

Case Study:

Dana-Farber Yawkey Center for Cancer Care

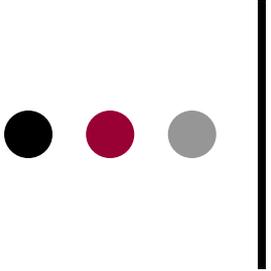
Strategies for Reducing Diesel
Emissions in the Healthcare &
Construction Markets

Kate Thomas, Assistant Project Manager
Walsh Brothers, Incorporated

Project Overview

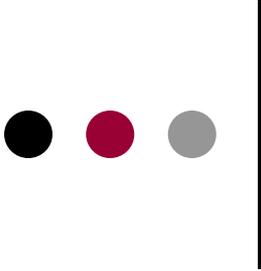
- Clinical Research and Treatment Facility in LMA
- Near 5-Year Schedule
- Dense Neighborhood





Motivation

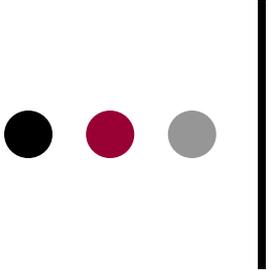
- Tasked with Mitigating Noise, Odor, Vibration
 - Neighborhood Relations
 - Patient/Guest Comfort
- Planned for filtration media, no-idling.
- Cold Call from GB3
 - Set the wheels in motion.



The Beginning

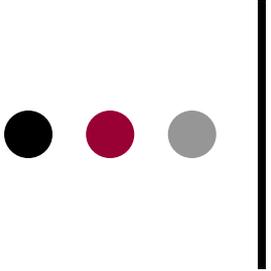
- Greater Boston Breathes Better Retrofit Seminar
- Introduced to Process, Technology
- Tasked WBI With Implementing Program





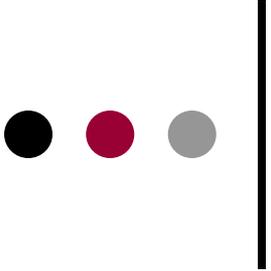
Program Goals

- Spec Was Created with Following Goals:
 - Require Advanced Pollution Controls
 - Diesel Emissions are a known contributor to serious health problems.
 - Improved Air Quality for Patients and Neighborhood
 - Improved Air Quality for Construction Personnel
 - Neighborhood Relations / Good PR
 - Market Transformation



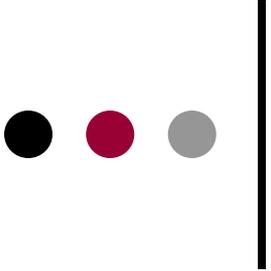
Executive Buy-In

- Convincing Execs, Sr. Management:
 - Natural Choice for DFCI
 - Cost Feasibility
 - Verification of Investment, Trusted Partner
 - Awareness of Patient, Community and Personnel Health Issues



Executive Buy-In, con't

- Convincing Execs, Sr. Management:
 - Customization:
 - All of These = Emission Reduction Program
 - No Idling
 - Alternative Fuels
 - No Idling + ULSD + EPA Approved Retrofit Technologies [WBI & DFCI]
 - In-House Technology Testing & Verification [Harvard]



Program at YCCC

o Staffing:

- 1 Person, a few hours weekly.
- No knowledge of engines or heavy equipment required [help from subcontractors and EPA]
- Create Contract Language, Templates
- Monitor Project Schedule for anticipated mobilizations
- Work with Subcontractors and EPA

