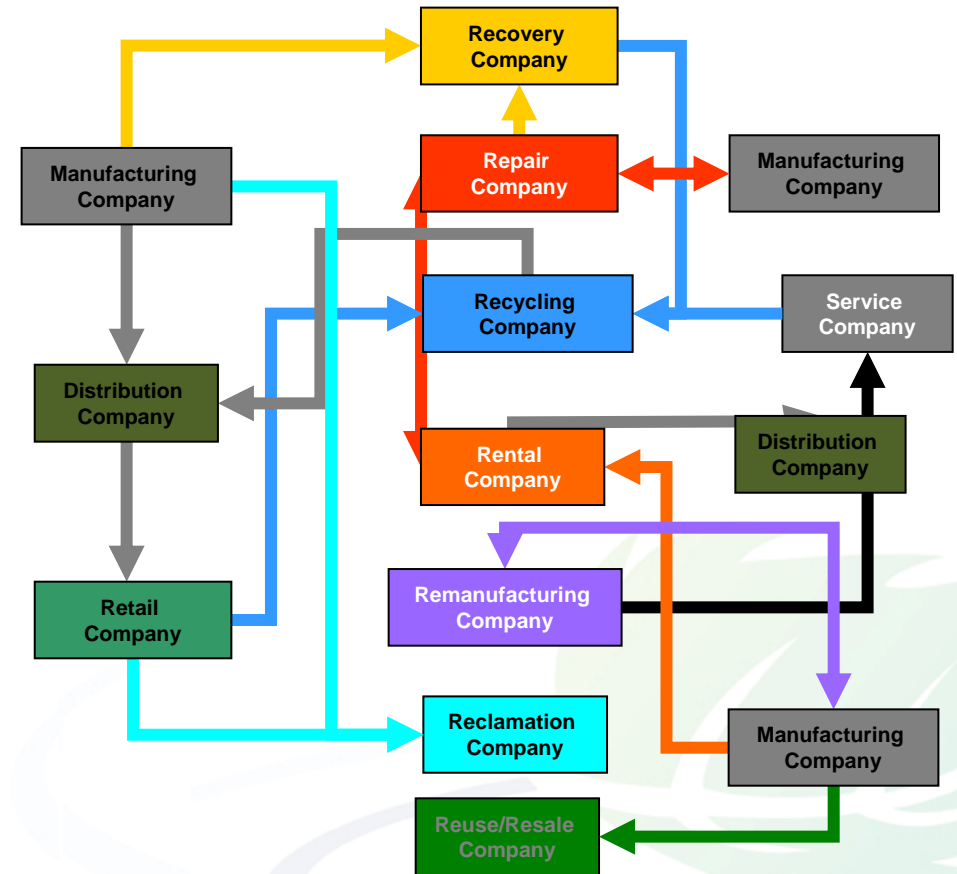
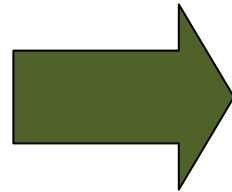
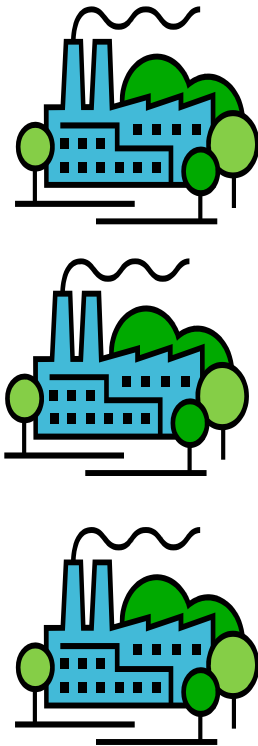


- **Infrastructure**
- **Buildings**
- **Operations**



All of these strategies lead to more *effective, efficient, and ecological* use of our resources.





