



# Credible Affordable Sustainability

Canadian Academy of Engineering

May 26, 2025

# Agenda.

## Purpose

- Increase engineer's effectiveness at credibly & affordably imbedding sustainability

## Process

- Insights from Enviro-Stewards first 25 years & Sustainable Business Textbook
- Q&A

## Payoff

- Sustainability proficient students
- Increased margin, smaller footprints & brand stewardship for their employers



# Sustainable Business: Contents

**Chapter 1:** Introduction

**Chapter 2:** The Business Case for Sustainability

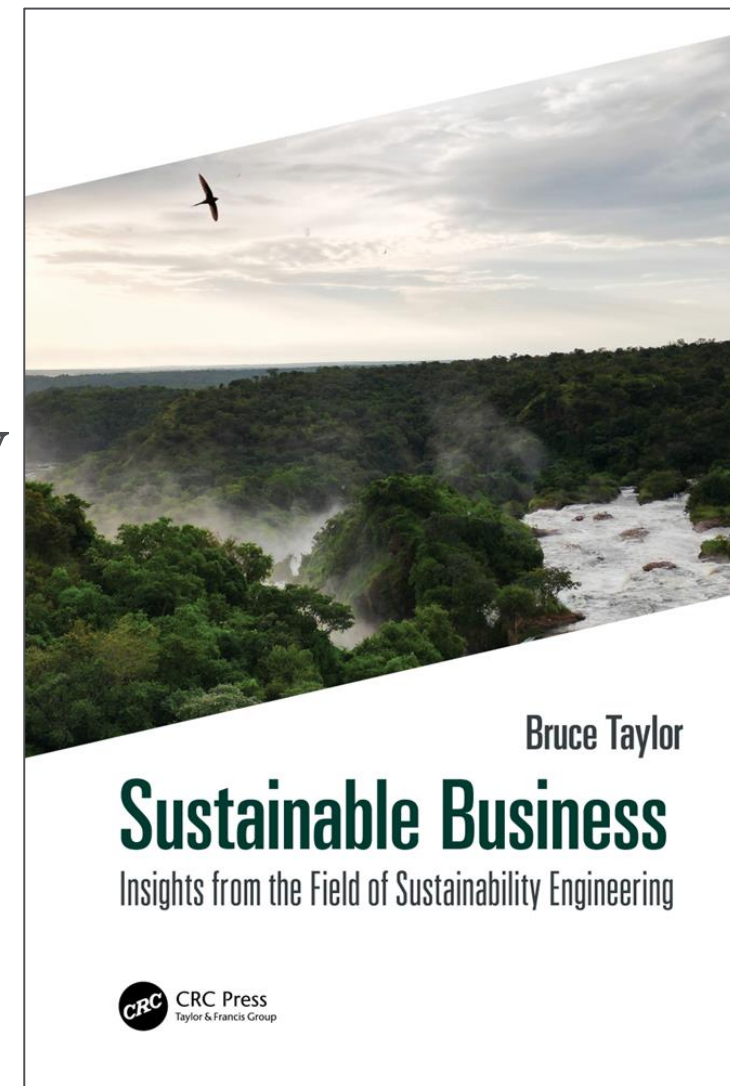
**Chapter 3:** Sustainability's Foundation

**Chapter 4:** Sustainability Skills Bootcamp

**Chapter 5:** Resource Conservation Skills

**Chapter 6:** Implementing Change

**Chapter 7:** The Power of Purpose



## 25 Case Studies:

Including the Safe Water Social Ventures (that receives 100% of textbook proceeds)

# Why Should Sustainability be a Priority:



## Investor Demand:

*“We focus on sustainability not because we’re environmentalists, but because we are capitalists and fiduciaries to our clients.”*

## Employee Attraction & Retention:

*eg. Enviro-Stewards has 90% less turnover than industry average*

## Brand Stewardship:

*Nearly 90% of Gen X consumers said they would be willing to spend an extra 10% or more for sustainable products, compared to just 34% two years ago.*



## Myths: Procuring on lowest cost

There is always someone who will do it cheaper...



