# GREEN BUILDINGS
# GREEN JOBS

Credit: Gotham Gazette


**NEW YORK COMMITTEE FOR OCCUPATIONAL SAFETY AND HEALTH**

**116 John Street, Suite 604, New York NY 10038**

**212-227-6440, www.nycosh.org**

# Why Green Buildings?
# Environmental Concerns

- Estimated 65-70% of NYC's energy (electricity & fuel) is consumed by building systems.
- Estimated 79% of NYC's greenhouse gas emissions originate in building operations.
- Buildings use large amounts of raw materials and water & generate immense quantities of waste.
- Increasing energy efficiency of NYC's buildings is critical to reducing future energy demand & reducing greenhouse gas emissions - key contributors to climate change.

NYCOSH

# Why Green Buildings?
# Environmental Concerns

- Even taking into account:
  - intensity of construction materials, and
  - long distances traveled to construction site,
- largest percentage of building energy use (80–85%) occurs during operational phase for heating, cooling, ventilation, lighting, water heating, & running appliances.

NYCOSH

# Why Green Buildings?
## Health Concerns

Exposure to chemicals contained in & released from

- structural materials
- building furnishings
- equipment, supplies, and products

can adversely impact health of:

- Construction & renovation workers
- Maintenance & service workers, and
- Building tenants.

# Green Buildings

- a.k.a. Energy-Efficient or High-Performance Buildings.
- Drastically reduce emissions, material, and water use.
- Have potential to reduce energy use by +/- 80%.

- Green buildings reduce energy load by:
  - integrating *efficient systems* (heating, cooling, lighting, water)
  - using *alternative energy sources* (passive solar, alternative energy sources)
  - *retaining energy* (efficient insulation and windows, thermal mass), and
  - using *recycled, reused, or low-energy building materials*.

NYCOSH

# Leadership in Energy & Environmental Design (LEED)


- U.S. Green Building Council
- “Green building" defined by establishing common standard of measurement.
  - Green Building Rating System
  - sustainable green building & development practices
  - universally accepted tools & performance criteria.

NYCOSH

# LEED Rating System

- developed through consensus-based process led by LEED committees.
- open, transparent process.
- technical criteria proposed by LEED committees publicly reviewed for approval by >10,000 membership organizations of US Green Building Council.

NYCOSH

# Levels of LEED Certification

- Certified
- Silver
- Gold
- Platinum.

# LEED Whole-Building Approach

- **Performance criteria in 6 key areas of human and environmental health:**
- **Sustainable sites**
- **Water efficiency**
- **Energy and atmosphere**
- **Materials and resources**
- **Indoor environmental quality**
- **Innovation and design process.**

# LEED Example : *Sustainable Sites* - SITE SELECTION

- Avoid development of inappropriate sites & reduce environmental impact of building location.
- Do not develop buildings, roads, or parking areas on:
  - Prime farmland
  - Undeveloped land <5 feet above 100-year flood plain elevation
  - Endangered species habitat
  - Within 100 feet of wetlands
  - Undeveloped land within 50 feet of body of water
  - Public parkland.

NYCOSH

# LEED Example : *Sustainable Sites* - DEVELOPMENT DENSITY & COMMUNITY CONNECTIVITY

- Channel development to urban areas with existing infrastructure.
  - Construct/renovate building on developed site AND in community with minimum density of 60,000 $ft^2$/acre, OR
  - Construct/renovate building on developed site AND within 1/2 mile of residential zone or neighborhood with average density of 10 units/acre AND within 1/2 mile of at least 10 basic services AND with pedestrian access between the building and the services.

NYCOSH

# LEED Example : *Sustainable Sites* - BROWNFIELD REDEVELOPMENT

- Rehabilitate damaged sites where development is complicated by environmental contamination, reducing pressure on undeveloped land.

# LEED Example: *Sustainable Sites* – PUBLIC TRANSPORATION ACCESS

Reduce pollution & land development impacts from automobile use:

- Locate project within 1/2 mile of commuter rail, light rail, or subway station, OR
- Locate project within 1/4 mile of stops for 2 or more public or campus bus lines usable by building occupants.

NYCOSH

# LEED Example: *Sustainable Sites* – ALTERNATIVE TRANSPORATION

- Provide secure bicycle racks and/or storage for 3% or more of building users AND provide shower and changing facilities for 0.5% of occupants.

# LEED Example: *Sustainable Sites* – LOW-EMITTING, FUEL EFFICIENT VEHICLES

- Provide preferred parking for low-emitting and fuel-efficient vehicles for 5% of total vehicle parking capacity of site OR install alternative-fuel refueling stations for 3% of total vehicle parking capacity.
- Provide preferred parking for carpools or vanpools, marked as such, for 3% of total provided parking spaces.

NYCOSH

# LEED Example: *Sustainable Sites* – MAXIMIZE OPEN SPACE

- Provide high ratio of open space to development footprint.