**Eco-Efficiency**

**Lean Mfg**

**Eco-Business Zone**

# Why Food Processors?

- Ontario is home to 3,500 food processors
- Contribute > \$32.5 billion to the provincial economy and employ 120,000 people
- **More than half are located in the GTA.**

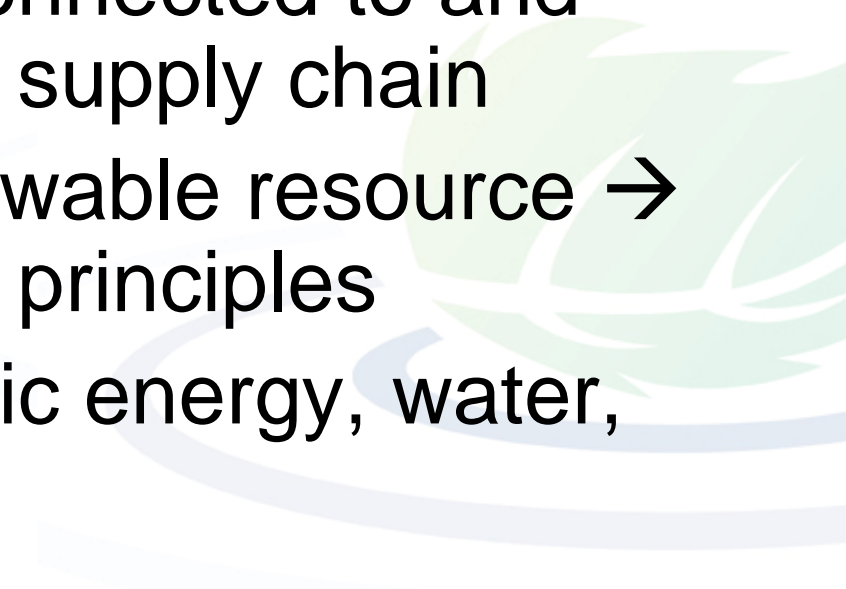


# Food Processors in Study Area



Draft based on data to date

# Food Processor Eco-Industrial Potential

- Food processors can benefit from same eco-industrial opportunities as many other businesses in region
  - Food processors are connected to and can influence a diverse supply chain
  - Food = biomass = renewable resource → ideal for 'eco-'industrial principles
  - Food processing specific energy, water, and regulatory needs
- 

# Sector EI Potential

- Sector needs a lot of water and energy
  - Cooling, Refrigeration, Freezing
  - Ventilation
  - Baking
  - Heated water
  - Lighting
  - Cleaning
  - Other processes
- Wastewater produced is less toxic than other industries → amenable to local treatment and reuse by others
- Resource consumption represents **major co\$t centres**

