Sustainability and Stewardship: a Status Report

Overview Presentation, University Senate

Nilda Mesa, Assistant Vice President, Environmental Stewardship
Adjunct Professor, School of International and Public Affairs
Columbia University in the City of New York
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Ask this: What is sustainability?

- Taking care of the needs of the present without compromising the needs of the future?
- Does it reach beyond the traditional scope of a project?
- Who pays?
- Who benefits?
- Are existing systems adequate?
- How do you project risks and costs?
- *No easy answers – a work in progress*

What Stewardship Means

- Integrating environmental considerations into all aspects of the university's planning and operations
- Energy efficiency a priority
- Columbia's PlaNYC Challenge Commitment
- Green Buildings
- Manhattanville Commitments
- Green Roofs and other Faculty and Student Collaborations
- Future Trends and Issues

Underpinnings

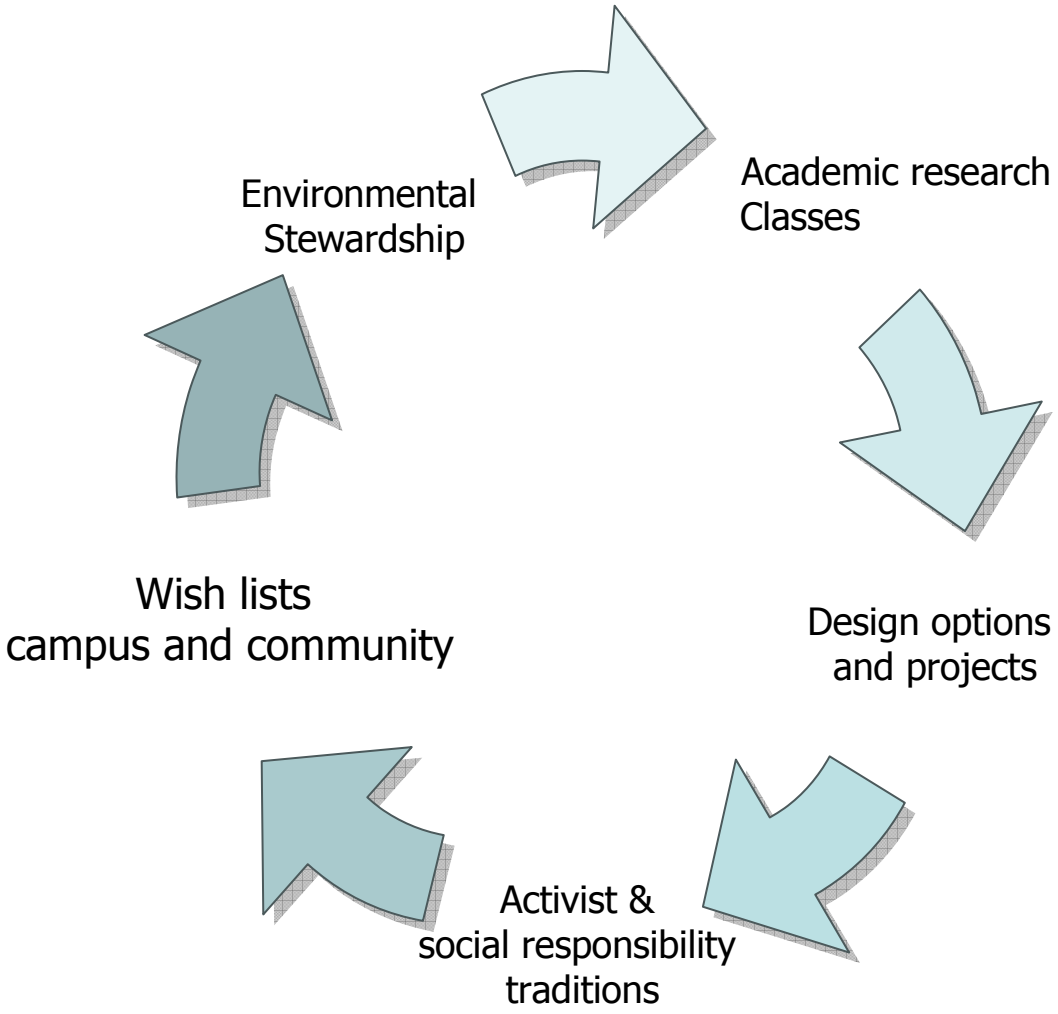
- Walking the talk
- Environmental research and learning at core
  - 24 environmental degrees, plus a major
  - “Global warming” coined here
  - El Niño
  - RV Langseth
  - Ocean currents’ role in climate change
  - IPCC