# LEED Example: *Sustainable Sites* – HEAT ISLAND EFFECT: ROOF

- Reduce heat islands (thermal gradient differences between developed & undeveloped areas).
  - Use roofing materials that have high Solar Reflectance Index, OR
  - Install vegetated roof for at least 50% of roof area.

NYCOSH

# LEED Example: *Sustainable Sites* – LIGHT POLLUTION REDUCTION

- Minimize light trespass from building & site to reduce sky-glow, increase night sky access, & reduce impact on nocturnal environments.
  - Reduce non-emergency interior lighting with direct line of sight to openings in building envelope by at least 50% between 11 PM & 5 AM.
  - Light exterior areas only as required for safety & comfort.

NYCOSH

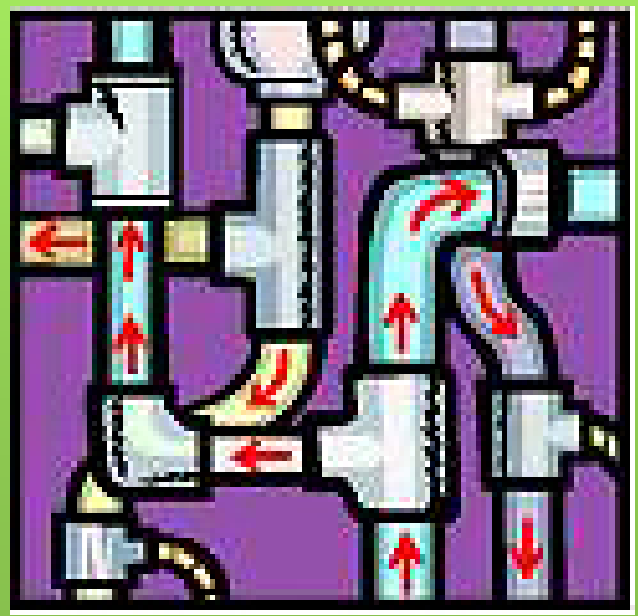
# LEED Example: *Water Efficiency* – INNOVATIVE WASTEWATER TECHNOLOGIES

- Reduce potable water use for sewage conveyance through use of:
  - water-conserving fixtures (water closets, urinals) or
  - non-potable water (captured rainwater, recycled greywater, and on-site or municipally treated wastewater).

NYCOSH

# LEED Example: *Water Efficiency* – INDOOR PLUMBING

- Reduce indoor potable water use by 30 to 50%.



# LEED Example: *Energy & Atmosphere* – ENERGY EFFICIENT MANAGEMENT

Develop building operating plan including:

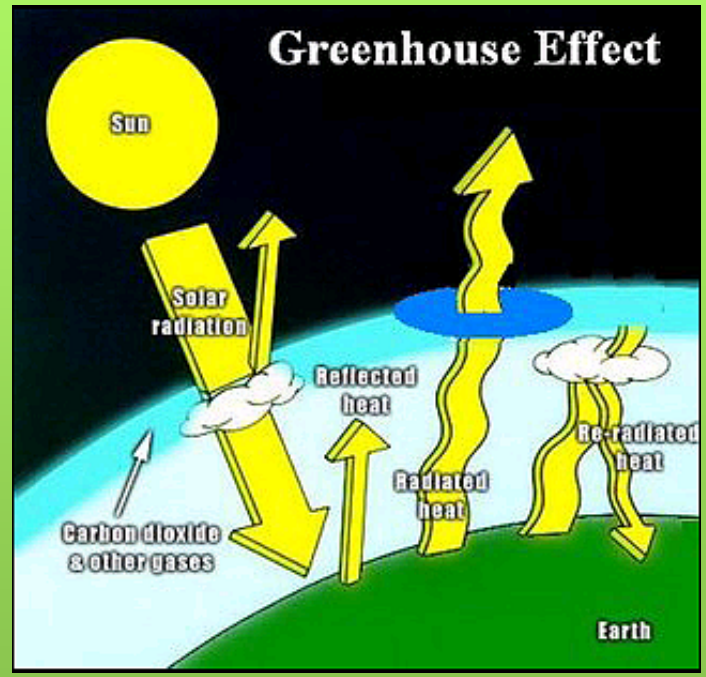
- occupancy schedule
- equipment run-time schedule
- design setpoints for HVAC equipment
- design lighting levels throughout building.

- Develop systems narrative describing mechanical & electrical systems & equipment, including heating, cooling, ventilation, lighting, & building control systems.
- Create preventive maintenance plan for above equipment.
- Conduct energy audit.
- Implement computer-based building automation system (BAS) to monitor & control key building systems.

NYCOSH

# LEED Example: *Energy & Atmosphere* – REFRIGERANT MANAGEMENT

- Zero use of CFC-based refrigerants in new HVAC systems.
  **(CFCs = chlorofluorocarbons)**
- In reused HVAC equipment, comprehensive CFC phase-out conversion prior to project completion.




NYCOSH

# LEED Example: *Energy & Atmosphere* – ON-SITE RENEWABLE ENERGY

- Provide at least 35% of the core & shell building's electricity from renewable sources:
  - solar
  - wind
  - geothermal
  - low-impact hydro
  - biomass & bio-gas.

