



New York State Division of Housing and Community Renewal

25 Beaver Street
New York, NY 10004

MANAGEMENT BUREAU MEMORANDUM #2004-C-01

To: All Housing Authorities – Chairpersons and Executive Directors*
All Housing Companies – Owners, Managing Agents and Site Managers

From: Jane I. Berrie, Director
Housing Management Bureau

Date: February 10, 2004

Subject: Utility Consumption Record — Form HM-3
Report on Maintenance of Heating Equipment — Form HM-38

The Housing Management Bureau routinely undertakes initiatives to assist housing companies and authorities in coping with the energy costs that represent a substantial and increasing portion of the operating budgets of our State-supervised housing developments.

The recording and analysis of energy usage is essential in controlling energy costs. In order to assure that energy utilization information is reported accurately and can be relied upon for analysis purposes, you are required to submit the enclosed Utility Consumption Record (HM-3) for the period from July 2002 through June 2003 along with supporting documentation. In addition, to ensure that heating equipment is maintained at optimal operating efficiency throughout the year, you are required to complete and submit the enclosed Report on Maintenance of Heating Equipment (HM-38). Detailed instructions for the use of each of these forms are also enclosed.

The HM-3 is also available in an electronic format on DHCR's website at www.dhcr.state.ny.us, under "Housing Operations", "Forms". We encourage you to complete and print your HM-3 using this convenient format. If you have any questions about completion of this electronic HM-3, please call Josie Torres Melendez at 212-480-7314.

Please carefully review the descriptions below for each form, as well as the enclosed detailed instructions for each. Questions concerning these forms should be addressed to the assigned Housing Management Representative (HMR).

A. Utility Consumption Record (HM-3)

In order to demonstrate the success of energy conservation measures - or the need for more effective ones - energy use and costs must be carefully monitored. The HM-3 is designed so that all essential energy-related information can be recorded and examined easily. We believe you will find this form helpful in your efforts to monitor energy consumption.

Please complete the top part of the form. For items 1-22, *complete only those items which have changed since your last submission*. Enter the period covered as **July 2002 through June 2003**, and record all of the requested utility consumption data using information provided on utility bills or statements covering that period. Include copies of the supporting bills or statements (electricity, gas, fuel, water and sewer) with your submission to the Division. You may be able to obtain a printout of monthly consumption data from your service provider; this may be provided to the Division in lieu of copies of the actual bills. Your submission will be spot-checked by our office staff upon receipt, and you will be advised of any irregularities noted and necessary corrections.

B. Report on Maintenance of Heating Equipment (HM-38)

It is critical that management and maintenance staff utilize the HM-38 as a working tool in maintaining the heating equipment throughout the year. Division field staff will be reviewing your maintenance procedures at the site. For this review, it is essential that you have available at the site your copy of the HM-38, plus the boiler room log and all maintenance records that support the work done on the heating equipment.

Submit two (2) copies the HM-3 with one (1) copy of supporting bills or statements and two (2) copies of the completed HM-38 to the address below by March 19, 2004.

New York State Division of Housing and Community Renewal
Housing Management Bureau
25 Beaver Street
New York, NY 10004

ATTENTION: Josie Torres Melendez — Room 633

The original forms and documentation should be retained for your records.



Jane I. Berrie

* **This memorandum, unless otherwise indicated, is advisory or informational in nature for Federally-subsidized public housing projects.**

Encls: Form HM3 (01/04), Form HM-38 (11/00), Instructions for HM-3 (01/04), Instructions for HM-38 (11/00)

cc: Housing Authority Chairperson without Enclosures
Housing Company Owner without Enclosures

Instructions for Completion of Utility Consumption Record (HM-3)

At the top of the form enter descriptive information on your housing development including: project number, project name, total number of dwelling units, and total number of rental rooms. *If the information on items 1-22 has not changed since your last submission, it is not necessary to reenter this information.* Please indicate the reporting period and complete the utility consumption and cost data on the bottom of the form.