Role of Office of Environmental Stewardship

- Interdepartmental, interdisciplinary
- Bridging boundaries, facilitating new modes
- Informing, coaching
- Testing and piloting
- Assessing

- *How do you define sustainability in an urban campus setting?*
- *Networks and entrepreneurship are key*
- *No greenwashing, rigorous standards*

Integrating Core Columbia Values with Planning and Operations



Overall Green Planning Factors

- LEED and the marketplace
- Green building codes, government agency requirements
- Choice of materials changing
  - LEED influence
  - Source – local and sustainable favored
- Traditional maintenance – veer towards green
  - HVAC and building systems
  - Cleaning
  - Flooring example
- Economy and economic development
- Barriers
  - Retrofitting aging infrastructure
  - Financing
  - Split incentives
- Jobs and the local community
  - Training
  - Monitoring
- Wild card: Economy

Major initiatives

- PlaNYC GHG reduction commitment
  - Climate Action Plan
  - GHG emission inventory
  - How chose projects – maximize energy efficiency
- Green Buildings
  - LEED standards
- Surplus Reuse Program and Recycling Center
- Student partnerships
  - Water bottles/orientation
  - EcoReps
  - Green Umbrella
  - Energy Challenge
- Faculty and staff partnerships
  - New employee orientation and audits
  - Green Roof Research Station
  - Urban Design Lab
  - SEAS
  - Data Center: NYSERDA
  - Gateway and service learning
  - Athletics – green game and more
- Community partnerships
  - Biodiesel/ waste oil
  - Food to City Harvest and Broadway Presbyterian
  - MWL preference

PlaNYC Challenge Commitment

- 30% reduction from 2005 levels by 2017
  - Reductions are over gross square footage
- Conducted GHG Inventory 2005-06 Baseline Year
- Developed an emission reduction action plan
- Implement
- Monitor
- Review and adjust

What we learned

- *Building energy usage makes up over 95% of greenhouse gas emissions*
- *Different buildings exhibited different patterns – gsf useful*
- *Difficulty of collecting data and quantifying in old buildings*