## Case Study:

### Southbrook Vineyards

- Already LEED gold certified
- Previous audit identified **5%** savings with a **20-year** payback
- Our assessment identified & implemented **40% savings** with a **4-month payback**
- **One-third** fewer solar panels required for remaining energy saved **\$20,000/year** of wine yield

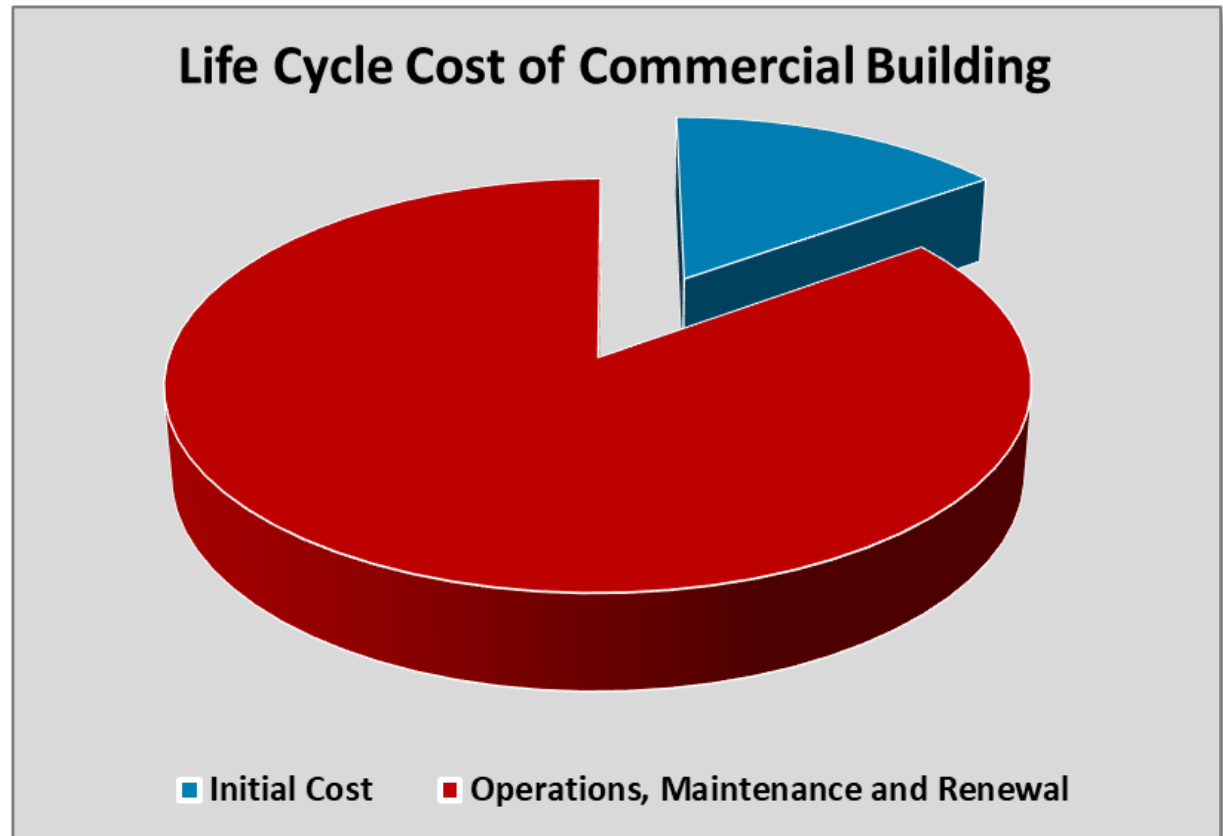
*"Don't use renewables to waste your energy more efficiently!"*