NYCOSH

# LEED Example: *Energy & Atmosphere* – MEASUREMENT & VERIFICATION

- Provide accountability of building energy consumption by metering building electricity & tenant electrical end-uses.

# LEED Example: *Materials & Resources* – RECYCLABLES

- Provide easily accessible area serving entire building & dedicated to collection & storage of materials for recycling, including paper, corrugated cardboard, glass, plastics, & metals.

# LEED Example: *Materials & Resources* – BUILDING REUSE

- Retain 25%, 50%, or 75% of existing building structure (including structural floor and roof decking) and envelope (exterior skin and framing).

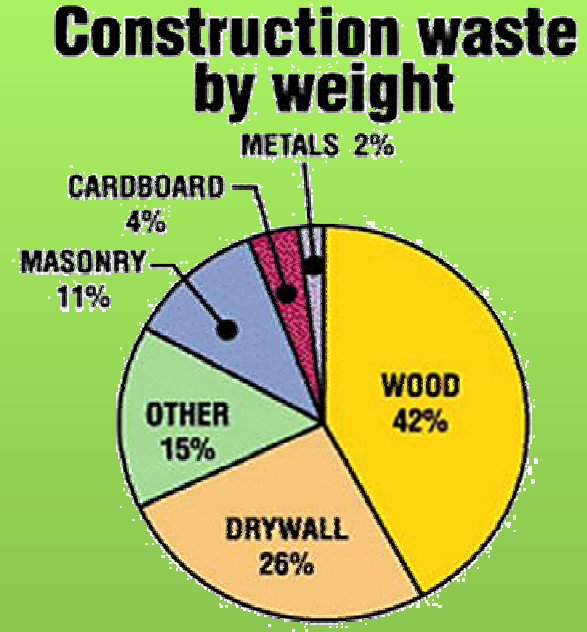
# LEED Example: *Materials & Resources* - RECYCLED CONTENT


- Increase demand for building products that incorporate recycled content, thereby reducing impacts resulting from extraction and processing of virgin materials.

NYCOSH

# LEED Example: *Materials & Resources* – CONSTRUCTION WASTE MGMT.

- Divert construction & demolition debris from disposal in landfills & incinerators.
- Redirect recyclable recovered resources back to manufacturing process.
- Redirect reusable materials to appropriate sites.




NYCOSH

# LEED Example: *Materials & Resources* – REGIONAL MATERIALS

- Use building materials or products extracted, harvested, or recovered, and manufactured, within 500 miles of project site.


NYCOSH

# LEED Example: *Materials & Resources* – CERTIFIED WOOD


- Use a minimum of 50% of wood-based materials & products certified in accordance with Forest Stewardship Council's (FSC) Principles & Criteria.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – PRE-OCCUPANCY IAQ MGMT.

After construction/renovation, prior to occupancy/reoccupancy, conduct building flushout OR indoor air testing.

- Perform building flushout
  - Supply total air volume of 14,000 $ft^3$ of outdoor air/$ft^2$ while maintaining internal temperature of at least 60° F and relative humidity no higher than 60%, OR
- For occupancy prior to completion of flush-out
  - Space may be occupied following delivery of at least 3,500 $ft^3$ of outdoor air per $ft^2$.
  - Once space is occupied, ventilate at minimum rate of 0.30 cfm/$ft^2$ of outside air or the design minimum outside air rate, whichever is greater.
  - During each day of flush-out period, ventilation shall begin minimum of 3 hours prior to occupancy & continue during occupancy.
  - These conditions shall be maintained until 14,000 cu.ft./$ft^2$ of outside air has been delivered to the space.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – PRE-OCCUPANCY IAQ MGMT.

After construction/renovation, prior to occupancy/reoccupancy, conduct building flushout OR indoor air testing.

- Conduct baseline IAQ testing using protocols consistent with EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
- Ensure that contaminant maximum concentrations are not exceeded:
  - Formaldehyde - 50 parts per billion
  - Particulates (PM10) - 50 micrograms per cubic meter
  - Total Volatile Organic Compounds (TVOC) - 500 micrograms per cubic meter
  - 4-Phenylcyclohexene (4-PCH) - 6.5 micrograms per cubic meter
  - Carbon Monoxide (CO) - 9 parts per million, & no greater than 2 parts per million above outdoor levels.

