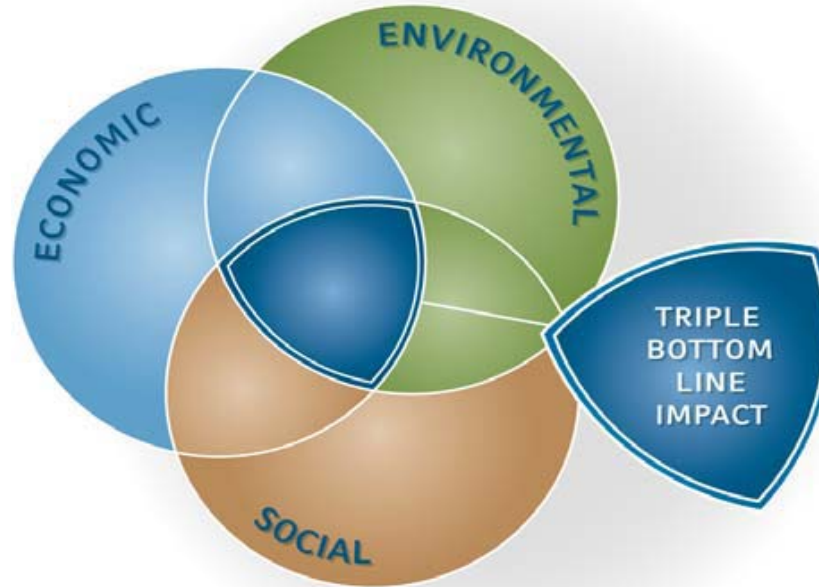


TRIPLE BOTTOM LINE ANALYSIS



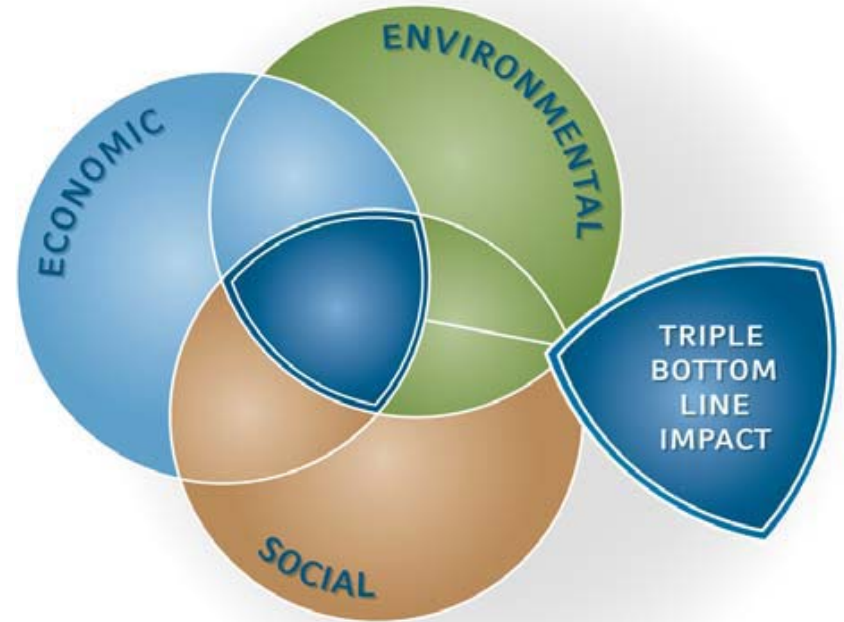
Kraig Bader
Fort Collins Utilities Light & Power
Standards Engineering Manager
970.416.2481

Katy Bigner
Fort Collins Utilities
Environmental Project Coordinator
970.221.6317



Triple Bottom Line (TBL)

- Balanced approach to business decisions
- **Environmental** – what impacts will it have on the environment?
- **Social** – how will it impact society?
 - Consider both Workforce & the Community
- **Economic** – how much will it cost over the life of the project or product?



Factors to Consider When Applying TBL

- **Environmental** – life cycle assessment of: energy consumption, GHG emissions, waste generation, depletion of natural resources, impacts on biodiversity, etc.
- **Social** – human health impacts, use of local businesses, impact to employees, etc.
- **Economic** – life cycle cost assessment, use reduction, product performance & quality, impact on staff time & labor, etc.



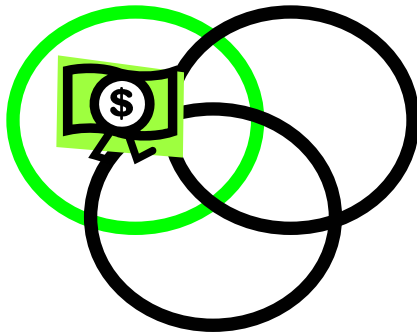
Triple Bottom Line Analysis: Not So Different From Common Sense

- Increased life cycle vs. low cost
 - Examples?
- Reduced maintenance expenses vs. low cost
 - Examples?
- Reduced operations expenses vs. low cost
 - Examples?

