

Preliminary Study
Small Boilers in the Headquarters Building
and the Printing & Photography Building

I. Background

As worldwide interest in energy has changed because of the rising cost and questionable availability of oil, the economical approaches to the efficient use of energy have expanded. While the thrust of past efforts was to design and maintain power plants to meet demands efficiently, a new parameter includes expenditures for various sizes of equipments to meet limited special conditions. Such expenditures would not have been economically justified prior to the oil crisis.

To increase steam production efficiency in the Headquarters area, studies have been made and projects have been designed to take advantage of the available resources. An early study examined the feasibility of generating steam by burning the refuse from the classified waste disposal systems. Though initial information appeared promising, the final conclusion was that it took more energy to burn the refuse to make steam than it took to make steam without the refuse.

A study was made to determine if a smaller boiler could be placed in the Powerplant to provide steam more efficiently during late spring through early fall when steam requirements were less. The small boiler could also be fired in concert with one or more of the existing large boilers to efficiently satisfy peak requirements. The study indicated that such a project would be effective in conserving energy and a design for this work is now near completion.

II. Requirement

To this point, the steam conservation efforts have been targeted at the Powerplant. Since the Powerplant and the buildings served by the Powerplant are remoted from each other, steam transmission lines are required to provide service. While new steam lines are being designed to replace existing lines and provide redundant transmission facilities, any steam line will radiate some amount of heat regardless of the insulation. This amount is rather constant and is a function of the properties of the insulation.

During winter operation, the buildings use an amount of heat that is relatively large compared to the heat that is lost through the transmission lines, since the lines are designed to handle the greatest heating requirement. During summer when the heating needs are less, the heat lost through the transmission lines is theoretically only slightly less than in the winter. Since the steam used has dropped significantly while the transmission loss has almost remained constant, the transmission loss now becomes a significant part of the overall summer steam load.

The requirement then is to determine if there is an economically efficient way to operate the Headquarters complex during some summer period so that the Powerplant's steam equipment and transmission lines can be secured and some energy saved.

III. Discussion

A. Steam is supplied in quantity to two main facilities, the Headquarters Building and the Printing & Photography Building. As both have significantly different functions and equipment, they will be discussed separately.

1. Headquarters

The main uses of steam in the summer are for operating cafeteria equipment and for heating water for comfort facilities and for film type processors. A small amount is used for humidity control. The film processor and humidifier steam loads are individually small and scattered. They could probably be satisfied by individual electric hot water heaters and portable humidifiers. The hot water for comfort facilities can probably be secured during this period. An exception would be the medical facility on the first floor and then an electric hot water heater could be installed.

The cafeteria steam load is large and concentrated. The utility room under the cafeteria kitchen contains an old fan and an old chiller, either of which could be removed to provide space convenient to the existing steam distribution station for a boiler of sufficient size for the cafeteria. The exhaust stack could be run vertically in the south courtyard. The boiler could be fired using the same propane

gas line now used for the classified waste incinerator. The boiler would be fired at a low 15 pounds per square inch pressure setting, eliminating the need for an additional operator.

The disadvantage is that there would be no quick backup should the small boiler fail since the Powerplant boilers and the transmission lines would be cool. The estimated time to start the main boilers, heat the transmission lines and supply steam would be between eight and ten hours assuming that the steam system is not in some maintenance or repair status.

B. Printing & Photography Building

Steam is used in the Printing & Photography Building to provide hot water for film processors, chemical mixing operations, comfort facilities and for temperature and humidity control. All of these needs are important to a printing and photography facility. All of these needs could be handled by a small boiler located in the basement of the Printing & Photography Building in available space convenient to the existing steam station. The exhaust stack could be routed vertically through the first floor and roof. The boiler could be oil fired with oil being supplied by a pipe line between the boiler and the existing fuel tanks at the Powerplant.

The disadvantage is again the loss of the boiler and the eight to ten hour minimum period before steam could be supplied from the Powerplant.

C. The heat lost through the existing transmission lines would be difficult to determine accurately without outside assistance as the piping is in questionable condition as evidenced by a GSA project, estimated at more than \$1,000,000, to replace it and some chilled water lines. However, by comparing the June fuel oil consumption rate with the maximum firing rate of the two small boilers discussed above, an estimated saving of between 22,000 gallons and 37,000 gallons of fuel oil could be realized for the period of July and August.

D. The cost of installing the two boilers is estimated to be in the \$110,000 to \$125,000 range in the FY 79-80 period. The cost to install electric hot water heaters has been discussed with the GSA Langley Buildings

Field Office personnel, and it was agreed that GSA would attempt to fund the cost of the hot water heater installations in the Headquarters Building.

E. One building that has not been discussed is the Motor Pool. This facility normally uses hot water for comfort facilities and showers but as an energy saving measure the steam to this facility is presently secured for the summer.

IV. Conclusion and Recommendations

It appears that the installation of a small boiler in Printing & Photography Building and the installation of a small boiler and an assortment of electric hot water heaters and humidifiers in the Headquarters Building could be an energy saving project.

The General Services Administration is the operator of the Headquarters complex and is the primary agency to make such energy oriented changes or alterations to the physical plant as this study addresses. It is, therefore, recommended that the GSA be advised of this preliminary study so that it may be examined in more detail by their engineers and incorporated in their energy conservation programs as appropriate.

Steam Generating Efficiency

To reduce fuel costs to a minimum, the steam generating equipment should operate at or near maximum efficiency on a continuous basis. Toward that goal, the steam requirements have been divided into operational modes consistent with seasonal loads and have been phased assuming that additional equipment is placed for maximum efficiency.

1. Phase I

Phase I is the present operational mode whereby all steam is produced by one or more of the three large boilers in the Powerplant. The steam that is produced is supplied to the various campus buildings via steam transmission lines.

2. Phase II

Phase II assumes the installation of a small boiler (less the half of the capacity of one large boiler) in the Powerplant. This small boiler is sized to be efficient over a five month, late spring through early fall, period. It can also be used during those winter periods when the load requirement would fall within a range where the combination of one large boiler plus the small boiler would be more efficient than the combination of two large boilers. The energy savings result first from matching the equipment capabilities to the load. Second, the new boiler incorporates more automatic controls as well as improved technology and design to eliminate the effects of presently performing some manual operations and to reduce the impact of operator error or judgment.

The operating efficiency of the boilers has recently ranged from a high of 81 percent in January to a low of 70 percent in May. For the purpose of computing a fuel saving it is assumed that the average summer efficiency without the new boiler is 74 percent, that the efficiency with the new boiler will be between 80 percent and 82 percent, and that the average steaming rate will be 13,000 pounds of steam per hour. The expected savings under these assumptions should be between 30,000 gallons and 45,000 gallons of No. 6 fuel oil for the summer period of May through September.

5. Phase III

Phase III assumes the installation of small boilers located in individual buildings instead of in the Powerplant. These individual boilers are sized against limited summer loads. During a Phase III operation, the Powerplant and the campus transmission lines would be secured. The energy savings would result from further matching of the additional equipment to a reduced load and from not producing the heat normally lost from the Powerplant equipment and the transmission lines. The energy saving beyond Phase II is estimated to be between 5,520 and 24,400 gallons of No. 6 fuel oil. The estimated saving if Phase II were not implemented was previously estimated to be between 22,300 and 37,200 gallons of No. 6 fuel oil.

The above three phases represent a plan of progressive refinement of steam conservation. Phase II is the result of a detailed study by an independent engineering company. It represents an addition to the primary steam generating equipment in the Powerplant to maximize the operating efficiency of that facility, and it is a funded project with design nearly complete. The third phase is the result of trying to determine if there is any way to go beyond Phase II and achieve additional savings. While Phase III has not been studied in the same detail as Phase II, the preliminary examination indicates that additional energy saving may be realized by reducing some steam service in the Headquarters and Printing & Photography Buildings and by installing small boilers and electric hot water heaters where service cannot be reduced. This third phase should continue to be examined, probably by GSA because of their more primary role in operating the Headquarters facilities.

