



A BETTER CITY

CHALLENGE for
SUSTAINABILITY

*Business and Institutional Leaders
Working Toward a Sustainable City*

Energy Management Workshop 12 June 2012

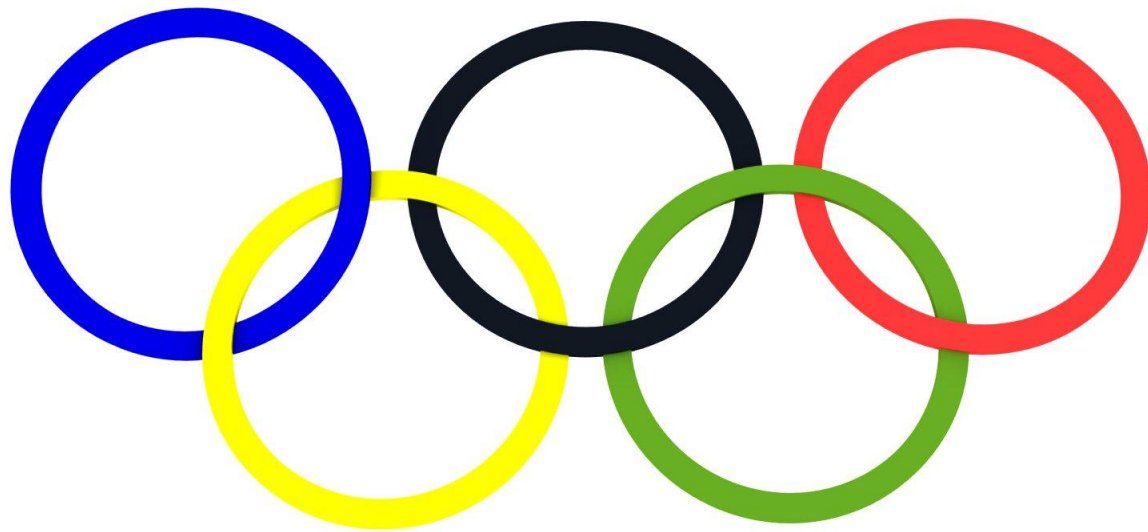
BARR FOUNDATION

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Why is energy management important to you?