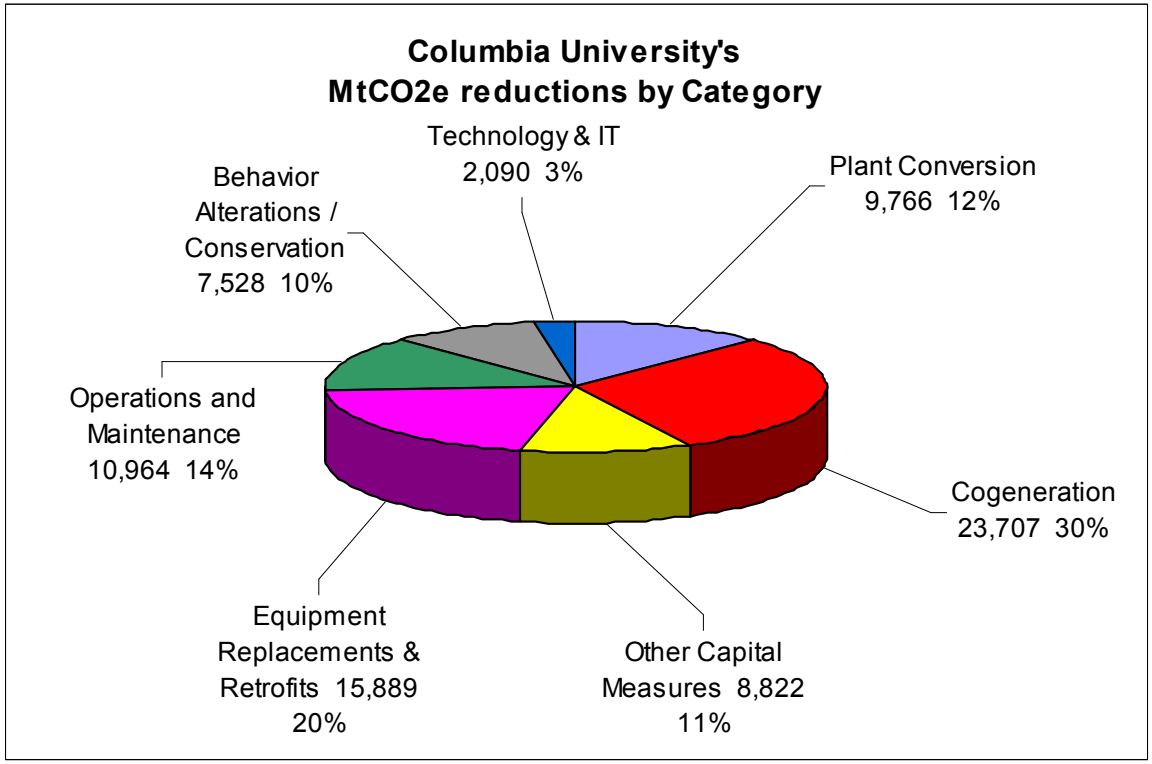
ACTION PLAN

- Projection: Columbia University will reduce approximately 110,229 MTCE by the year 2017
- Projects average a payback period of 6.7 years
- Overwhelming majority of the emissions derive from buildings and their energy usages
- Action plan focuses on strategies to reduce energy consumption in existing buildings and in central operations that supply the buildings
- Strategy focus
  - Replace aging infrastructure with more efficient alternatives
  - Produce the greatest greenhouse gas reduction for the cost
  - Reasonable payback period for the investment
  - Special areas: computers and data centers, fume hoods

