Energy Strategy and Project Financing

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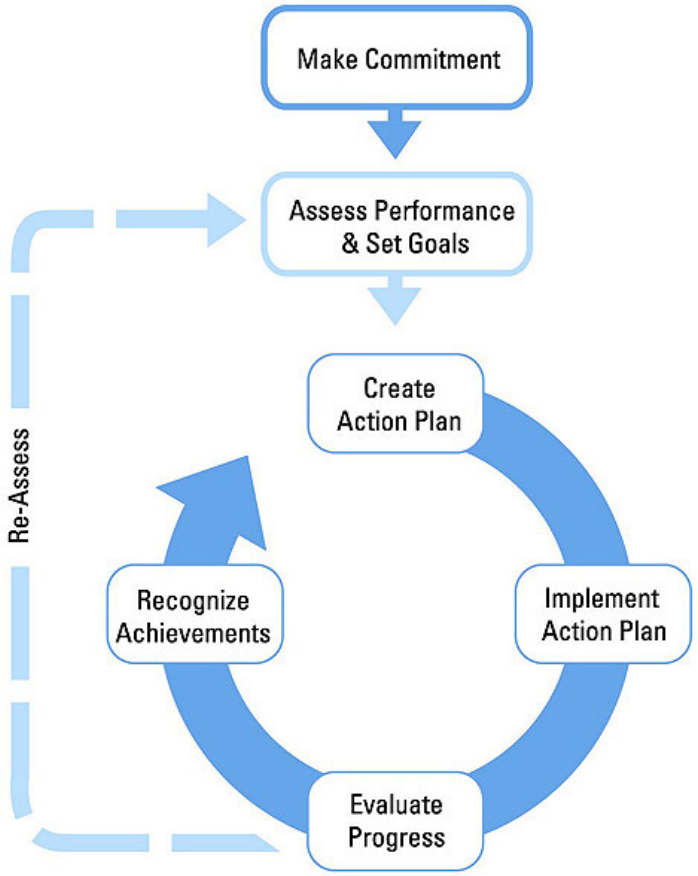
ENERGY STAR
Monthly Partner Web Conference
November 18, 2009

About The Web Conferences

- Monthly
- Topics are structured on a strategic approach to energy management
- Help you continually improve energy performance
- Opportunity to share ideas with others
- Slides are a starting point for discussion
- Open & interactive



Web Conference Tips

- Mute – To improve sound quality, all phones will be muted.
- Use # 6 to un-mute and * 6 – to mute
- Presentation slides will be sent by email to all participants following the web conference.

Today's Web Conference

Energy Strategy and Project Financing

- Derek Supple – Johnson Controls Inc.
- David Hitchings – Northrop Grumman
- Discussion
- Announcements

ENERGY STAR Monthly Partner Meeting:

Energy Management Financing Strategies

Energy Efficiency Indicator survey

2009 Findings

Derek Supple
Sustainability Programs Manager
derek.supple@jci.com
November 18, 2009

Johnson Controls

Today's Agenda

- About the survey
- 2009 findings and trends
- Key drivers
- Global comparisons
- Barriers
- Financing solutions

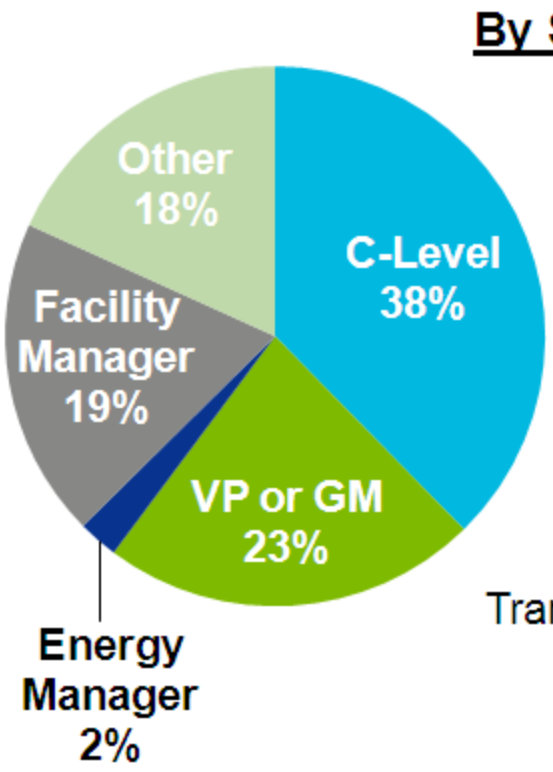
Focus of the survey

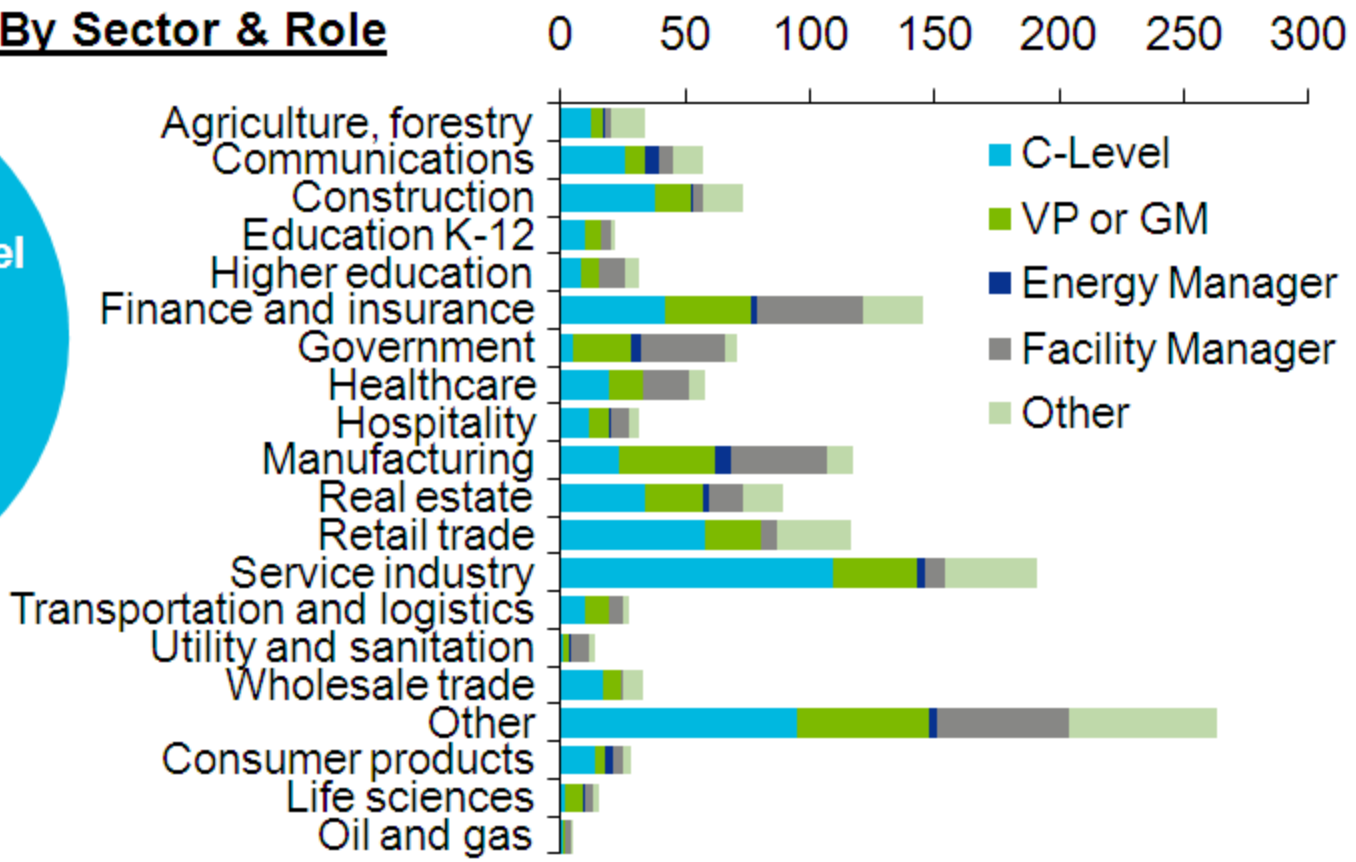
Annual Energy Efficiency Indicator Survey

- What are the attitudes, priorities and concerns of the people at the front lines of energy management and energy efficiency?
- What level of investments are they planning?
- What financial criteria do they use?
- What trends are emerging?

