

Appendix F

National Conference on Weights and Measures Task Force on Energy Allocation

Summary

The National Conference on Weights and Measures (NCWM) Task Force on Energy Allocation met October 6-7, 1988, April 5-6, 1989, and June 19-20, 1989 at NIST in Gaithersburg, Maryland. As a result of extensive study and discussion prior to and during these meetings, the Task Force concluded that:

- 1) energy or utilities allocation is not a weights and measures concern with respect to device regulation;
- 2) the NCWM Liaison Committee should approach an organization which might more appropriately regulate energy or utilities allocation systems;
- 3) information collected by the Task Force should be presented to such organization in the form of a recommended regulation as a basis for that organization to begin its work;
- 4) the Task Force should assist the Liaison Committee as requested; and
- 5) guidelines should be provided for use by weights and measures jurisdictions that receive complaints on allocation systems.

Details of all Task Force meetings are available upon request. A copy of the Recommended Regulation for Energy or Utilities Allocation Systems referenced in Item (3) above was printed in NCWM Publication 16 as Appendix G to the Interim Report of the Executive Committee.

In the process of assisting the Task Force with the issue of energy or utilities allocation, members of the energy or utilities allocation industry formed an association known as National Utilities Allocation Association. As a result of the Task Force meetings held since the publication of Appendix G in NCWM Publication 16 and comments received from members of the energy or utilities allocation industry, changes have been made to the recommended regulation. A final version of the recommended regulation is given in a revised version of Appendix G along with a summary of the major changes.

In the process of developing the recommended regulation, the Task Force discussed the use of a standardized complaint form to be used for registering complaints about energy or utilities allocation systems. The Task Force developed samples of a tenant complaint form and a management response form. These sample forms are intended to be presented to the regulating agency for their use in developing their own version of such forms and might also be used by weights and measures jurisdictions. Copies of the forms accompany this report.

A detailed report of the work of the Task Force since its establishment will be available in the form of a National Conference on Weights and Measures publication following the National Conference on Weights and Measures in July 1989.

Background Information

Study of the issue prior to the October meeting provided the Task Force with an overview of the types and capabilities of energy allocation systems in use in the United States. The systems used to allocate costs of energy usage are divided into two broad categories: a gas, oil, or electric fired heating system or a hydronic heating/cooling system. The Task Force reviewed each type of system to determine its ability to provide the actual measurement of energy usage as required by the weights and measures community. It examined the types of systems used with each of these heating methods. The criteria outlined below are considered to be minimum requirements for a system to be appropriate to the weights and measures community. Failure to meet these criteria indicates that "assumptions" are being made to arrive at a supposedly "measured" quantity.

Many of the identified systems may utilize precise measuring instruments for part of the total energy measurement. However, these systems were found to make assumptions about various other parameters

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required to arrive at the final energy determination. Because these systems only approximate energy usage and do not provide actual energy measurement, it is the opinion of the Task Force that they do not lend themselves to rigorous certification procedures (for example, testing for repeatability and accuracy) required by weights and measures.

Gas, Oil, or Electric Fired Furnace Systems:

1) Elapsed Time Monitors

Many of these systems do not have all of the parameters considered necessary for determining energy usage. The following features are considered minimal for an elapsed time monitor system to be adequate for determining energy usage.

Note: Elapsed time monitors are not acceptable for use with variable rate heating devices.

- a) For constant rate furnaces, monitor the time of gas, electric, or oil delivery (or cubic feet of gas delivered, or kilowatt hours consumed for electric systems, or gallons consumed for oil systems);
- b) Provide the rate of consumption of the furnace or, alternatively, the metered rate of gas (cubic feet per hour), electricity (kilowatts), or oil consumption (gallons per hour);
- c) Provide means to assure that the timer is activated only when gas, electricity, or oil is being consumed.

Comparisons with devices or systems that do provide measurements must be made prior to concluding whether or not these systems are able to measure or provide a basis for calculation of actual energy usage.

2) BTU Meters

No BTU meters for gas, oil, or electric fired systems are known. (Metered electric kilowatt hours, cubic feet of gas, or gallons of oil do provide a basis for the calculation of BTU energy input.)

3) Time/Temperature

No time and temperature systems for gas, oil, or electric fired systems are known.

4) Comfort Systems

These systems do not provide an acceptable means for determining energy usage; they only monitor the setting of the thermostat; they do not measure actual energy usage.

Hydronic Heated/Cooled Systems Served By In-Building Boilers and Chillers, Or By District Heating and Cooling:

1) Elapsed Time Monitors

These systems are inappropriate since they do not measure two important parameters for energy use determination: the temperature and the flow rate of the water.

If these systems were to measure the temperature of the water and the flow rate, they would then fall into the category of BTU meters.

2) BTU Meters

These meters are capable of completing the BTU Formula by determining the following parameters to be used in calculating the total energy usage:

- a) change in temperature of the water;
- b) volume of water; and
- c) time

These devices appear to be acceptable means of determining energy usage for the purposes of cost allocation since they take into account the parameters required to determine actual energy usage. The landlord will determine a cost per unit of energy for each billing period. When setting the cost per unit of energy, the landlord must take into account the cost of maintaining the heating/cooling system and the amount that was paid for the fuel, electricity, or thermal energy used to run the heating/cooling system. The tenant's bill will be calculated from the amount of energy used (as determined by the BTU meter) and the cost per unit of energy that the landlord set for that billing period.