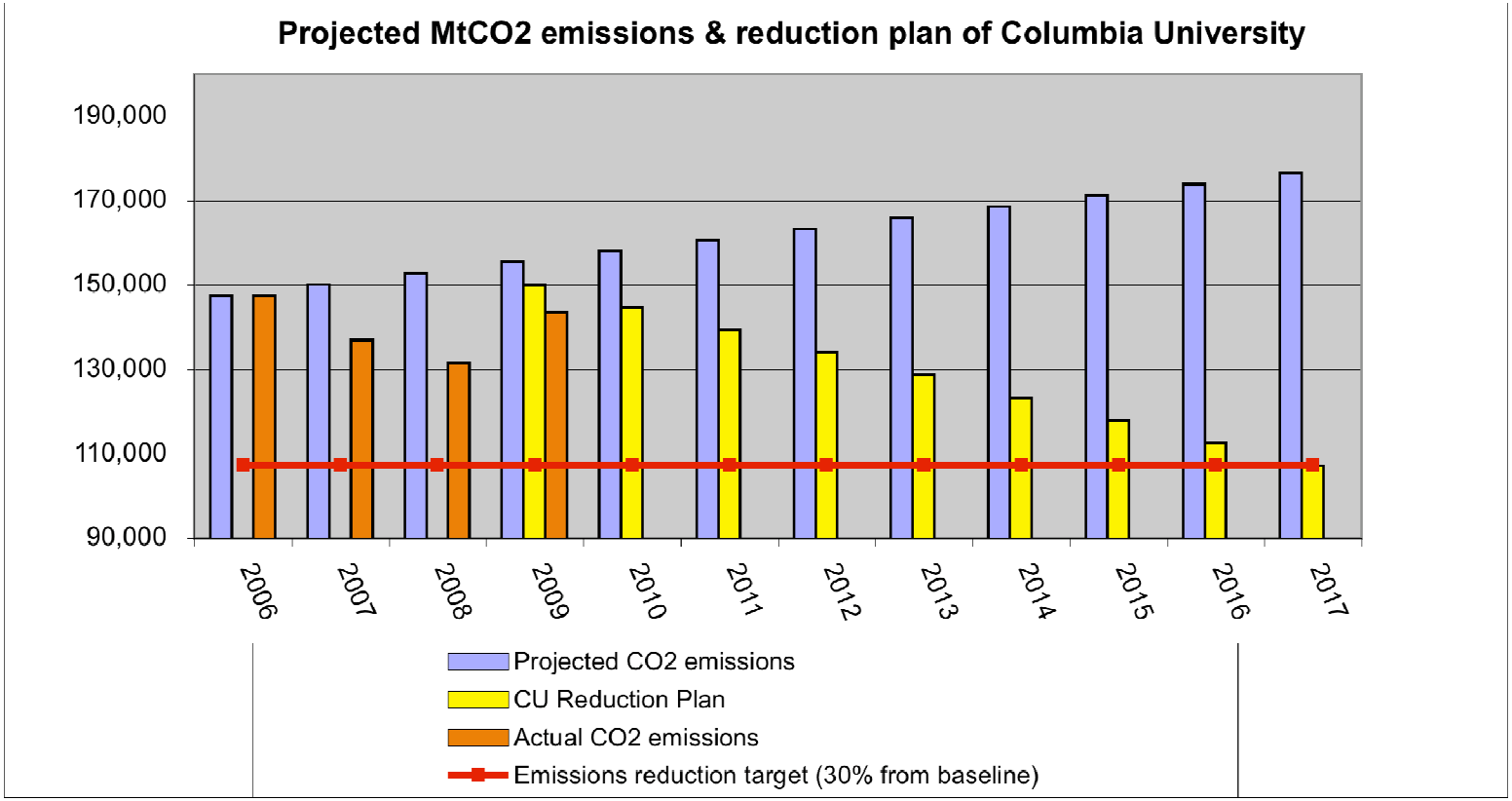
Strategic energy focus

- Greenest electron?
- The one never used
- Efficiency, not indulgences
- NYC challenges for charismatic renewables
- Transportation not a big factor
- CUMC: completed energy audit

Original Plan for 30% Reductions



How we are doing so far



LEED Buildings and projects

- Comer Geochemistry Building
- McVickar Hall
- Northwest Corner
- Faculty House
- Knox Hall
- Rosenfield buildout
- Manhattanville: LEED-ND

The 63,000-square-foot Gary C. Comer Geochemistry Building at Lamont-Doherty Earth Observatory

Pilot Reuse Project: Faculty House

- First project
- Kitchen equipment to cooking school in Honduras
- 29,495 lbs
- Faculty House: LEED Gold
  - First McKim, Mead and White LEED building
  - Only LEED Gold dining and conference facility in Manhattan

- Expanded greening to dining and catering operations

Surplus Reuse Program

Cubicles

Desks

Chairs

491 tons of furniture and equipment kept out of landfill since 2008

Green Purchasing

- Office paper with a minimum of 30% post-consumer recycled content
- Aerated and low flow water spouts on sinks and toilets for water conservation
- Recycled carpet squares
- Green Seal Cleaning products
- Low VOC (Volatile Organic Compounds) paints, adhesives

Sustainable Campus Design

- LEED for Neighborhood Development pilot program
- Commitment to at least LEED Silver certification for all academic and residential project
- Research facilities designed to achieve Lab 21 standards
- Memo of Understanding with the Environmental Defense Fund/ Clean Construction Program