A bar chart illustrating the three phases described above is attached.

Att

Operational Mode

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Jan Feb Mar April May June July Aug Sept Oct Nov Dec

Phase One: Present

1st Lge Blr

One or more large
boilers in the power
plant.

2nd Lge Blr

Phase Two: Add small
boiler to the power
plant.

1st Lge Blr

2nd Lge Blr

Small Blr

Phase Three: Add Bld
boilers and elec. hot
water heaters.

1st Lge Blr

2nd Lge Blr

Small Blr

Bldg Blrs

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Oil Program May Revive Gas Lines

Heating Fuel Plan Also Faulted for Sharp Price Rise

By Larry Kramer and John M. Berry
Washington Post Staff Writers

While the federal government's program to force increased heating oil production apparently has succeeded in ensuring an adequate supply this winter, it appears to have caused two important side effects: sharply increased prices and a looming prospect of gasoline lines next spring.

In ordering the oil industry to have 240 million barrels of home heating oil in its tanks by the end of next month at all costs, the Carter administration also:

- Allowed the oil industry to boost heating oil prices more than 50 percent since January, including an equal boost in refinery margins (which includes profits) during that time.

- Forced the industry to stockpile so much heating oil as insurance against shortages that it may have to cut back gasoline production for lack of storage space.

The latest Energy Department figures show that home heating oil and diesel fuel in refinery storage tanks reached levels slightly above what they were at the same time last year.

And if refinery production continues at its present level, it appears the industry could have as much as 255 million barrels in storage by President Carter's deadline.

But the price for that abundant supply has been high. Heating oil prices have gone from about 50 cents a gallon last fall to about 87 cents a gallon today, a jump of around 75 percent.

And there are indications now, according to DOE officials, that a large portion of that increase came in the form of industry profit boosts.

At a time when prices and profits would under normal circumstances drop because demand for heating oil was dropping, just the opposite has happened.

Because the administration wanted to be extra sure that there would be no winter shortage, it essentially created an artificial demand for heating oil that would not normally have been justified.

And the industry, which has long felt its profits on heating oil to be inadequate, used the situation to increase profits, boosting the price of heating oil far more than was justified by import crude oil price increases.

While some of the added increase is clearly due to increased operating costs to refiners, even oil company officials admit they have begun to raise profits to what they consider to be more equitable levels than they have had in the past.

"There is without question an element of increased profits. Our profits on heating oil have definitely improved," says Charles Bowman, vice president of Gulf Oil Refining and Marketing Co. But, he added, the boosts represent "the first real increase in profit margins in this industry since 1973 when heating oil was first put under price controls."

Those controls were removed in 1976, but a soft market for heating oil, which is being used in fewer and fewer homes each year, has prevented the industry from increasing profit margins.

Administration economists anticipated, for example, that normal petroleum consumption during the fourth quarter of 1979 would be 6 percent above a year ago and 9 percent above 1977, based on another overly optimistic estimate that the gross national product would jump 3.5 percent in 1979. Instead, it now appears, demand is dropping as a recession takes hold.

And, the DOE forecasters paid little attention to the impact that mandatory heating standards and switching to natural gas or other fuels would have in reducing overall consumption. Those factors, it now appears, will result in significant reductions in consumption.

And, finally, the DOE forecasters made no adjustment to their consumption projections to account for the impact higher heating oil prices would have on its use by residential, commercial and industrial users.

"We always thought the 240-million-barrel level was too high," says Ted Eck, chief economist for Standard Oil of Indiana. "I thought 210 or 220 million barrels had more logic. We thought there would be a recession, and that higher heating oil prices would repress demand. I haven't met anyone who uses heating oil who isn't doing something like wearing a sweater or just turning down the dial to reduce the amount of heating oil used."

Gulf's Bowman said he, too, viewed the government figures as being "on the high side. And our view has not changed. But our main concern was the timing of when they wanted peak inventory levels."

Bowman said Gulf usually considers Dec. 1 the time to have peak stocks in order to insure adequate coverage during the winter. Carter originally set Oct. 1 as his target, but later moved that to the end of October.

Departing Deputy Energy Secretary John O'Leary now defends the 240-million-barrel figure by saying "we had no choice." He said the administrator was so concerned with insuring supplies for the winter that it had built in an additional 20 million "fudge factor" into the 240-million-barrel figure, in case the winter was an extremely bad one.

But, Bowman says, "O'Leary never talked to us about any 20-million-barrel pad."

The problem with the government projections may be that they were motivated more by political considerations than economic ones, administration sources say.

Participants in the interagency task force on energy set up by Carter say that during that group's meetings, the question of Carter trooping through the snows of New Hampshire during a heating oil shortage was raised several times. That risk, they were told, had to be avoided at all costs.

At the same time, administration insiders report, little consideration was being given to the meaning of the statement "all costs."

Besides creating a fear of shortages that did help to push prices up, the administration warning to refiners to produce huge amounts of heating oil, and fast, sent scares through consumers, particularly in the Northeast. That situation resulted in a willingness on the part of consumers and retailers to pay abnormally high prices to be insured of a supply that may never have been in doubt.

And now there is a new dangerous side effect looming on the horizon: gasoline shortages next spring.

"We are worried about having too much heating oil in primary storage," said Standard's Eck. "We run the risk of producing so much more heating oil than we need that our storage tanks will be full when we have to start producing enough gasoline. If our tanks are full, we have to shut down refinery capacity and only re-ship every day. We can't drink the stuff."

"When you have too much heating oil, which it appears we may, one of two things can happen," says Gulf's Bowman. "Either you broker it to someone else — which will be unlikely this winter since everyone will probably be in the same situation —

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OIL, From A1

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"What we are doing," he said, "is inviting gasoline lines next summer."

Still, there are others who are happy to see so much heating oil around.

"I thought the 240 was a proper target when I heard about it, and I hope they keep at it and even pass it," says John Buckley, president of Northeast Petroleum outside of Boston, one of the largest resellers and wholesalers of heating oil in the country.

Buckley said his firm is moving out stocks to retail dealers faster than last year because "we don't have enough storage to contain what we're getting."

But, he says, "extra protection [through increased refining] is the prudent thing to do. If it causes containment problems to refiners, that's too bad."

He admits there is a risk of a tougher gasoline situation in the spring, but said that was acceptable because "we don't want to play roulette with a problem as important as keeping warm."

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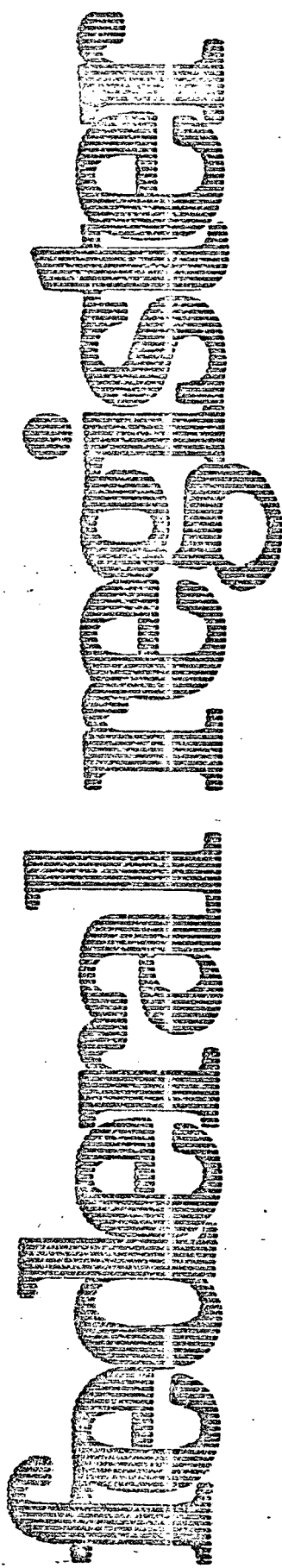
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Thursday
July 5, 1979



Part V

**Department of
Energy**

**Emergency Building Temperature
Restrictions**

DEPARTMENT OF ENERGY

10 CFR Part 490

[Docket No. CAS-RM-79-109]

Emergency Building Temperature Restrictions.