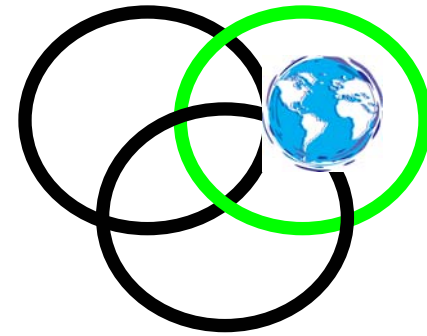


EXAMPLE (3 slides)

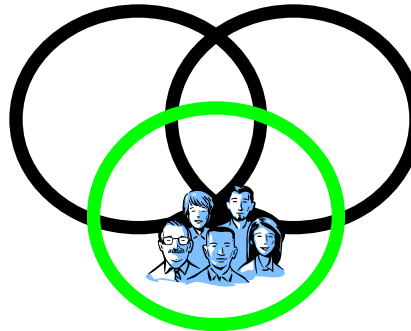
Economic





Environmental



Social



Example: Use of Compact Fluorescent Lamps (CFLs)

Typical Light Output (Lumens)	Standard Bulb (Watts)	Exposed CFL Bulb (Watts) 	Enclosed CFL Bulb (Watts) 
250	25	5 to 7	9 to 10
450	40	9 to 11	14 to 15
900	60	13 to 18	18 to 20
1,200	75	18 to 23	25
1,750	100	25 to 30	–

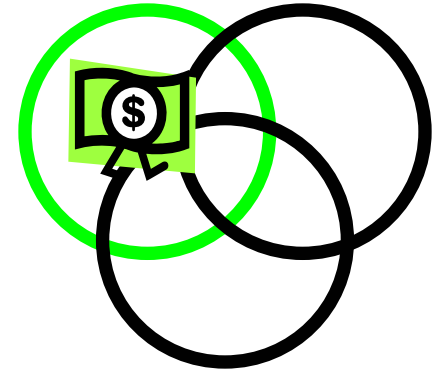
- Last up to 10 times longer than standard light bulbs.
- Use 2/3 to 3/4 less energy than standard light bulbs.
- CFLs are offered locally from \$1.75 to \$8, allowing for positive return on investment ROI.
- Smaller than standard light bulbs; retrofitting incandescent bulbs is easy.
- Operate at lower temperatures, generating less waste heat than incandescent.



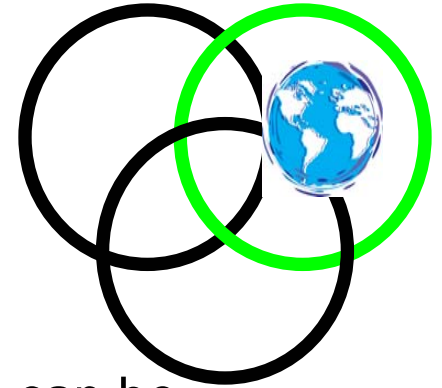
Use of Compact Fluorescent Lamps (CFLs)

Economic Benefits (1 of 3):

- Pros:
 - Reduced energy needs & longer life of CFLs vs. incandescent makes for a positive Return on Investment (ROI).
 - Longer life span allows reduced maintenance & replacement costs.
- Cons:
 - Higher capital investment (initial cost).
 - Higher costs of disposal (labor & transportation costs) if no local recycling program exists.
 - Not suitable in every type of lighting fixture (size, lighting duration).



Use of Compact Fluorescent Lamps (CFLs)



Environmental Benefits (2 of 3):

– Pros:

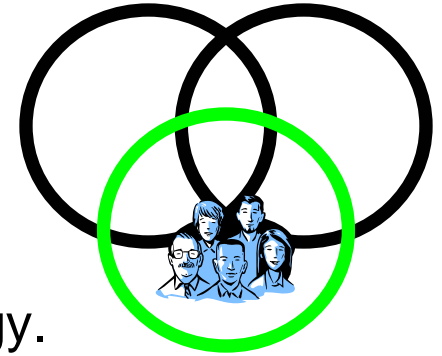
- Reduces landfill waste.
- Reduces energy consumption, & therefore can be part of GHG reduction strategy.
- Airborne mercury entering environment avoided as part of energy savings (less coal combustion)

– Cons:

- Requires proper handling & disposal for mercury.
- If communication & implementation of mercury handling & disposal isn't adequate, public health & ecosystem problems could be created (contamination of water & land).



Use of Compact Fluorescent Lamps (CFLs)



Social Benefits (3 of 3):

- **Workforce & Community Pros:**

- Provides adequate light for work & saves energy.
- Less time needed for maintenance & replacement over life of lamp.
- Reduced energy costs frees up funding to support workforce & other local businesses.