NYCOSH

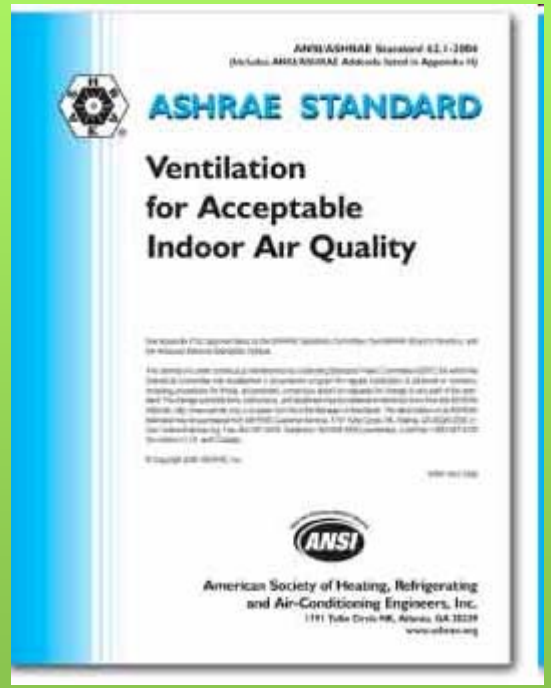
# LEED Example: *Indoor Environmental Quality* – IAQ MGMT. PLAN

- Implement IAQ management program based on EPA's "IAQ Building Education and Assessment Model (I-BEAM)."
  - **www.epa.gov/iaq/largebldgs/i-beam/index.html**

# LEED Example: *Indoor Environmental Quality* – MINIMUM IAQ PERFORMANCE

- Meet the minimum requirements of Sections 4 through 7 of ASHRAE 62.1-2004, Ventilation for Acceptable Indoor Air Quality.

**(note: current standard is 62.1-2007)**




NYCOSH

# LEED Example: *Indoor Environmental Quality* – OUTDOOR AIR DELIVERY

- Install permanent ventilation monitoring systems to ensure ventilation requirements are met.
- Configure monitoring equipment to alarm when conditions vary by 10% or more from setpoint.
- For each mechanical ventilation system, provide outdoor airflow measurement device capable of measuring minimum outdoor airflow rate with accuracy of +/- 15% of minimum outdoor air rate, as defined by ASHRAE 62.1-2004.
- Monitor $CO_2$ concentrations within all naturally ventilated spaces.

NYCOSH

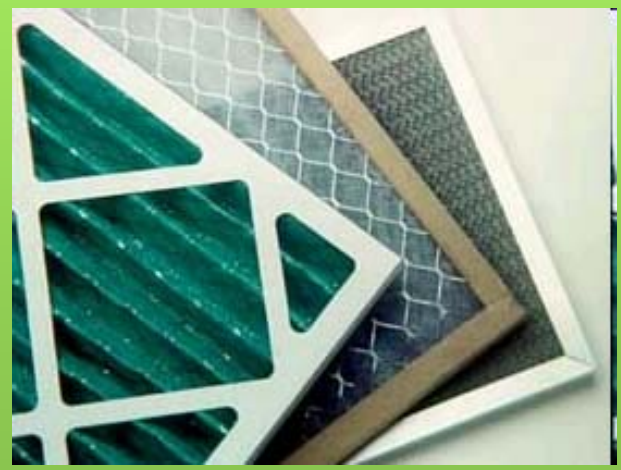
# LEED Example: *Indoor Environmental Quality* – INCREASED VENTILATION

- Increase outdoor air ventilation rates to occupied spaces by at least 30% above minimum rates required by ASHRAE Standard 62.1-2004.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – CONSTRUCTION IAQ MGMT.

- Implement Indoor Air Quality (IAQ) Management Plan for construction & pre-occupancy phases :
  - During construction meet or exceed Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 1995, Chapter 3.
  - If using permanently installed air handlers during construction, use Minimum Efficiency Reporting Value (MERV) 8 filters.



NYCOSH

# LEED Example: *Indoor Environmental Quality* – LOW-EMITTING MATERIALS

- Reduce indoor air contaminants that are odorous, irritating and/or harmful to comfort or well-being of installers and occupants.

  - Interior adhesives & sealants must comply with South Coast Air Quality Management District (SCAQMD) Rule #1168.
  - Paints and primers applied to interior walls and ceilings must not exceed VOC content limits of Green Seal Standard GS-11.
  - Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates must not exceed VOC content limits of Green Seal Standard GC-03.
  - Clear wood finishes, floor coatings, stains, & shellacs must not exceed the VOC content limits of South Coast Air Quality Management District (SCAQMD) Rule 1113.
  - All carpet & carpet cushion shall comply with Carpet and Rug Institute's Green Label Plus program.
  - Composite wood products shall contain no added urea-formaldehyde resins. Laminating adhesives shall contain no added urea-formaldehyde resins.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – INDOOR POLLUTANT SOURCE CONTROL

- Where hazardous gases or chemicals may be present or used (garages, housekeeping/laundry areas, copying/printing rooms, etc.), exhaust each space sufficiently to create negative pressure with respect to adjacent spaces.
- In mechanically ventilated buildings, provide occupied areas with air filtration prior to occupancy of Minimum Efficiency Reporting Value (MERV) of 13 or better. Filtration should be applied to both return and outside air that is to be delivered as supply air.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – THERMAL COMFORT

- Provide high level of thermal comfort control by individual occupants or by specific groups in multi-occupant spaces (i.e., classrooms, conference areas), i.e. individual control over air temperature, radiant temperature, air speed, and/or humidity.
- Design HVAC systems & building envelope to meet requirements of ASHRAE Standard 55-2004, Thermal Comfort Conditions for Human Occupancy.