AGENCY: Department of Energy.

ACTION: Final rule.

SUMMARY: The Department of Energy (DOE) today promulgates final regulations to implement "Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions" (the Plan), which place temporary, emergency restrictions on temperature settings for heating, cooling and hot water in commercial, industrial and other non-residential buildings in order to reduce energy consumption. The regulations will become effective on the effective date of the Plan.

These regulations prescribe specific heating and cooling restrictions of 65° F and 78° F, respectively, for simple and complex heating, ventilating and air conditioning systems, heating set back requirements for periods when buildings are unoccupied, and temperature restrictions of 105° F for hot water used for personal hygiene and general cleaning. Building owners and operators are required to post a certificate of compliance with the restrictions in a prominent location within each building. The regulations exempt certain categories of buildings or portions of buildings from the temperature requirements of the Plan. Standards and procedures are established for states seeking exemptions on grounds that a comparable state plan is in effect. The regulations provide procedures for Federal enforcement of the mandatory temperature restrictions and contain penalty provisions for violation of those restrictions.

EFFECTIVE DATE: These regulations will become effective on a date determined by the President and transmitted to Congress as the effective date for "Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions."

FOR FURTHER INFORMATION CONTACT:

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Mary Doyle, Office of General Counsel, Department of Energy, 20 Massachusetts Avenue, N.W., Room 2221C, Washington, D.C. 20585 (202) 376-4100.

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SUPPLEMENTARY INFORMATION:*I. The Proposed Regulation*

On June 1, 1979, DOE issued a notice of proposed rulemaking and public hearing (44 FR 31922, June 1, 1979) intended to provide for implementation of the President's "Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions" (the Plan). Placing temporary, emergency restrictions on temperature settings for heating, cooling and hot water in commercial, industrial and non-residential public buildings. Written comments were invited, and public hearings were held in San Francisco, California; Chicago, Illinois; Dallas, Texas; New York, New York; and Washington, D.C. between June 14 and 21, 1979. Over 550 written comments were received and 110 oral presentations were made at the five public hearings. Commenters include representatives of a broad range of trade associations, educational and cultural institutions, building owners and operators, business activities, and private citizens from many sections of the country.

The great majority of the comments opposed some or all of the proposal. Most of the commenters agreed that a comprehensive energy conservation plan is necessary in order to conserve our dwindling energy reserves. Many comments were received which suggested that other conservation techniques be included in the regulations as alternatives to the specified temperature restrictions. For example, the National Restaurant Association developed a set of guidelines for restaurant operation which if followed would appear to yield significant energy savings. Others suggested a percentage reduction alternative which would allow an exemption from temperature restrictions for any person who demonstrated that he saved a specified percentage of energy use when compared to a base period.

The inclusion of alternative conservation methods was rejected for several reasons. First, since these regulations are mandatory in nature with penalties for non-compliance, violations must be readily detectable. It

was determined that there are significant problems associated with checking compliance with most alternative conservation techniques. Also, relaxation of the cooling restrictions to 78° F, discussed below, eliminates many of the operational difficulties which may have resulted from the 80° F limit and which prompted these alternative proposals.

There also were reasons from a policy standpoint to reject these proposals. Permitting alternative conservation measures as a means of avoiding temperature restrictions would tend to favor those persons who have not conserved in the past, and conversely would restrict to the 65-78° F temperatures those persons who have done the most for conservation. We also were concerned with problems of public perception of the program if certain buildings were more comfortable than others, and with the possible competitive disadvantages which may result if adherence to the temperature restrictions was not generally uniform.

DOE encourages associations like the National Restaurant Association to continue to develop and implement these conservation techniques, notwithstanding that they are not included in these regulations. Implementation of such measures, together with thermostat restrictions, will add measurably to this Nation's energy conservation effort.

Many commenters recommended that the range of permissible temperatures be narrowed from the 65° F-80° F range contained in the proposed regulations. Representatives of restaurants, health spas and other physical fitness facilities, and retail stores, expressed displeasure with the proposed 80° F minimum for cooling. They cited expected losses of business from customers unwilling to experience significant discomfort, reduced employee productivity, damage to retail items, including food, from spoilage or mildew, and jeopardy to the health of persons with allergies and respiratory problems. Health concerns also were raised for persons in certain age groups when exercising in health spas and fitness centers. Museums, art galleries, libraries and archives expressed concern that their collections might incur severe damage. Opposition to the 65° F heating maximum was much more limited and emphasized presumed reductions in employee productivity. Building owners and operators noted that some buildings have thermostats with fixed temperature ranges which would have to be replaced if more extreme temperatures were imposed. They also pointed out that many

buildings have combined heating and cooling systems which operate at maximum efficiency at temperatures other than 65° F and 80° F. A more detailed discussion of the public comments is included below in the "Section by Section Analysis of the Emergency Building Temperature Restrictions Regulations."

DOE has carefully considered all of the comments submitted. Many of the suggestions for changes have been incorporated into the final regulation. A basic change in the overall approach to implementation of the Plan is the adoption in these regulations of a lower minimum temperature of 78° F for cooling and a reduction in the minimum allowable dew-point temperature from 67° F to 65° F. These modifications are adopted, in response to public comment, since DOE believes that many of the concerns raised are worthy of being addressed. In addition, building owners and operators will be more willing and able to comply with the reduced minimum cooling and dew-point temperature limitations and fewer exceptions and exemptions will be required.

A number of more detailed changes have also been made in response to the public comments received. For example, a general exemption is made available for doctors' and dentists' offices. Buildings which would require the use of increased amounts of energy to comply with the regulations are permitted to operate in accordance with normal operating practices consistent with maximum energy savings, with some limitations on cooling practices. Other detailed changes were made in the regulations and are discussed below.

II. Background and Brief Description of the Final Regulations

Pursuant to sections 201(a) and (b) of the Energy Policy and Conservation Act (42 U.S.C. 6201 *et seq.*) (EPCA), the President developed and transmitted the Plan to Congress on March 1, 1979. DOE published a notice on March 8, 1979 (44 FR 12906) of the President's adoption of the Plan. The Plan was approved by resolutions of the Senate on May 2, 1979 and of the House on May 10, 1979. Section 201(b) of the EPCA provides that to put the Plan into effect, the President must submit to Congress his finding that the Plan's effectiveness is required by a severe energy supply interruption or in order to fulfill obligations of the United States under the international energy program, together with a statement of the Plan's effective date. Under section 201(a) of the EPCA, the Plan, once implemented, will remain in effect for a

period no longer than nine months, unless earlier terminated or suspended by the President. Section 9(a) of the Plan authorizes DOE to implement, administer, monitor and enforce its terms, to determine exemptions, and to promulgate regulations as necessary and appropriate.

The objective of the Plan, and DOE's intent in formulating these regulations, is the achievement of a significant and immediate reduction in energy demand. In its May 1979 "Report to the President on the Energy Supply Interruption," DOE has concluded that continuing reduced levels of world crude oil production have resulted in a severe national energy supply shortage which is beginning to have a major adverse impact on the national safety and the national economy. The enforcement of mandatory conservation measures, such as the building temperature restrictions contained in the Plan and these regulations, is required to help meet the shortage. Current petroleum product shortages in the United States are principally with respect to gasoline and distillates, including diesel fuel. Stocks of distillates are significantly below levels for the comparable period of 1978 and DOE is seriously concerned that unless stocks are built up, adequate amounts of heating oil may not be available for the heating season. These regulations directly assist in this regard by reducing electricity demand and demand for heating oil in winter. In the cooling season, for many utilities significant amounts of peak load air conditioning demand is met by distillate. By reducing this demand, the Plan and the regulations will directly address the distillate shortage situation and assist in ensuring that the nation has adequate heating oil in the coming winter.