Step 1 - Assess



Step 2 - Commit



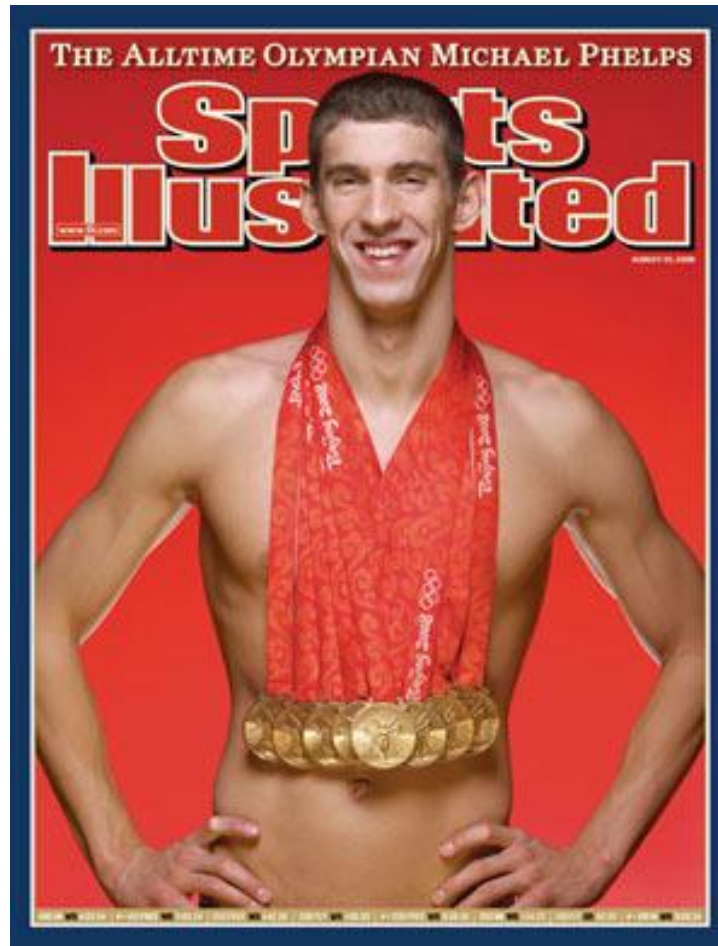
Step 3 - Plan



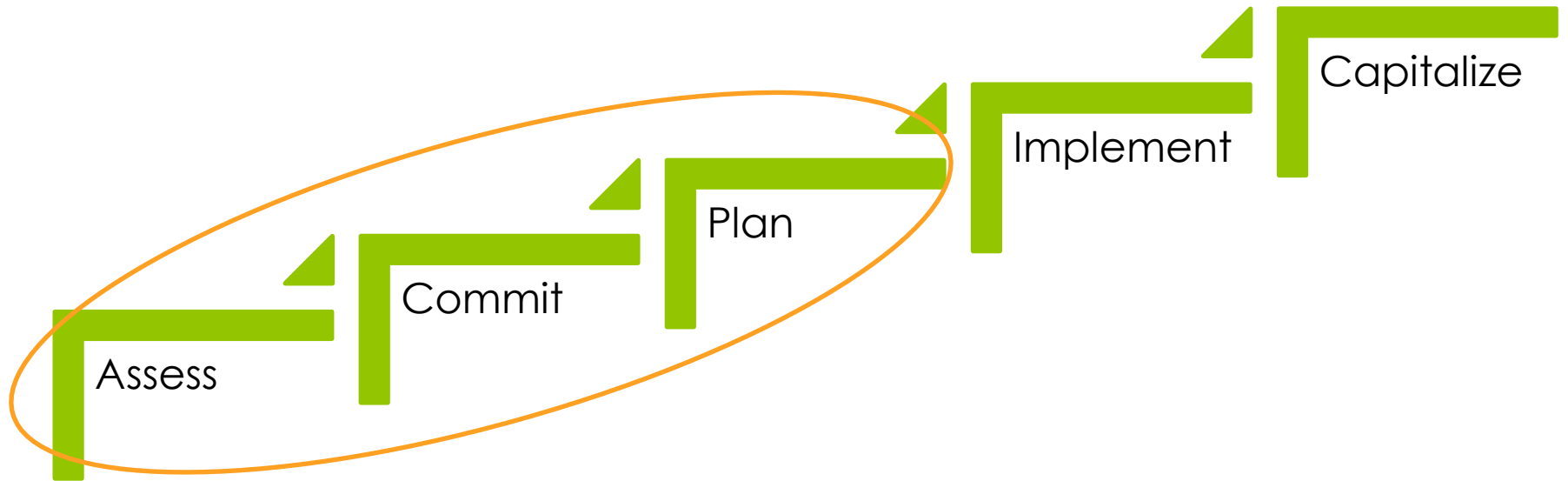
Step 4 - Implement



Step 5 - Capitalize



Energy Management Framework



Energy Management Framework



EDF CLIMATE CORPS: Turning Energy Efficiency Opportunity into Action



June 12, 2012

A Better City: Energy Management Workshop

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EDF Climate Corps

Environmental Defense Fund is a nonprofit, nonpartisan organization with over 20 years of experience working with leading companies to develop and promote cleaner, more efficient business practices that save energy and preserve natural resources.

Climate Corps places specially trained MBA and MPA students in companies, cities and universities to build the business case for energy efficiency.