# Myths: Selection based on Lowest Initial Cost

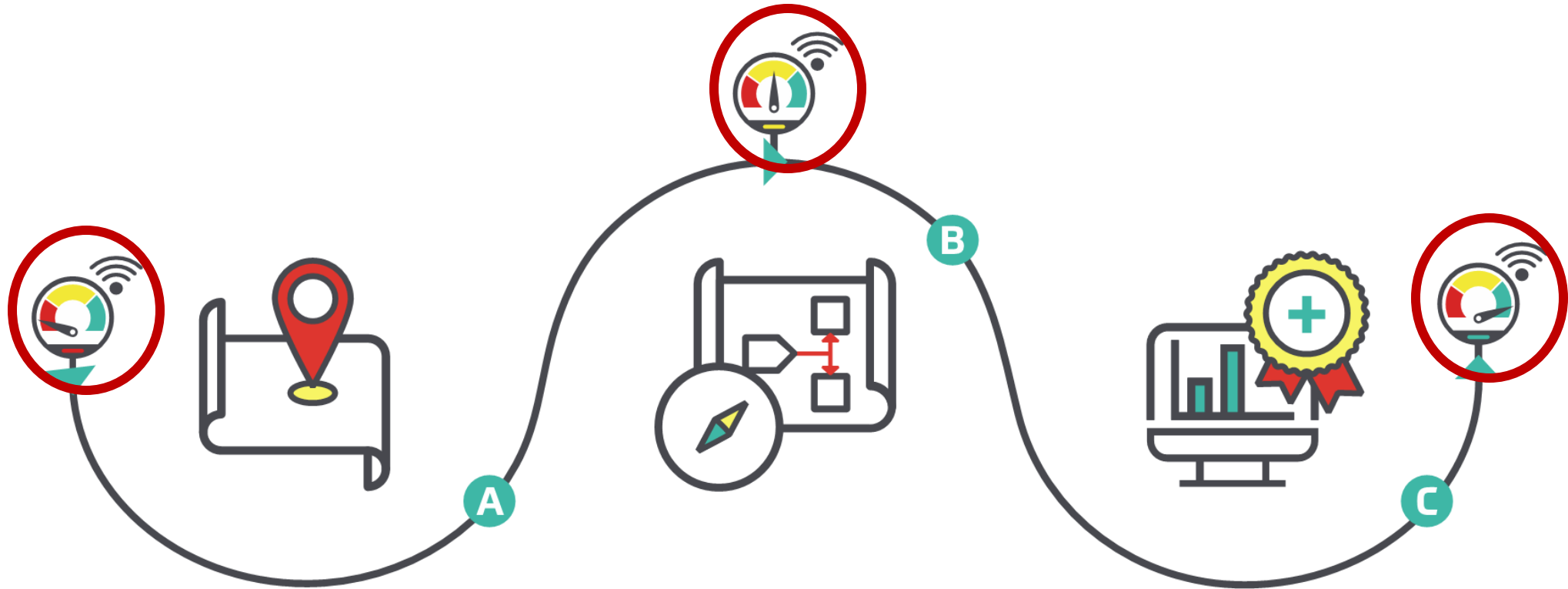
*Design Build is simultaneously the cheapest and the most expensive way to build (depending on your time horizon)*

- Minimize engineering (by building what has always been built)
- Minimize the capital cost to stay under a funding cap
- This consistently **maximizes** the life cycle cost (and carbon footprint)!



# Stewwi (System to Track Energy, Water & Waste Improvements)

## Credible Affordable Decarbonization



### A Baseline

- Establish Starting points & targets
- Operations (Scope 1 & 2)
  - Supply Chain (Scope 3)

### B Conserve

- Implement quick wins & deep retrofits
- Decarbonize supply chain

### C Replace

- Credibly replace remaining consumption/emissions
- Select SDG-rich project(s)

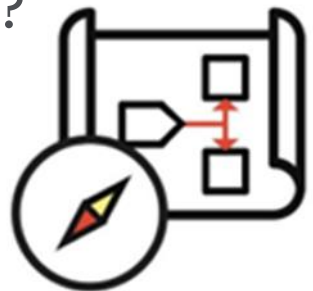


# Identify Opportunities

Preventing root causes.



1. **Who** are your champions?
2. **What** are your wastes?
3. **Why** are your wastes generated?
4. **Where** can they be improved?
5. **When** should they be implemented?
6. **How** can implementation be expedited?



# Decarbonization:

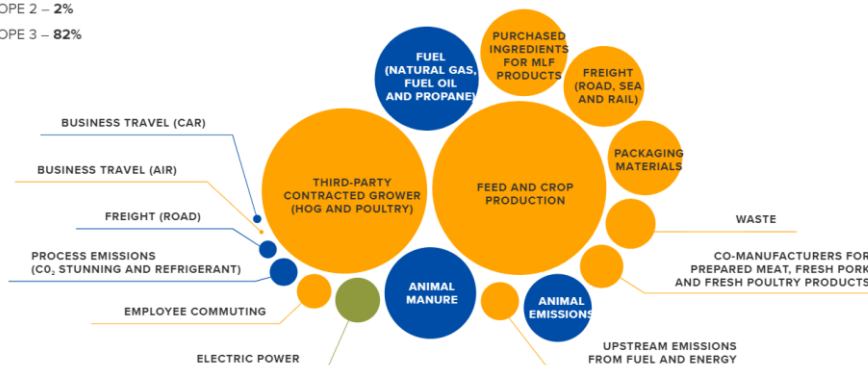
Maple Leaf Foods.