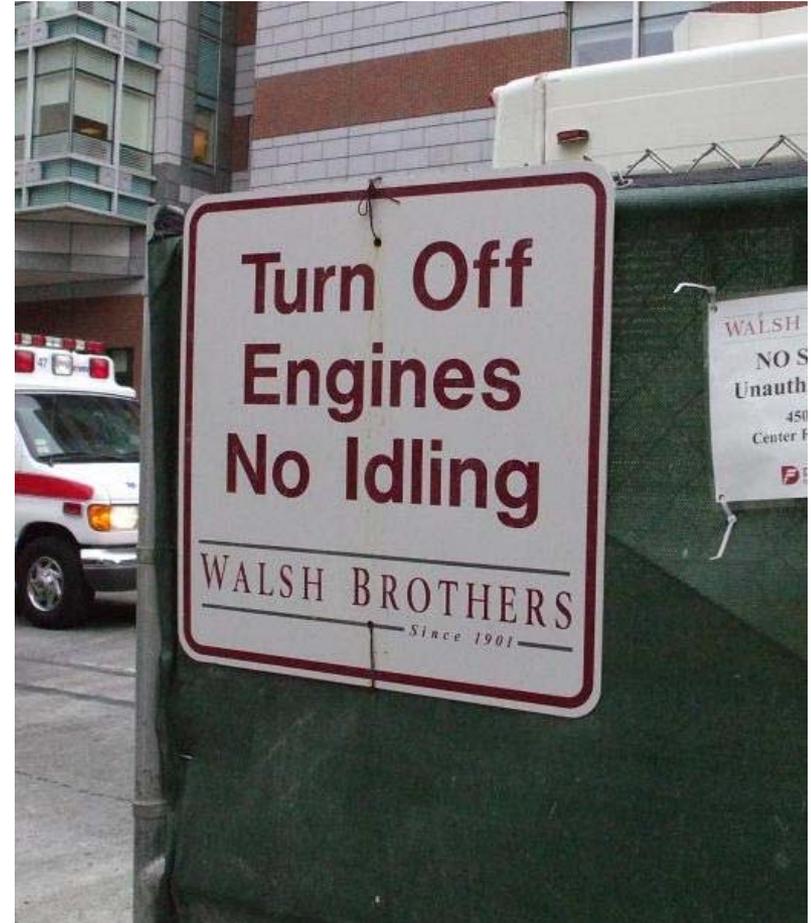
Contract Language

- Reductions:
 - 42% VOC
 - 31% CO
 - 20% PM
- Cleaner Fuels
 - Exclusive use of ULSD



Contract Language

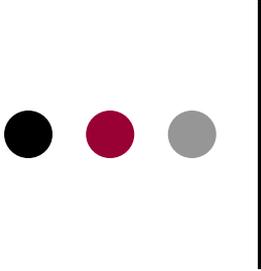
- Strict No-Idling & Turn-Off Policy
- Electric Powered Equipment
- Nuisance Odor Control
 - Away From Sensitive Receptors



Implementation: Working With Subcontractors

- Program Relies Heavily on Subs
- Included in Contract
- Pre-Mobilization Planning
 - Equipment Lists
 - EPA Verification Numbers & Devices
 - Cut Sheets!
- Clearly Labeled Equipment





Retrofits to Date

- o All DOC's and ULSD – 21 to date.

Equipment	Make/Model	Equipment	Make/Model
Crane	Manitowoc 777	Excavator	Cat 345
Crane	Manitiwoc 10000	Excavator	Cat 321
Crane	Soilmec SC-120	Excavator	Cat 321
Crane	Tadano TR400E	Excavator	Cat 375
Excavator	CAT M108	Gradall	XL-5200
Loader	Case 821C	Crawler Carrier	ISI-IC-45
Pump	Gormann Rupp	Drill Rig	Casagrande C-8
Pump	Thompson	Drill Rig	Cadagrande C-8
Excavator	Komatsu PC700	Compressor	Sullair 185
Excavator	Komatsu PC600	Compressor	Sullair 900
Excavator	Cat 345		



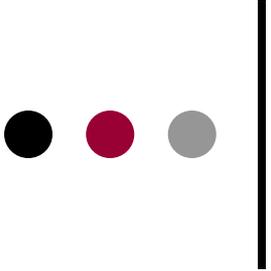
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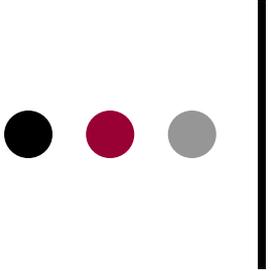
Retrofits to Date





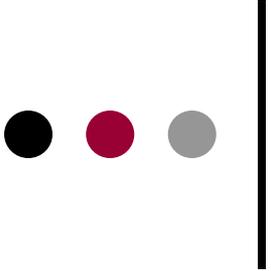
Planned Retrofits

- 2-3 Excavators, Spring 2008
- 1 Crane, Spring 2008
- 3-5 Compressors, Ongoing
- Asking Future Subs to Push Envelope
 - Example: A concrete sub can retrofit their pumps, but how to lessen impact of 'dirty' trucks bringing concrete to site?