The final regulations prescribe specific heating and cooling restrictions of 85° F and 78° F for both simple and complex heating, ventilating and air conditioning (HVAC) systems, heating set back requirements for periods when buildings are unoccupied, and a temperature restriction of 105° F for hot water used for personal hygiene and general cleaning. As authorized by the Plan, residential buildings, hotels and other lodging facilities, hospitals and other health care facilities, elementary schools, nursery schools and day-care centers are excluded from coverage. The regulations make general exemptions available to certain other categories of buildings or uses within buildings. In addition, a procedure is established by which individuals may apply to DOE for specific exceptions based on special hardship or inequity. The regulations

require that affected building owners or operators must self-certify their compliance with the restrictions or their eligibility for exemption.

The Plan authorizes states to seek exemptions from building temperature requirements on grounds that a "comparable program" is in effect. The regulations establish standards of comparability and a procedure for granting state exemptions. Finally, the regulations set forth Federal enforcement procedures and penalty provisions for violation of the temperature restrictions.

III. Section by Section Analysis of the Emergency Building Temperature Restrictions Regulations

Subpart A. Scope and Definitions

§ 490.1 *Scope.* Section 490.1 is essentially the same as proposed, with the addition of a provision that the regulations shall supersede inconsistent Federal orders, regulations and directives. The purpose of the added provision is to make building temperature restrictions uniform among Federal buildings and between government and privately owned buildings. In response to the question raised by several commenters, the regulations, once effective, will supersede any lease provisions which are inconsistent with the regulations.

§ 490.2 *Effective date.* Proposed § 490.2 provided that the regulations would become effective on July 1, 1979, or another date specified by the President. This section now provides that the regulations will become effective on a date specified by the President as the effective date of the Plan and may be terminated or suspended by the President, or will terminate on the same date as the Plan terminates.

§ 490.3 *Authority to contract or delegate.* Section 490.3, which provides that DOE may delegate or contract for the carrying out of its functions under these regulations, is unchanged. In the preamble to the proposed regulations DOE stated its intention, pursuant to section 9(c) of the Plan, to delegate to each state Governor requesting such delegation, a substantial portion of its authority to implement the Plan. On June 18, 1979, DOE issued a notice of intent (44 FR 34965, June 18, 1979) which set forth the duties and authorities to be delegated to states requesting delegation and the amount of Federal funds which will be available to states to which delegation is made to meet the cost of their implementation activities.

§ 490.4 *Authority to issue orders and guidelines.* Section 490.4 is unchanged, and provides that DOE may issue orders and guidelines as necessary to implement these regulations.

§ 490.5 *Definitions.* Most of the definitions which were proposed in the June 1, notice have been adopted as proposed. Several definitions have been modified after consideration of the public comments. The definition of "ASHRAE" has been deleted.

Definitions were added, for clarification, for "cooling season" and "heating season". The "cooling season" is defined as that season when energy is consumed only to lower the temperature of a building. Some systems, e.g., reheat systems, may be operated so they never have a cooling season, where, for example, the reheat function is operating for the entire year. Similarly, "heating season" is defined as that period when energy is consumed only to raise the temperature of a building. Other periods of the year are neither heating season nor cooling season. For example, heating energy may be consumed to warm a building in the morning and cool it in the afternoon. These periods do not necessarily correspond to the four seasons of the year.

The definition of "dry-bulb temperature" has been expanded to include alternative definitions which incorporate an adjustment for the effects of thermal radiation on the building occupant. This adjusted dry-bulb temperature can be based on generally accepted industry practices, which include, for example, the mean radiant temperature. This allows adjustment of the HVAC system to account for radiation gain from sunlight through windows, and for radiation loss through windows. Incorporation of the adjustments, however, is a difficult task and may require the assistance of a professional engineer.

In response to several public comments, a definition for "elementary school" has been added.

The definition of "hotel and other lodging facility" has been modified, in accordance with the suggestion of one commenter, to include buildings where sleeping and lodging accommodations are provided in the ordinary course of business to members of a private membership organization or other private facility. All restrictions and exemptions in these regulations apply equally to public and private facilities.

"HVAC systems capable of simultaneously heating and cooling" is defined to mean those systems, primarily in large buildings, which are

capable of heating one room or set of rooms, e.g., perimeter rooms in cold weather, while at the same time cooling another room or set of rooms, e.g., interior rooms which must be air conditioned even during cold weather.

"Occupied period" was redefined to include only that period during which the building is used for its normal functions. Reference is made to section 490.14(a)(4)(ii), which allows operation of the HVAC system before the occupied period to bring building temperature to the authorized limits.

The definition of "residential building" has been clarified so that residential building lobbies and hallways are included within the definition, but business or commercial areas on separate HVAC system controls are not.

The definition of "room" was modified to refer to areas contained within floor to ceiling partitions. This modification allows a more meaningful description of the compliance measurement technique.

A definition was added for "solar energy" because of the many comments received. This definition refers to direct solar heating and cooling, solar electric power generation, wind energy, biomass (such as wood) and small scale water power. It does not include indirect use of these sources, such as hydro-generated electric power purchased from utilities, since this energy may be used to displace fossil-generated electricity.

Subpart B--Heating and Cooling Restrictions

Two overall changes have been made with respect to the temperature requirements set forth in this Subpart. First, DOE has decided to lower the minimum permissible cooling temperature from 60° F to 78° F. This change was made for two reasons. Comments from representatives of restaurants, retail stores and other businesses cited expected losses of business from customers unwilling to experience significant discomfort, reduced employee productivity, damage to retail items from mildew, and other problems. Also, we believe the energy savings potential of the 78° F restriction on cooling is equal to or greater than the possible savings which would be achieved under the 60° F limitation, due to increased voluntary compliance.

In our view the revised cooling minimum of 78° F addresses adequately the concerns raised in the comments. A dry-bulb temperature of 78° F is within the comfort zone commonly accepted by HVAC system engineers, and is within

the design specifications of most HVAC systems. In addition, at the public hearings on the proposed regulations many speakers indicated that while the 80° F level was a serious problem, a minimum level of 78° F would be acceptable. Assuming that people adjust their clothing styles, we believe that there should be little difficulty in adjusting to the 78° F level.

One major concern of restaurant owners was that kitchens will be significantly hotter if the dining room temperatures are raised to 80° F in restaurants where kitchens are cooled by the exhaust air from the dining rooms. We anticipate that lowering the allowable temperature to 78° F will keep the kitchens in a tolerable temperature range. However, it should be noted that if the kitchens are on the same HVAC system as the dining rooms, § 490.17(a) would allow the kitchen temperature to be used as the criterion for setting the space-conditioning control devices. The regulations do permit operation of the kitchens at 78° F; in such circumstances, the dining rooms would be cooler.

Another important consideration in lowering the minimum allowable cooling temperature relates to the necessity to ensure a high level of compliance with the restrictions. If the public perception of the building temperature restriction regulations is that such regulations were unfair or excessively burdensome, compliance with the regulations could suffer significantly. Since the cooperation of building owners and operators is critical to achieving meaningful energy savings, the revised minimum level should actually have a positive effect on energy savings.

The anticipated savings from implementation of the 65° F heating and the 78° F cooling restrictions would be approximately the same as, or slightly higher than, the previously estimated oil savings range of 190,000 to 375,000 barrels per day. The economic analysis prepared in conjunction with the Plan assumed average building thermostat settings at the time the Plan would be implemented of 68° F in the heating season and 77° F in the cooling season. Based on information generated in the public hearings, we now believe that current temperature levels in buildings covered by the Plan fall within a narrower range, probably 70° F to 71° F in the heating season and 75° F to 76° F in the cooling season. If the other previous assumptions in the economic analysis of the Plan are retained, anticipated oil savings using these temperature levels would rise by between 120,000 and 240,000 barrels of oil per day over previous estimates. The

reduction in oil savings that could be anticipated from lowering the cooling standard from 80° F to 78° F is approximately 120,000 barrels of oil per day. Thus the reduced oil savings from utilizing a 78° F cooling restriction would at a minimum be fully offset by the increase in the savings estimate from our use of more current assessments of building temperature levels. Finally, we note that these savings estimates relate only to the direct or indirect use of oil; additional savings from other energy sources, such as natural gas and coal, might amount to at least half again the projected oil savings from implementation of the Plan.