In determining the cost of operating the hydronic heating system for the building, kilowatt hour meters (for electricity), and Btu meters (for thermal energy) can be used to calculate or directly indicate the BTU energy input. Oil consumption meters (in gallons), or gas consumption meters (in cubic feet), can be used to calculate total BTU energy input including stack loss. (They cannot be used to calculate the portion not including stack loss.)

3) Time/Temperature Monitors

These systems measure time by use of a timing device. They determine temperature using a temperature sensor or by assumption. These systems were determined to be inappropriate from a weights and measures standpoint since they do not measure flow rate, and they may assume temperature. In order to be appropriate, flow rate should be measured, and the temperature value should not be assumed. If these two parameters were to be measured, the system would then fall into the category of a BTU meter.

4) Comfort Systems

The Task Force has determined that, from a weights and measures standpoint, these systems do not provide an acceptable means for determining energy usage. These systems only monitor the setting of the thermostat; they do not measure actual energy usage.

Recommendations

Although energy or utilities allocation systems are not fully acceptable in terms of measurement, Task Force members recognize that they fulfill a need and serve a purpose to landlords and to tenants, and they may provide an incentive to conserve energy. The Task Force feels that weights and measures should not regulate these systems as measurement devices, but that it has an obligation to the members of the National Conference on Weights and Measures to guide the issue in a direction which will ultimately result in resolution. Failure to pursue the issue in this manner would prevent the Task Force from fulfilling the tasks originally delegated to it.

The Task Force makes the following recommendations to the NCWM based on its extensive study and discussion; they address the needs perceived by the members of the National Conference on Weights and Measures.

- 1) Request that the Liaison Committee work with the Task Force to:
 - a) approach a national organization, such as the National Association of Regulatory Utility Commissioners, which would more appropriately regulate energy or utilities allocation systems; and
 - b) work with industry groups such as the International District Heating and Cooling

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Association, American Society of Heating and Refrigeration Engineers (ASHRAE), Building Owners and Managers Association (BOMA), or National Utilities Allocation Association (NUAA) to develop guidelines for these systems.

- 2) Request that the Liaison Committee present the information collected by the Task Force in the form of a recommended "regulation" (along with suggested tenant complaint and management response forms) to the regulating organization. The regulating organization could use the regulation as a basis for establishing its own set of requirements for the regulation of energy or utilities allocation systems. The intent of providing a model "regulation" is to:
 - a) provide an incentive for the regulating organization to develop requirements for the regulation of energy or utilities allocation systems; and
 - b) increase the likelihood that the requirements identified in the draft will be in the final regulations established by the regulating organization.
- 3) Provide the benefit of the knowledge of the Task Force members in the area of energy or utilities allocation to the Liaison Committee in encouraging the regulating organization to implement these recommendations through its members in each state.
- 4) Propose that the following guidelines established by the Task Force for weights and measures officials be utilized by jurisdictions that receive complaints on these systems.

Outline of Procedures for Responding to Complaints About Energy or Utilities Allocation Systems

a) Contact All Parties Involved

- i) Gather as much information as possible from all parties involved to ascertain if the complaint pertains to energy or utilities allocation systems. (Complaints which do not pertain to energy or utilities allocation systems should be referred to the appropriate agency.) Include a detailed account of each party's version of the incidents which took place. If possible, include such information as the nature of the complaint, the time period over which the complaint took place, the manufacturer and model of the system involved in the complaint, the names and addresses of all individuals involved, and what other agencies the complainant has contacted.

b) Involvement of Other Agencies

- i) If another agency (or agencies) is known to have regulatory authority over such systems, contact that agency (or agencies) and provide them with the information collected in (1)(A). Request that they proceed with the complaint and notify the complainant.
- ii) If no other agency is known to have regulatory authority over energy or utilities allocation systems, it will be necessary to identify other agencies which might better provide assistance to the complainant.
- iii) Some suggested contacts of regulatory and non-regulatory agencies include:

Consumer Protection Agency of the Office of the Attorney General
Local or State Consumer Protection Office
Landlord/Tenant Organization
National Utilities Allocation Association
Public Service Commission/ Public Utilities Commission
State or Local Building Inspector's Office
State Department of Energy

- iv) If the efforts listed in (A) and (B) fail to identify an agency which is able to assist the complainant, an agency which will act as a mediator must be identified. As a final alternative, it may be necessary for the state/local weights and measures office to act as a mediator for the parties involved.

c) Referral to the NUAA

- i) Advise complainant to contact NUAA at NUAA's toll-free telephone number (This number is to be established in August 1989 and will be distributed to state weights and measures directors for distribution to local weights and measures offices.)
- ii) Advise the complainant to contact weights and measures if NUAA is unable to assist them in the resolution of their complaint.

d) Weights and Measures Office as Mediator

- i) In the event that NUAA is unable to assist the complainant in the resolution of the complaint, it would be advisable for the weights and measures jurisdiction to attempt to mediate the complaint in a non-regulatory role.
- ii) If unable to successfully mediate, advise the complainant that, as a last course of action, they may wish to pursue the complaint through their local legal system.

e) Documentation

Adequate documentation should be maintained throughout the handling of the complaint. Any forms or procedures normally used by the weights and measures jurisdictions for handling complaints should be used. Documentation should include all details of the complaint, all details of weights and measures participation, and a description of contacts with other agencies. Since it may be necessary for the weights and measures office to participate in the resolution of the complaint, sufficient documentation is essential.

f) Completion of Complaint

Whether or not the weights and measures jurisdiction has handled the entire complaint, the weights and measures office should follow up by contacting the complainant after a reasonable period of time to insure that the complaint has been satisfactorily resolved. Use any additional procedures normally used by the jurisdiction for following up on a complaint to determine if the complaint can be closed.