- Enviro-Stewards completed energy, water, and pollution prevention assessments at 35 facilities
- MLF reports 572 of the 1,300+ projects identified have been implemented (saving over \$17 million to date)
- World's First Major Carbon Neutral Food Company (while generating a net increase in profitability)

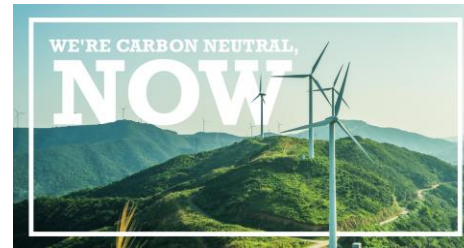
## Carbon Inventory

### Total Emission Sources

- SCOPE 1 – 16%
- SCOPE 2 – 2%
- SCOPE 3 – 82%



2021  
**Clean50**  
exceptional contributors to the clean economy  
**TOP PROJECT**



MAPLE LEAF FOODS

World's First Major Carbon Neutral Food Company

## MAPLE LEAF FOODS & ENVIRO-STEWARDS

### LEADING BRANDS ARE COMMITTING TO CARBON NEUTRALITY SOMETIME IN THE FUTURE, BUT WHY WAIT?

There is simply no more time to waste. The urgency of the climate crisis requires us to act now. That is why in 2019, Maple Leaf Foods became the first major food company in the world to become carbon neutral and is on a journey to become the most sustainable protein company on earth.

Even more impressive, they **achieved carbon neutrality while generating a net increase in profitability.**

### HOW DID MAPLE LEAF FOODS BECOME CARBON NEUTRAL?

By aggressively avoiding and reducing its greenhouse gas emissions across its operations and supply chain and by investing in high-impact environmental projects across North America to offset the remaining, unavoidable emissions. MLF's sustainability team retained Enviro-Stewards to find practical viable measures to reduce its environmental footprint at each of 35 MLF facilities across North America.

Thus far, the conservation measures have resulted in the following savings\*:

- 1.77% absolute reduction in SBT Scope 1 & 2 GHG emissions
- 19.5% reduction in natural gas intensity
- 25.9% reduction in electricity intensity
- 21.6% reduction in water intensity, and
- 12.1% reduction in solid waste intensity (91.6% diversion rate)

All of the above savings have a **payback period of one year on average!**

\*Note: Performance measured from 2014 baseline with the exception of solid waste, which is a 2015 baseline and SBTs (Scope 1 and 2), which is a 2018 baseline.



# Utility Conservation:

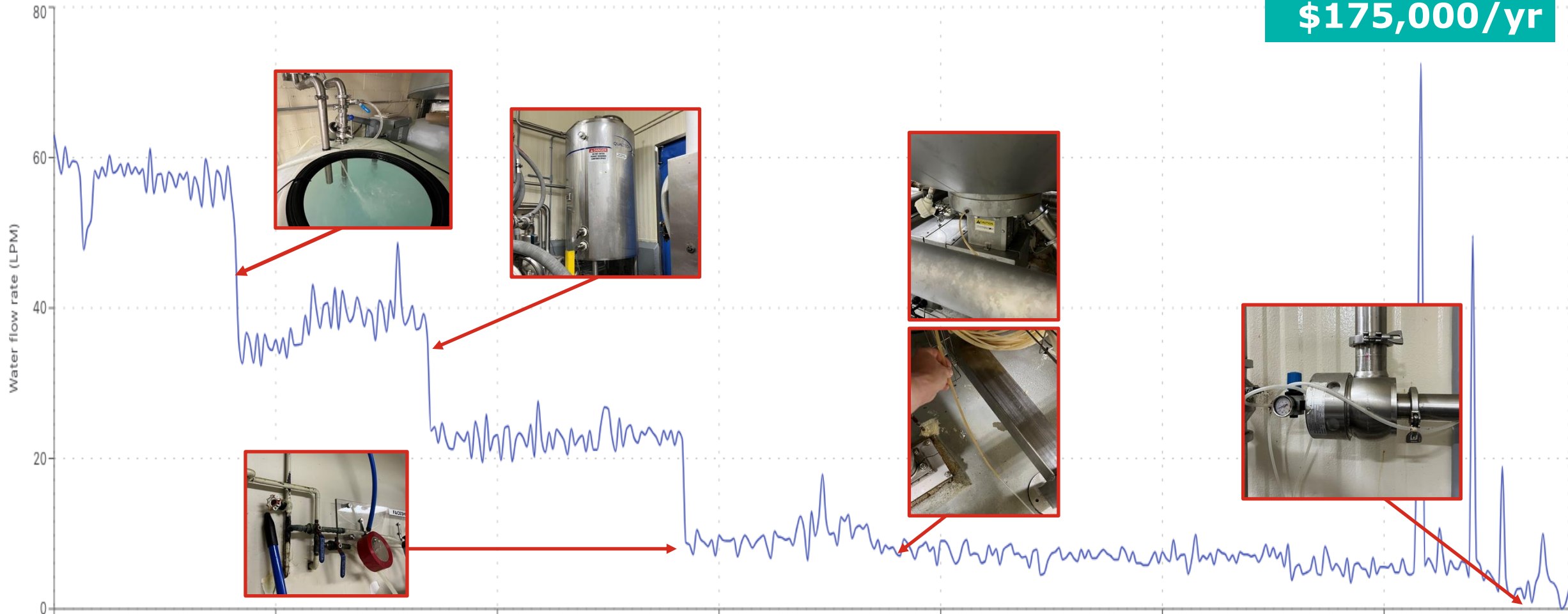
Water conservation  
(Victoria day 2024)