The heating restriction of 65° F has been retained as proposed. The major reason for adhering to the 65° F limitation is DOE's serious concern that unless existing stocks are conserved, the supply of home heating oil may not be adequate in the coming heating season. In addition, opposition to the 65° F heating limitation, as expressed in the public comments, was substantially less than that directed to the proposed cooling restriction.

The second major change in this Subpart is that we have lowered the dew-point temperature from the proposed 67° F to 65° F. Many commenters expressed concern that the level set forth in the proposed regulation was too high, particularly in humid regions of the country. The humidity level set in the final regulations is still relatively high. However, it should be noted that HVAC systems work in such a way that we expect the high humidity conditions to occur only under rare circumstances. With normal operation of the HVAC system to maintain 78° F, the dew-point will be close to a comfortable level of 61° F. Only under the unusual conditions of high latent heat loads would the 65° F dew-point humidity limit ever be encountered. Many comments were received from restaurant owners who stated that they need comfort conditions significantly better than available in the home if they are to draw customers. Restaurants do have high latent loads and therefore will operate near the humidity limit of 65° F. However, the additional discomfort in raising the dew-point temperature from 61° F to the required 65° F minimum is not considered significant particularly in light of the reduced minimum cooling temperature level adopted in the final regulations, and the provisions of § 490.16 allowing use of ventilating fans.

The use of relative humidity, rather than dew-point, was suggested by many commenters, because relative humidity

is easier to measure. We recognize the measurement difficulty and have listed several methods by which dew-point can be inferred. Dew-point was chosen as the criterion because the upper limit of comfort, according to common industry usage, is based on dew-point, and not on relative humidity. The cooling of the human body, for example, is known to depend on dew-point rather than relative humidity, for any given dry-bulb temperature. Therefore, although the measurement technique is more complicated, the measurement is more meaningful for defining the limits of a comfort region. In those few cases in which relative humidity is controlled, the operator will want to experiment with several relative-humidity set points until the proper dew-point is attained.

§ 490.11 HVAC Systems Without Capability for Simultaneous Heating and Cooling. This section of the regulations is virtually identical to that in the proposed regulations; however, as already noted, permissible dry-bulb temperature has been reduced from 80° F (as proposed) to 78° F, and the permissible dew-point temperature has been decreased from 67° F as proposed to 65° F.

§ 490.12 HVAC Systems With Capability for Simultaneous Heating and Cooling. Many comments were received concerning the apparently simplistic manner in which the complex HVAC systems of large buildings were treated in the proposed regulations. Many of the comments arose because the proposed regulations did not clearly indicate that an operator was expected to shift his compliance technique to suit his situation. For example, if the operator finds that holding the cooling-coil temperature to 55° F is adequate in the intermediate seasons but not in the summer, because room temperatures exceeded 78° F, we would expect him to change compliance techniques from control of the cooling-coil temperature to maintaining the hottest room at 78° F. Other comments concerning complex systems were directed toward the numerous thermostats which would require adjustment. When the temperature sensors are placed in the return ducts, the adjustment could be extremely costly. We would expect operators facing this problem to elect the compliance technique in which the cooling-coil temperature is maintained at 55° F, since the cooling coil can be controlled at the central plant. As discussed below we have added the provision that if an alternate control strategy can be devised for what the operator defines as the intermediate season (when heating and cooling are

both being supplied to the building) and this alternate strategy results in less energy consumption by the HVAC system than would be consumed if any of the other methods of compliance are met, then the operator can use his alternate strategy.

Other than the alteration in temperature limits, no changes were made in the temperature range requirements available to all HVAC system operations as one method of complying with the regulations. Also, there are no changes to the requirements for operators of fan-coil, induction, or baseboard (or similarly operated) units, except that emphasis is placed on the opportunity for operators to choose among compliance techniques so that human comfort is maximized. Therefore, the operator might choose to keep the coolant to the cooling coils at 55° F during the intermediate seasons. However, the 55° F may not be sufficient to keep the room dry-bulb temperature below 78° F, in which case the operator may switch to the temperature range alternative, set the cooling level below 55° F, and bring the temperature down to 78° F. Such switching of compliance techniques may be made as often as the operator desires.

The regulations imposed on heat-pump operators remain unchanged, except for the new temperature limits. Some minor clarifications were introduced into the language concerning "all-air" systems. In addition, the new temperature limits were incorporated in response to comments received. We have added, first, a section emphasizing that the operator may change his compliance technique as many times as he desires and, second, that alternate temperature set points may be used if these result in more energy savings than would be realized if the temperature settings of 65° F and 78° F were used. A licensed professional engineer must certify his analysis that shows that the alternate temperature set points will save more energy than if the specified settings were used. This greater saving in energy may be realized over any time period. For example, the intermediate settings may save more energy only during the intermediate season, in which case the operator may use (and is encouraged to use) these intermediate set points during the intermediate season, while reverting to the specified settings during the heating-only and cooling-only seasons.

In introducing the change to accommodate intermediate settings that save more energy, we have retained the provision that the liquid coolant supplied to the cooling coil be at 55° F.

or that the air temperature leaving the cooling coil be at 60° F, to ensure that the savings achievable by less dehumidification are not circumvented by the users of the intermediate set points. If the 55° F or 60° F limits do not provide enough cooling to keep the room temperatures below 78° F, the operator would probably want to switch compliance techniques to the temperature range alternative, in which the compliance is measured by the room temperature being not less than 78° F, rather than the engineer-certified alternative.

In certifying that less energy will be used the engineer need establish only these temperature levels "consistent with" maximum energy savings; he need not demonstrate that no other settings would achieve greater savings. The emphasis and requirement is that the alternate technique must, under normal circumstances and weather and building usage, save more energy than would be saved if the 65° F-78° F settings were used. Any false certification by an engineer would subject that engineer to the penalties provided in the regulations.

Comments were received expressing the concern of many regarding the cost of equipping buildings with new thermostats which automatically maintain temperatures within specified ranges, and the cost of constantly changing thermostats. The regulations do not require equipping a building with a new thermostat since one of the other compliance strategies may be chosen. The costs of changing the thermostats and rebalancing the HVAC systems may increase the man-hours required; however no feasible alternative could be developed which would not provide a major loophole allowing the spirit of these regulations to be circumvented. In addition, it is not expected that the short time span (nine months) in which the regulations will be effective will require unreasonable numbers of adjustments. We have attempted to anticipate the operation of all types of systems, and the addition of new subsection 490.12(e) permits great latitude in compliance. However, in case we have not foreseen some circumstances, owners and operators may apply for an exception under § 490.32.

§ 490.13 Requirement for accuracy of space-conditioning control devices.
Several comments were received asking for a specific definition of the allowable range for accuracy requirements for the space-conditioning control devices. However, there is such a variation among types of devices that any specific range, such as 5° F suggested by one

commenter, would not be proper for all types of devices. The requirement of the regulations that space-conditioning control devices be maintained within reasonable tolerances of accuracy must be interpreted in light of the accuracy of commercially available devices in the price range that is actually used in the building.

§ 490.14 Regulation of Building Temperatures During Unoccupied Periods. Section 490.14 establishes HVAC system operation restrictions for buildings during unoccupied periods. The changes made to the restrictions include a recognition that the outdoor air temperatures which govern the scope of the restrictions applicable during the unoccupied period need only be the anticipated temperatures, not actual temperatures. In addition, an option has been included which allows setting the space-conditioning control device at 55° F or lower, or at its lowest set point if higher than 55° F.

Operation of the HVAC system is no longer restricted to the two hours before building opening. Several of the comments, particularly from warmer climates, pointed out that it was necessary to begin system operation more than two hours before occupancy, in order to reach operating temperatures. Also, the load requirements on utilities if all units began operating at the same time would not be manageable. Therefore, the final regulations authorize HVAC system operation during the unoccupied period as far in advance as is necessary so that the authorized temperature levels are reached simultaneously with the beginning of the occupied period. Additionally, operation of HVAC systems during unoccupied periods is authorized where a public utility or district heating system requests such operation for load management purposes.