NYCOSH

# LEED Example: *Indoor Environmental Quality* – DAYLIGHT & VIEWS

- Provide connection between indoor spaces & the outdoors through introduction of daylight & views into regularly occupied areas of building.

NYCOSH

# Green Buildings - Benefits

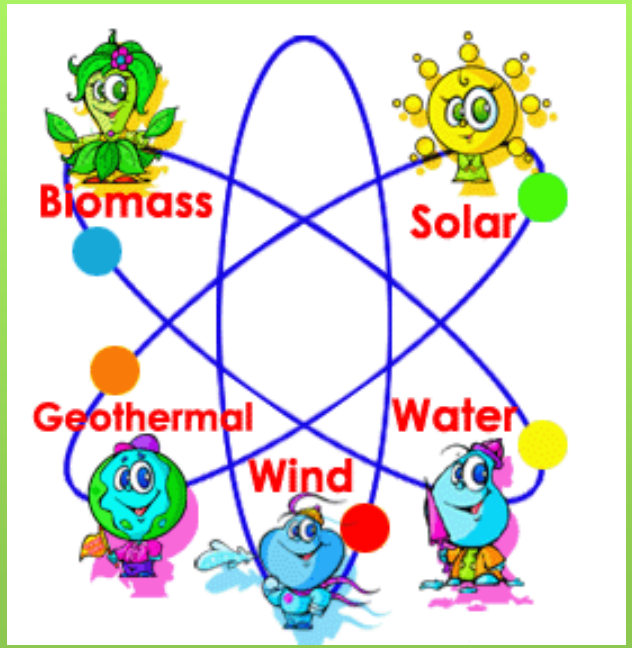
- Green buildings use key resources more efficiently when compared to conventional buildings simply built to code.
- Green buildings are healthier work & living environments, & contribute to higher productivity & improved employee health & comfort.
- Green buildings benefit owners, occupants, community, & society.

NYCOSH

# Green Buildings – Shortcomings & Obstacles (1)

- Green buildings cost more to design & to construct compared to conventional buildings.
- *However, high initial costs can be offset by savings incurred over time due to lower operational costs.*

# Green Buildings – Shortcomings & Obstacles (2)




- LEED Standards are skewed toward ongoing use of fossil fuels.
- >50% of available LEED points support efficient use of fossil fuels, while only handful are awarded for use of sustainable energy sources.

NYCOSH

# Green Buildings – Shortcomings & Obstacles (3)

- LEED tends to emphasize the end product.
  - Example: Because leather does not emit VOCs it is deemed environmentally healthy. This disregards the use of extremely harmful chemicals in the process of tanning leather.
- Some products that do not contain harmful chemicals and products produced by sustainable production do not earn additional points for their attention to environmental concerns.

NYCOSH

# Green Buildings – Shortcomings & Obstacles (4)

- Although LEED rating system is sensitive to local environmental conditions, point system does not adequately address varying local environmental conditions.
  - Example: A building in Maine would receive same credit as building in Arizona for water conservation, though water conservation may be more important in Arizona).

NYCOSH

# Green Buildings – Shortcomings & Obstacles (5)

- Most (70%) New Yorkers are renters. Most residential & many commercial renters do not pay directly for energy use. Electric bill is folded into monthly rent as flat rate - landlord pays one utility bill on behalf of all tenants. Little incentive for tenants to invest in improvements like efficient lighting or appliances because charged same amount regardless of consumption.

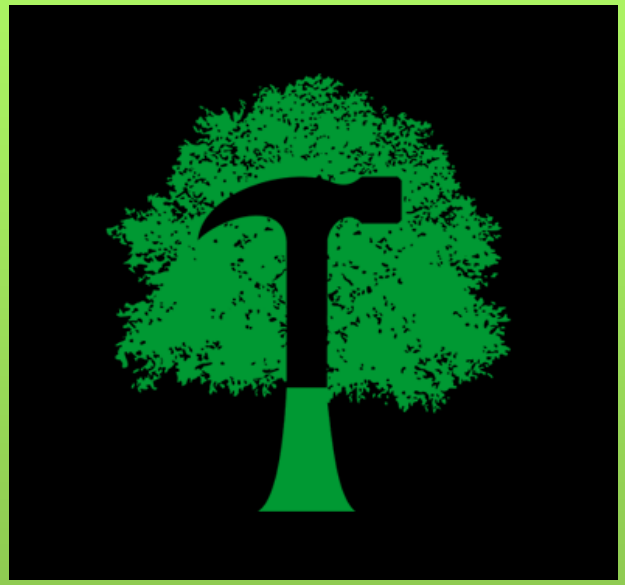
- For renters who do pay directly for energy & would benefit from efficiency improvements like window or boiler replacement, building owners have little incentive to invest in these measures. Owner would not capture the savings, but would have to incur the costs.

- Commercial tenants who pay for own energy use may have little incentive to invest in improvements where payback may take longer than term of lease.

