

# Sustainability

*An Owners Perspective*

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# What is Sustainability?



**If you still don't believe.....**

***Positive proof of global warming.***



**18th  
Century**

**1900**

**1950**

**1970**

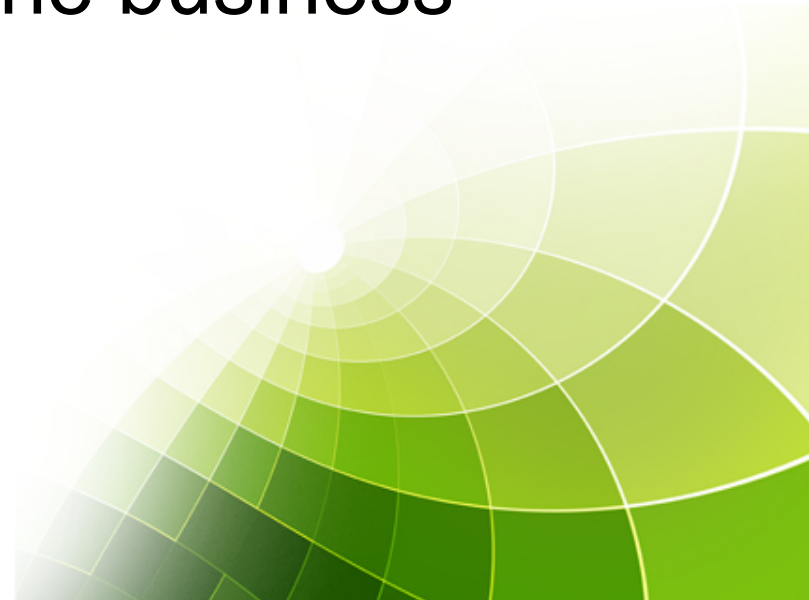
**1980**

**1990**

**2006**

# Business Definition of Sustainability

- Definition: Sustainability in business is a strategy that drives long-term corporate growth and profitability by mandating the inclusion of social and environmental issues in the business model.



# Evolution of the Triple Bottom Line

1990

Profit  
Profit  
Profit

2000

Profit  
Profit  
People

2010

Profit  
People  
Planet

PEOPLE  
PLANET  
PROFIT



# Profit First.....Not Profit Only!



# MAKING SUSTAINABLE DECISIONS



**Determining the Right Shade of Green for a Specific Community**

Using Interactive Value Analysis and the Risk Analysis Process for Assessing the Economic Value of Sustainability Initiatives

By John Parker and John Williams

**Abstract**

Being "green" is the topic of the day in thousands of communities. Cities, counties, states, even the federal government, are joining academia, not-for-profits, privately held, and publicly traded companies in their efforts to improve their sustainability. Each community is headed in a different direction. Which direction or combination of sustainable strategies will produce results that are the "right" shade of green for a given community? The answer lies in an understanding of stakeholder plans and expectations as to what they can afford and where they will achieve the greatest results with the resources they invest. Specific clues are provided that show ways in which communities can use cost-benefit analysis and risk analysis to determine what level of sustainability is optimal. The approach is designed to guide communities through an objective, transparent, and interactive process that will contribute to practical plans that feature high probabilities of successful implementation.

**Keywords:** cost benefit, interactive value analysis, return on investment, risk analysis, risk assessment process (RAP), stakeholder involvement, sustainable design

**A Changing World**

THE CLIMATE IS CHANGING, design standards are changing, and the expectations of shareholders and stakeholders are changing. Corporations and municipalities need to mitigate the impacts of their operations and adapt to their communities in a new, faster changing world.

Communities of all types (cities, counties, states, and federal agencies as well as corporate, academic, health care, and public utility companies) are facing choices. The most fundamental of these involve decisions as to how far they want to reach in terms of their efforts to be "green." Will they work

to make changes that will impact the world, nation, state, county, town, or even the way things are done in a single building? What can they afford and where will they achieve the greatest results for the resources they invest?

Many firms and municipalities are measuring their progress according to a triple bottom line that looks not just at economic performance but also at environmental and social performance. The costs and benefits of sustainability have a complex interaction. Do the benefits of having more power supplied from green sources outweigh the costs? To determine how green you should be, a business case for sustainability initiatives is required.

Cost-benefit analysis and risk analysis are essential tools for determining what level of sustainability is optimal. Through either an interactive value analysis (IVA) or a more analytical risk analysis process (RAP), professionals can help their clients by providing decision support for their sustainability initiatives.

