



Energy & Greenhouse Gas Management

Monthly Partner Web Conference
October 20, 2010

Call-in number: 866 299 3188
Access code: 202 343 9965

Host: Walt Tunnessen

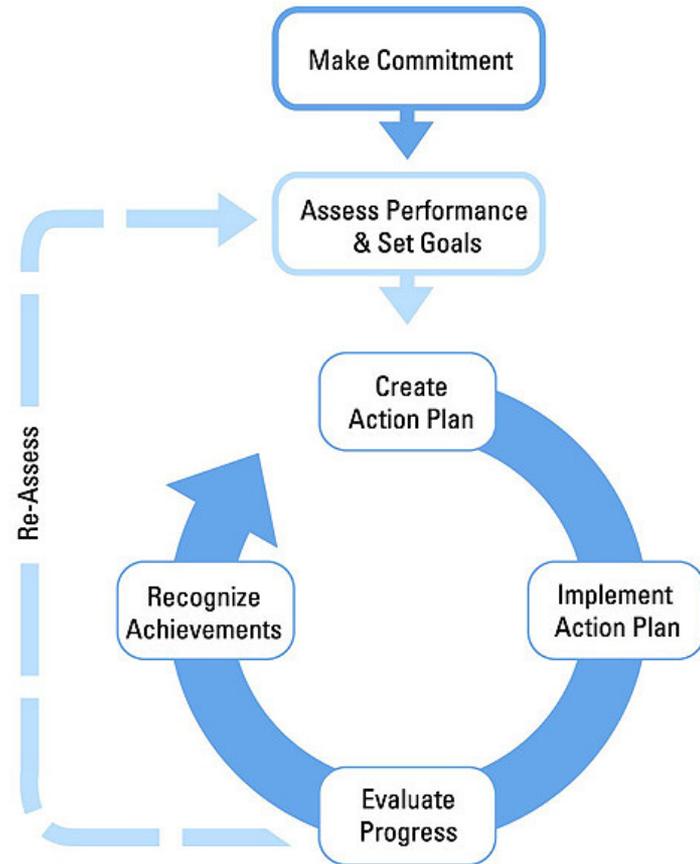


Learn more at energystar.gov

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



Web Conference Logistics



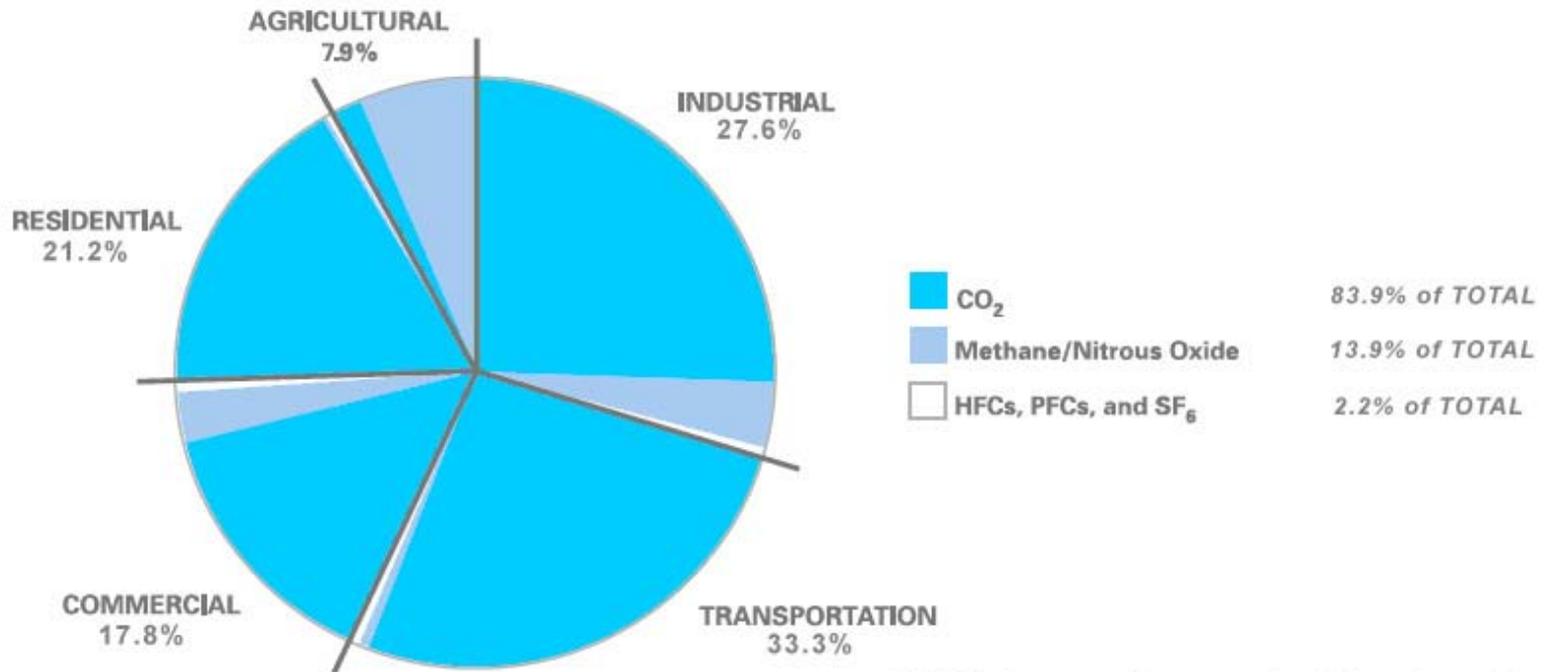
- Phones will be Muted
To ask a question use **# 6 to un-mute**
and *** 6 – to mute**
- Questions – use the chat window or ask question during the Q & A period.
- Presentation slides will be sent by email to all participants following the web conference.

