



NEHIA Meeting March 25, 2009

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nationalgrid

The power of action.™

LEED and Sustainable Initiatives are Smarter

USGBC LEED; Leadership in Energy and Environmental Design

- ◆ Sustainable Sites
- ◆ Water
- ◆ Energy
- ◆ Materials
- ◆ Indoor Environmental Quality

Not all LEED Buildings meet the same standards

LEED and Sustainable Initiatives are Smarter

Indoor Environmental Quality vs. IAQ

- ◆ Views
- ◆ Personal control of HVAC and lighting
- ◆ Thermal comfort
- ◆ Low VOC; Carpet, paints, composite wood sealants, furniture
- ◆ Increased ventilation
- ◆ Outdoor air quantity monitoring and alarms
- ◆ Isolation of pollution sources; Copiers. Cleaning products, Walk off mats

Renewables vs. Efficiency

- ◆ **Mass. Technology Collaborative handles Renewables**
- ◆ **Utilities handle energy efficiency**
- ◆ **Municipal electric companies don't provide incentives**
- ◆ **Incentives available in MA, RI, NH, VT, CT, NY and ME**
- ◆ **Efficiency is more cost effective. Start here!**

How about a 5 year solar PV payback!

Get your Share

Massachusetts approx.

\$80 million for 2009 for Efficiency

Existing Buildings: Is Efficiency an IAQ Nightmare?

Efficiency vs. IAQ in Office Environments

Tighter envelopes (minor for Commercial)

Increased insulation

- ◆ Generally minor for Commercial properties
- ◆ Old mill buildings are exceptions

Lighting Efficiency

- ◆ Fewer lamps
- ◆ Major lamp recycling initiative
- ◆ Low mercury lamps (optional)
- ◆ LED: No mercury

Existing Buildings

VAV Ventilation and cumulative load reductions

- ◆ Comprehensive load reduction drives systems to part load operation
- ◆ Fresh air is set as a % total air volume.
- ◆ Lower load = lower total air and drives lower fresh air volume
- ◆ Accidental IAQ impact

Solutions: 1. Rebalancing, 2. Air flow measurement devices

Existing Office Buildings / Schools

Ventilation System Measures

- ◆ Demand control ventilation (CO₂) **May hurt**
- ◆ Enthalpy based economizer **No harm**
- ◆ Improved time of day control on ventilation **May hurt**

Existing Manufacturing

Sample opportunities for utility incentives

Variable ventilation rates

- ◆ VFD fans
- ◆ Worker presence sensors for ventilation
- ◆ VOC or Carbon Monoxide sensors

Add spot ventilation to lower general ventilation

Heat recovery from ventilation systems

Low pressure drop air filters

Solar wall Solar Duct to preheat ventilation air

Existing Manufacturing

Leverage Efficiency incentives for EH&S benefits

- ◆ **Healthier safer process may well be more efficient**
- ◆ **Use utility incentives to fund potentially 45% or more of process change with EH&S as a “side” benefit.**
- ◆ **Electric utility pays up to 45% plus gas incentives**
- ◆ **Potential for payback of 1.5 years or less.**

Existing Manufacturing Synergies between Industrial Hygienists and Efficiency

CASE 1: Your client / business needs increased ventilation but cost is an issue

- ◆ **Free estimate of operation cost and savings potential**
- ◆ **Utilities pay 50% of cost of efficiency study**
- ◆ **Gas incentive potential of \$1 to \$2 per therm saved**
- ◆ **Electric incentive to pay 70% of a more efficient way (incremental cost).**

Existing Lab Buildings; Ventilation System Improvements

Opportunity is huge

Easily \$5/cfm/ year to condition 100% OA

Barriers to more efficient ventilation rates

- ◆ Misperception that more is better
- ◆ EH&S experts and facility team “fear”. “Don’t change it!”
- ◆ Lack of understanding of how hoods work / don’t work
- ◆ Conflicting regulations
- ◆ Unfamiliar with alternatives

Try a 1 to 2 year payback!

Existing Lab Buildings

Ventilation System Opportunities

Reduced unoccupied ventilation rates

Simple rebalancing and reset for new uses

High performance hood conversions

- ◆ (40% to 50% lower cfm)
- ◆ No variation, fewer malfunctions from VAV
- ◆ Paybacks in 3

“No Vent” Carbon filter storage cabinets/ hoods.

CFD modeling for vivariums, production areas

2009 Lab Ventilation Efficiency Bonus!

Exclusively for National Grid Customers

Increase incentives:

- ◆ **Go from 45% TO 60% of retrofit project cost**
- ◆ **Reduce ventilation air volume by 20%**

New and Existing Chiller Plants

WATER TREATMENT ALTERNATIVES

- ◆ **Non-chemical cooling tower water treatment systems (May save energy, incentives may be available)**
- ◆ **Now recognized and sold by tower vendors**
- ◆ **LEED point potential**

LEED EB

- ◆ **Green housekeeping**
- ◆ **Chemical free water treatment**
- ◆ **Low VOC paint and maintenance products**
- ◆ **Policies on containing construction contaminants.**
- ◆ **Monitoring IAQ**

LETS WORK TOGETHER!

- ◆ **Industrial Hygienists have an important role**
 - ◆ Bring us to opportunities
 - ◆ Work with us to educate contactors
 - ◆ Educate lab facilities managers and EH&S staff
- ◆ **We can help you with technical and financial resources as well**