Who we surveyed

1422… Total number of respondents





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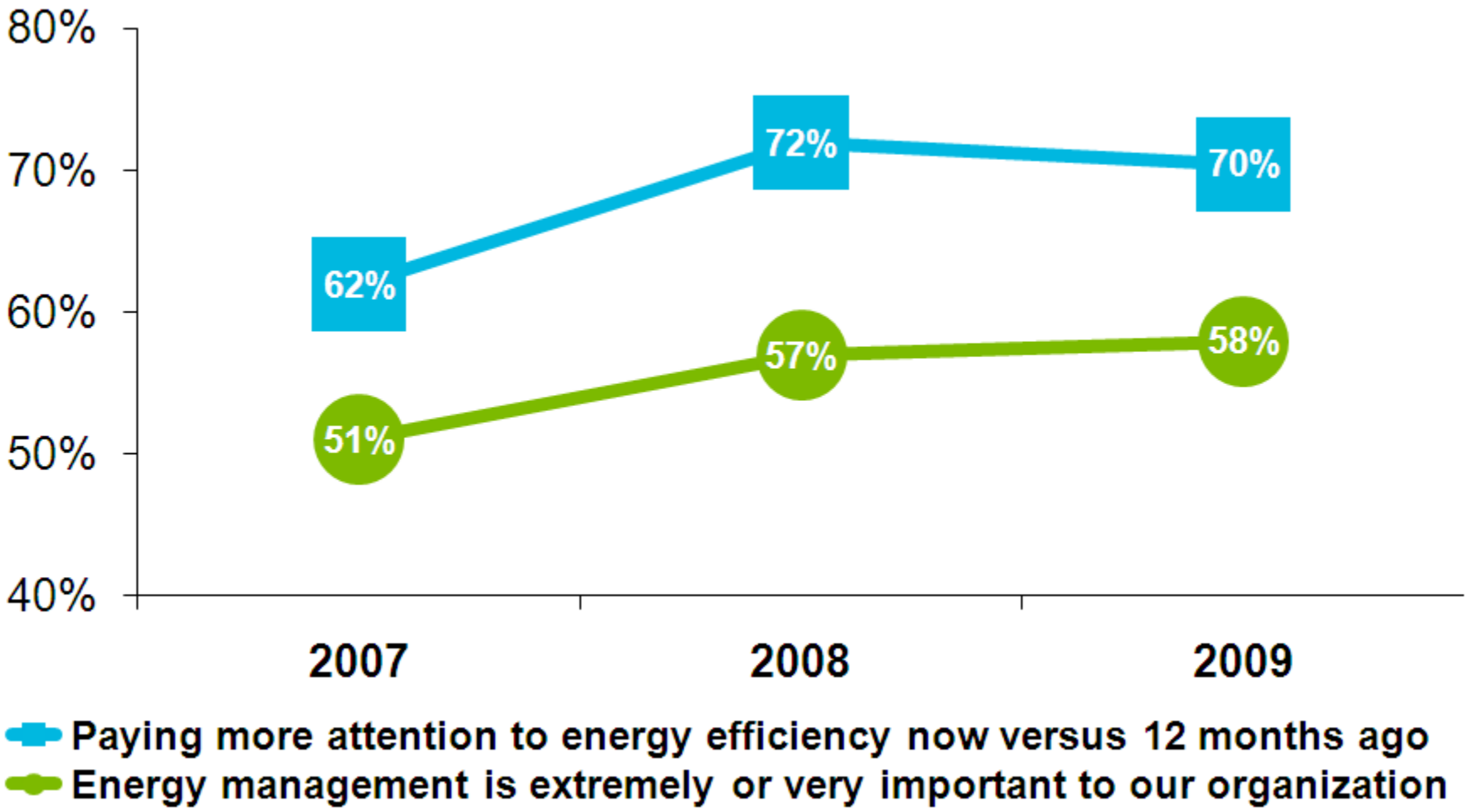
Efficiency has never been more important



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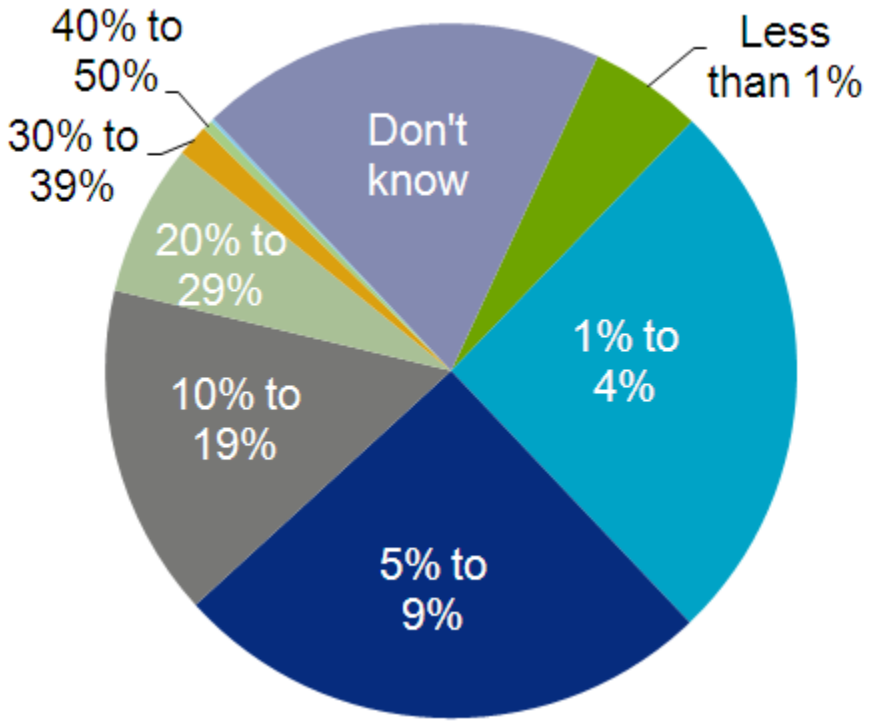
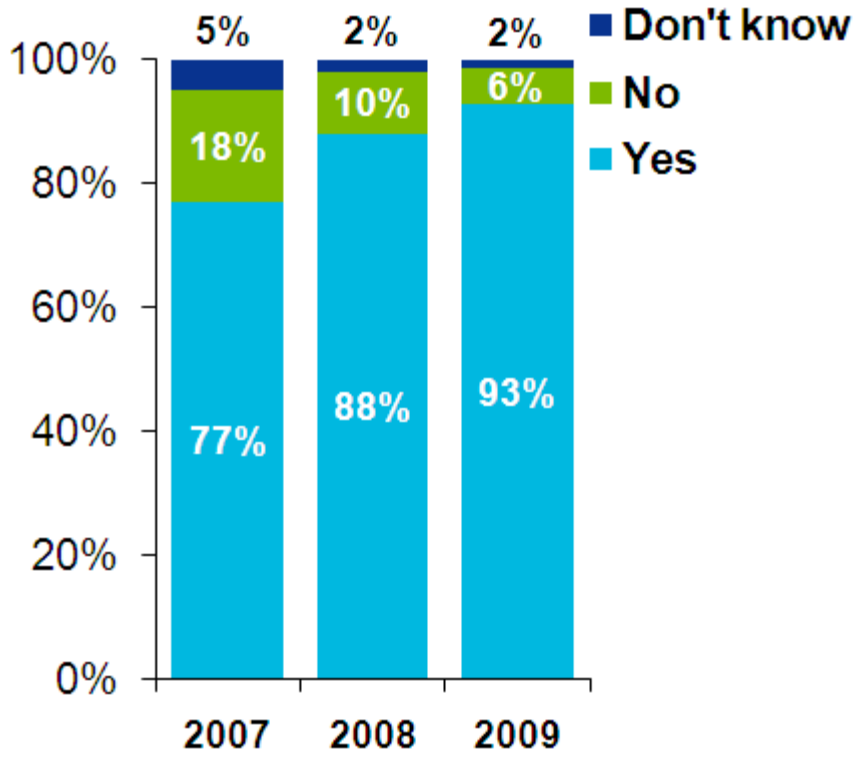
Efficiency has never been more important

Is energy efficiency a priority in your current or planned construction or retrofit projects?