US Greenhouse Gas Emission



- 85% of US GHG Emissions are CO₂
- Most CO₂ emissions are associated with energy use

Distribution of US GHG Emissions by Sector



NOTE: Totals may not add up to 100% due to independent rounding.
Source: US EPA Inventory of Gas House Gases and Sinks 1990 - 2004

GHG management process



- Inventorying
- Goal Setting
- Reduction implementation

Today's Web Conference



Speakers:

- Sam Pilcher – CitiGroup
- Jeff Nunn – The Boeing Company
- Questions & Discussion
- Announcements

Energy Management and GHG goal setting

ENERGY STAR Partner's Meeting
October 20, 2010

Sam Pilcher / Citi Realty Services



Overview

- Citi's Goals
- Key considerations and lessons learned on setting and achieving GHG reduction goals
 - Firm culture
 - Defining boundaries
- Delivering on the goals
 - Managing data
 - Understanding sources
 - Setting a strategy
 - Maintaining focus
 - Observations on our process

Citi's GHG reduction goals

Citi has gone through the process of environmental goal-setting twice in the past four years

2006

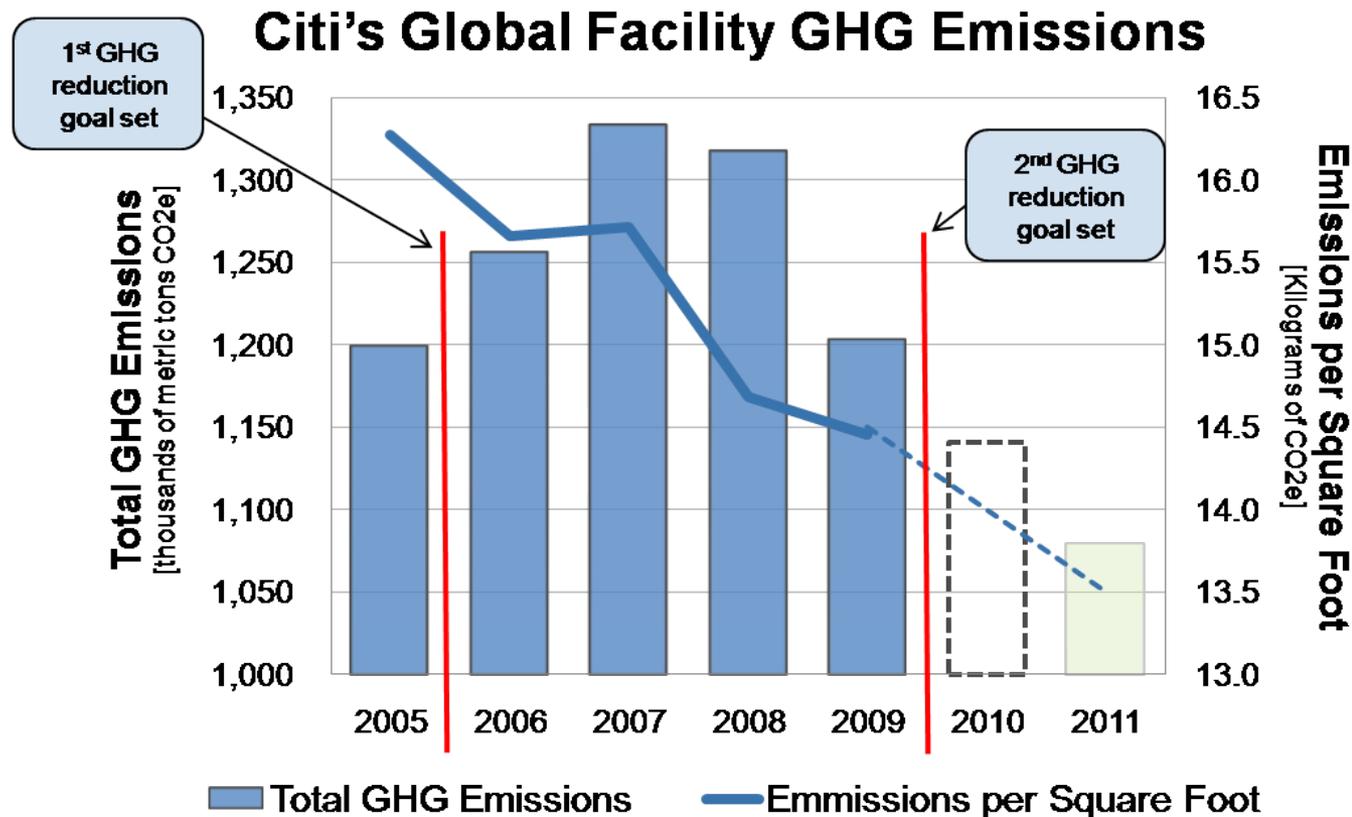
- Citi will reduce carbon emissions 10% by 2011 from a 2005 base year

2010

- Achieve a 25% reduction in absolute GHG emissions by 2015 from a 2005 base year, building upon 2011 goal
- Improve portfolio energy 25% measured in ENERGY STAR Portfolio Manager from a 2005 base year
- Achieve a 40% reduction in waste to landfill from a 2005 base year
- Achieve a 25% reduction in water usage from a 2005 base year
- 15% of Citi's global real estate portfolio will be LEED certified

Cascading goals

Before completing our first goal, Citi created a second GHG reduction goal to ensure a continuation of efforts.