Climate Corps Results

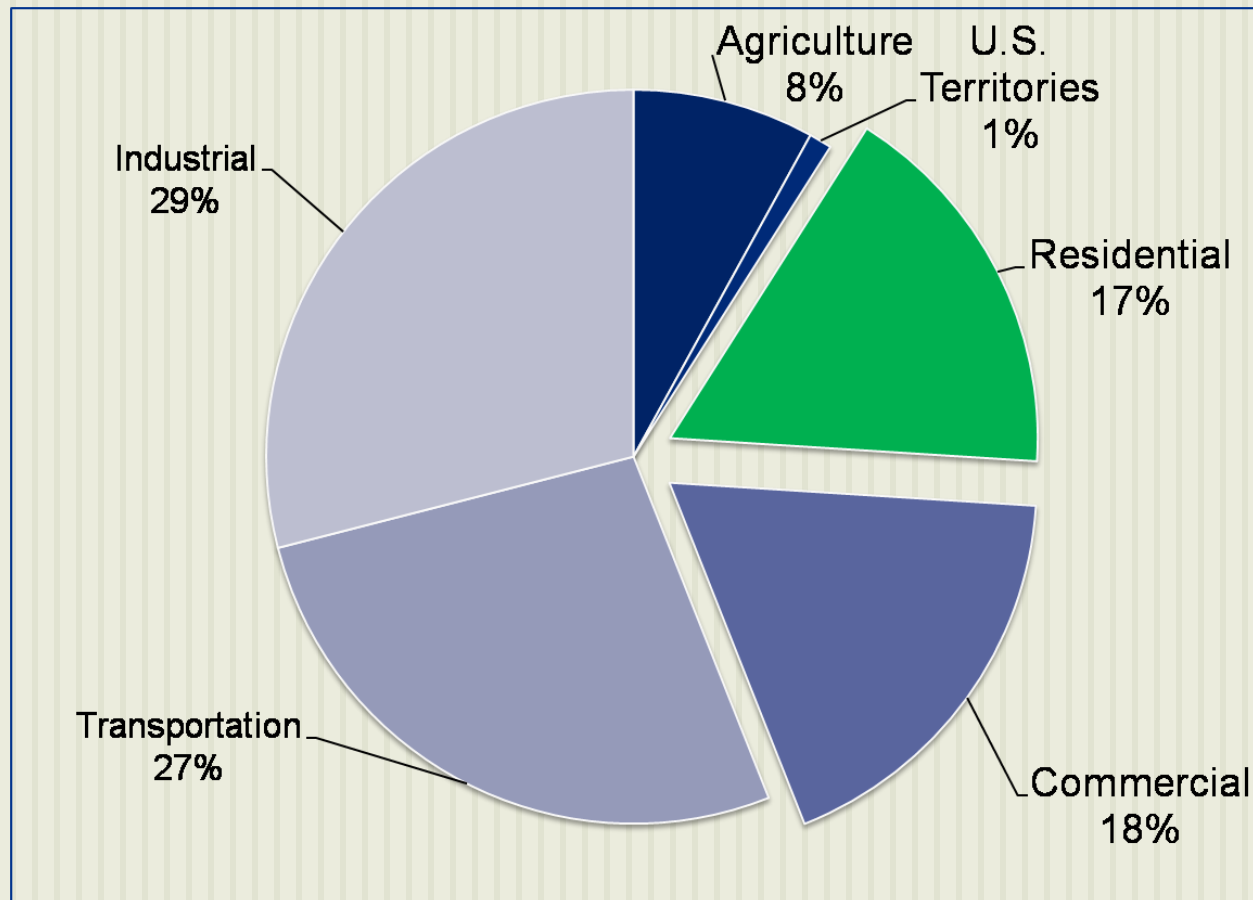
Since 2008, almost 300 Climate Corps fellows have identified energy efficiency savings worth:


- Over \$1 Billion NPV
- Enough energy to power 100,000 homes for a year
- CO₂ savings equivalent to 200,000 cars annually

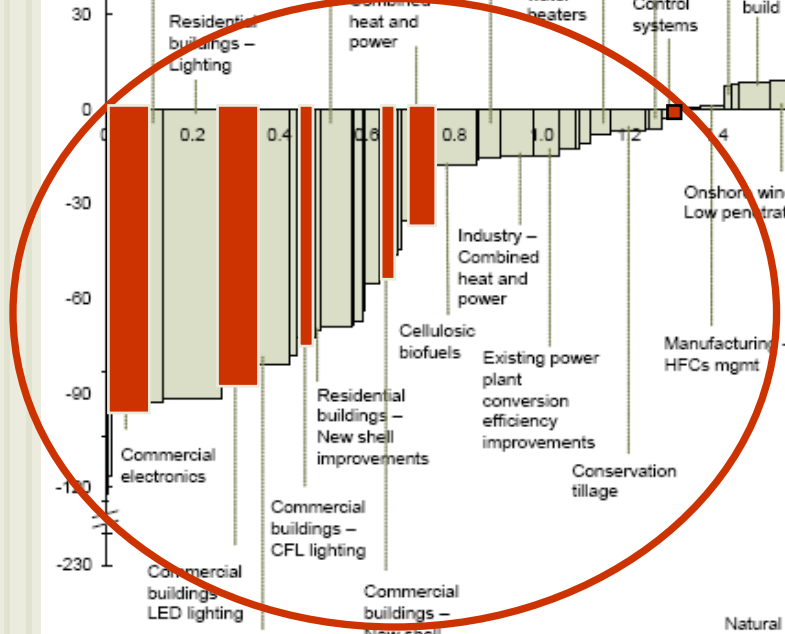
Over 86% of savings recommended by fellows have been implemented.