A number of comments were received regarding the ability of the operator to anticipate the minimum outdoor dry-bulb temperature during the unoccupied period. This should not be a problem during the hot and cold seasons of the year. During the mild seasons, the operator is expected to use his best judgment. In any event, the additional energy consumption caused by not using the setback in those periods will be minimal.

§ 490.15 Auxiliary Heaters. This section is identical with the one in the proposed regulations, and prohibits use of auxiliary heaters to raise the room temperature above 65° F. Comments were raised about discomfort, particularly for secretaries and other

persons with sedentary jobs in areas where temperatures cannot be precisely controlled. The regulations allow for control of the portion of the HVAC system so that the extreme temperature in the area controlled by that portion of the system is within the authorized limits. In addition, auxiliary heaters can be used where necessary to raise the temperature to 65° F. Changes in clothing habits for affected individuals also will reduce the potential discomfort.

§ 490.16 Use of Ventilating Equipment. This section remains unchanged from the proposed regulations. Energy usage for fans and pumps (except heat pumps, or compressors) is not restricted. Comments were received indicating that in some HVAC systems the fan and pump requirements may consume a significant portion of a building's total energy requirements. However, the dominant energy consumption is due to the refrigeration equipment, so a net energy saving is to be realized. Any increased air flow in the summer, due to the central or portable fans, will make the higher temperatures and humidities more tolerable. Therefore, no limitations are placed on fan use, and use of fans to circulate air for increased comfort is encouraged.

§ 490.17 Measurement Techniques. Since a portion of an HVAC system may regulate the temperatures in many rooms simultaneously, rooms will be difficult to regulate precisely. The preamble to the proposed regulations recognized this problem, allowing temperatures to be measured in the room with the extreme temperatures.

To clarify this issue, the regulations have been changed to allow that if any room whose temperature is controlled by a portion of an HVAC system is in compliance with temperature restrictions, all rooms whose temperature is controlled by that same portion of the system are deemed to be in compliance. Thus, the room on any one system with the extreme high temperature when cooling, and the extreme low temperature when heating, may be the room measured for determination of compliance.

Another change to this section authorizes an option for the calculation of dry-bulb temperature by taking the mean of the temperature at the center of the room, and at the center of and two feet away from each of the exterior walls. If there are no exterior walls, then the temperature only is measured in the center of the room. Also, for HVAC systems in which temperatures cycle, the temperature may be taken as the

average of several equally spaced measurements over a period of time. The appropriate time period may be determined by the inspector and the operator to account for system cycling differences among buildings.

§ 490.18 *Exemptions from Heating and Cooling Restrictions.* Sections (a)(2), (3), and (4) have been modified to emphasize that HVAC systems using solar, waste, or similar systems which will in fact save no energy if not operated to heat or cool the building are exempt only during those periods they provide the only source of heating or cooling energy. When backup systems are operating, either separately or in conjunction with the solar or other system, the exemption is not available. This section requires, for example, solar assisted heat-pump systems to operate within the 65° F-78° F temperature limitations while the heat pump compressor is operating.

Several comments were received stating that energy derived from the use of coal, natural gas, or other non-oil energy source should not be covered by the regulations. DOE has decided not to alter the proposed regulations in this respect. The Plan and the implementing regulations focus on energy conservation, not only on oil conservation. Much of the expected savings will be in electricity used for space cooling, space heating, and hot water. Such savings are meaningful in terms of meeting the overall goal of reducing oil imports since regional pooling arrangements, seasonal and other factors such as nuclear plant shutdowns affecting the generating mix, and the potential for "wheeling" of electric power all can result in oil savings. For example, surplus coal-generated power from one utility may be wheeled to replace normally oil-generated power in another. A regulation with building temperature restrictions focused solely on oil usage would not only be impossible to develop or enforce within reasonable expenditure levels but also would be highly inequitable in its impacts.

The final regulations also clarify the provisions in subsection (b) which authorize buildings or portions of buildings which have HVAC systems incapable of handling the peak load when occupied, like theatres or other large places of assembly, to precool. Precooling only is authorized to the extent necessary so that during peak occupancy, the temperature will reach the authorized cooling levels.

Subpart C—Domestic Hot Water

§ 490.21 *Regulation of Hot Water Controls.* No changes were made in the 105° F domestic hot water restriction. This was deemed sufficient in most cases to provide hot water for personal hygiene or general cleaning requirements. Some systems will have problems maintaining that temperature for the entire utilization period due to capacity restriction. Operators of these systems may wish to develop practices which will conserve their hot water supply for priority needs, such as showers. These can include shutting off the hot water supply to sinks, for example. In addition, operators can place a mixing valve between the tank and the nearest tap, which will allow tank operation at a higher temperature.

§ 490.22 *Measurement of Domestic Hot Water Temperature.* This section remains unchanged from the previous regulations, with the modification that the operator may elect to measure the tank temperature at the tap nearest the hot water tank. This permits the installation of a mixing valve between the tank and the tap which will allow capacity constrained systems to be operated at a higher temperature than 105° F. If the temperature is lowered to 105° F by mixing the hot water with cold water in the mixing valve.

§ 490.23 *Maintenance of Hot Water Control Devices.* This section remains unchanged from the previous regulations.

§ 490.24 *Exemption From Hot Water Restrictions.* Several of the public comments noted that the prescription of a maximum hot water temperature of 105° F is inconsistent with the Model Retail Food Store Sanitation Ordinance prepared by the U.S. Food and Drug Administration (FDA), which provides dish and utensil washing water temperatures of 200° F. Others stated that certain industrial processes or process clean up procedures might require use of hot water at temperatures higher than 105° F. Section 490.24(b) has been modified, in response to these comments, to provide exemption from the hot water restrictions for commercial processes and process and other clean up procedures where varying temperatures are required. In addition, where the FDA model ordinance is adopted by state or local jurisdictions, § 490.24(b) provides that its provisions would supersede the requirements of these regulations.

An exemption also has been added for domestic hot water provided by using waste heat (such as in fuel energy systems), but only when the waste heat

provides the only source of water heating energy. If a backup system is operating in conjunction with the waste heat system, the exemption is not available.

D. Exemptions

§ 490.31 *General Exemptions.* A large number of the public comments addressed the exemptions provisions of the proposed regulations. Some, for example the restaurant and retail food industries, sought inclusion of additional exemptions in the final regulations. Others, such as museums, also requested clarification of the exemptions provisions as proposed. These comments have been carefully considered, and changes have been made in response to some of the suggestions received.

Section 490.31(a) has been modified to provide that exemptions are available from the requirements of subparts B or C of the regulations. The word "or" is used to indicate that persons may claim exemption from either the heating and cooling or hot water restrictions as they affect the activities and uses set forth in this section. For example, a person claiming exemption solely on the basis that a manufacturer's warranty requires specific space temperature levels to prevent damage to special equipment would qualify for exemption from the heating and cooling restrictions in Subpart B of these regulations, but not from the hot water temperature restrictions contained in Subpart C. Similarly, when a manufacturer's warranty requires specific water temperatures for the operation of special equipment, an exemption is available only from the hot water temperature restrictions.

Section 490.31(a)(2) is clarified by providing for exemption only where certain temperature and humidity levels are critical to materials and equipment used in manufacturing, industrial or commercial processes. Thus, no exemption is available based on the personal comfort of persons engaged in such a process.

Comments were received from representatives of the retail food industry and the restaurant industry inquiring whether proposed § 490.31(a)(3) was intended to exempt these industries from the regulations. While the comments expressed dissatisfaction with the cooling temperature restriction provided in the proposed regulation, most indicated acceptance of the heating restriction. Section 490.31(a)(3) as adopted is changed from the proposal only in that raw materials, goods in process and

finished goods specifically have been included in this section, although they generally were included within the subsection (2) exemption for commercial processes. Section 490.31(a)(3) does not provide a general exemption for the retail food and restaurant industries. However, where it can be demonstrated that the operation of the cooling or heating temperature restrictions would cause dangerously high bacterial counts or other unhealthful conditions in food, an exemption is available under § 490.31(a)(3). With respect to restaurants, reference is made to § 490.17(a) of these regulations, which provides that compliance is determined by measuring for each space-conditioning control device the room or portion of a covered building with the extreme temperature. Thus, a restaurant building with the dining room and kitchen on the same HVAC system control device will be considered to be in compliance with the cooling restrictions if the system is operated to maintain the kitchen area at 78° F, even though lower temperatures may result in the dining area.