Goal setting

Key considerations of defining your scope

- Firm Culture
 - Setting targets will also reflect the firm's culture and how it approaches other issues.
 - Some firms have a culture of setting very challenging targets with no clear plan of how to achieve but know their ambition and culture will deliver of plan that will achieve success.
 - Other firms will have a detailed knowledge of their emissions, future business plans and will set targets based on these plans – a more cautious approach, but based on what they know is achievable.
 - Goal orientated culture
 - Some companies are very goal orientated in that, if it is a goal it will focus's peoples' time and effort, and unless it is a goal it is ignored.
 - Environmental issues are often fast changing and you need to have some flexibility in your goal setting to allow for adjustments to be made.

Goal setting

Key considerations of defining your scope

- Boundary setting
 - Many companies, including Citi, utilize the *GHG Protocol* as the standard for reporting emissions
 - Sets out simplified guidelines and examples for setting emissions reporting boundaries and the scope of emissions that will be included in reporting
- Two basic boundary types are *operational control* and *equity control*
 - Citi utilizes the *operational control* boundary for its GHG reporting
 - Defined by Citi as the real estate which is directly managed and controlled by Citi Realty Services
 - Includes all owned, net and gross leased facilities, even those over which we do not control “plant rooms” as in a typical gross lease
 - In a gross lease, Citi can still effect energy consumption for the space we control
 - We include the energy and emissions we can directly measure and estimate the balance of building consumption that is incurred by Citi’s occupancy of the space. Other firms might not report Landlord controlled energy (eg gas for heating)

Goal setting

Key considerations of defining your scope

- In addition to the boundaries and sources described previously there are other GHGs that can be included in your reporting, some of which will be outside a traditional energy manager's scope
 - Refrigerant gases (CFCs, HFCs)
 - Transport fuels
 - Process emissions
 - Supply chain emissions
 - Embedded CO₂
- The nature of your firm (and other external stakeholders) will determine the importance of these areas, but
 - Need to clearly communicate your sources and scope of emissions
 - Keep some flexibility in your goal setting
 - E.g. It might be more GHG and cost efficient to cut refrigerant gases than electricity and gas consumption

Goal setting

Implications and challenges created

- Implication of reporting Citi's portion of energy used in the common parts of the buildings we are multi-tenants in
 - Challenge is there has been a trend of Citi moving into more multi-tenanted buildings, where we have less control over plant
 - Green leases and working with landlords
- Citi Realty Services manages up the goal, but engagement with other departments needed.
 - Where does energy efficiency fit in a firm's GHG strategy
- Absolute vs Relative goals
 - Need to understand the business's goals and business plan and how this will impact on goals

Achieving goals

Managing data

Collect and manage data thoroughly and accurately

- In order to set effective goals, it is imperative that a comprehensive inventory of potential GHG sources are identified and tracked
- Leverage technology
 - Excel is still the most commonly used tool in GHG data management
 - Database and web applications are widely available for GHG tracking and reporting
 - Even utility bill payment processes can serve as a method of aggregating data
- Set a process to extract data from known sources to extrapolate to sources that are difficult or impossible to quantify

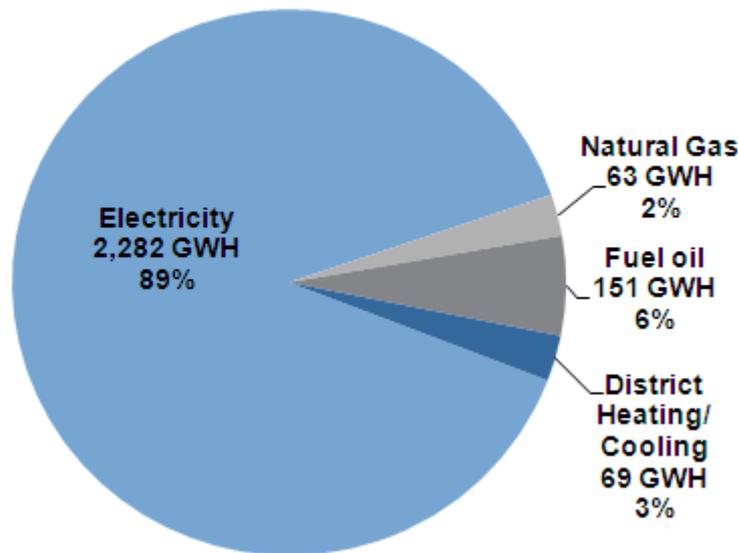
Understanding sources

Managing data

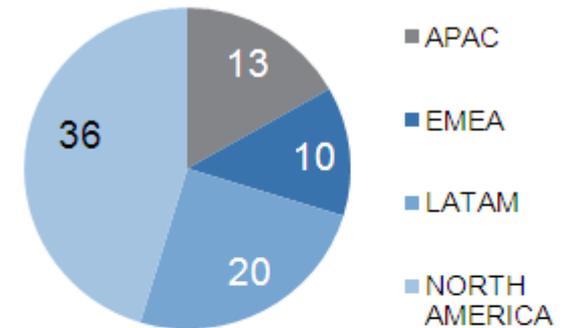
Understand the portfolio and it's emissions sources

- Citi's portfolio contains mainly office and retail branches
- GHG source is primarily indirect emissions from electricity consumption