By how much do you expect planned improvements over the next year will reduce energy use?



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Top Efficiency Measures

77% switched to energy efficient lighting

64% adjusted HVAC temperature controls

62% educated facilities operations staff

38% installed lighting sensors

Green Buildings & Renewables

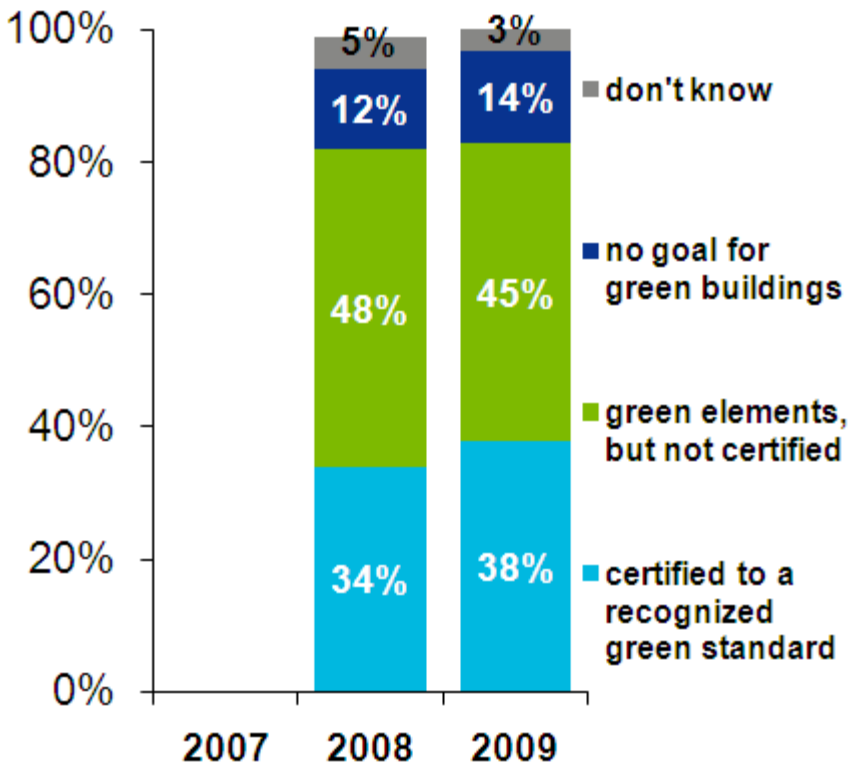
38% seeking green building certification for new construction projects, a **4%** increase

8% increase in organizations considering solar electric and **7%** increase in geothermal energy

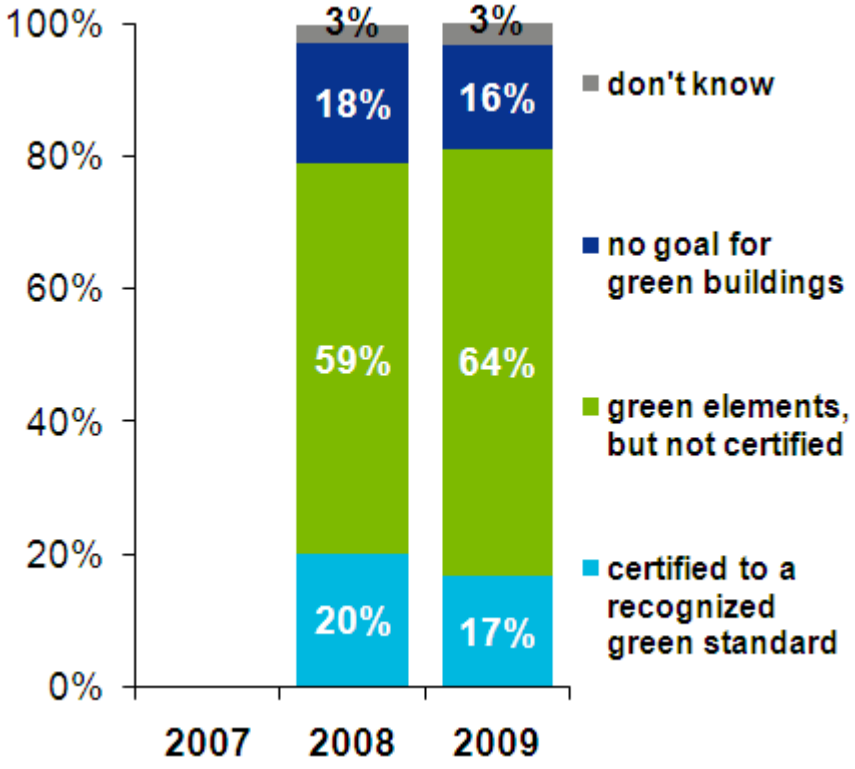
57% would like to own the assets (as opposed to entering into a power purchase agreement)

Green Building Policies

What are the goals for your <u>new construction</u> projects with respect to green buildings?



What are the goals for your <u>retrofit projects</u> with respect to green buildings?



Seeking certification or green elements more often

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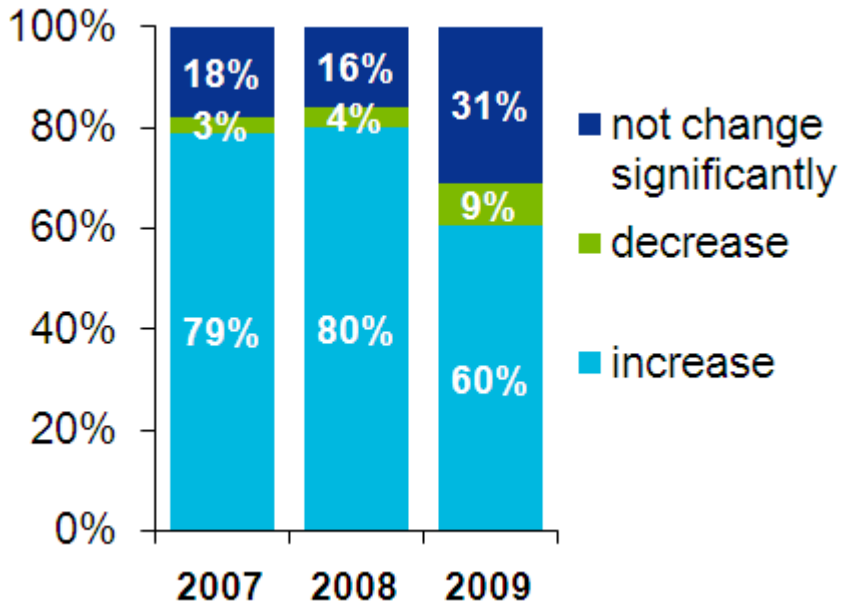
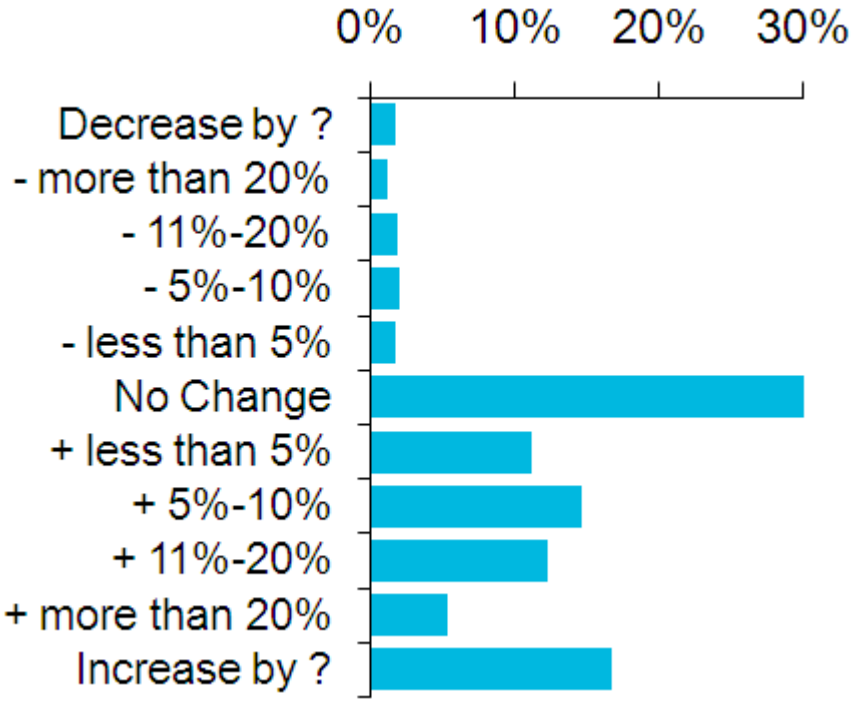
Energy Price Expectations

Do you believe the price of the energy your facilities use will increase, decrease, or not change over the next 12 months?