- Government agencies historically have had little incentive to increase energy efficiency - no guarantee that money saved would go to agency rather than into general fund.

NYCOSH

# Green Initiatives



- Sheet Metal & Air Conditioning Contractors' National Association
- NYC Local Law 86
- PlaNYC 2030
- NYS 15 X 15

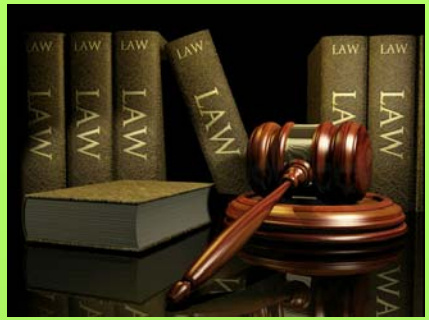
NYCOSH

# Sheet Metal & Air Conditioning Contractors' National Association (SMACNA)

- **IAQ Guidelines for Occupied Buildings Under Construction**
  - **contain the work area**
    - **physical barriers**
    - **relocate pollutant sources**
    - **temporarily seal building**
  - **modify HVAC operation**
    - **shut down or isolate**
    - **pressure differentials**
    - **upgrade filter efficiency**
  - **reduce emissions**
    - **substitute low-emitting products**
    - **change work practices**
    - **modify equipment operation**
  - **intensify housekeeping**
    - **dust suppression, HEPA vacuuming, wet methods**
    - **increase cleaning frequency**
  - **rescheduling**
    - **reduce overlap between construction activity and building occupancy**


NYCOSH

# NYC Local Law 86




- Passed in 2005.
- All new construction & significant renovations receiving $2 million or more in City capital funds must meet LEED standards.
- Schools & hospitals must achieve LEED Certified rating. All other projects must meet LEED Silver requirements.
- Some City-funded projects must also meet additional energy & water use reduction targets.
- Covers approximately $12 billion in new construction & renovation under City's capital plan.

NYCOSH

# PlaNYC 2030


- 2007 plan for sustainability of NYC's environment and infrastructure for next 20 years.
- Proposes increased energy efficiency via:
  - reducing energy consumption by City government
  - strengthening energy & building codes
  - creating NYC Energy Efficiency Authority, and
  - prioritizing key areas for private sector energy efficiency incentives.
- If all PlaNYC 2030 efficiency initiatives are implemented, City projects 14-15% reduction in energy consumption by 2015.

NYCOSH

# NYS 15 x 15

- 2007 NYS comprehensive state energy plan.
- Focus on energy efficiency, conservation, & renewable energy.
- Goal: reduce projected statewide electricity consumption by 15%, by 2015.
- Proposes:
  - standards for energy-intensive appliances like boilers
  - fast-tracking next generation power plant construction
  - increasing government investment in existing building efficiency.

# Green "Double Dividend"

- Green building measures projected to result in both environmental & employment gains (the "double dividend").
- Job creation fields in new green economy include:
  - green designers, architects, auditors, engineers, estimators, project managers
  - construction/renovation jobs, such as pipe fitters, sheet metal workers, & laborers
  - energy efficient building maintenance
  - green manufacturing work
  - renewable energy
  - recycling
  - brownfield remediation
  - public transportation
  - urban forestry.

NYCOSH

# Sustainability & Jobs

- As economy transitions toward greater sustainability:
  - Additional jobs will be created - as in manufacture of pollution control devices added to existing production equipment.
  - Some employment will be substituted - as in shift from fossil fuels to renewables, or from truck to rail-car manufacture, or from landfilling & waste incineration to recycling.
  - Some jobs may be eliminated without direct replacement - as when packaging materials are discouraged or banned & their production is discontinued.
  - Many existing jobs (especially in construction & maintenance) will be redefined as day-to-day skill sets, work methods, and profiles are greened.

NYCOSH

# Green Skills Gap

- Transition to green economy will create demand for workers, many of them in skilled trades or professions.
- Filling these positions will require adequate training programs.
- A “skills gap” already exists between available workers & needs of green industries.
- Requires not only adaptations in training new workers but also retraining efforts for those workers who transition from older, polluting industries to new ones.

NYCOSH

# Green Collar Equity Issues (1)

- Community & advocacy organizations: green collar employment offers “pathway out of poverty” in economically depressed or marginalized areas.
- Racial & ethnic minorities often have difficulty entering apprenticeship programs for skilled trades. At same time, skilled workers are aging & shortages of skilled workers are becoming major concern.
- Doors to new green economy need to be fully opened to those who have had difficulty finding their place in the “old” economy for reasons related to discrimination or lack of skills, resources, or opportunities.

NYCOSH

# Green Collar Equity Issues (2)

- In addition to quantities of jobs & access to jobs, there is range of qualitative questions:
  - occupational profiles & work skills
  - wage & benefits
  - opportunities for advancement
  - respect for worker representation (unionization)
  - openness to worker participation & empowerment.
- To fully identify, adopt, & implement green opportunities in the workplace, the active involvement of workers, unions, and community-based organizations is essential.