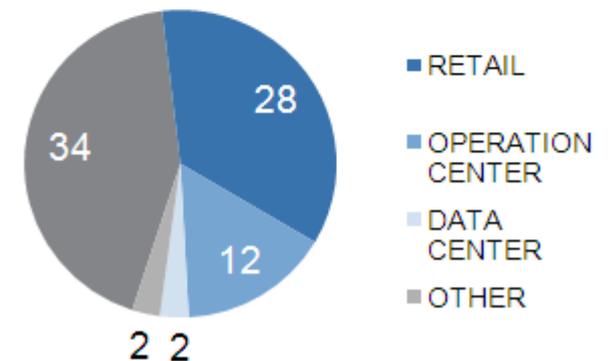
Citi Energy and Fuel Use by Type



Real Estate by Region (millions of SF)



Real Estate by Type (millions of SF)



Achieving our goals

Using goals to help define a strategy

- In a large organization such as, it is easy to become distracted from long-term goals and easy to pass-off responsibility
- Using our goals to achieve success
 - Set interim steps – set and measure performance against energy and GHG reduction goals each month, quarter or year
 - Cascade the information down and up – engage senior management and ensure teams are aware of data and performance
 - This was a public goal and this focuses attention and publicity builds momentum

Excerpt from Citi's 2009 Citizenship Report – <http://www.citigroup.com/citi/citizen/index.htm>

OPERATIONAL ENVIRONMENTAL GOALS AND PERFORMANCE	
2009 Goals	2009 Performance
Complete ENERGY STAR benchmarking of 1,500 branches and expand major buildings portfolio to more than 100 sites	1,600 branches benchmarked in ENERGY STAR, more than 100 major buildings benchmarked
Achieve ENERGY STAR Certification in at least 20 new sites and recertify all 2008 recipient facilities	All 11 2008 ENERGY STAR facilities recertified and 43 new facilities certified in 2009, totaling 54 certified facilities
Expand LEED training program to assist employees in earning LEED Accreditation	LEED training organized and available in all regions, resulting in 35% increase in number of LEED Accredited staff members
2010 Goals	
Expand ENERGY STAR benchmarking to more than 6,000 facilities globally	
2015 Goals	
Achieve a 25% reduction in absolute GHG emissions from 2005 base year (building upon current 2011 goal of 10%)	
Achieve a 40% reduction in waste stream to landfill from a 2005 base year	
Achieve a 20% reduction in water usage from a 2005 base year	
15% of global real estate portfolio will be LEED certified	
Improve portfolio energy efficiency 20% from 2005 base year as measured in ENERGY STAR's Portfolio Manager	

Achieving our goals

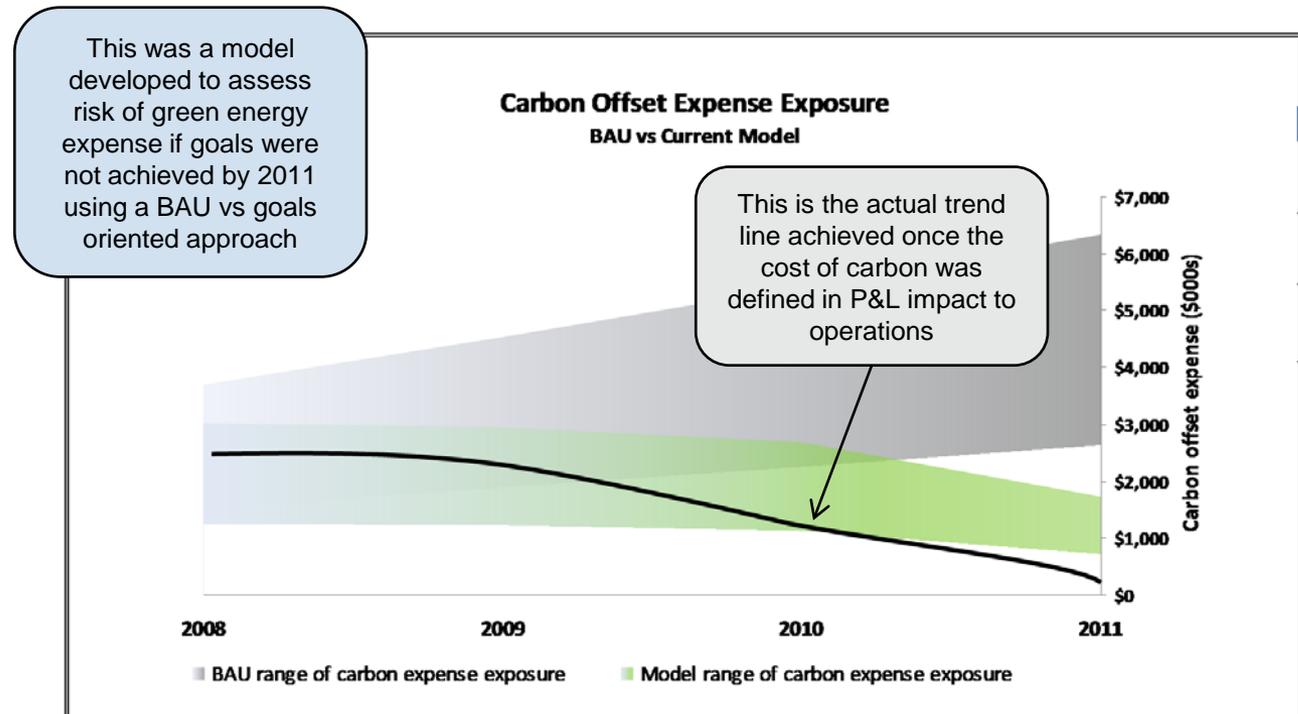
Managing risk

After having set a public corporate goal, we left ourselves no opportunity to miss this target. Our *failsafe* option was to increase green energy purchasing to compensate for any shortcoming in efficiency.