- 1 Enter the name of the utility or company that supplies electricity to your housing development and list the account number or numbers if you have more than one account.
- 2 If a different company than the company listed in 1 above also delivers the electricity to your housing development, enter the name of the utility or company that delivers electricity to your housing development and list the account number or numbers if you have more than one account.
- 3 Enter the rate or service classification applicable to your electric service.
- 4 If you have direct current (DC) electric service, enter the account number.
- 5 Depending on the type of metering at your housing development, you might have a master meter or the individual dwelling units might be individually metered or sub-metered. Enter the number of meters you have of each type.
- 6 If you purchase steam from another company, enter the name of the company and if applicable the account number.
- 7 Enter the total number of refrigerators in your housing development and the average age of all these refrigerators.
- 8 If you have natural gas service, enter the name of the utility or company that supplies natural gas to your housing development and list the account number or numbers if you have more than one account.
- 9 If a different company other than the company listed in 8 above delivers natural gas to your housing development, enter the name of the utility or company that delivers natural gas to your housing development and list the account number or numbers if you have more than one account.
- 10 Enter the rate or service classification applicable to your natural gas service.
- 11 If you use fuel oil, enter the name of the company that supplies fuel oil to your housing development and note the number grade of fuel oil supplied.
- 12 This section is used to provide information on any air conditioning system or units at your housing development. If you have a central air-conditioning system, enter the year installed, the number of chillers, the type of chillers (e.g., absorption, reciprocating, centrifugal, etc.), and the total installed tonnage. If your tenants have individual room or through-the wall air conditioners, enter the number of individual air conditioners.

- 13 Some housing developments may have interruptible natural gas service, and are at times asked to switch to an alternative fuel. If you have interruptible natural gas service, please describe.
- 14 This section is used to provide information on the heating system at your housing development. Enter the year installed and the fuel used. If you have a central heating system, enter the number of boilers, the total boiler(s) input, and the total boiler(s) output. If your tenants have individual heating units, enter the number of individual heating units and their average capacity (e.g., Btu/hr). Check the box for the heating distribution media at your housing development, either steam, circulated hot water or forced air. Also, provide information on the type of heating controls whether central controls or individual thermostats; if individual thermostats, indicate the number of thermostats.
- 15 This section is used to provide information on the provision of domestic hot water at your housing development. An important consideration is whether the hot water is generated through the same equipment used to provide space heating or the hot water is generated with separate equipment. With either configuration, indicate the year the equipment was installed and the fuel used to generate hot water. If you have a central hot water storage tank, indicate the size of the tank in gallons. If you have separate equipment to generate hot water, enter the total input and the total output. If your tenants have individual water heaters, enter the number of individual water heaters.
- 16 Enter the name of the supplier that provides water to your housing development.
- 17 Indicate the basis for the billing of water to your housing development, whether it is charged at a flat rate, is metered for gallons or cubic feet used, or some other billing basis.
- 18 If the company that provides sewage service to your housing development is different from the company providing water service, enter the name of that company providing sewer service to your housing development.
- 19 Does your housing development have a central laundry room? If so, please enter the number of washing machines and their average age.
- 20 Enter the total number of number of gas cooking ranges and / or electric cooking ranges in your housing development.
- 21 This section is used to provide information on the elevators in your housing development. Enter the total number of elevators as well as the type of elevator motors present.
- 22 This section should be used if you have any on-site generation of electricity. If you have on-site generation, enter the date of the installation, the name of the manufacturer of the generator(s), the number of generators, the total rated output of the generators in kW, and the total rated output in kVA.

On the bottom of the form, record utility consumption and cost data for the period from July 2001 through June 2002 using information provided on your utility bills or statements covering that period. This completed HM-3 must be accompanied by a copy of all supporting statements for electricity, gas, oil, water and sewer.