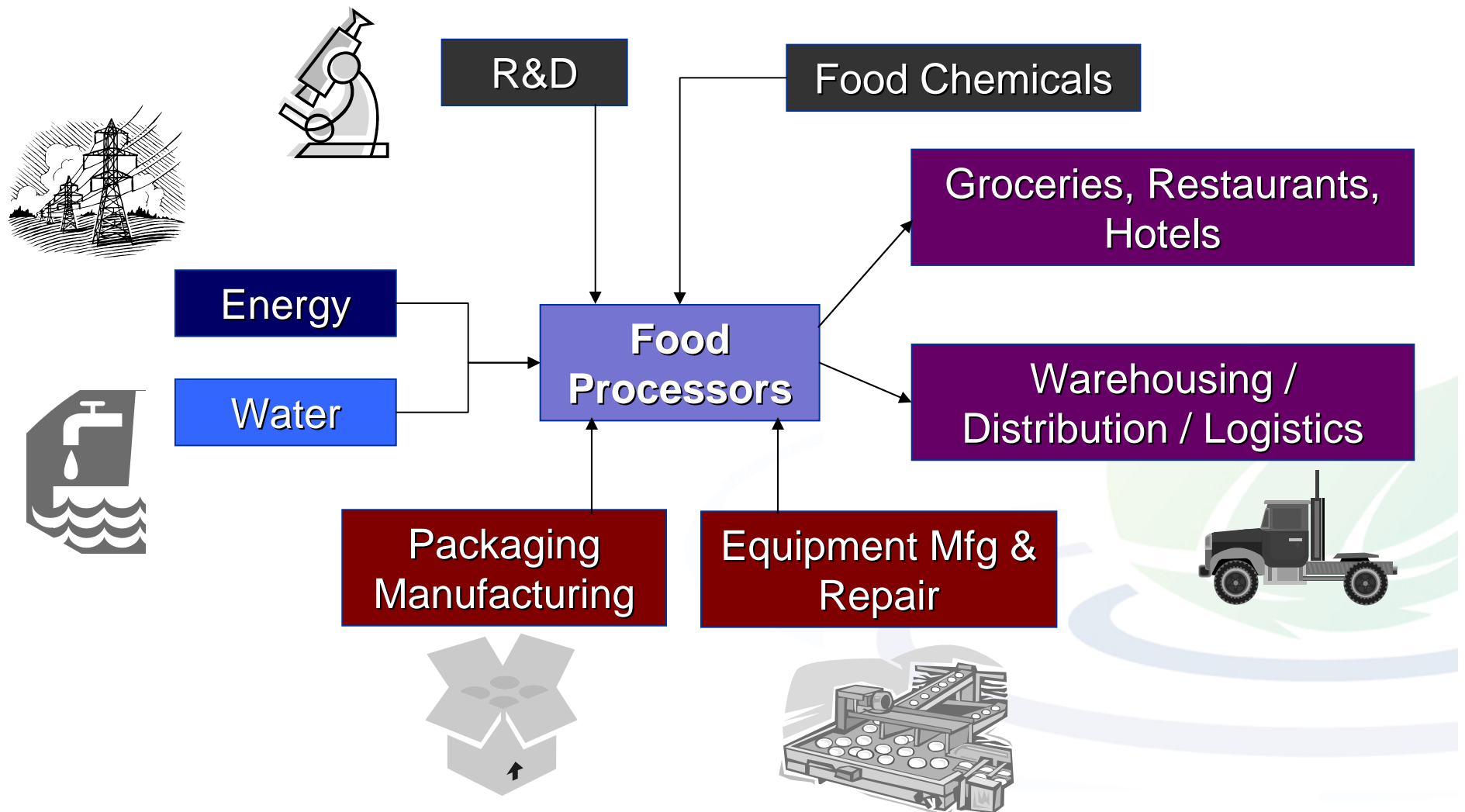


# General Eco-Industrial Examples

- Green Product Purchasing Blocks
  - Solvents, Cleaners, Fuels
- Peak Power Management
  - Target motors, pumps, etc.
- Co-ordinated equipment purchase
  - Using batch freezers over continuous freezing methods can reduce energy need by 20%
- Zone-wide green building retrofits to reduce building operating costs



# Food Industry Supply Chain



---

# Food Processing & “Eco-Industrial”

Foundation already in place

A decorative graphic on the right side of the slide. It features a green apple with a white stem and leaf, positioned above several concentric, light blue circular ripples that suggest water or a ripple effect.

# PPG Can Help Control Variable Costs

- Lighting, heat, and other basic facility requirements comprise less than 40% of the average food processor's energy costs.
- The cost of utilities –like water, sewer, electricity and natural gas – can exceed labour costs in a food plant.
- Food & Beverage industry sees profitability as most threatened by **rising energy / fuel costs**
- **“With the rising cost of energy, processors are looking for any way they can increase the thermal efficiency of their processing systems, and often this involves simply using otherwise wasted energy” ...**

The Grant Thornton 2007 Survey of U.S. Food and Beverage Companies

# A Wealth of Existing Cooling/Heating Technologies & Management Strategies

- Variable-frequency drives (VFDs)
- Air pressure blanket doors
- Heat recovery; Hot water recycling
- Infrared Heating in warehouses
- High efficiency boilers and motors
- Refrigeration compressor controls
- Modernization and upgrading of existing equipment and facilities
- Ensure positive pressure in heated areas (cold air stays out)
- Reduced idling of equipment
- Proper operation of refrigeration control systems
- Using low ambient temperatures to provide free cooling during winter and shoulder months

---

# Food Processors Already Practicing Eco-Efficiency



# Case Study: Maple Leaf Foods (Winnipeg, MB)

- 2 refrigeration systems
  - 2,450 hp compressors, 285 hp condensers
- Installed heat recovery system between compressors and condensers
- Recovered heat used for process water heating
  
- **Reduced boiler's natural gas consumption by 22%**
- **Reduced energy use by 12%**
- **Payback: < 2 years**
- **Annual savings: > \$100,000**



# Little Cost; Big Savings

- Weston Foods
  - “Anticipate \$40,000 in savings as a result of shifting operations to different times of the day to lower demand charges”.