NYCOSH

# Green Jobs – Definition (1)

- Jobs that contribute substantially to preserving or restoring environmental quality, including jobs in agriculture, manufacturing, construction, installation, & maintenance, as well as in scientific and technical, administrative, & service-related activities.

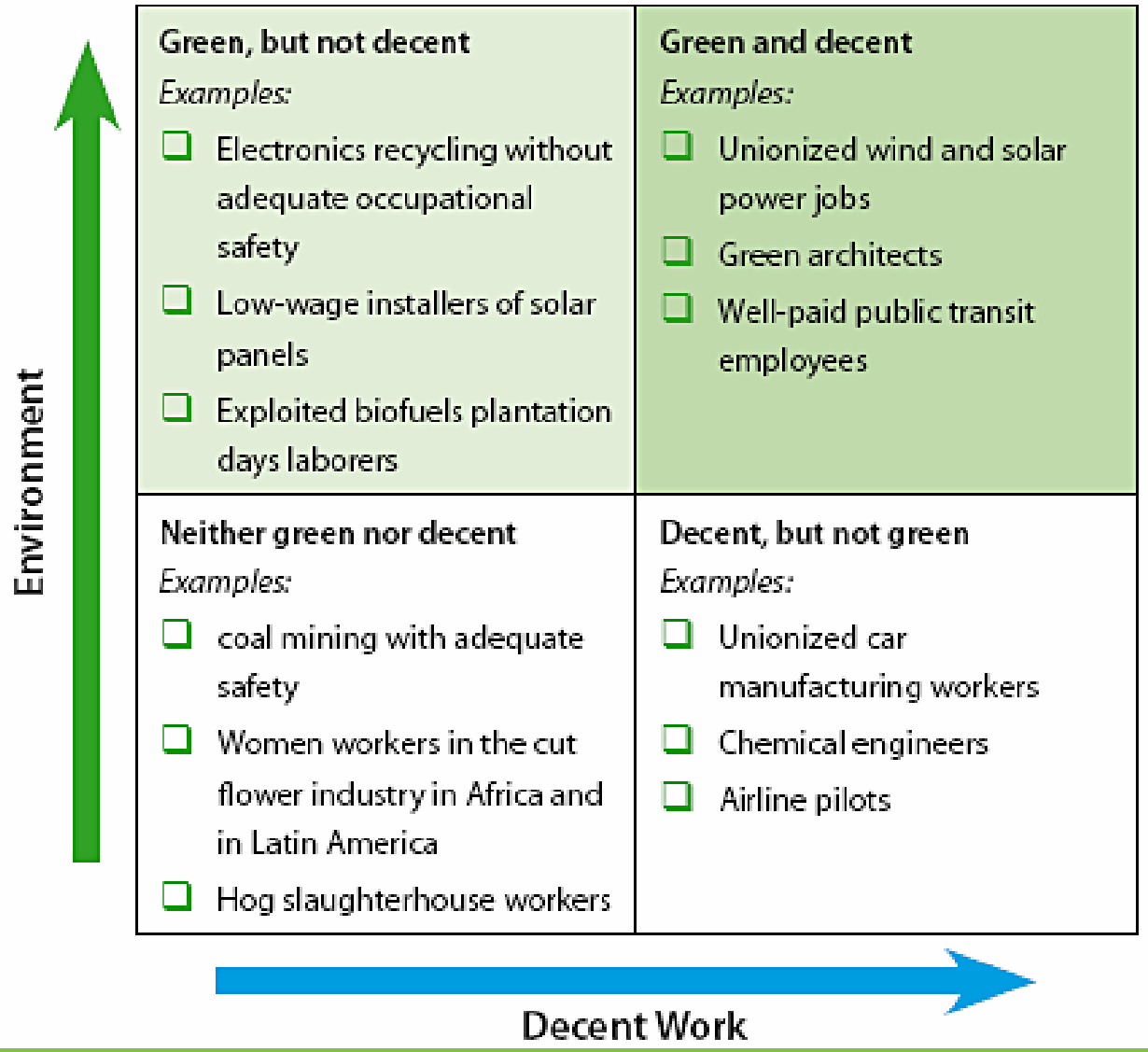

NYCOSH

# Green Jobs – Definition (2)

- Narrow definition of green job may focus solely on environmental components of job.
- However, green jobs also need to be decent jobs - pairing concerns like efficiency and low emissions with traditional labor concerns:
  - Wages & benefits
  - career prospects
  - job security
  - occupational health & safety
  - other working conditions & worker rights.
- A job that is exploitative, harmful, or fails to pay a living wage is not a green job.

NYCOSH

*Figure I.1-1. Green and Decent Jobs? A Schematic Overview*




NYCOSH

# Green Jobs Can't Be Outsourced

- Because most green collar jobs in NYC would involve transitioning existing infrastructure to greater sustainability, they cannot be outsourced.
- Improving the energy efficiency of an existing building in New York City, replanting an urban park, or cleaning up a contaminated piece of land simply cannot be done elsewhere.