Illustrative Open Space Design

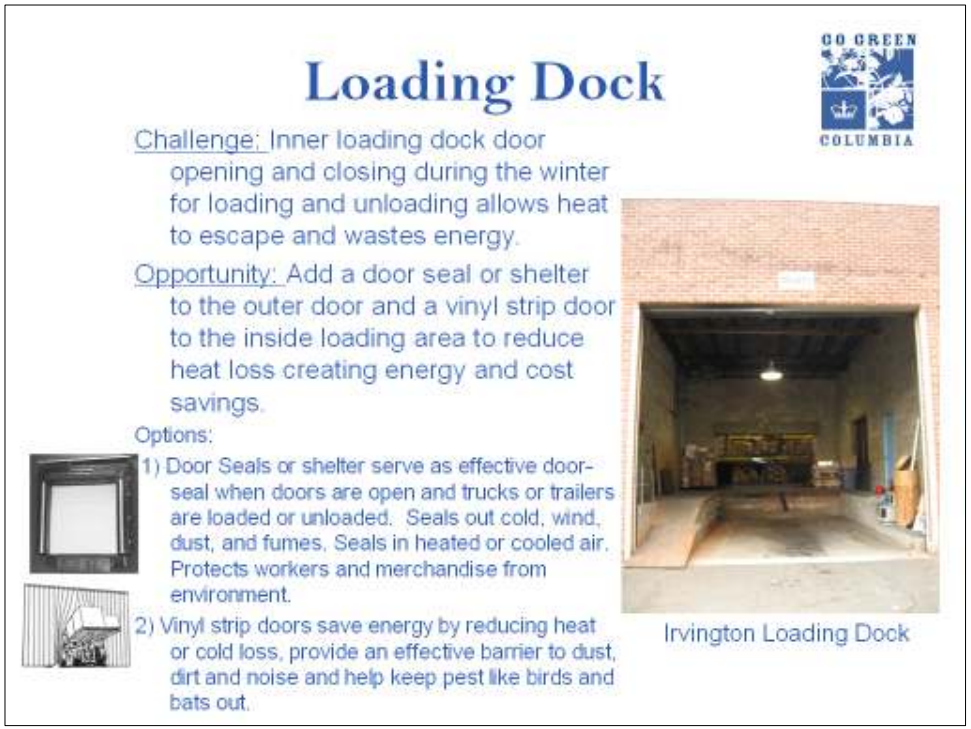
Reality House Sustainable Deconstruction

- Month long **"green"** salvage training program during the summer of 2009 to deconstruct the 3rd and 4th floors of Reality House at 637 W. 125th Street
- Utilized 35 men and women from two local job training programs
- Approximately 40 tons of surplus materials removed and 90% donated both locally and internationally

- Managed in partnership with the Institution Recycling Network (IRN) as a national model
- Recycling and reuse update: Currently achieving 96% recycling rate

Environmental Greening Audits

- Columbia University Medical Campus Residences
- Columbia University Press
- Studebaker
- Also orientations



Loading Dock

GO GREEN COLUMBIA

Challenge: Inner loading dock door opening and closing during the winter for loading and unloading allows heat to escape and wastes energy.

Opportunity: Add a door seal or shelter to the outer door and a vinyl strip door to the inside loading area to reduce heat loss creating energy and cost savings.

Options:

1) Door Seals or shelter serve as effective door-seal when doors are open and trucks or trailers are loaded or unloaded. Seals out cold, wind, dust, and fumes. Seals in heated or cooled air. Protects workers and merchandise from environment.

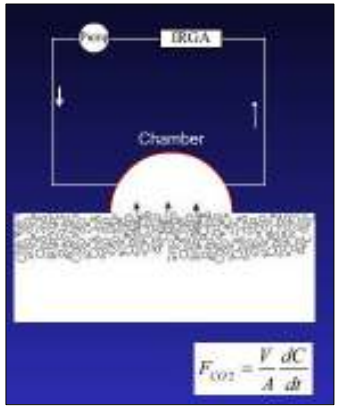
2) Vinyl strip doors save energy by reducing heat or cold loss, provide an effective barrier to dust, dirt and noise and help keep pest like birds and bats out.

Irvington Loading Dock

Excerpt from CU Press Greening Recommendations

Faculty and Research Collaboration

Green roof and research station site at 423 W. 118th Street



Sedum is the succulent plant used on Columbia's Green Roofs

Green roof at 635 W. 115th Street

Waste Cooking Oil to Biodiesel

- 1,700 gallons of cooking oil used annually on Columbia's Morningside campus.

- The Doe Fund picks up Columbia's waste oil from 16 facilities across the Morningside campus.

- Originated as student idea
- Role of SEAS

Other CU projects

- Green football game: Athletics
- Composting proposal
- Energy Challenge
- Watt Hall
- Microturbines pilot

STARS

- Sustainability Tracking, Assessment & Rating System
- Developed over 3 years through AASHE
- Input from over 100 schools
- Version 1.0 released this year
- Modeled on LEED, gain points in
  - Education and Research
  - Operations
  - Planning, Administration, & Engagement
  - Innovation

Collaboration vs. Competition

- STARS is a rating system, NOT a ranking system
- STARS provides a venue to share best practices and learn from other institutions
- STARS was created by the higher education community for the higher education community
- Voluntary system

STARS Founding Partners

Questions?

For more information on Columbia and its stewardship initiatives….

www.environment.columbia.edu