Darren Borden, Energy Management Engineer, Weston Bakeries.



---

# Food Processing & “Eco-Industrial”

Moving Beyond Eco-Efficiency



# Happy Planet Foods Eco-Industrial Audit™

- Juice and smoothie manufacturer
- Process optimization to reduce water use and improve wastewater quality
- Residuals reuse:

## Dried Apple Pomace →

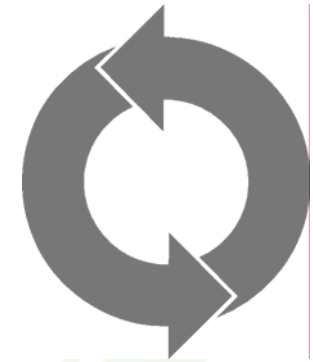
- fertilizer;
- dried fruit products;
- Composting
- Nutraceutical extraction



*Image courtesy of Happy Planet Foods, Inc*

# “Eco-Industrial” Synergy Potential

- a.k.a. “residuals reuse”
- CO<sub>2</sub> waste → food industry
  - For solvents, freezing, carbonation
- Food wastewater → process water
  - For textiles, metal finishing
- Food wastewater → landscape irrigation
- Food waste → composting; new value added products; animal feed



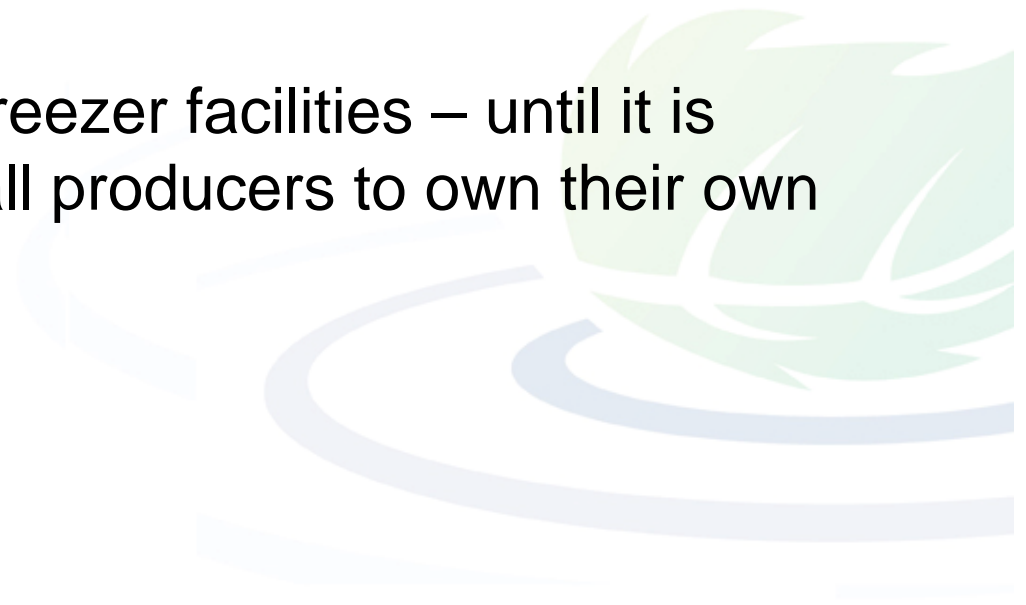
# Eco-Industrial Approaches for Food Processors

- Water & heat management networks
  - Inter-business recycling (water, heat)
  - Joint utilities e.g., wastewater (pre-) treatment, energy production
  - Increased information exchange regarding internal eco-efficiency opportunities
- Group purchasing
  - High-efficiency equipment procurement
  - Alternative fuels for fleets
- Collaborative logistics projects
  - Shipping/Receiving Facilities
- Partnerships for eco-services
  - Training, R&D, green marketing, performance measurement