Do you believe the combined price of the energy that your facilities use will. . .



More divergence this year, but most still expect prices to rise.

Average price increase expectation is 14%

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Key drivers for efficiency

51% see significant legislation within **2** years as extremely or very likely, a **12%** increase from last year

79% view incentives as highly influential in their purchase decisions, a **4%** increase from last year

57% say climate change is a significant influence in their organization's energy efficiency decisions

12% and growing have a publicly stated carbon reduction goal

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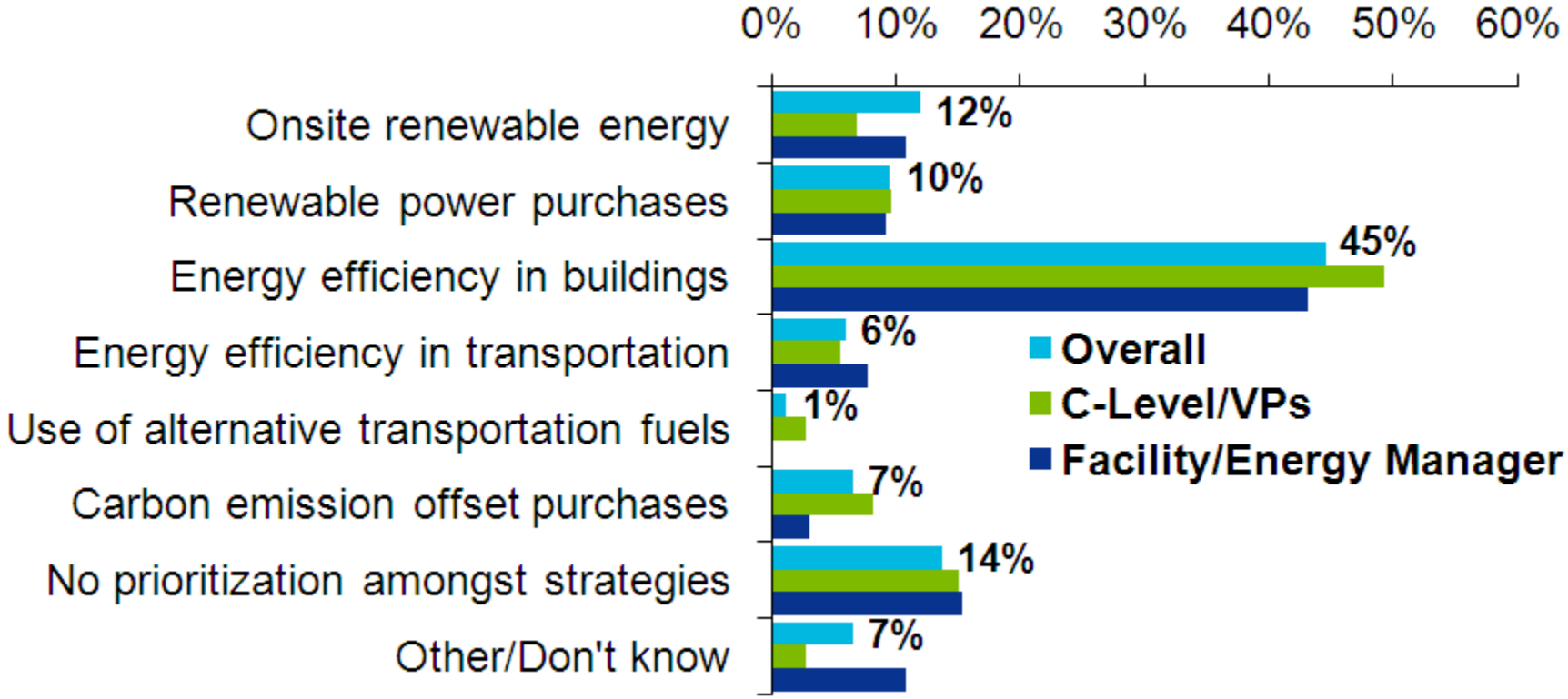
Building efficiency is top climate solution

What is your company's top strategy going forward to meet its carbon reduction goal?



From boiler room to boardroom, leaders choosing efficiency first

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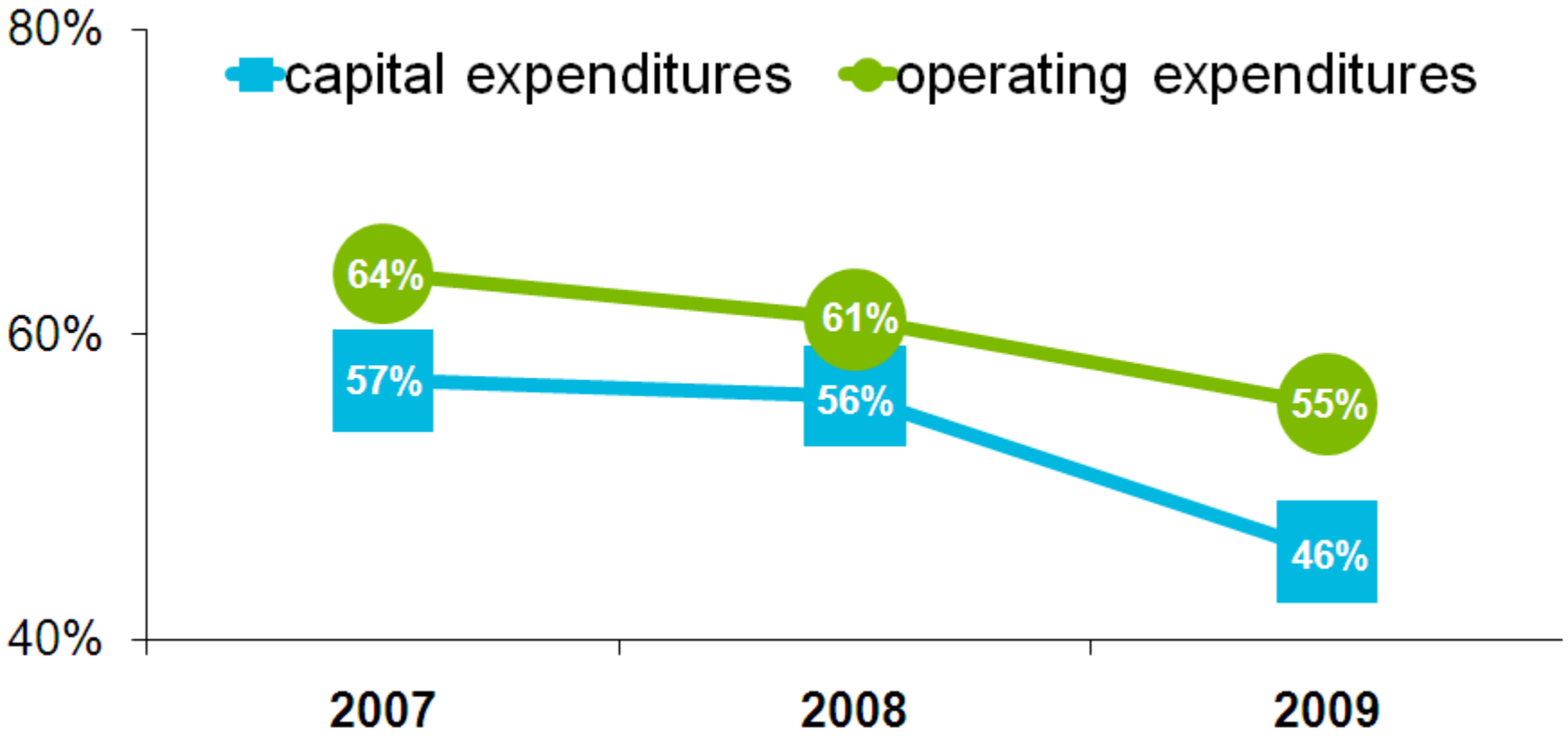
Holding back on investments

Fraction planning to make energy efficiency investments over the next 12 months with....