Buildings contribute over 35% of CO₂ emissions

U.S. GHG Inventory

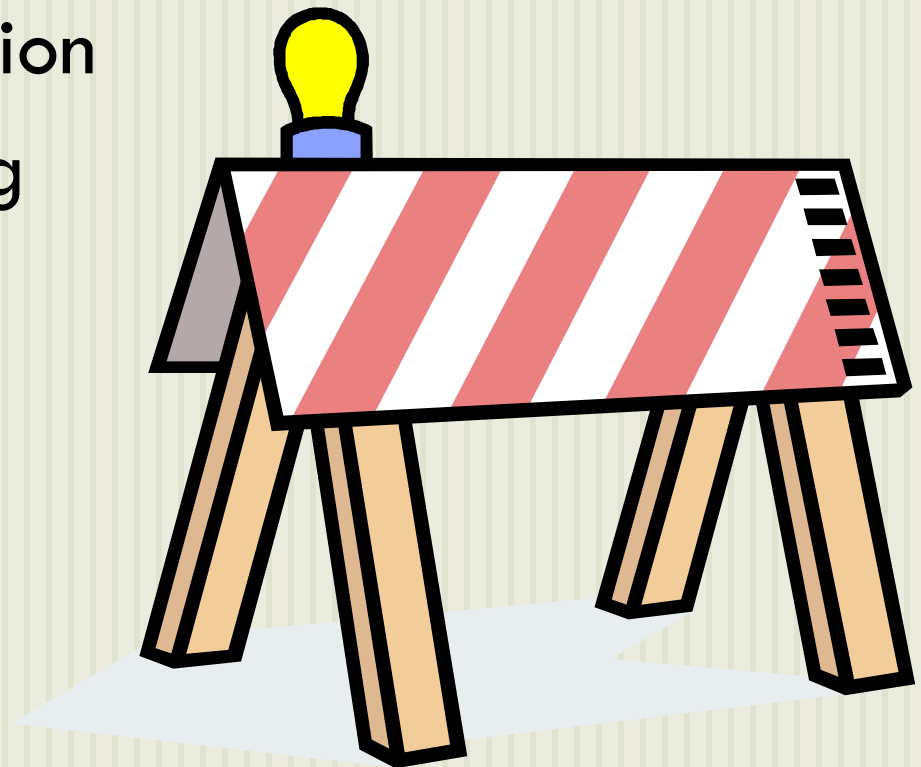


 Abatement costs < \$50/ton



...But common barriers get in the way

- Organizational Priorities
- Access to Capital
- Information Collection
- Information Sharing
- External Factors



Overcome barriers with actionable efficiency plans

Strategies for overcoming common barriers to efficiency:

- **Organizational Priorities:** Set goals and benchmark performance against self and peers.
- **Access to Capital:** Track efficiency investments, consider more holistic financial metrics like NPV, dedicate funding for efficiency.
- **Information Collection:** Mandatory reporting, submetering buildings or business units.
- **Information Sharing:** Train staff about energy efficiency, share success stories, and engage cross functional teams.
- **External Factors:** Consider green leases, account for rising energy costs, periodically reaffirm company commitment to energy efficiency or sustainability.
- **And above all....**

Show Me the Money!!!

A strong financial case is your best ally. What financial metrics are most important to your company?

In addition to Payback and ROI, consider the long term cash flows, or Net Present Value (NPV), of an energy efficiency investment across its entire life.

Energy Savings—Quick Math

How much does it cost to run an old-fashioned light bulb vs. a CFL?

Remember:

A = Price per Kilowatt hour (kWh)

B = Watts * .001 (convert watt to thousands/kilo)

C = Hours per Year is 2080 (8 hrs/day, 260 days/yr)



100 Watt
Incandescent

<u>A</u>		<u>B</u>		<u>C</u>		<u>Energy Cost</u>
\$.15 kWh	x	.1kw	x	2080 hours	=	\$31.20/yr



23 Watt
CFL Equivalent

\$.15 kWh	x	.023kw	x	2080 hours	=	\$7.18/yr
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**\$24/year
savings!**

\$24 annual savings = \$87 NPV

$$NPV = (\text{Incremental Cost}) + \sum \frac{\text{Annual Savings}}{(1+r)^t}$$

$$\mathbf{\$87} = (-3+-1) + \frac{24}{(1.04)^1} + \frac{24}{(1.04)^2} + \frac{24}{(1.04)^3} + \frac{(24-1)}{(1.04)^4}$$

Assumptions:

- 4 year project life
- Discount rate of 4%
- Incremental cost in year 1 of \$3
- Maintenance cost in year 1 and 4 of \$1

Vending Machine Example



Type:

- Typical refrigerated vending machine consumes 400 watts, \$225/year

Opportunities

- Delamping – 180 watts reduction, \$100/yr savings
- Energy saving sensors – 30-50% savings, Typical cost: \$170/unit, < 2 yr payback

Example:

- 51% savings, \$185/yr savings @ 8.5cents/kWh measured with recording ammeter

Future/Better Ideas

- Vendor requirement in new contracts/
Energy Star vending machines

Any Questions?



IT NOW TAKES MUCH LESS ENERGY TO
COME UP WITH A NEW IDEA.

MINIMUMBLE.COM

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