# Eco-Industrial Approaches for Food Processors

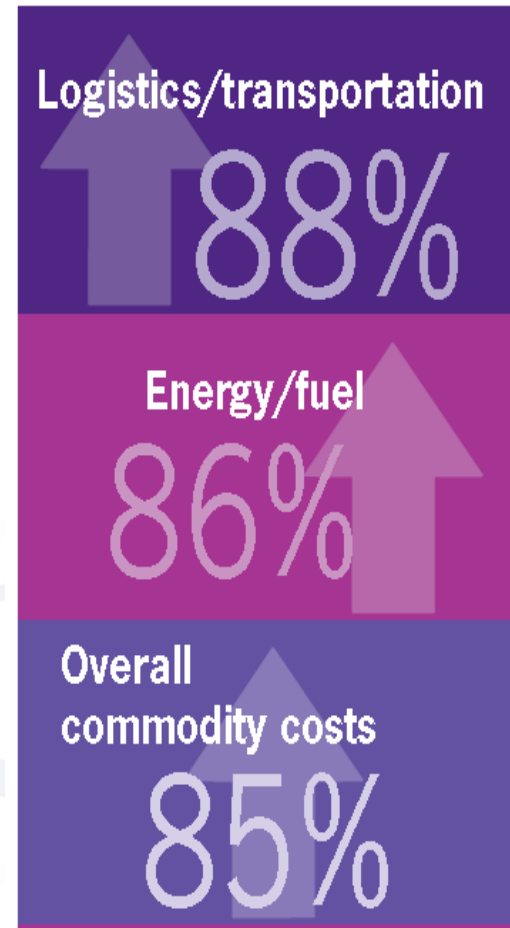
- Co-operation between smaller firms in the areas of
  - co-packing
  - freezer capacity
    - E.g. off-site rental freezer facilities – until it is economical for small producers to own their own



# Benefits of Going “Eco-Industrial”

- Decreased operating costs associated with:
  - Waste(water) disposal
  - Heating
  - Energy supply
  - Logistics
  - Maintenance and controls
- Increased revenues through
  - New value-added products
  - Higher yields from more efficient processes

Percentage of food companies reporting rising costs in these areas





**Eco-industrial approach can increase options and improve business case to address sector challenges**




**“Eco-Industrial” adds group power to common strategies**

---

# Partners in Project Green

## Programming

- Products
  - Services
  - Programs
- 

# Programs & Services

- PPG will offer programs / services *in addition to* education and outreach
  - Business / regulatory liaison
  - Professional services broker
  - Business advocate
  - Information hub (one-window)
  - "Matchmaker"



---

For Example....

“Food for Thought”



# Regulatory Liaison

- Work with governments to enhance policy support for eco-innovation
- Work with governments to facilitate food industry wastewater cascading to other sectors


# Business Advocate

- Make sure food processing gets recognized as an eco-business sector
- Ensure food industry is included in biomass – to – energy policy discussions

# Professional Services Liaison

- Coordinate detailed feasibility studies.  
Assist businesses with:
  - Scoping project ideas; engage other businesses who might be interested in implementing a similar project
  - Preparing Terms of Reference for green design professionals
  - Liaising with green design professionals
  - Finding additional funding, if needed

# Tools & Products

- Life cycle analysis tools for decision making
  - Mapping “excess” resources e.g. steam, clean wastewater, etc.
  - “Residuals” exchange matching
  - Others ideas brought forward by businesses
- 

# Education & Outreach

- Educational programming
  - Target businesses / industry associations re: energy / water efficiency strategies
  - Target regulatory officials re: emerging eco-practices within or involving food industry
- One-window information
  - Environmental technology / green suppliers (E.g. liaise with OCETA)
  - Local best practices
  - Funding sources



# Partner Roles

- Partners in Project Green
  - Deliver programs / services / tools to businesses
- Businesses
  - Sit on PPG Steering Committee
  - Technical resource for best practices
  - In-kind or financial support
- OMAFRA
  - Represent food processor interests for PPG
- Your role?

---

# Wrap Up & Next Steps