Many retail food stores stated that compliance with the proposed cooling restriction would result in an increase in their current energy consumption because of the additional energy required to operate refrigeration equipment when building temperatures increased. In this connection, § 490.12(e) of these regulations provides specific exceptions for persons who can demonstrate that compliance with the requirements of the regulations would result in the consumption of more energy than operation at some other temperature level. Where higher building temperatures result in severe frost build up in refrigeration equipment so that food cannot be properly stored, § 490.31(a)(3) makes available an exemption.

Section 490.31(a)(4) has been restated to provide that an exemption is available when required "to protect plant life essential to the operation of a business within a covered building, materials or animal life." This language is intended to make clear that an exemption to protect plant life is available only when the plant life is essential to the operation of a business, and cannot be claimed, for example, for purposes of protecting decorative plants in a business office.

Comments were received from museums, libraries, art preservation associations and archival institutions strongly urging exemption from the heating and cooling restrictions where necessary to protect museum

collections, library and archival collections and historical collections and structures. An express exemption has not been included, since § 490.31(a)(4), which provides for exemptions where special environmental conditions are required to protect "materials", is intended to make available exemptions when necessary to preserve such collections and structures.

In response to public comments from physicians, dentists, and others, § 490.31(a)(5) has been added to provide an additional class of general exemptions. These exemptions are based solely on a concern for health and are not intended to be available on the basis of personal comfort. Under § 490.31(a)(5)(i), an exemption is provided when necessary to protect the health of persons in the offices of physicians, dentists and other licensed members of health care professions. Section 490.31(a)(5)(ii) makes available an exemption to protect the health of persons engaged in rehabilitative physical therapy. This section does not provide exemption for purely recreational facilities, for example bowling alleys or indoor tennis courts, or for exercise facilities not engaged in rehabilitative therapy. Section 490.31(a)(5)(iii) exempts from the heating restrictions only, buildings or portions of buildings which house swimming pools. This exemption is available only as necessary to protect the health of persons using the swimming pools.

One comment suggested that a general exemption from the cooling restrictions be provided where workers are required to wear special or protective clothing on the job. Because of the difficulty of defining necessary special or protective clothing, and determining appropriate temperature or humidity levels where such clothing is required, we have not provided such an exemption. The exemption available under § 490.31(a)(2) relating to manufacturing, industrial and commercial processes, although it is directed to materials and equipment used in such processes is likely to provide exemption for many of the workers referred to in the comment. Where workers suffer special hardship, a specific exception may be sought under § 490.32. In addition, no general exemption has been provided where unusually high exertion levels are required of workers. Again, reference is made to the specific exception provision, § 490.32, for cases where special hardship exists.

Many comments were received from building owners and operators in the

southern regions of the United States concerning the high outdoor air humidity levels and consequent high latent loads inside the buildings. Section 490.31(a)(6) has been added in response to these comments. This section provides for an exemption where damage to the structure or insulation of a building will result from operation of the HVAC system according to the regulations. In southern regions, this section may allow the HVAC system to be operated with more reheat or at a lower indoor humidity. Condensation occurring on the inside surface of windows is an indication that condensation damage is occurring in the walls. Section 490.31(b) is a new section which provides that any exemption authorized by the regulations is deemed effective when claimed. This section refers to exemptions only, and does not apply to specific exceptions provided under § 490.32, which under § 490.32(a) are not effective until granted by DOE. Section 490.31(b) represents a change from the proposed regulation, which provided that general exemptions would not become effective until certification requirements were met.

Section 490.31(c) has been renumbered and revised in order to simplify the self-certification and exemption requirements imposed by this regulation. As further described in a later portion of the preamble, § 490.43 of the regulations provides that a building owner or operator, generally the person principally responsible for building operation, must complete and post in a prominent location within a covered building, a single form entitled "Certificate of Building Compliance," and submit to DOE a "Building Compliance Information Form." Both forms, which DOE will prepare and distribute, will provide for description of the nature of any exemptions claimed, the portions of the building claimed to be exempt, and temperature levels required in the exempt portions of the building consistent with maximum energy savings. It is planned that only one "Certificate of Building Compliance" will be posted and one "Building Compliance Information Form" will be submitted to DOE for each covered building. To facilitate the completion of these forms, § 490.31(c) requires persons claiming exemptions to provide the building owner or operator with the information required for preparation of the two forms.

§ 490.32 *Specific exceptions.* Section 490.32 has been amended to include the requirements, set forth in § 490.32(c), that any person to whom DOE grants a specific exception from the regulations

must provide the building owner with all necessary information relating to the exception. Section 490.32(c) parallels § 490.31(b) relating to general exemption claims, and is included for the purpose of facilitating completion by the building owner or operator of the "Certificate of Building Compliance" and the "Building Compliance Information Form." It should be noted that § 490.32(a), referring to "Application for Exception", incorporates by reference another part of the DOE regulations and does not refer to Subpart D of these regulations.

§ 490.33 and § 490.34 *Limitations of exceptions or exemptions; Scope of exceptions or exemptions.* These sections received no public comment and are unchanged.

§ 490.35 *Exemption procedures for states.* Many of the public comments received from state and local officials, business groups and others addressed this section and focused particularly on the definitions of "comparable program" and "same subject matter" contained in proposed § 490.35(d)(1) and (2). The comments expressed the view that the definition of "comparable program" should be expanded to include state plans mandating a percentage reduction in energy usage to be achieved by means other than temperature restrictions. These suggestions have much to recommend them. However, for reasons discussed elsewhere in the preamble, the alternative of mandating a percentage reduction in energy use has been rejected. § 490.35 is unchanged from the proposal and the terms "comparable program" and "same subject matter" are defined in § 490.35(d)(1) and (2) to provide that to be comparable a state plan must contain mandatory heating, cooling and hot water restrictions. It should be noted that a state plan which mandates energy conservation measures in addition to temperature restrictions may qualify as a "comparable program" under these regulations.

E. General Provisions

§ 490.41 *Joint and Several Liability.* Section 490.41 received little comment and remains unchanged.

§ 490.42 *Reporting Requirement.* DOE received comments from public utilities which strongly objected to proposed § 490.42 requiring them to make available to DOE upon request customer lists or other information deemed necessary to administer and enforce the regulations. The comments expressed the utilities' concern that § 490.42 might require breach of their obligation of customer confidentiality, damage customer relations and result in

unacceptable expenditures of time and resources. Section 490.42 is based upon Section 7 of the Plan, which provides that "any public utility or fuel distributor shall make available to the Secretary, upon request, information deemed necessary by the Secretary to administer and enforce the Plan." After consideration of the issues involved, DOE has decided to retain § 490.42 as proposed in the final regulations. However, we recognize the importance of the issues raised by the public comments and are continuing to analyze whether the information in question is needed to administer and enforce the Plan. Until this decision has been made and these issues satisfactorily resolved, DOE will take no action under § 490.42.