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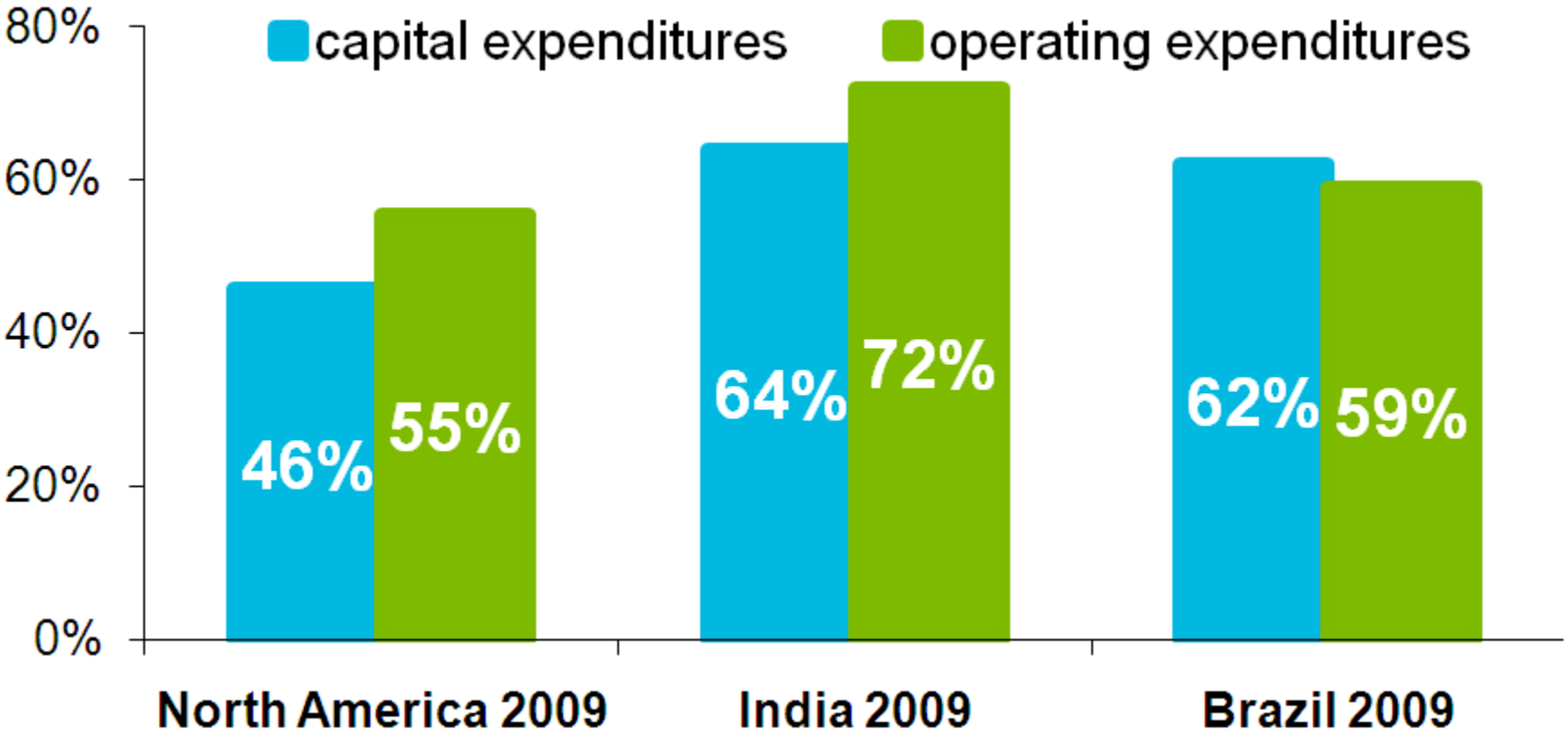
Greater fraction investing abroad…

Fraction planning to make energy efficiency investments over the next 12 months with....



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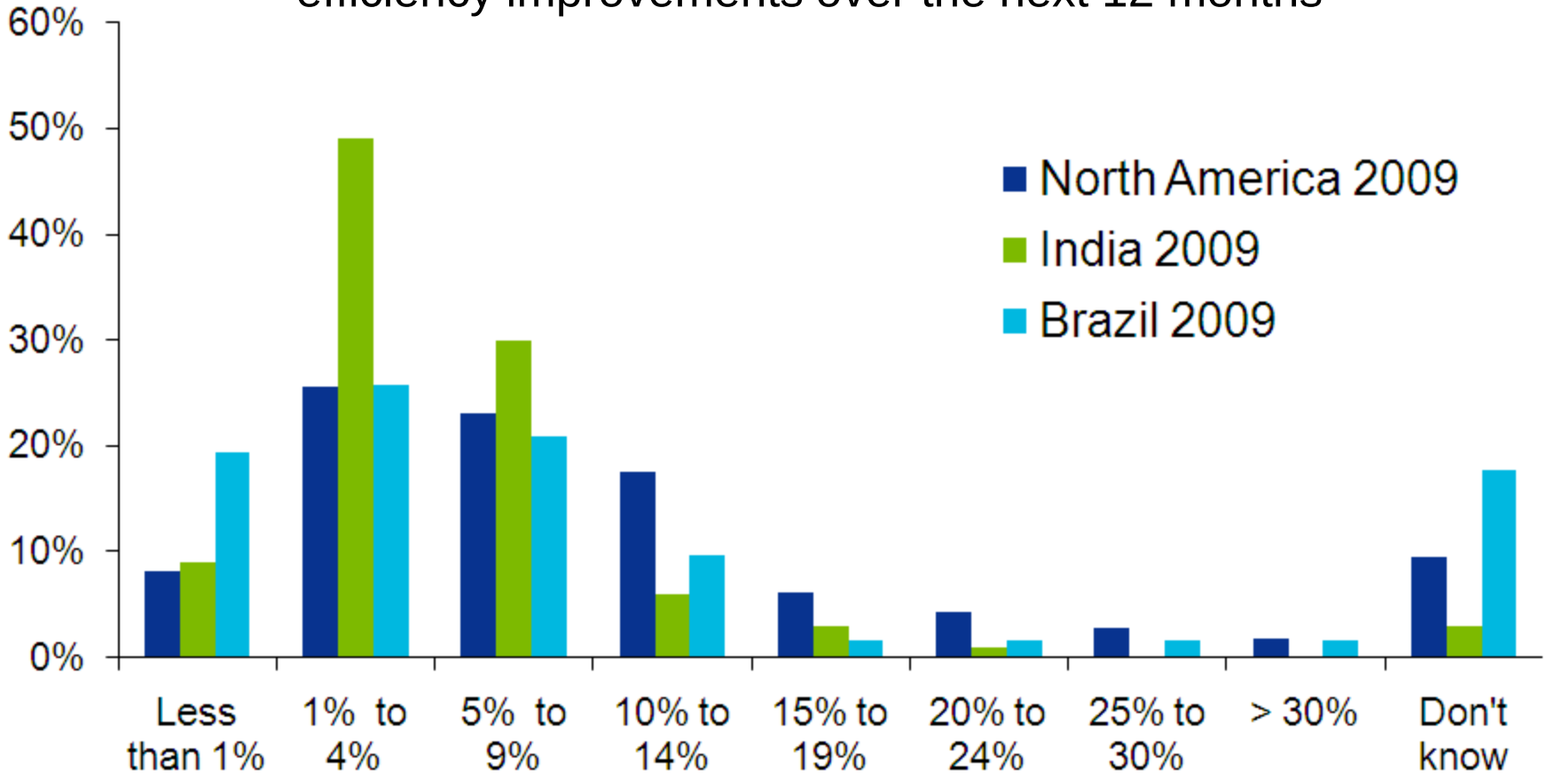
…but with smaller fraction of budgets