- **Workforce & Community Cons:**

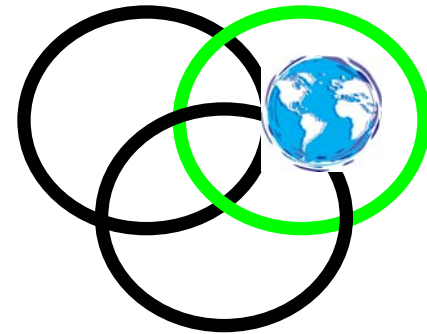
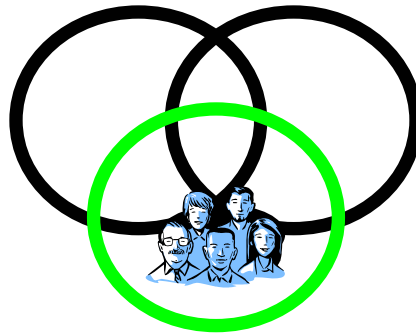
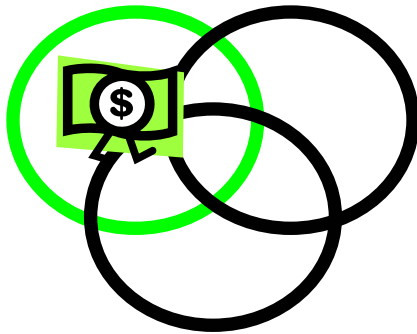
- Disposal must be handled appropriately to avoid compromising public health.
- Public concerns about mercury handling & health risks.



Triple Bottom Line Memory Test - CFLs

What Do You Remember from the last three slides?

- Would you make your analysis or recommendation from the information on the previous 3 slides?



TBLAM!

Triple Bottom Line Analysis Map (TBLAM)

• When you have completed each section, please select the appropriate "Condition indicator" on the traffic light graphic that reflects the result of the analysis.

Project or Decision: Use of Compact Fluorescent Lamps

Evaluated by: Ft. Collins Utilities

Positive Outcome - Proceed!

Acceptable Risks - Caution

Re-evaluate Before Proceeding

Social		Environmental		Economic	
<p>WorkForce </p> <p>STRENGTHS:</p> <ul style="list-style-type: none"> - Able to provide adequate light for work needs while saving energy. - Less time needed for maintenance & replacement over life of lamp. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> - Lighting change may be noticeable and may potentially cause eyestrain for some unless designed appropriately. <p>OPPORTUNITIES:</p> <ul style="list-style-type: none"> - If employees are educated or consulted prior to change, employee engagement in a company savings effort, can help develop energy efficiency culture. <p>THREATS:</p> <ul style="list-style-type: none"> - If employees are not engaged, some may actively attempt to deter energy savings. 	<p>Community </p> <p>STRENGTHS:</p> <ul style="list-style-type: none"> - Reduced energy costs frees up funding to support other local businesses, - Reduced energy needs may improve regional air quality from coal-fired power plants - health benefit. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> - If quantities of CFLs are large, disposal must be handled appropriately so as not to compromise public health. <p>OPPORTUNITIES:</p> <ul style="list-style-type: none"> - Possible reduction of greenhouse gases and improved regional air quality through reduced electrical demand. <p>THREATS:</p> <ul style="list-style-type: none"> - Public concerns about mercury handling & health risks pose a problem. 	<p></p> <p>STRENGTHS:</p> <ul style="list-style-type: none"> - Reduces landfill waste. - Reduces energy consumption, and therefore can be part of GHG reduction strategy. - Mercury entering environment avoided as part of energy savings (less coal combustion). <p>LIMITATIONS:</p> <ul style="list-style-type: none"> - Requires proper handling and disposal for mercury. <p>OPPORTUNITIES:</p> <ul style="list-style-type: none"> - Possible reduction of greenhouse gases and improved regional air quality through reduced electrical demand. <p>THREATS:</p> <ul style="list-style-type: none"> - If communication of mercury handling and disposal is not adequate, public health and ecosystem problems could be created (contamination of water and land). 	<p></p> <p>STRENGTHS:</p> <ul style="list-style-type: none"> - Reduced energy needs & longer life of CFLs versus incandescent makes for a positive Return on Investment (ROI). - Longer life span allows reduced maintenance & replacement costs. <p>LIMITATIONS:</p> <ul style="list-style-type: none"> - Higher capital investment (initial cost) - Higher costs of disposal (labor and transportation costs) if no local recycling program exists. - Not suitable in every type of lighting fixture (size, lighting duration). <p>OPPORTUNITIES:</p> <ul style="list-style-type: none"> - Reduced energy costs will contribute to ROI. Less work time spent on replacement of lamps <p>THREATS:</p> <ul style="list-style-type: none"> - Large scale adoption may lead to temporary supply issues. 		

NOTES: The condition indicators should be selected based on your personal values as they relate to this analysis. You are not "trying to get to green," but using this form as an analysis method to guide a qualitative and quantitative assessment.

Consider using a more detailed analysis method like this one to develop a memorandum with your recommendation.