In 2007, we forecasted our emissions growth trajectory at the time and estimated that unless we make improvements, we faced a risk between \$3-6MM in carbon offsets to meet and maintain goal levels – *not including the missed opportunity expense of achieving energy efficiency*

With a reasonable level of success on our energy reduction goals – mostly in operational best practices the impact would be closer to \$1MM annually in offsets

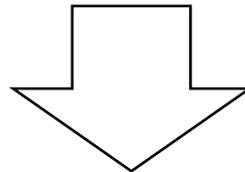
The results are re-forecasted continually, and as of mid year 2010 that risk is now near zero



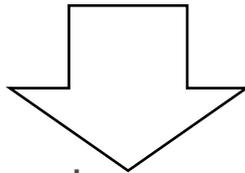
By compounding carbon value with energy expense saves, the financial case and C-level buy-in on initiatives is strengthened dramatically

Defining the program

- Citi takes the following approach towards achieving the goals
 - Operational efficiency – the no-cost, low-cost adjustments that could be made with instant returns; the “quick wins”



- Capital projects. The Citi philosophy – don't invest in an energy project to save energy that could have been saved by changing operations



- Explore/invest in alternative and renewable energy projects. Left till last to ensure we would not invest in creating renewable energy only to waste it as a result of inefficiently.

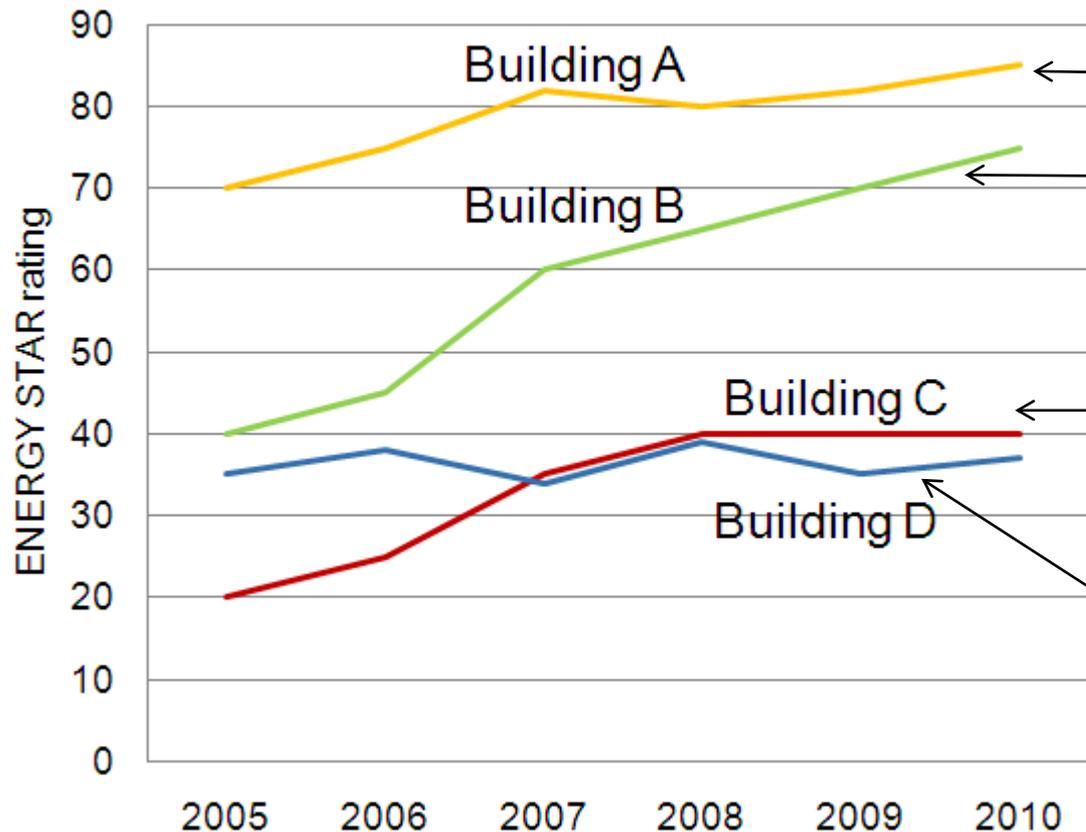
Using tools to find opportunity

ENERGY STAR and energy benchmarking

- Energy benchmarking provides the best opportunity to gauge GHG reduction opportunity
 - Clear picture on efficiency of operations over time
 - Insight into an industry based comparison of performance
- Citi now benchmarks ~5,000 facilities in ENERGY STAR Portfolio Manager
 - Started as a portfolio of 75 large US facilities as a means to earn recognition
 - Grew to include over 1,500 bank branches
 - Now includes every facility globally for which Citi receives direct or submetered energy bills, including leased space within buildings
- With a portfolio of this size and fluidity, it would be otherwise impossible to determine where real improvements have occurred
 - Provides the ability to isolate and identify facilities that have made improvements, and then to understand what was done to make them – developing powerful case studies of best practices
 - Highlights the areas that need additional resources or have room for improvement at a glance
- Be aware of benchmarking pitfalls and manage up the data

Leveraging tools

Example using ENERGY STAR benchmarking to examine opportunity in a portfolio



Example of a well-designed and/or well-run building and a source of design or operations best practices

A well-run building from which operational best practices may be drawn

Example of a building in with significant efficiency improvements over time, but leveled out at a lower score after operational best practices were implemented – candidate for energy efficiency capital improvements

Example of a building which has not shown improvements, likely a candidate for assistance with or reassessment of operation improvements