Fraction of capital budget to be invested in energy efficiency improvements over the next 12 months



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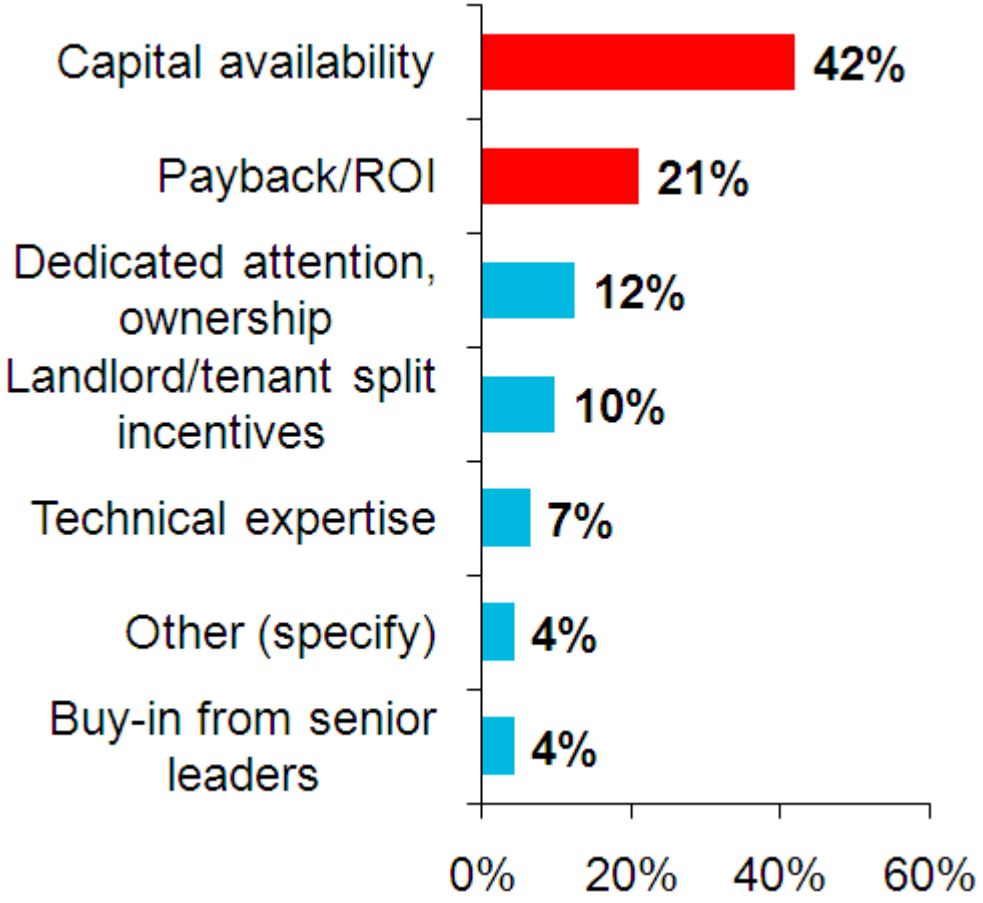
First cost is greatest barrier

Top Barrier to Improving Energy Efficiency



3.5

Average maximum payback period for energy efficiency

Nearly 50% require less than a 3 year payback

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Financing solutions

Several financing options exist or are under development to help owners overcome the first cost barriers for deep energy retrofits in buildings both large and small…private and public…owner-occupied and tenant-occupied

1) Traditional debt (loans, bonds)
2) Municipal leases
3) Capital leases
4) Lease/bond pools
5) Shared savings agreements
6) Tariff based on-bill financing
7) Tax-lien financing (PACE)
8) Energy efficient mortgages
9) Power purchase agreements

+ finance model "**superchargers**"

1) Performance contracts
2) Green leases

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Bullish on PACE financing

What is PACE Finance?

PACE = **P**roperty **A**ssessed **C**lean **E**nergy loans, also known as tax-lien financing

Definition: Property owners borrow money from a "municipal financing district" to finance energy efficiency and renewable energy measures and repay over 5-20 years through added assessment on their property tax bill. Like any tax assessment, loan is senior to private liens, including mortgages

Benefits:

1. Property assessments provide a secure, well-established payback mechanism
2. Security of the payback mechanism allows financing up to 100% of upfront costs
3. Repayment obligation attached to property not borrower, and transfers with ownership, enabling longer term projects with deeper levels of savings
4. Tying payment to the property solves credit and collateral issues
5. Allows owners to pass-through retrofit expenses to net lease tenants
6. Bundling large group of borrowers can reduce overhead and transaction costs
7. Leverages bond markets to scale investment by commoditizing energy efficiency

EEI Observations & Conclusions

- **Increasing interest in energy efficiency**
  Becoming more visible and important across markets and organizations
- **Tempered investment levels**
  Driven by uncertainty in the economy, government policy, and energy prices
- **Demand for efficiency will surge**
  Policy certainty, new incentives, and new financing solutions will drive significant investment

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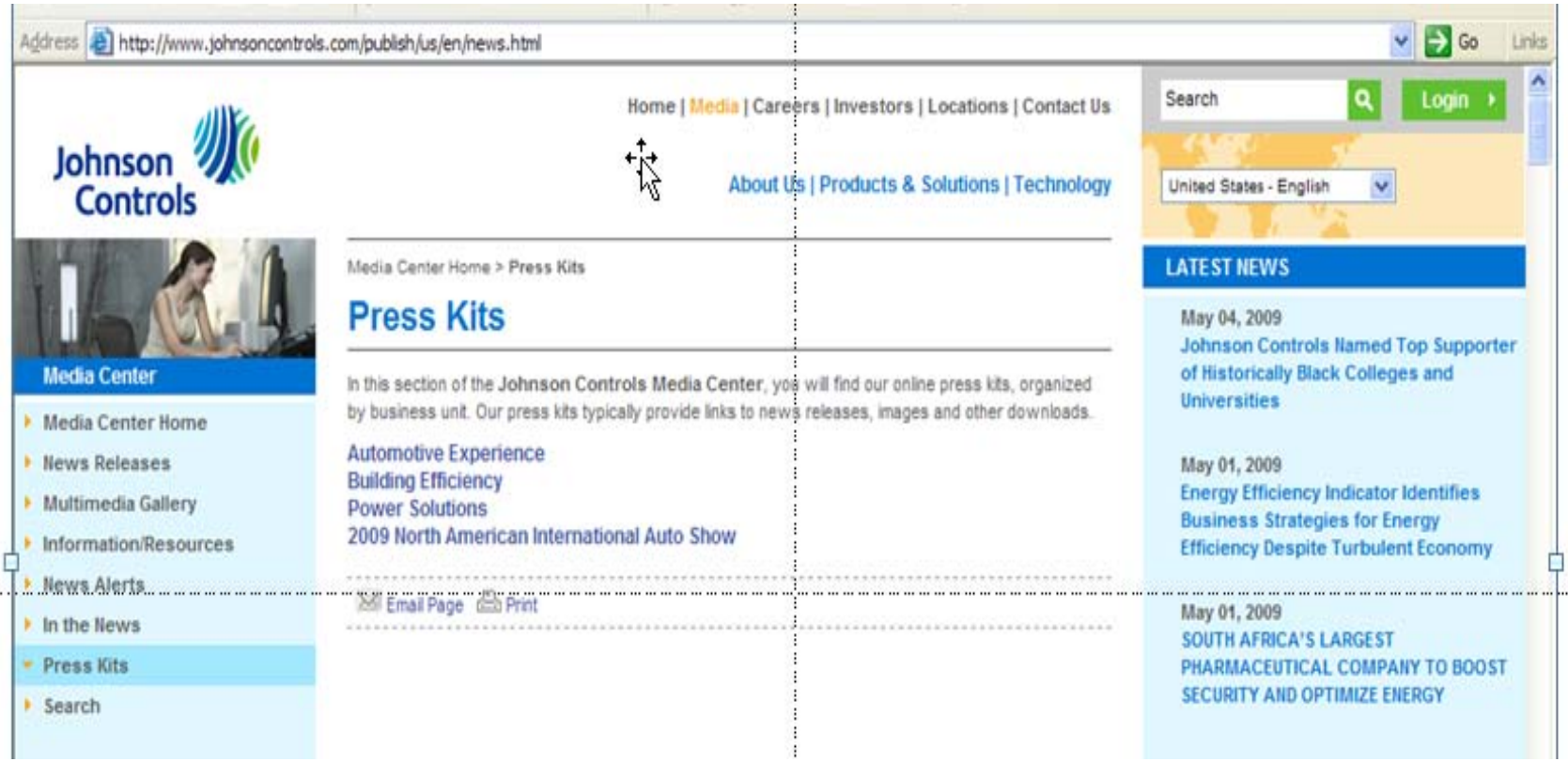
For More Complete EEI Results