**Savings:**

**32,000 m<sup>3</sup>/yr water**

**75,000 m<sup>3</sup>/yr gas**

**\$175,000/yr**



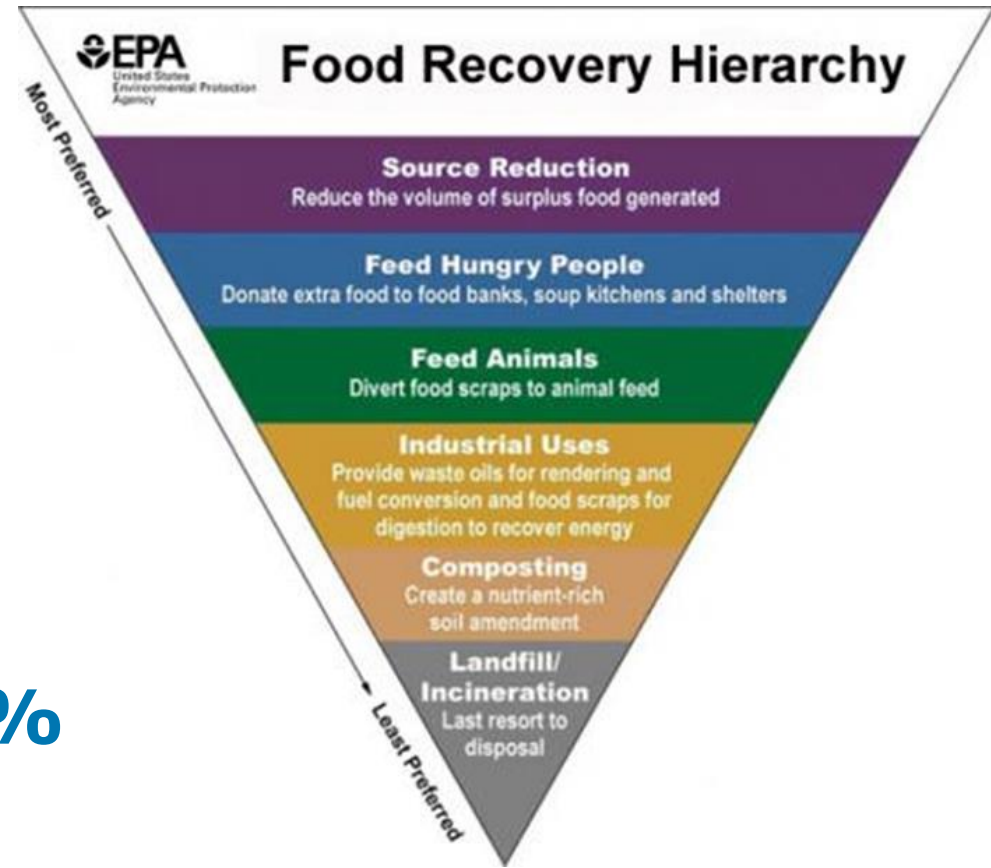


# The Case for Food & Beverage Conservation:

- **1/3** of all food is presently wasted
- If it were a country, food loss would be the **3<sup>rd</sup> largest GHG** emitter (after USA & China)
- **2<sup>nd</sup> largest potable water** consumer (after food)
- **\$1 trillion** in lost value (according to UN FAO)

