Why Not the Cleanest?

The Conversion of Heating Systems from Oil to Natural Gas and Other Not-So-Quick Fixes

Presented by Lewis M. Kwit

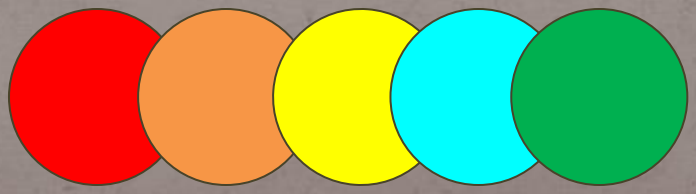
Energy Investment Systems

Why Save Energy?

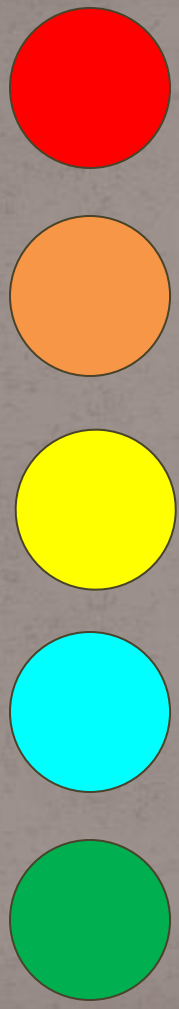
1. Reduce our dependency on foreign oil.
2. Save money.
3. Reduce pollution.

A Sustainability Protocol for NYC Apartment Buildings

- In 2009 EIS was engaged by Rudd Realty Management to develop a sustainability protocol.
- EIS conducted surveys of 15 condominiums or cooperatively owned apartment buildings in Manhattan.
- EIS developed a user-friendly gradation methodology ranging from red (danger) to green (energy saver) to rate the energy performance of major building systems.



EIS Heating System Gradations



Red	Steam or Electric Heat
Orange	Cast iron boilers
Yellow	Scotch marine boilers/oil fuel
Aqua	Scotch marine boilers/duel fuel capability
Green	Dual fuel Scotch Marine boilers & separate efficient water heaters

Major Findings

- Buildings are largely dependent on #6 oil to satisfy heating needs.
- Landmark district buildings (Upper East & West Sides) have a preponderance of leaky single-paned windows.
  - Electricity is primarily direct metered, that is, residents receive bills directly from Con Edison.
  - Many buildings have original elevator motors.
  - None had renewable resources.
  - Few sustainable characteristic in apartments.

The EIS Sustainability Audit

- From this base, EIS developed the city's first comprehensive Sustainability Audit aimed at assessing and improving the energy performance of the city's multifamily buildings.

- Heating is one major system discussed. Others are roofs, windows, lighting, electrical service, elevators, building envelope, and electric motors and drives.

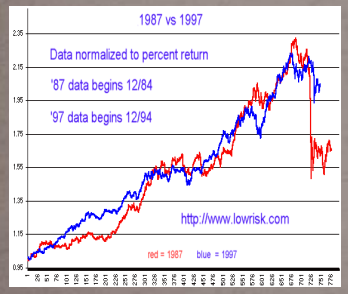
- Switching heating fuel from #6 oil (the most polluting on the market) to clean burning natural gas is at the heart of most of EIS Sustainability Plans.

Why convert from oil to natural gas?

1. Natural gas is produced domestically.
2. Gas prices are 20-30 cents lower than the oil-per-gallon equivalent.
3. Natural gas has a lower carbon footprint and lower levels of other pollutants than #6 oil.

The Conversion Process in Your Building

1. Retain an energy consultant to chart costs and savings.
2. Retain an engineer.
3. Locate a heating maintenance contractor.
4. Provide a "load letter" to Con Edison.



conEdison

240 Central Park South
Savings through Oil-to-Gas Conversion

- Two residential towers facing Central Park
  - 310 units plus commercial space
  - Two boilers using number 6 oil

Annual oil usage = 156,527 gallons
Current cost of oil = $2.24/gallon
Annual cost of oil (156,527 gal @ $2.24/gal) $350,620

Heat value of 156,527 gallons is equivalent to 234,791 therms of natural gas.

Current cost of natural gas = $1.05/therm
Annual cost of interruptible natural gas (234,791 therms @ 1.05/therm) $246,531

Annual savings **$104,089**

240 Central Park South

Cost of Oil-to-Gas Conversion

Replacement of 1 boiler, 2 burners, gas piping and booster pump	$600,000
Con Ed charge for new gas service	+$37,000
Minus cost of 1 boiler that is an essential service & thus inappropriate for payback analysis	-$100,000
Total Capital Cost	**$537,000**

Payback period: ($537,000 ÷ 104,369) = 5.16 years

Costs & Savings Side by Side at a Sample NYC Apartment Building

- 16 story building on Central Park West
- Built in 1929, building has 85 residential and 2 commercial units
- Heating system consists of a newly installed boiler that burns Number 6 oil

Costs		Savings	
Engineers Fees (plans & specs)	$5,000	Current annual #6 oil bill	
Engineers Fees (inspections)	2,000	55,000 gallons @ $2.10/ea	$115,500
Chimney cleaning	4,000	Natural gas for equivalent BTUs	
Equipment/installation	50,000	82,500 therms @ $1.20/ea	$99,000
Contingencies	20,000		
Minus utility rebates	($33,000)		
Net Cost	$48,000	Annual Fuel Savings w/ Gas	$16,500

Payback Period: ($48,000 ÷ $16,500) = 2.9 years

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