Go to johnsoncontrols.com → media → press kits → BE



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November 18, 2009

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NORTHROP GRUMMAN

Overview of NGC greeNG ECOmodel

November, 2009

David Hitchings

Corp Program Director,
greeNG

Why and ECOmodel

- The ECOmodel serves three main objectives:
  - Models the impact of Green House Gas (GHG) regulations on Northrop Grumman's bottom line ----- Shows the Big Picture
  - Provides a comprehensive Project decision framework for assessing the financial and environmental benefits of a project
  - Establishes a balance scorecard approach for non-tangible environmental project benefits into a ECOpoint system
- The ECOmodel was established in late 2008 and is being rolled out in 2009.

ECO Model Definition

NORTHROP GRUMMAN

- What makes it an ECOmodel :
  - An ECO Model uses the business discipline of a traditional business Return On Investment (ROI) model and applies current and future value and risk components that are unique to the complexity of a highly regulated and very public Environmental Stewardship arena
    - The ECO Model adds current and emerging true dollar value components to the typical ROI model that should not be overlooked such as :
      - Tax Incentive on advance energy or environmentally beneficial technologies
      - Third party incentives from resource providers (electrical , water, etc)
      - Carbon Offset credits which can be sold on the open market
      - Local, State, and Federal grant programs
    - The ECO Model adds softer Environmental values into a ECOpoint system:
      - HR related value for retention, attractions, productivity, etc.
      - Reputation and Corporate Responsibility attributes
      - Business development linkage and reference accounts
      - Investor Relations and stakeholder assessments
      - Supplier involvement and relationship

ECOmodel Development

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- A baseline ROI model currently used for selecting key enterprise projects that are complex in nature and reflect multi-year commitments (at least a 5 year horizon)
  - Traditional calculation such as IRR, NPV, Years to Payback, etc. must be included
  - Must allow a diverse set of costs (outflows) (labor, systems, material, capital, etc.) and return attributes (inflows) (savings, credits, sales, etc)
- Add the true Cash items to the inflows that are typically associated with ECO projects such as; tax credits, grants, supplier incentives, etc.
- Determine a comprehensive list of possible value components that are not easily translatable to cash (employee retention, carbon offsets, public image)
  - Determine if there are legitimate methods of translating these benefits to cash based inflows
  - Determine the value system for non-cash benefits and how they would be used in the ECOmodel decision process

EcoModel Development Process

From Traditional ROI Model to EcoModel

Utilized Existing Financial Model
1

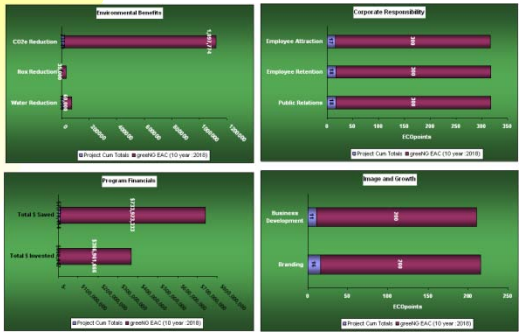
Added Cash Equivalents
2

- Carbon Offsets
- Tax Incentives
- Provider Incentives

Added Eco Points
3

- Footprint Reduction
- Corp Responsibility
- Image / Growth

Model Outputs

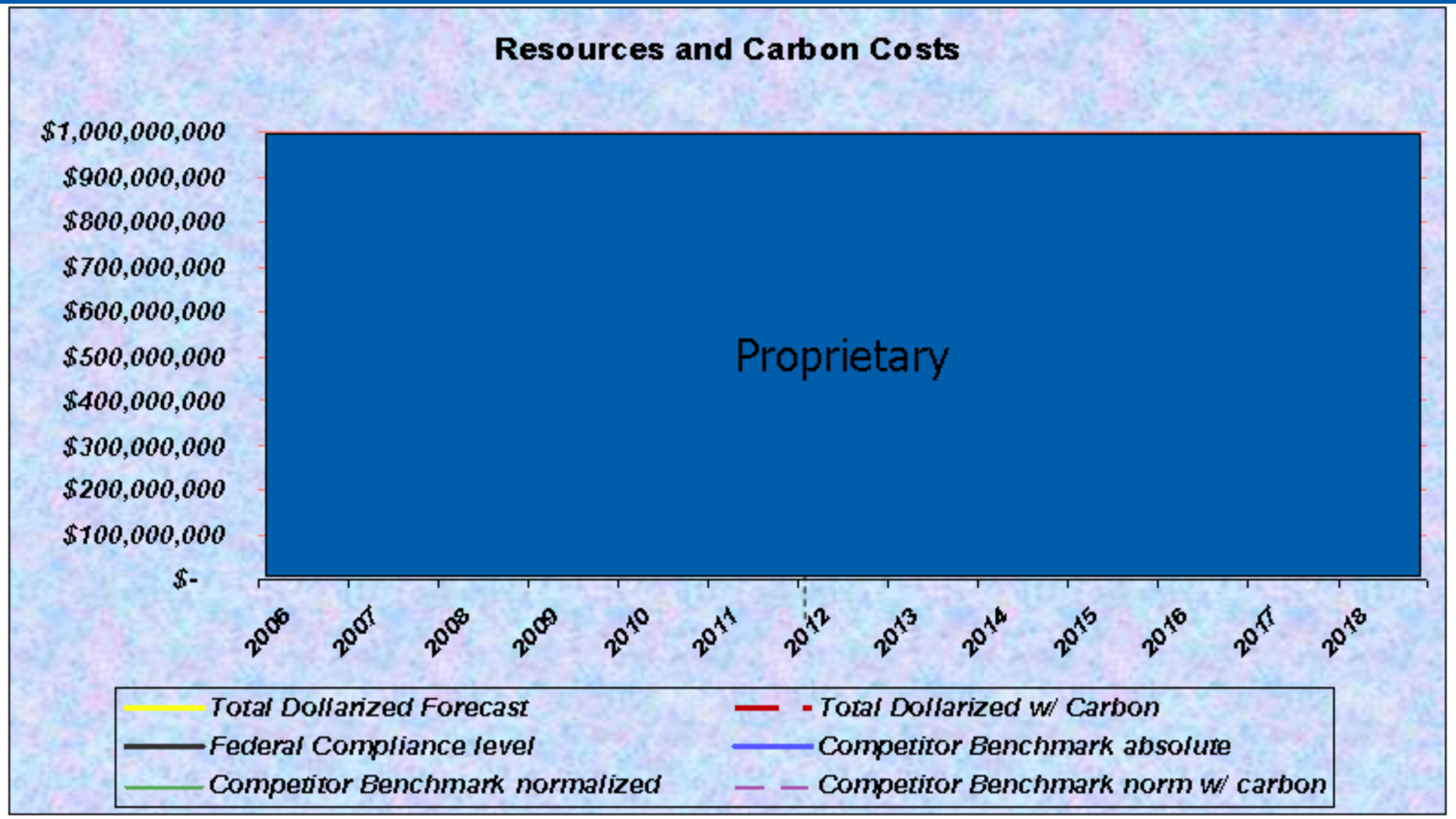


A prioritized list of green projects

Initiatives Doing/Potential	Investments	ECO-Points: Environmental Impact	ECO-Points: Corporate Responsibility	ECO-Points: Image and Growth
Beach Days	2.5-5K ea.	L	M	L
HazMat/ Electronics Round-up	<$1.0K ea.	L	M	H
Earth Watch *	$150K/yr		M	H
greeNG Web Sites *	$20K/$10K/yr		H	H
Supplier Green Evaluation *	$20K/yr +	L	M	H
Earth Day *	$100K/yr		H	H
greeNG ShareCenter Information Repository *	$50K/yr		M	H
greeNG Employee Resource Groups (ERGs) *	$200K-350K/yr w/Potential savings	M	H	H
Footprint Metrics *	$200-380K/yr	*Significant*	H	H