## If Succeed in diverting even 100%

- **1/3** of all food will still be wasted
- If it were a country, food loss would remain the **3<sup>rd</sup> largest GHG** emitter (after USA & China)
- **2<sup>nd</sup> largest potable water** consumer (after eaten food)
- **>90% of \$1 trillion** in lost value





## Integrated, Water, Energy & Product

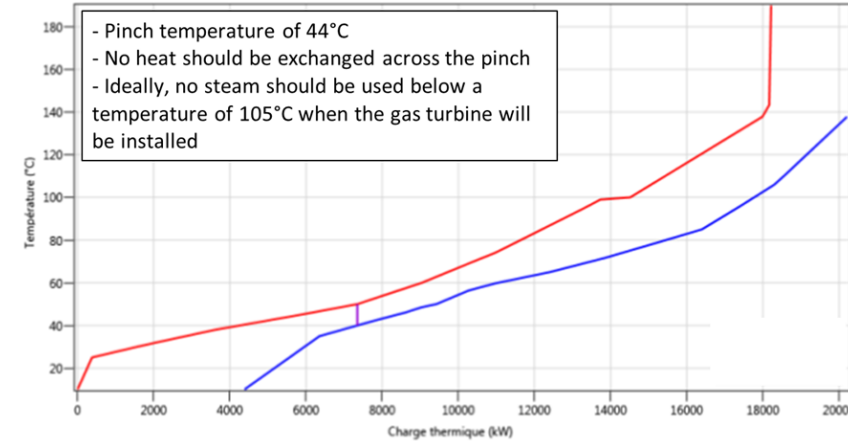
### Process Integration (PI) Study:

- 3,233,000 kWh/yr (140 tonnes)
- 4,570,000 m<sup>3</sup>/yr of gas (8,700 tonnes)
- 123,000 m<sup>3</sup> of water (6 tonnes)

**\$1,645,000/yr** with 2-year payback

### Food Loss Prevention Study

- \$706,000/year food savings with 6-month payback (938 tonnes/yr)
- 4,000 tonnes/yr less (embedded) GHG!





## C. Credibly Replace remaining balance

Partner with a specific & inspiring project **that you feel comfortable defending** (rather than purchasing RECs on open market)



For example: Enviro-Stewards recommissioned solar panels on an orphanage in South Sudan (rather than our own roof in Ontario, Canada).

- South Sudan has **twice the useful daylight** of Ontario
- Orphanage's (diesel) grid was **10 times dirtier** than Ontario's
- Money for diesel can be **spent on food** at the orphanage instead



# Safe Water Social Ventures:

TEDx “Better than Charity”, [www.swsv.org](http://www.swsv.org)

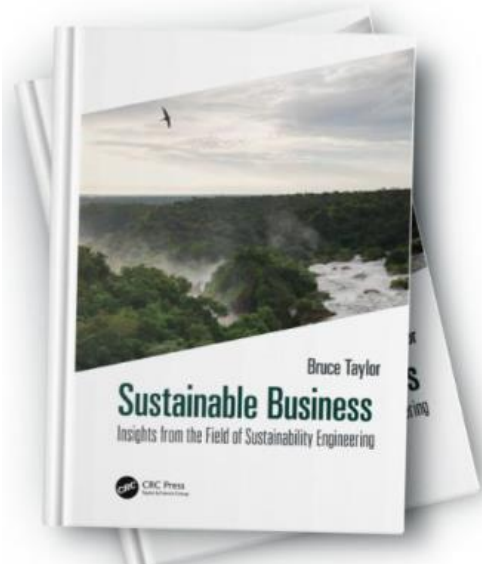
- Market Assessment & Business Planning
- Technical Training
- Business Training
- Sales Agent Trainer Training





# Purpose:

- **Cup for Cup lunch**  
**May 30<sup>th</sup>** 20025 at OSF
- **EMC Green Skills**  
Starts October 1, 2025
- **Impact Film Festival**  
**November 20<sup>th</sup>**, 2025





*engineering*  
*change*

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