

# NYC cleanheat

## Why burning No. 2 oil could end up costing about the same or less as burning No. 4 or No. 6 oil

Due to a biodiesel tax credit and increased efficiency, burning No. 2 oil could end up costing less than burning No. 4 or No. 6 oil. Burning natural gas is another option but not every building can get access to natural gas in the near future. For economic and health reasons, building owners that are switching out of No. 6 oil should switch directly to No. 2 oil and skip the switch to No. 4 oil. Buildings currently burning No. 4 oil should also switch fuel. Natural gas can be added at a later point when it becomes available.

*No. 2 oil mixed with bio-diesel could be cheaper than No. 6 oil due to a 5-year State tax credit.*

Additional costs incurred with No. 4 oil include:

- Anticipated higher price for the new *low sulfur* No. 4 oil as of October 2012. No. 4 oil is a blend of No. 6 oil and No. 2 oil. *Low sulfur* No. 4 oil will need to contain much more No. 2 oil (about 60%) to meet the new sulfur requirements. As a result, the price of low sulfur No. 4 oil will track the price of No. 2 oil closely;<sup>1</sup>
- 2-3 additional service calls due to No. 4 oil clogging the burner (oil separating);<sup>2</sup>
- Diminished boiler heat transfer leading to about 5% more gallons burned.



Dirty boiler tubes leading to decreased efficiency.



Clean boiler tubes provide optimal heat transfer.

Soot and dirt deposit on the boiler tubes when burning No. 4 or No. 6 oil. A dirty boiler leads to decreased heat transfer and reduced efficiency.

The result: more gallons of oil need to be burned for the same amount of heat that a clean boiler would produce.

### CASE STUDY

Manhattan Coop building that burned approx. 27,000 gallons of No. 6 oil during the winter of 2009/2010 burned almost **10% fewer gallons** during the following winter after switching to No. 2 oil **despite the lower energy (BTU) content of No. 2 oil** and despite 2010/2011 being a harsher winter.<sup>3</sup> Cleaner burning No. 2 oil improved the boiler heat transfer and resulted in fuel usage reduction.

## EXAMPLE: OPERATING COST COMPARISON

Assuming a 5% fuel usage reduction with No. 2 oil compared to No. 4 oil and a \$0.15 price difference<sup>4</sup>:

|                           | <b>No. 4<br/>(50,000 gallons)</b> | <b>No. 2 Oil<br/>(47,500 gallons)</b> | <b>Approx. savings<br/>with No. 2 oil</b> |
|---------------------------|-----------------------------------|---------------------------------------|---|
| <b>Fuel Cost</b>          | \$145,250 <sup>5</sup>            | \$145,378 <sup>6</sup>                | -\$128                                    |
| <b>Add. Service Calls</b> | \$1,000                           | \$0                                   | \$1,000                                   |
| <b>Boiler Cleaning</b>    | \$1,200                           | \$600                                 | \$600                                     |
| <b>TOTAL</b>              | \$147,450                         | \$145,978                             | <b>\$1472</b>                             |

**Capital costs** for buildings converting to No. 2 oil can be higher when the existing oil tank needs to be replaced.<sup>7</sup> Typically, underground tanks and those that are older than 30 years will need to be replaced. Eventually, all buildings will need to switch out of No. 4 and No. 6 oil so switching directly to No. 2 oil will ensure that a building is in full compliance with the New York City law and will not have to switch fuel again at a later point.

A **biodiesel blend** will reduce fuel costs for residential buildings due to the State biodiesel tax credit. A 20% biodiesel/No. 2 oil blend receives a 20 cents/gallon tax credit which is typically enough to bring the price close or below the No. 6 oil price. Biodiesel blends up to 20% (B20) can be used without any adjustments to the boiler or burner and have been tested in many buildings.<sup>8</sup>

Finally, all buildings should implement **energy efficiency measures** to increase savings and prevent overheating. Especially a separate hot water heater and a heat management system should be considered.<sup>9</sup>

**For more information:** [info@nyccleanheat.org](mailto:info@nyccleanheat.org) or Phone: 212-656-9202

<sup>1</sup> As of October 1, 2012, No. 4 oil can only contain 1,500ppm sulfur (low sulfur No. 4 oil) which is half the sulfur that is allowed under current law. In 2010/2011 the average price difference between No. 4 and No. 2 oil was around \$0.15/gallon based on Castle Oil and Hess Oil prices. With No. 4 oil's reduced sulfur content requirement, heating oil providers will need to use about 50% more No. 2 heating oil to make low sulfur No. 4 oil whereas now they are only using about 40% of No. 2 oil to make No. 4 oil. As a result, the price difference between No. 2 oil and No. 4 oil will most likely be smaller as of 2012 than it is now. No. 2 and No. 4 oil prices should track each other closely. Get price estimates from your heating oil provider.

<sup>2</sup> No. 4 oil is a mixture between No. 6 and No. 2 oil. The two oils can separate in the tank and the No. 6 oil can clog the burner requiring a service call.

<sup>3</sup> Almost 10% fuel savings despite winter '10/'11 having 7% more heating degree days compared to winter '09/'10. For details on this case study, go to [www.edf.org/cleanheat](http://www.edf.org/cleanheat). Daniel Gigante from Abilene, Inc., Rich Mortman from National Mechanical Services and John D. Maniscalco from the New York Heating Association all confirmed that a clean boiler can improve heat transfer leading to about 5% fewer gallons burned despite the lower BTU content in No. 2 heating oil.

<sup>4</sup> Based on a conservative estimate of a 5% fuel usage reduction with No. 2 oil due to improved heat transfer within the boiler and including the effect of the lower energy content of #2 oil (conservative estimate based on case study that showed a 10% reduction when going from No. 6 oil to No. 2 oil despite harsher winter).

<sup>5</sup> At \$2.91/gallon for regular No. 4 oil (price as of April 2011). See Endnote 1 for price difference predictions.

<sup>6</sup> At \$3.06/gallon for regular No. 2 oil (price as of April 2011). See Endnote 1 for price difference predictions.

<sup>7</sup> The oil tank will need to be cleaned, oil lines steam cleaned and possibly the oil pump replaced when going to No. 2 oil. Buildings with underground storage tanks and/or very old tanks will most likely need to replace the oil tank when switching to No. 2 oil to avoid leaking. Buildings need to be in compliance with all DOB, DEP and DEC requirements.

<sup>8</sup> According to Gene Pullo from Metro Terminals Corp., thousands of homes and buildings have been using biodiesel blends up to B20 without any problems. The biodiesel helps the fuel burn cleaner and reduce pollution.

<sup>9</sup> Given that most buildings are overheated, real savings come from implementing best maintenance practices and low-cost efficiency measures (e.g. heat management system, pipe insulation, steam trap replacement, thermostatic radiator valves or radiator shut off valves). Best maintenance practices and efficiency measures can lead to substantial fuel savings in the range of 5-25%.