**What Shade of Green is Right?**

With unlimited resources, it is possible to be very green, but who has unlimited resources? It is important to scale efforts along the lines of what can really be accomplished within a given sphere of focus and influence.

Are some green shades better than others? All shades have a direct connection to the level of risk the organization faces in the way it grows or does business. They also relate to the degree to which it is viewed as competitive. In the public sector, "competitive" is about being the kind of community that people want to live, work, and play in. In the private sector, competitive is about responding to the customer as well as regulatory expectations at a price that is attractive, if not lower than any other source or in alignment with the quality of product or service.

Selecting the right shade of green involves balancing risks and rewards in a way that matches stakeholder

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- Sustainable organizations must make tough choices and justify their expenditures when applying capital to sustainable solutions.
- Sustainability minded organizations want to see social and environmental factors in RFP responses and project proposals.
- Traditional models such as life-cycle cost analysis (LCCA) fall short:
  - Only consider cash flows
  - Lacks environmental impacts
  - Does not account for the human element

# Sustainable Return on Investment



# SROI FLOW DIAGRAM

## Example of Benefits

### Cash Benefits

- Reduced electricity costs
- Reduced heating/cooling costs
- Reduced water costs
- Reduced sewage costs
- Reduced waste disposal costs
- Reduced labor costs
- Other reduced operational costs

### Non-Cash Benefits

- Reduced green house gas emissions
- Reduced air pollution
- Water conservation
- Improved health
- Improved productivity
- Improved safety
- Community/public perception

## Costs

### Capital Costs (\$)

### Associated Maintenance Costs (\$)

### Operating Cost Increases (\$)

### Disposal Costs (\$)

Total Benefits (\$)

Company's Want Factor

Total Costs (\$)

**Project Decision**

*Reveals a Project's Full Value*

# Air Filter Study Outputs

## Cardboard Waste

The following cardboard waste data is derived by the 144 required filter sections. Numbers are based on two pre-filter changes and one bag filter change per year.

Box Type	Pounds per Box	Sq. Feet	Filters per Box	Number of Boxes
Jan. Pre Filter Box	3lbs. 9 oz.	15.6	18 units per box	8
Jan. Bag Filter Box	2lbs. 13 oz.	12.0	5 units per box	29
Jul. Pre Filter Box	3lbs. 9 oz.	15.6	18 units per box	8
Mini Pleat Box	2lbs. 6 oz.	9.4	5 units per box	29

Box Type	Total Boxes	Total Sq. Ft.	Total Weight
Pre Filter Boxes	16	249.6	57
Bag Filter Boxes	29	348	65.3
<b>Totals</b>	<b>45</b>	<b>597.6</b>	<b>122.3</b>

Mini Pleat Boxes	<b>29</b>	<b>272.6</b>	<b>68.8</b>
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# Air Filter Study Outputs

## Cost of Filter Disposal

	Pre/Bag		Mini Pleats
Weight of One Pre & Bag	6 lb 2 oz	Weight of Single Mini Pleat	2lb. 9 oz.
Annual Number of Filters	432	Annual Number of Filters	144
Total Filter Weight LB	<b>1,098</b>	Total Filter Weight LB	<b>301</b>
Cost to Dispose per LB	0.11	Cost to Dispose per LB	0.11
Total Cost of Disposal	\$120.78	Total Cost of Disposal	\$33.11

## Freight Charges

Pre and Bags -- January Delivery	Pre Filter Only --June Delivery	Mini Pleat January Delivery
\$223.70	\$89.65	\$110.00
Annual Freight Expense	<b>\$ 313.35 Pre's and Bags</b>	<b>\$110.00 Mini Pleats</b>

# Air Filter Study Outputs

## Freight Pollution Factors

Urban Freeway Truck Emission Factors (grams/mile)

Vehicle Type	Year	VOC	CO	NOx	PM
Diesel Tractor	2010	0.28	1.10	8.06	0.17
<b>Pre and Bags</b>	Miles - 488	136.64 grams	536.8 grams	3,933 grams	82.9 grams
<b>Mini Pleats</b>	Miles - 1,610	450.80 grams	1,771 grams	12,976 grams	273.70

## Electricity Pollution Factors

Connecticut Emissions Rates -- Gas Generation ( pounds )