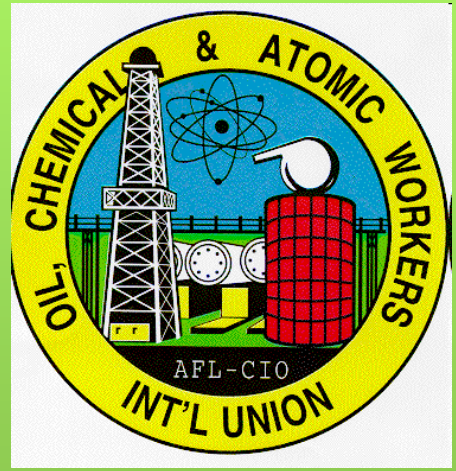
# Just Transition

- Transition to green economy will produce new green jobs & greening of some existing jobs.
- However, will also result in job losses, particularly in energy-intensive industries, extractive industries, & road transport.
- As a result, calls are emerging for a *just transition:*
  - those harmed are adequately assisted
  - new opportunities created are shared by diverse worker, social, and community constituencies.
- Just Transition is <u>not</u> just a safety net.
- Transition must allow for greater social inclusion, equity, and opportunity.

NYCOSH

# Origin of Just Transition Concept

- Roots in U.S. labor movement.
- In mid-1980s, Oil Chemical and Atomic Workers (OCAW, now part of United Steelworkers) attempted to negotiate “Superfund for Workers” when New Jersey Ciba-Geigy chemical facility was closed down due to environmental concerns.
- In addition to demand for income protection for plant’s 650 workers, OCAW also sought program of government-funded retraining for displaced employees.




NYCOSH

# ILO Just Transition (1)

- Workers' Rights. The expansion and enforcement of workers rights allows for workers to associate freely with other workers and to organize.
- Decent Work. Decent work is work that takes place "under conditions of freedom, equity (race, gender, age), security & dignity, in which rights are protected and adequate remuneration & social coverage is provided."

# ILO Just Transition (2)

- Social Protections
  - “All human beings have right to pursue material well-being & spiritual development in conditions of freedom and dignity, of economic security & equal opportunity.”
  - Presence of solid social floor allows workers & communities to shift into new forms of sustainable economic activity without fear of falling into extreme poverty.
  - Absence of such basic protections will compel workers to resist change and/or to engage in environmentally damaging economic activities.
  - ILO & others advocate “social floor” & rights-based approach to protections.

NYCOSH

# ILO Just Transition (3)

- Social Dialogue
  - Transition policies are designed & implemented with active participation of those whose lives they affect: employers, workers, & farmers.
  - Main goal of social dialogue is to promote building of consensus & democratic involvement of all workplace stakeholders.
- Sustainable Businesses
  - Companies are asked to embrace, support, & enact 10 principles in areas of human rights, labor standards, the environment, & anti-corruption.

NYCOSH

# Examples of Just Transition (1)

- Spain
  - industry-based roundtables established to identify & reduce adverse effects on Spain's competitiveness and workforce as country complies with Kyoto Protocol.

- Germany
  - broad coalition of government, industry, unions, & environmental NGOs collaborating to renovate buildings for climate protection purposes, while at same time creating green jobs.

NYCOSH

# Examples of Just Transition (2)

- United States
  - idea of Just Transition embedded in proposed Congressional legislation on climate protection. Provisions include quality job training for displaced workers, temporary wage assistance, health care benefits to workers in training programs, & other measures.

- Argentina
  - government pushing incorporation of environmental clauses in collective agreements & participation of workers in policy processes to achieve sustainable development. Proposals to train trade union “environmental delegates” & promote good-quality green jobs in different economic sectors.

NYCOSH

# Local Just Transition Initiatives

- **Urban Agenda**
  - Urban Agenda works for a truly sustainable New York City - thriving, green, & just. We advocate policies & programs grounded in action-oriented research & supported by strong coalitions of unions, business, & the community.
  - We advocate for sustainable energy policies & the importance of green collar jobs. We are proud to be working with our diverse coalition partners. Our close working relationship with the New York City Central Labor Council has been critical to our success.

- **NYC Apollo Alliance**
  - NYC Apollo believes a visionary investment in advanced technologies, high performance building, & job training will create thousands of new jobs, increase worker productivity, & build a cleaner, healthier environment.
  - We bring unions, environmentalists & environmental justice advocates, businesses, educators, & community-based organizations together to reframe political debates, build new alliances, & implement a compelling policy agenda for social change.

NYCOSH

# Resources

This presentation is adapted from the following resources:

- **Blue Green Alliance**, www.bluegreenalliance.org/site/c.enKIITNpEiG/b.3227091/k.E4AB/Blue_Green_Alliance.htm.
- **International Labour Organization**, Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World. www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_098503.pdf.
- **NYC Apollo Alliance**, www.urbanagenda.org/nycapollo.htm.
- **Urban Agenda**, www.urbanagenda.org/.
- **U.S. Green Building Council**, www.usgbc.org/.

NYCOSH