Achieving efficiency

Observations on what achieved to date

- In the years immediately after having set a corporate emissions reduction goal, our absolute GHG emissions continued to grow
- Defining financial risk raised awareness to all levels and helped drive energy efficiency goals
- *A global financial meltdown following a period of tremendous growth also helped refocus us on energy efficiency expense opportunities – an inconvenient boost to GHG management strategies*
- During this period, capital was tight, projects were scarce, and operational changes and improvements set the course to pick off most low hanging fruit
- As a result, we are now on target to hit GHG reduction goals organically, through the thorough saturation of lessons learned and best practice implementation – without capital improvements or major energy projects, and without the need to purchase green energy to reach this goal
- However that was only the first 10%. Having learned what can be done, Citi is intent on continuing to challenge ourselves and to drive the industry by setting new and even more aggressive goals,
- We are also determined to avoid complacency in our own organization that might have resulted from early success
 - So, before we even completed our first goal, and with the target in sight, we set new goals that also incorporated other sustainability criteria.
 - Sustainability field is fast evolving and global leaders are in this long term so there is constant peer pressure to continually improve

Summary

- Environmental and sustainability has and is still moving away from energy efficiency and other factors should be considered when GHG goal setting
 - Energy efficiency will still dominate, but field is evolving fast
- Define your emission boundaries and understand the implications of decisions.
- Develop reporting processes and guidance to ensure accurate reporting
- Use tools, such as ENERGY STAR, to help focus when attention required
 - Recognition can help drive improvements and engagement
- This is a long term process, set long term targets with interim targets and publicize results to ensure management focus



The Boeing Company

ENERGY STAR

2010 October Web Conference



Energy and Greenhouse Gas Management

Jeff Nunn
Corporate Energy Manager
October 20, 2010

The Boeing Company

Overview



- World's largest, most diversified aerospace company
- Design, assemble and support commercial jetliners, defense systems, satellites and launch vehicles
- Customers in more than 90 countries
 - Total revenue in 2009: \$68.3 billion
 - 70% of commercial airplane revenue historically from customers outside the United States
- Manufacturing, service and technology partnerships with companies around the world
- 157,000 employees across the U.S. and in 70 countries
- 87M square feet total floor space enterprise-wide

Partnering worldwide for mutual growth and prosperity

The Challenge

“Just as employees mastered “impossible” challenges like supersonic flight, stealth, space exploration and super-efficient composite airplanes, now we must focus our spirit of innovation and our resources on reducing greenhouse-gas emissions in our products and operations.”

W. J. McNerney
Chairman, President and CEO
The Boeing Company



Life Cycle Environmental Footprint Reduction

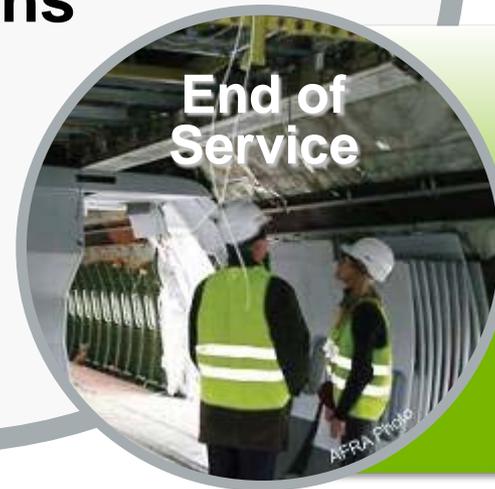
- Minimizing manufacturing waste
- Conserving energy and water
- Reducing emissions



- Reducing emissions
- Minimizing noise
- Reducing fuel consumption

**Innovative
Environmental
Solutions**

- Stewardship, conservation and life cycle strategies



- Remarketing
- Reclaiming materials
- Recycling

2012 Environmental Targets

- Energy consumption*
- Greenhouse gas emissions*
- Water consumption*
- Hazardous waste*
- Solid waste recycling

25%
Improvement
Over 5 Years

* Revenue-adjusted basis

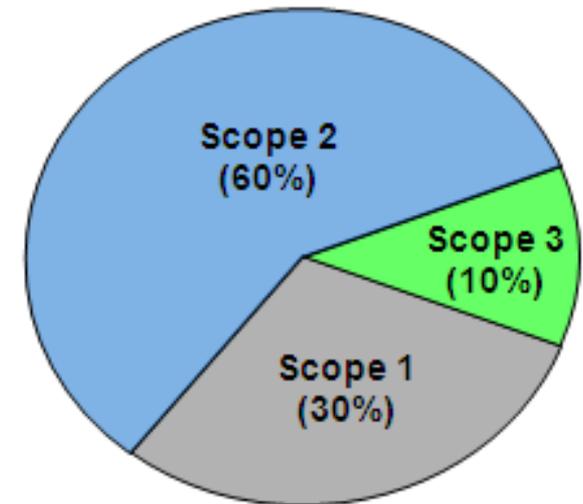


Outperforming Our 2010 Plan

Greenhouse Gas Management

- Committed to transparent reporting
- CO₂(e) footprint analysis used to guide reduction strategies
- Continuously maturing GHG management system for integrated mandatory and voluntary reporting
 - U.S. Federal, EU ETS for Aviation, etc.
 - CDP, EPA Climate Leaders, Boeing Environment Report
 - Product lifecycle emissions
- ISO 14064 is desired common framework

CO₂(e) Footprint



- Scope 1: Direct GHG Emissions
- Scope 2: Indirect Emissions (Purchased Energy)
- Scope 3: Other Indirect Emissions (Air Travel / Rental Cars)

