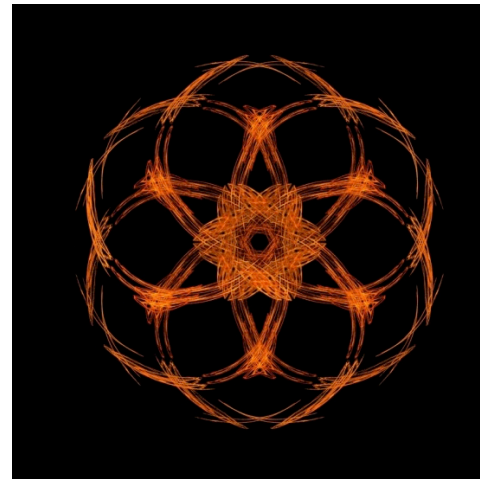


REAL-WORLD APPROACH TO HEATING OIL



1. ENERGY



Fuel BTU Output

- **Electricity:**
1 KW = 3,413 Btu/hr
- **Natural gas:**
1 CCF = 100 Cu Ft = 1 Therm = 103,000 Btu's
- **Propane:**
1 Gal Propane = 91,600 Btu's
- **Gasoline:**
1 Gal Gasoline (mid grade) = 125,000 Btu's
- **Ethanol:**
1 Gal Ethanol = 76,000 Btu's
- **Fuel Oil:**
1 Gal of #2 Fuel Oil = 139,000 Btu's
1 Gal of #4 Fuel Oil = 145,000 Btu's
1 Gal of #6 Fuel Oil = 150,000 Btu's

All of the following fuels are equivalent to 1,000,000 Btu's:

Electricity: 293.083 kWh
(3412 Btu/kWh)

Natural Gas: 1 MCF, 10 therms or 1,000 cubic feet

Coal: 83.34 pounds
@ 12,000 Btu/pound

Propane : 10.917 gallons
@ 91,000 Btu/gallon

Gasoline: 8.0 gallons
@125,000 Btu/gallon

Fuel Oil #2: 7.194 gallons
@ 139,000 Btu/gallon

Fuel Oil #6: 6.67 gallons
@ 150,000 Btu/gallon

FUEL OIL	
138,690 BTUs Per Gallon	
Fuel Unit Cost \$/Gal.	Unit Cost \$/MMBTUs
\$2.50	\$18.03
\$2.60	\$18.75
\$2.70	\$19.47
\$2.80	\$20.19
\$2.90	\$20.91
\$3.00	\$21.63
\$3.10	\$22.35
\$3.20	\$23.07
\$3.30	\$23.79
\$3.40	\$24.51
\$3.50	\$25.24
\$3.60	\$25.96
\$3.70	\$26.68
\$3.80	\$27.40
\$3.90	\$28.12
\$4.00	\$28.84

NATURAL GAS	
1,000,000 BTUs Per Thousand Cubic Feet (MCF)	
Fuel Unit Cost \$/MCF	Unit Cost \$/MMBTUs
\$12.00	\$12.00
\$12.50	\$12.50
\$13.00	\$13.00
\$13.50	\$13.50
\$14.00	\$14.00
\$14.50	\$14.50
\$15.00	\$15.00
\$15.50	\$15.50
\$16.00	\$16.00
\$16.50	\$16.50
\$17.00	\$17.00
\$17.50	\$17.50
\$18.00	\$18.00
\$18.50	\$18.50
\$19.00	\$19.00
\$19.50	\$19.50
\$20.00	\$20.00
\$20.50	\$20.50
\$21.00	\$21.00
\$21.50	\$21.50
\$22.00	\$22.00
\$22.50	\$22.50

ELECTRICITY	
3,413 BTUs Per Kilowatt-Hour (KWH)	
Fuel Unit Cost \$/Gal.	Unit Cost \$/MMBTUs
\$0.070	\$20.51
\$0.074	\$21.68
\$0.078	\$22.85
\$0.082	\$24.03
\$0.086	\$25.20
\$0.090	\$26.37
\$0.094	\$27.54
\$0.098	\$28.71
\$0.102	\$29.89
\$0.106	\$31.06
\$0.110	\$32.23
\$0.114	\$33.40
\$0.118	\$34.57
\$0.122	\$35.75
\$0.126	\$36.92
\$0.130	\$38.09
\$0.134	\$39.26
\$0.138	\$40.43
\$0.142	\$41.61
\$0.146	\$42.78
\$0.150	\$43.95
\$0.154	\$45.12

Pounds CO2 per Mbtu

- Natural Gas 117.08
- #2 Oil 161.39
- #6 Oil 173.91

Building Energy Load

- The total amount of energy to operate a building.
- Minimum Demand vs. Peak Demand
- Actual Heating and Cooling Loads



2. EFFICIENCY

Whole Building Approach

- Insulate it Tight; Ventilate it Right!
- Equipment Efficiency
- Use technology to eliminate human factor
- Resident health and comfort are priority!