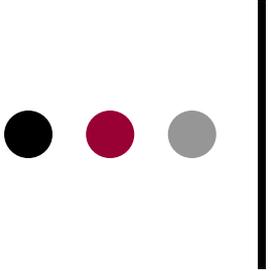
Maintenance / Operational Impacts

- NONE!
- Proper Sizing Ensures Proper Performance
- Routine Maintenance
- Subcontractor Fears:
 - Impact to Equipment Performance
 - Impact to Fuel Consumption
 - [Theoretically, reduced idling saves money from less fuel consumption!]



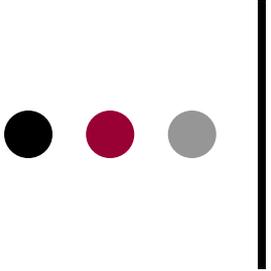
Program Funding & Cost

- All Program Costs by DFCI
 - < 1/1000 of total project cost
 - Routine Business Practice
- Moral / Social / Environmental Payback
 - Improved Air Quality = Improved Public Health = Reduced Healthcare Costs?



Program Funding & Cost

- Cost Per Vehicle
 - Range - \$500 - \$3,500
 - Total Cost of Program = Less Than \$125,000
- Reduced Idling Saves Fuel, Money
- EPA Validation of Investment
 - Important to Voluntary Program
 - Ensures Performance and Durability



LEED / GGHC

- LEED

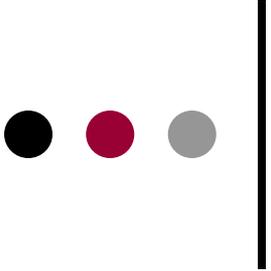
- Innovation Credit?
- Incorporation into V2.3?

- GGHC

- Component of MRc4.2

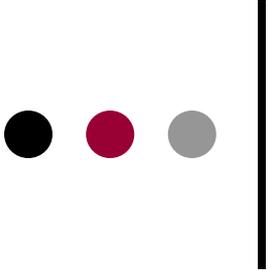
- Diesel Program Complements Other Environmental Efforts

- Indoor / Outdoor Air Quality
- Environmental Management Plan



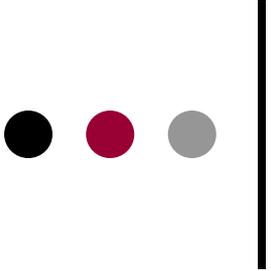
Hurdles

- Learning Curve
- Faith in Subcontractors
- Onsite Operations
 - Limits the subcontractor's ability to swap out equipment at will.
 - Enforcing No-Idling / Shut-Off
 - Verification



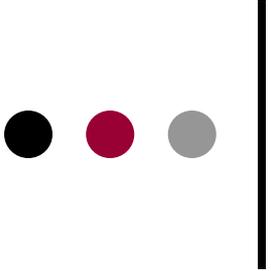
Positive Impacts

- Market Transformation
 - At the forefront of a new trend.
- Self-Perpetuating Cycle
 - Clear trend in marketplace. Subs gain experience, get more jobs. Owners talk, programs take root elsewhere.
- Environmental Stewardship
- PR



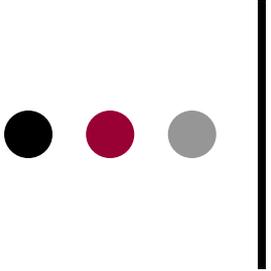
Positive Impacts

- For DFCl: Incorporation into DFCl Master Plan
 - Enhance Their Mission
- For WBI: Implement on New Jobs
 - Leaders in the Marketplace
- For Subcontractors:
 - Marketing Tool
 - Benefit From Participation
 - Gain Retrofitted Equipment



Lessons Learned

- ALL Devices EPA Approved
- What Would We Change?
 - Length of Time Onsite?
 - After the initial learning curve, the program is absolutely feasible.
 - Subcontractors are becoming more knowledgeable.
 - More than worth the cost.



Looking Forward

- Interesting Time for Diesel Powered Equipment:
 - Baselines are constantly improving.
 - Huge Need for Retrofits:
 - Case Study: Sitework Contractor, Fleet = 100 pieces of Equipment
 - Age 15 years to New
 - ¼ of the Fleet is New [<5 years]
 - 10% of Fleet is Retrofitted
 - Nearly ¾ of the Fleet Needs Retrofits



Questions