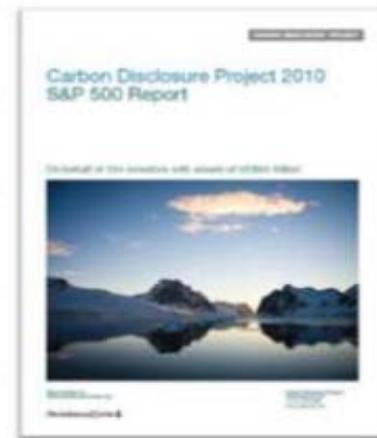
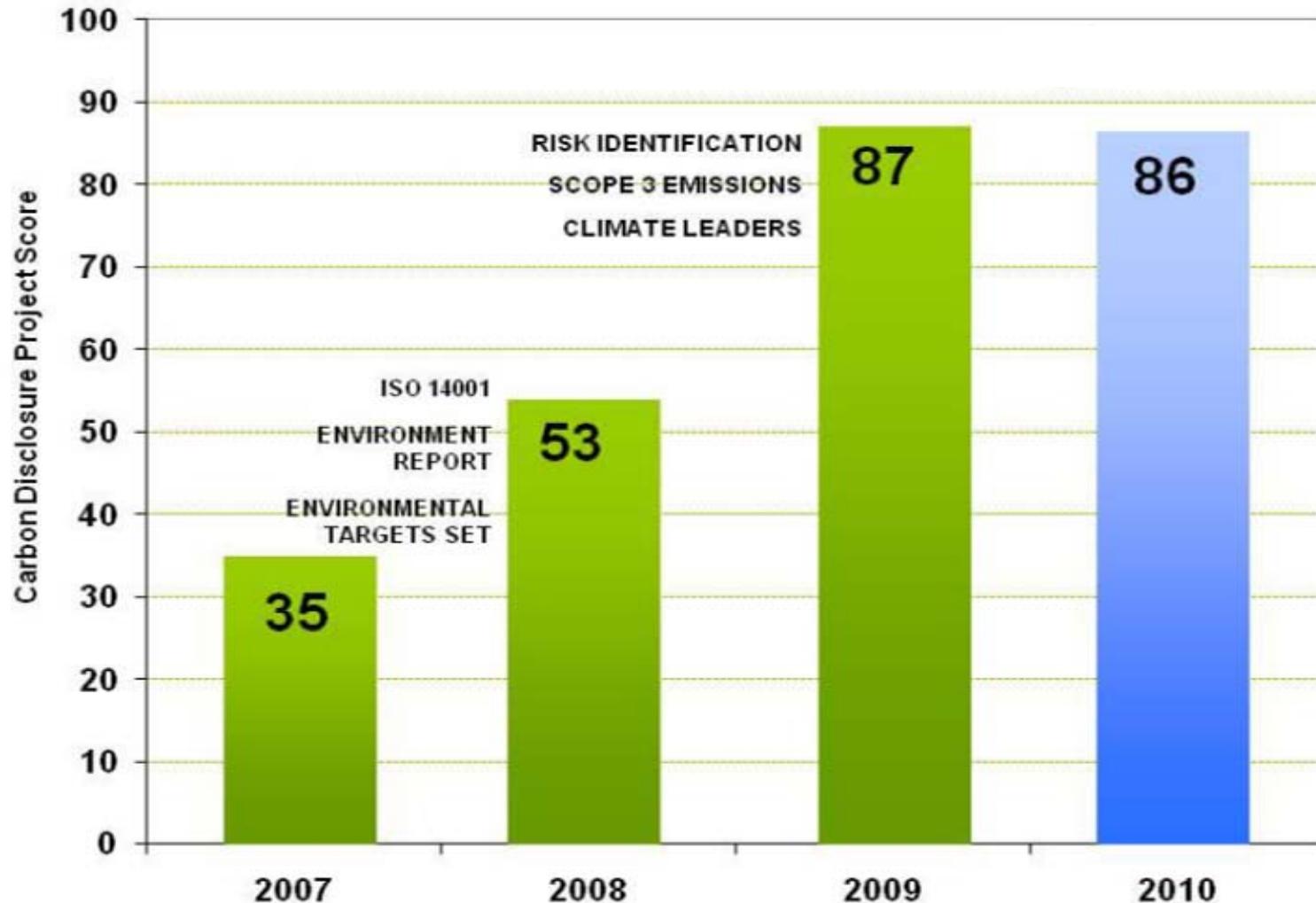
Committed to Transparency

- Sharing progress and successes
- Identifying areas for improvement
- Encouraging feedback

The collage features several key documents and images:

- 2010 Environment Report:** A central document with a large image of an F-22 fighter jet. The text includes: "Our team also show generosity of spirit throughout the global recession. In total employees and The Boeing Charitable Trust contributed \$142 million — and we volunteered many of our expertise — to help communities worldwide. We remain on a progressive five-year improvement in emissions intensity and recycling rates at all our major sites." Below this is a section titled "2010 Environment Report" with the subtext: "From designing fuel-efficient new airplanes to pioneering people of Boeing are developing innovative ways to address change. >>>"
- Carbon Disclosure Global 500 Report:** A report cover with a green and orange design, featuring the text "Industry Guidelines" and "Energy Efficiency Opportunities".
- Corporate Citizenship:** A document with a photo of a Boeing executive and the text: "Boeing and its people continue to make steady progress in protecting the environment and helping to meet vital needs in communities all around the world." It includes a line graph titled "Environmental Footprint Reduction Progress" showing a downward trend from 2002 to 2009.
- EnviroBlog:** A screenshot of a blog page with the Boeing logo and the title "EnviroBlog". It includes a "Subscribe" form and a "Recent Posts" section.
- Energy Efficiency Opportunities:** A document cover with a green background and a glowing globe, featuring the text "Energy Efficiency Opportunities".
- Other Documents:** A "Carbon Disclosure Global 500 Report" cover with a photo of a globe, and a "Corporate Citizenship" document with a photo of a Boeing executive.