Instructions for Completion of Report on Maintenance of Heating Equipment (HM-38) (11/00)

I Individual Gas-Fired Hot Air Furnaces

(usually found in one and two story buildings)

- 1 Furnace filters, usually disposable type, are designed to trap lint and dust before reaching the heat exchanger.
- 2 Clean burner tubes and check color of flame. If flame is yellow, check for cracks or improper setting of tubes or of air adjustment.
- 3 Check flue for tight fit. While burner is on, check for leaks around joints with a lit match or candle. If flame on match or candle goes out, it is an indication that combustion gases are being released which requires *immediate action*.
- 4-7 Recommended maintenance: lubricate bearings of blowers, change filters, clean heat exchangers, etc .

II Burners

- 1a Flame of oil burners should be red and free of smoke.
- 1b Flame of gas burners should be bluish with no yellow spots.
- 2 Resetting air-fuel ratios and negative drafts on dampers of burners and of breaching should be done by certified personnel. A good draft for burners should be around .2 inches of water and around .5 inches of water for flues (breaching) .
- 3 Oil filter canister(s) located on suction side of pump for #2 oil has replaceable filter(s), while #6 oil uses strainers that must be cleaned periodically. Note that #6 oil must also be preheated to 140°F or 150°F before burning.
- 4 Boiler control panel should be in good working order showing:
green - when boiler is on
red - when boiler is off
yellow - when boiler is on stand-by
Draft gauges should indicate proper readings of drafts on burners and on breaching, boilers' lead-lag, etc.
- 5-6 Check working condition of gauges for: oil pressure including temperature of #6 oil, primary combustion air, negative pressure on vacuum systems and air pressure on supply or exhaust systems.
- 7 Check high fire modulation on large boilers.
- 8 Check reading on gauges (described on 5 and 6 above) that would indicate proper operation of fuel pump. Also, check for abnormal noise from pump bearings.
- 9 Good carbon dioxide (CO₂) readings for non-condensing type boilers are 11.5-13% for oil and 9-11% for gas. Higher concentrations of CO₂ are indicative of higher boiler efficiencies.

Gas boilers require a mandatory carbon monoxide (CO) test when installed. This test should be performed if CO is suspected in boiler room. It is recommended that CO detectors be installed in all boiler rooms with gas boilers.

The flame of a gas boiler should be bluish with no yellow tips.

Stack temperature for non-condensing boilers should be above 270°F. Normally, stack temperatures are around 350°F- 450°F. A high stack temperature equates to a higher heat loss through the chimney. High chimney temperature may indicate that cleaning or replacing tubes on steel boilers or cleaning flue passages on cast iron boilers is in order. Some boilers are inherently inefficient which results in a stack temperature higher than normal. High efficiency boilers (i.e. condensing type boilers) have flue temperatures of less than 150°F.

III Boilers

1-3 Inspection reports from insurance company.

4 Cleaning refers to soot removal by scraping and vacuuming tubes of either steel boilers or cast iron sections of boilers. The effect of soot built up on fuel consumption is as follows:

| | | | |
|-------------------------|-------|-------|------|
| Thickness of Soot | 1/32" | 1/16" | 1/8" |
| Approx. Efficiency Loss | 2.3% | 4.5% | 8.3% |

5 Plugged tubes reduce the efficiency of a boiler while increasing the temperature of its flue.

6 One or more pressure relief valves for each boiler are located on top or side of each boiler. Domestic hot water (DHW) boilers and DHW tanks must have relief valves for both pressure and temperature.

7 Refractory materials on fire boxes, baffles, etc. are designed to prevent combustion flames from impinging and damaging unprotected elements in the interior of boilers. Damaged or improperly installed refractory materials will shorten the life expectancy of boilers. Also, check refractory wall for soot deposits. If soot is visible check for proper setting of burner linkages or for proper spray pattern of nozzle.

8 Abnormal pressure and/or temperature changes should prompt the operator to look for possible malfunctions and take corrective action.

9 The temperature switch (one for each large boiler) is designed to shut off the fuel supply when temperature exceeds 165°F. The switch should be installed 6-12 inches above the burner.