Types of Fuels Used

Con Edison no longer operates generating plants to produce electricity. Con Edison of New York has a nominal output of approximately 700 megawatts of generating capacity from steam generating plants. Although Con Edison of New York produces only about two percent of the total electricity delivered, it uses the cleanest fossil fuels – natural gas and low-sulfur oil – to generate steam and electricity sold to customers.

The two regulated utilities purchase their electricity on the spot market, under firm power contracts, or through the wholesale electricity market administered by the New York Independent System Operator (NYISO). Many Con Edison Solutions customers are also supplied with electricity from the NYISO. Con Edison cannot track or control the energy sources used to generate the electricity purchased through the NYISO, although the primary fuels are varying combinations of natural gas, nuclear, coal, oil, hydro, and other sources.

CECONY	
Fuel Mix	Percent
Bio-Mass	< 1%
Coal	10%
Gas	43%
Hydro	4%
Nuclear	35%
Oil	6%
Solar	< 1%
Soild Waste	1%
Wind	< 1%
Total	100

O&R	
Fuel Mix	Percent
Bio-Mass	< 1%
Coal	30%
Gas	24%
Hydro	11%
Nuclear	22%
Oil	12%
Solar	0%
Soild Waste	< 1%
Wind	< 1%
Total	100%

CES	
Fuel Mix	Percent
Bio-Mass	< 1%
Coal	30%
Gas	22%
Hydro	11%
Nuclear	23%
Oil	12%
Solar	0%
Soild Waste	1%
Wind	< 1%
Tot.	100%

Energy Distribution Systems

- Over 50% of wasted energy is lost through the distribution system.
- Steam Traps and Vacuum Pumps are most often overlooked in maintenance programs.
- Insulate pipes, in general it will pay for itself in the first year.

Case Study #1

- Upper East Side Building, 158 units, #6 oil
- Changed all steam traps throughout building.
- Annual oil consumption dropped from 108,000 gallons to 64,000 gallons
- CO2 emissions down 400 tons annually

Case Study #2

- Murray Hill Building, 165 units, Electric Heated
- Upgraded all common area lighting, installed VFDs on circulating pumps
- Base load reduced from 220 kwh to 109 kwh.
- CO2 emissions down 30 tons annually



3. INCENTIVE PROGRAMS

RESTECH

- NYSERDA funded program
- Covered the cost of Energy Audit
- No longer active

MPP

- NYSERDA funded program
- Offered monetary incentive based on energy load reduction.
- New program began in July 2010

CON EDISON

- Demand side reduction program.
- Offers monetary incentives to reduce load
- Currently offering incentives for lighting and cooling loads

4. NEW LEGISLATION



Local Law 84: Benchmarking Energy and Water Use

- All residential buildings over 50,000 sq ft will be required to file their energy usage with the EPA beginning May 1, 2011.
- All residential buildings over 50,000 sq ft will be required to complete an energy audit beginning in 2013. This will include a plan to make the energy use more efficient. The year of compliance will be last digit of block number.

Montreal Protocol: HCFCs

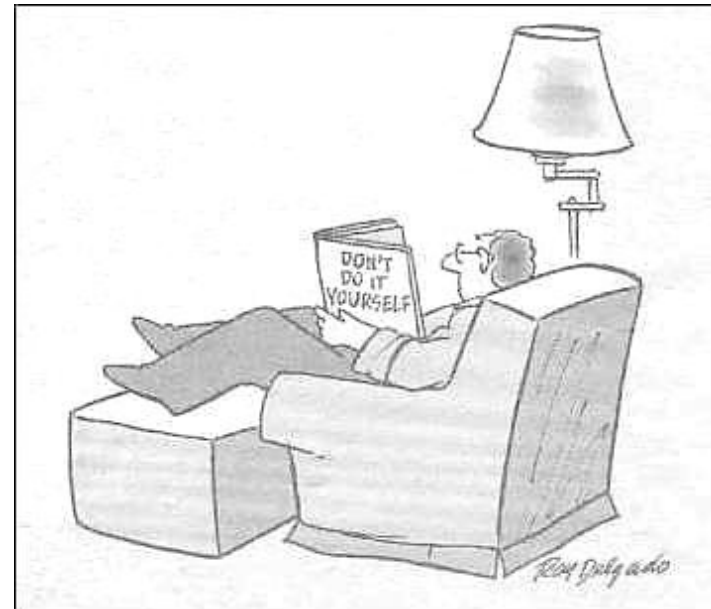
- Hydrochlorofluorocarbons (HCFCs)
- Freeze from beginning of 1996^b
 - 35% reduction by 2004
 - 75% reduction by 2010
 - 90% reduction by 2015
 - Total phase out by 2020^c

NYSERDA

New York State Energy Research and Development Authority

- NYSERDA is primarily funded by state rate payers through the System Benefits Charge (SBC).
- MPP is authorized by PSC beginning July 1, 2010

5. PROFESSIONAL SERVICES



TRAINING

- 1,000 Green Super Initiative
- BPI is offering free training through 32BJ for multifamily building operators.
- Resident Managers and Superintendents have the greatest knowledge of their buildings.

Consultants

- Engage a consultant for code compliance
- Look for professional accreditation
- Interview consultants.