Carbon Disclosure Project Results



Boeing included in S&P 500 and Global 500 Leadership Indexes

Conservation Initiative Focus Areas



Alternative
Commuting



Energy
Conservation



Renewable Energy



Sustainable
Site & Bldg
Design

Fleet
Management



Water
Conservation



Solid Waste
& Recycling

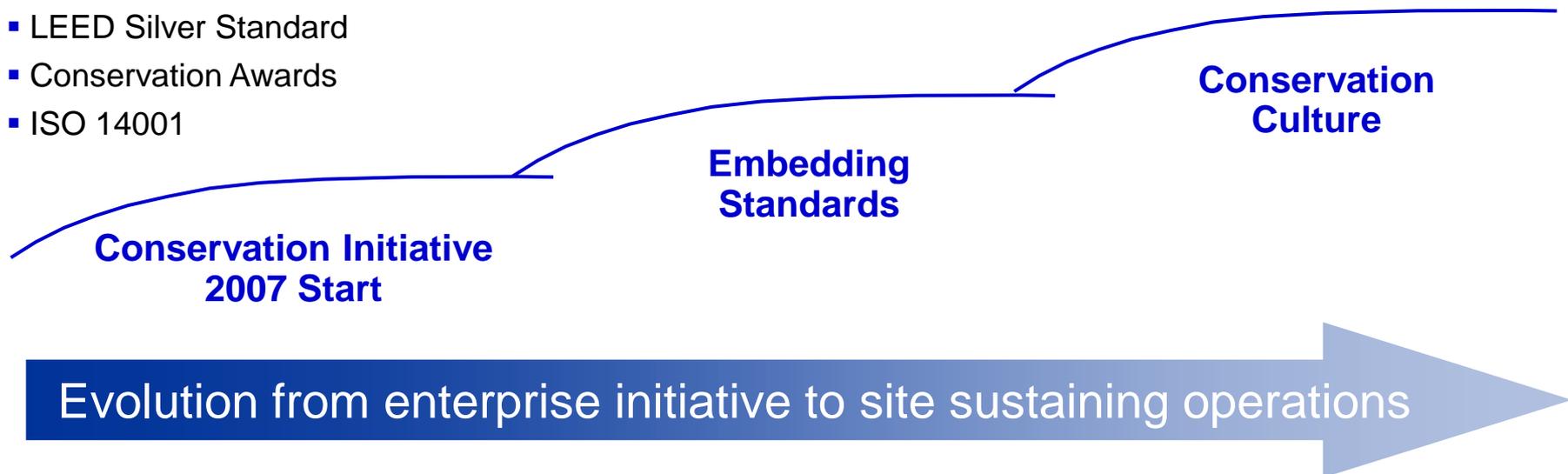


Embedding conservation culture in service delivery processes

Conservation Initiative Evolution



- SOW and Management System
- 7 Focus Areas
 - Energy Conservation
 - Renewable Energy
 - Sustainable Site & Building Design
 - Solid Waste & Recycling
 - Water Conservation
 - Fleet Management
 - Alternative Commuting
- Corporate 4-Walls Enviro Targets
- Targeted Investment Fund
- LEED Silver Standard
- Conservation Awards
- ISO 14001
- Embedding in Service Processes
- Sustaining Budgeting and Work
- Replication and Standardization
- Quality Mgmt and Lean +
- Employee Engagement Maturity
- Post 2012 Vision and Targets
- Comparative Assessments
- Region / Site Awards
- Conservation Strategies and Tactics Embedded in Functions and Services
- Part of Standard Work
- Continuous Environmental Footprint Reduction



Lean Energy Assessments



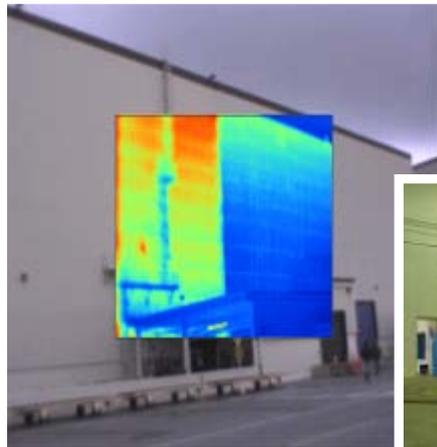
- 62 energy lean events since 2002
- Potential annual savings identified
 - 221M kWh (19,970 homes)
 - 40M gallons water
 - \$20M cost savings



Energy Efficiency Infrastructure Investments Opportunity Areas



Building envelope
improvements



Updated building
energy management
sub-metering and
control systems



Standard efficient
lighting systems



Mechanical systems
optimization with high
efficiency motors
and drives

Improved maintenance
of compressed air leaks

Building systems and
equipment re-commissioning

Energy conservation yields productivity and environmental gains

ENERGY STAR and LEED Facilities Certified and In-Process -- US Domestic



Conservation Awards



- Annual Energy Awards program since 2004
- Expanded to Conservation Awards in 2009
- Virtual VTC format
- Leadership engagement and sponsorship
- Team / individual recognition
- Visibility across the enterprise
- Financial and environmental benefits
- Projects leveraged for broader replication

Recognizing and celebrating successes

Engaging Stakeholders throughout the Enterprise for Continuous Improvement





Questions & Discussion

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- Thank you