KWH Saved	SO2	VOC	CO2	NOx	PM
220,580	.00132	.022	281.6	0.2508	.0080

- Total Cost of Ownership
- Review Sustainability Data
- Final Recommendation

# SUSTAINABILITY METRICS

## *Tier 1*

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- Energy Reduction
  - Water Savings
  - Waste Reduction
  - Pollution Factors
  - Carbon Reduction
  - Chemical Elimination
  - Freight Reduction costs/pollution
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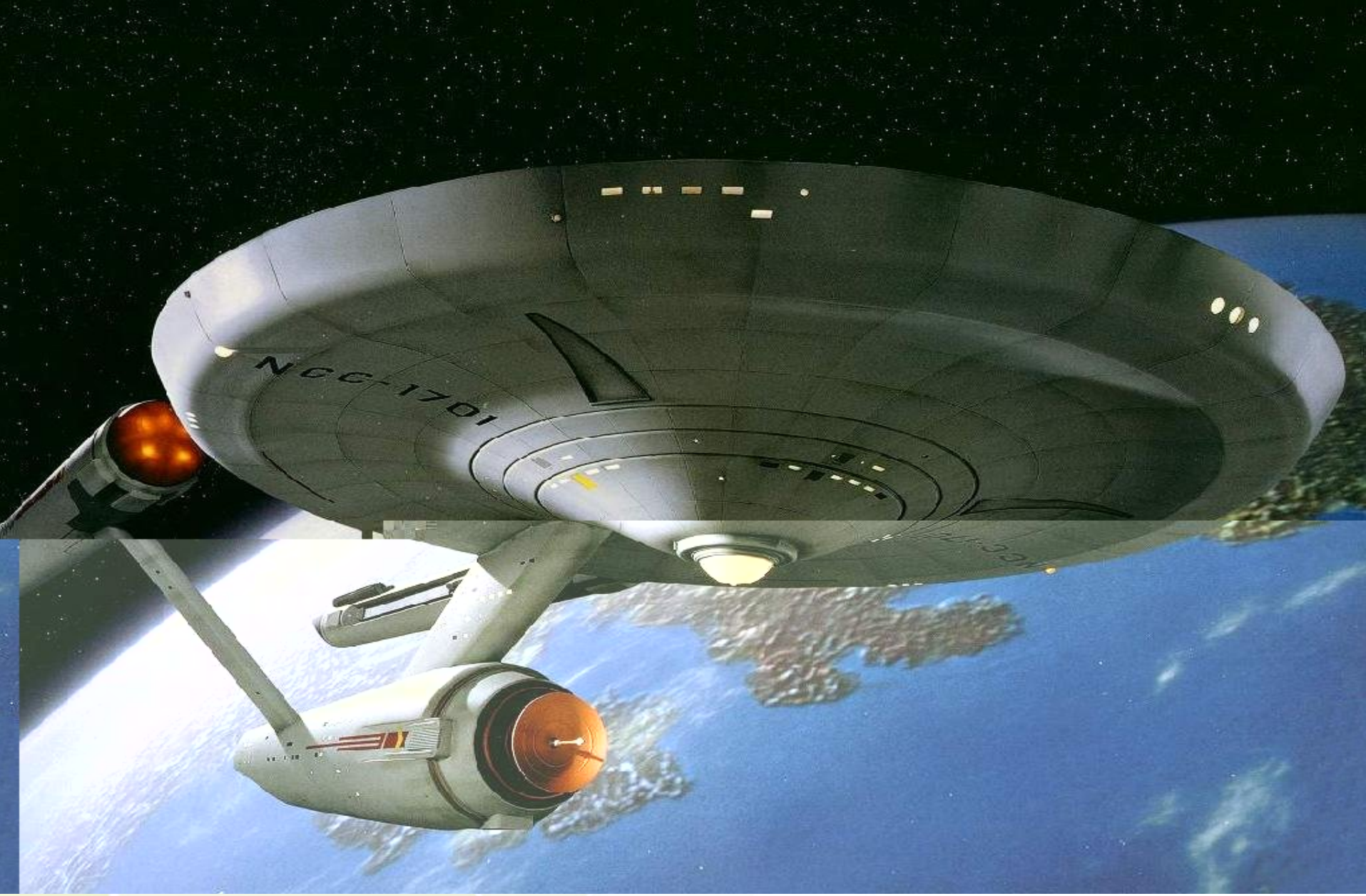
# SUSTAINABILITY METRICS

## *Tier 2*

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- Recycled Content Materials
- Air Quality & Productivity
- Non-Chemical Alternatives
- Health and Safety
- Lower Decibel Levels
- Low VOC Materials
- Hazardous Waste Removal
- Certified Products
- Local Resources





*Sustainability.....the Final Frontier!*