10 If, after the boiler is switched on (predetermined time measured in seconds), the flame is not on, the boiler will shut down on safety.

11 Ideally, hydronic systems require little or no make-up water and therefore require little or no water treatment.

Steam systems require make-up water to replace water discharged during blow downs. Also, steam systems are prone to lose water, in the form of vapor, through defective steam traps or as condensate through corroded return condensate pipes. The soundness of a heating system can be determined from the amount of water that must be replaced within the system.

- 12 Pressure relief valves discharge either because they are defective or because the system they are designed to protect has reached its design pressure. When expansion tanks become water logged, the pressure relief valves of hydronic systems will discharge water. Usually, boiler operators do not take this seriously; however, over time this spillage will have an adverse affect on the life expectancy of boilers, as well as that of the rest of the heating distribution system.

III A Steam Only

- 1 Automatic chemical feed should be part of any central steam heating system.
- 2 Boiler operators should make sure that chemicals are always present inside the dispensing drum and that the chemical feed pump is working. Also, they should check water consumption on the make up water meter to confirm that the proper amount of chemical is injected into the system.
- 3-5 The reason for blowing down equipment (float chambers in boilers and on piping connected to automatic water feeder, low water cut off, site glass, etc.) is to keep it free of sediment while maintaining the boiler safe and at optimum efficiency.
- 6 If heat exchangers provide heat or DHW as per design and do not leak, they should not be tampered with. Leaks in heat exchangers can be detected as follows:
 - A On steam systems look for excess condensate.
 - B On hydronic systems look for abnormal pressure differences.
 - C Over time, exchangers for DHW may become partially blocked with mineral deposits and must be either cleaned or replaced.

III B Small Modular Boilers

- 1-5 Self explanatory.
- 6 Indicate whether coil (heat exchanger) is inside the tank or external.
- 7 Boiler capacity in BTU/HR or SQ. FT. of radiation can be read from the name plate on each boiler.
- 8 Burners should be opened annually, their nozzles should be renewed and, if necessary, other parts should also be renewed and/or adjusted.
- 9-11 Self explanatory.

- 12-13 Depending on the system (DHW and/or heating, and the time of year) the temperature range (160°F - 180°F) may be readjusted. It must be noted that the lower the range the less energy is required to provide the same heat and/or DHW. Also, the high number on the range should always be 10°F less than the high limit setting. Under no circumstances should hydronic and DHW systems have the high limit set at more than 210°F.

This is a DHCR requirement. (See III. 9 above)

- 14 Tests and maintenance work on all boilers should be *recorded in the boiler room log.*

IV Heat Distribution System

- 1 Maintenance staff should periodically check the settings of thermostats, valves, aquastats, pressure controllers, etc. Also, they should check and clean contactor relays including those of thermostats, clean air vents, louvers, etc.
- 2 When work cannot be done in-house (e.g. resetting valves on pressure reducing station, replacing components and/or re-balancing vacuum systems, etc.), contractors or consultants should be hired.
- 3-6 Self explanatory.
- 7-8 Life expectancy of steam traps varies greatly (5-10 years) depending on the type, and wear and tear, due to the amount of condensate going through them. Most of DHCR's low pressure steam systems have F&T (float & thermostatic) traps on steam mains and thermostatic traps on the return side of radiators. Normally, F&T traps are located at the end of steam mains and risers in basements or in boiler rooms. Steam escaping from the condensate vents indicates that some traps are malfunctioning. Malfunctioning radiator valves will cause rooms/apartments along that riser to be either cold or overheated.

Starting with malfunctioning steam mains and risers, maintenance staff should inspect, repair and/or replace all steam valves. This required cyclical work should be scheduled over several summers. All repairs and/or replacements should be *entered in the boiler log.*

- 9 Automatic zone valves respond on signal from the controller. Several other sensors within the system must work properly in order to supply the right information to the controller.
- 10-11 Self explanatory.

V Miscellaneous

Self explanatory.