$ Current $$$$

Future Impact of CO2 w/ Competitor Benchmarks



* From Model Baseline

- Carbon Regulatory Impact Forecasted to begin in 2013 with 2006 Baseline year
- Carbon Regulation has widest forecasted variation with potential for an additional $34M NPV Impact

Lighting Replacement in 2008

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Project Status:

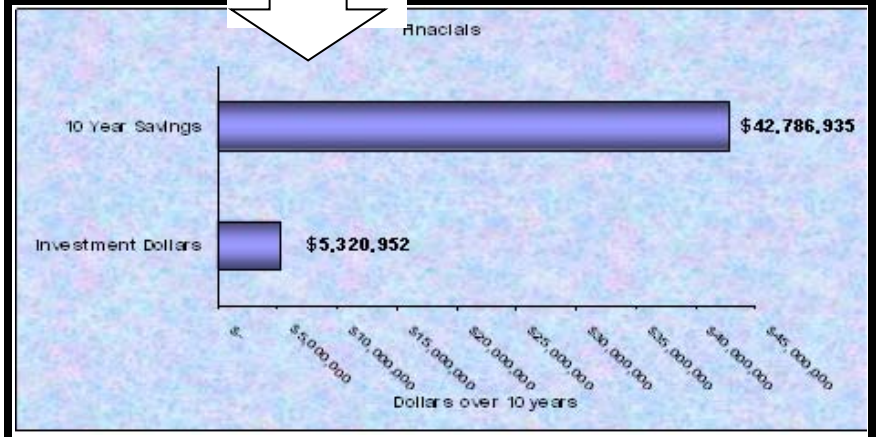
Enterprise % comp: *40%*

Project Description

- Replace lighting across the enterprise with energy efficient lighting
  - Replacement during normal cycle to reduce extra labor commitments
  - Easy replacement first
  - Fixture and Ballast changes on retrofits and for End Of Life requirements
  - Custom lamp designed for shipyards being piloted
  - Over 39 Million KWh per year saved
  - ROI Payback period ranges from (0 to 16 months)
- Lighting represents over 5 % of NGC's energy usage and over 3% of our Footprint

Financials

ECOmodel output

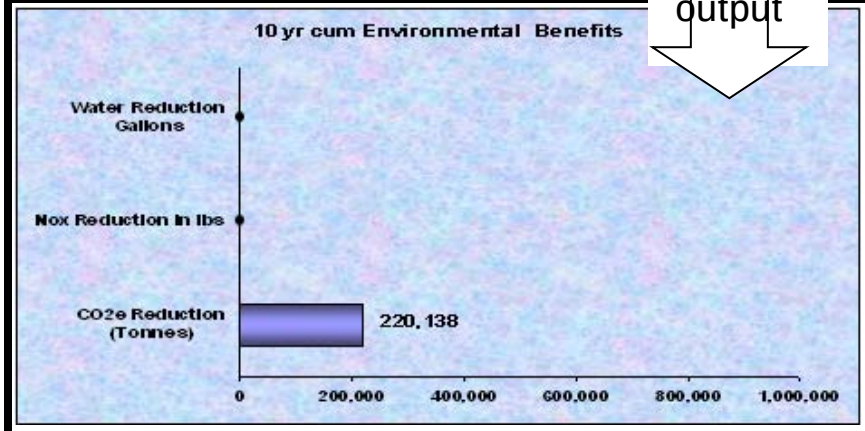


NPV @ 12.5% = $7,435,273 **Pay Back = <1 yr**

Annual: Investment = $ 538 K **Savings = $3.8 - $4.5M**

Environmental Benefit

ECOmodel output



ECOpoints = 30 **Annual CO2 reduction : 22K Tonnes**

Issues and Concerns

- Over 100,000 "Bad" lights still purchased in 2008.
  - Focus on outreach, communication & education
  - Reports and metrics tracking by sector
  - Necessary to achieve additional 2 % reduction
- Labor Savings collection process required
- Landlord agreements are reducing our savings potential
  - greeNG lease terms are being developed

Multi-Functional Devices (MFDs) in 2008

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Project Status:

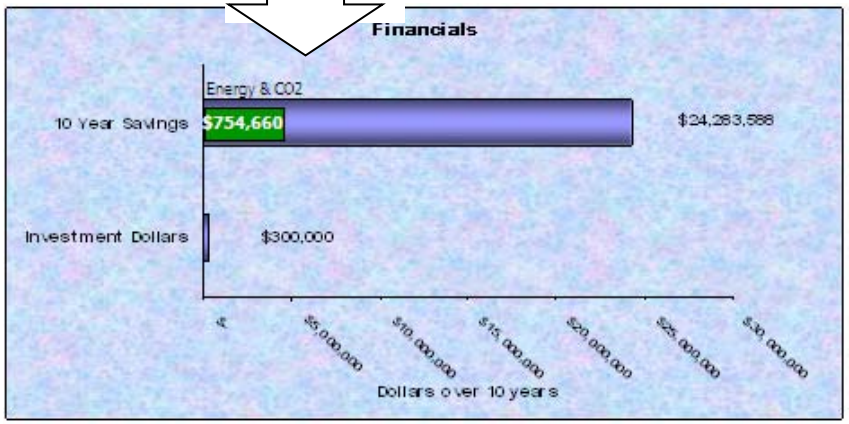
Enterprise % comp: *25%*

Project Description

- Replace dedicated printers, fax machines and copiers with Multi-functional devices
  - Corporate contracts with both Xerox and HP
  - Sector choose supplier and pace of adoption
  - Leverages best practices from NGAS
  - Reduces paper, waste, energy & heat loads
  - Pay by the image not for the machine
  - .7 Million KWh per year
  - ROI Payback period less then 1 year
  - Most of savings come from reduced material costs
- Represents a partial deployment to only participating sectors

Financials

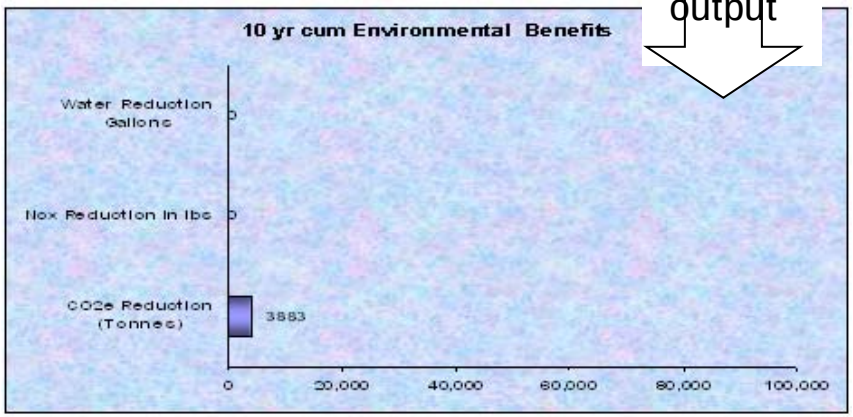
ECOmodel output



NPV @ 12.5% = $5,112,514 **Pay Back = <1 yr**
Investment = $ 300 K **Annual Savings = $2.2M**

Environmental Benefit

ECOmodel output



ECOpoints = 34 **Annual CO2 reduction : .39 K Tonnes**

Issues and Concerns

- Not all Sectors are participating
  - Focus business case outreach
  - Reports and metrics tracking by sector
  - Develop reduction in waste tracking
- Labor Savings under-committed
- Address any concerns with employee productivity impacts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Discussion

- Use * 6 to un-mute phone
- # 6 to re-mute phone

2010 Web Conferences

January – ENERGY STAR Update
February – CHP Strategies
March – Continuous Commissioning
April – Leveraging Geothermal
May – Award Winning Energy Programs
June – Driving Responsibility for Energy Use

Ideas and suggestions welcomed for future topics!

Contact: Walt Tunnessen – tunnessen.walt@epa.gov

- Thank you