§ 490.43 *Self-Certification.* As discussed above, § 490.43 has been revised to provide that the owner or operator of a covered building shall, prior to, within 30 days of the effective date of the regulation, a "Certificate of Building Compliance" in a prominent location within a covered building. The form has been designated "Certificate of Building Compliance", rather than the proposed "Building Owner's Certificate", since the certification requirement is imposed upon owners or operators. The Certificate, which will be developed by DOE, will require the building owner or operator to certify compliance with the regulations and to provide a statement of exemptions and exceptions claimed. In order to fulfill its authorities and obligations under the Plan to monitor implementation and to report to Congress and the President on the operation of the Plan within 60 days of its termination, DOE has further provided in § 490.43(b) of the regulations that building owners or operators must submit to DOE, within 30 days of the effective date of the regulation, a "Building Compliance Information Report." This form will be designed by DOE to present in an abbreviated fashion the compliance information contained in the "Certificate of Building Compliance." Both forms will be distributed by DOE to building owners and operators directly by mail where possible, and through trade associations, state and local government agencies and other organizations. The forms will also be made available at post offices throughout the country, and may be obtained from DOE as provided in § 490.43(d). The forms are currently being printed and distribution will begin shortly. Should delays be encountered in the process of distributing the forms, the 30 day requirement in § 490.43(a)(1) and (b) will not be rigorously enforced, although owners and operators will be

required to bring building temperature control devices into compliance as soon as the regulations become effective.

F. Administrative Procedures

These sections remain unchanged from the proposal.

G. Investigations, Violations, Sanctions and Judicial Actions

The public comment concerning Subpart G of the proposed regulation addressed exclusively the civil and criminal penalties provided in § 490.63 (b) and (c). Several commenters expressed the opinion that civil penalties of not more than \$5,000 and criminal penalties of not more than \$10,000 per violation are unduly harsh. The penalty provisions in § 490.63 (b) and (c) are required under Section 11 of the Plan, which incorporates the penalty provisions of sections 521 and 525 of the EPCA (42 U.S.C. 6394, 6395). It is noted that § 490.63 (b) and (c) state the maximum penalties allowable and that lesser penalties are permitted.

IV. Additional Matters

Environmental Review

After reviewing the proposed regulations pursuant to DOE's responsibilities under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), DOE has determined that this action does not constitute a major Federal action significantly affecting the quality of the human environment. Therefore, no environmental assessment or environmental impact statement was prepared and a negative determination to that effect is hereby issued.

Regulatory Analysis

In light of the DOE's emergency finding, as set out more fully in section IV of the preamble to the proposed regulation (44 FR 31931, June 1, 1979), this rulemaking is not subject to the provisions of Executive Order No. 12064 on Improving Government Regulations (43 FR 12631, March 24, 1978), under section 8 of that Executive Order which excepts regulations issued in response to an emergency.

(Federal Energy Administration Act of 1974, 16 U.S.C. 761 *et seq.*; Energy Policy and Conservation Act, 42 U.S.C. 6201 *et seq.*; Department of Energy Organization Act, 42 U.S.C. 7101 *et seq.*; E.O. 11790, 39 FR 23165; E.O. 12009, 42 FR 46267; Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions, 44 FR 12906 (March 8, 1979)).

In consideration of the foregoing, Part 490 of Chapter II, Title 10 of the Code of Federal Regulations is amended as set

forth below, effective on the effective date of the "Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions," 44 FR 12803 (March 8, 1979), in accordance with section 201(b) of the Energy Policy and Conservation Act, 42 U.S.C. 6201(b).

Issued in Washington, D.C., on July 2, 1979.
Maximo Savitz,
Acting Assistant Secretary, Conservation and Safety Applications.

10 CFR Chapter II is amended by adding Part 490, to read as follows:

PART 490—EMERGENCY BUILDING TEMPERATURE RESTRICTIONS

Subpart A—Scope and Definitions

- 490.01 Scope
- 490.02 Effective date
- 490.03 Authority to contract or delegate
- 490.04 Authority to issue orders and guidelines
- 490.05 Definitions

Subpart B—Heating and Cooling Restrictions

- 490.11 HVAC systems without capability for simultaneous heating and cooling
- 490.12 HVAC systems with capability for simultaneous heating and cooling
- 490.13 Requirement for accuracy of space-conditioning control devices
- 490.14 Regulation of building temperatures during unoccupied periods
- 490.15 Auxiliary heaters
- 490.16 Use of ventilating equipment
- 490.17 Measurement techniques
- 490.18 Exemptions from heating and cooling restrictions

Subpart C—Domestic Hot Water

- 490.21 Regulation of hot water controls
- 490.22 Measurement of domestic hot water temperature
- 490.23 Maintenance of hot water control devices
- 490.24 Exemption from hot water restrictions

Subpart D—Exemptions

- 490.31 General exemptions
- 490.32 Specific exceptions
- 490.33 Limitation of exceptions or exemptions
- 490.34 Scope of exceptions or exemptions
- 490.35 Exemption procedures for states

Subpart E—General Provisions

- 490.41 Joint and several liability
- 490.42 Reporting requirement
- 490.43 Self-Certification

Subpart F—Administrative Procedures

- 490.51 Purpose and scope
- 490.52 Notice of violation
- 490.53 Violation order
- 490.54 Violation order for immediate compliance
- 490.55 Modification or rescission
- 490.56 Stay pending judicial review
- 490.57 Consent order

490.58 Remedies

Subpart G—Investigative, Violation, Sanctions, Injunctions and Judicial Actions

- 490.61 Investigations
- 490.62 Violations
- 490.63 Sanctions
- 490.64 Injunctions

Authority: (Federal Energy Administration Act of 1974, 15 U.S.C. 761 et seq.; Energy Policy and Conservation Act, 42 U.S.C. 6201 et seq.; Department of Energy Organization Act, 42 U.S.C. 7101 et seq.; E.O. 11780, 39 FR 23185; E.O. 12003, 42 FR 6237; Standby Conservation Plan No. 2, Emergency Building Temperature Restrictions, 44 FR 12803 (March 8, 1979)).

Subpart A—Scope and Definitions

§ 490.1 Scope.

Except as otherwise provided in this Part, this Part applies to covered buildings in each state or political subdivision thereof, and shall supersede any law of any state or political subdivision thereof or any Federal order, regulation or directive, to the extent such law, order, regulation or directive is inconsistent with these regulations or any guidelines or orders issued pursuant thereto.

§ 490.2 Effective date.

These regulations shall become effective on a date specified by the President as the effective date of Standby Conservation Plan No. 2 (Emergency Building Temperature Restrictions) (44 FR 12803, March 8, 1979). The regulations may be terminated or suspended by the President, or will terminate on the same date as Standby Conservation Plan No. 2.

§ 490.3 Authority to contract or delegate.

DOE may delegate or contract for the carrying out of all or any part of the functions under this Part.

§ 490.4 Authority to issue orders and guidelines.

DOE may issue such orders and guidelines, and may make such adjustments, as are necessary to administer and implement the provisions of these regulations.

§ 490.5 Definitions.

(a) "Capability for simultaneous heating and cooling" means an HVAC system that can supply heating to one part of the space-conditioning equipment while supplying cooling to another, including but not limited to dual-duct, reheat, recool, multizone fans, fan-coil units in combination with central air and induction units in combination with central air.

(b) "Cooling season" means those periods when the HVAC system in a covered building is operated such that no space heating is being used in that building.

(c) "Covered building" means every building or portion of a building, but excludes residential buildings, hotels or other lodging facilities, hospitals and health care facilities, elementary schools, nursery schools and day-care centers, and such other buildings and facilities as the Secretary may by rule determine: *Provided*, That to the extent that the non-sleeping facilities of a hotel, motel or other lodging facility have space-conditioning control devices separate from the sleeping facilities, the non-sleeping facilities are not excluded from the definition.

(d) "Dew point temperature" means the temperature at which condensation of water vapor begins as the temperature of the air-vapor mixture is reduced. When the dry-bulb temperature equals the dew point temperature, the relative humidity is 100 percent.

(e) "DOE" means the Department of Energy.

(f) "Domestic hot water" means hot water which is intended for use in covered buildings for personal hygiene or general cleaning.

(g) "Dry-bulb temperature" means the temperature of air as measured by a dry-bulb, or ordinary, thermometer which directly measures air temperature. Alternatively, adjustments may be made using generally accepted industry practices to include the effects of thermal radiation, and this adjusted temperature may be used in lieu of the ordinary thermometer temperature measurement.

(h) "Elementary school" means any school which has any grades kindergarten through sixth grade: *Provided*, That if the non-elementary grade portions of a school have space-conditioning control devices separate from the elementary portions, the non-elementary grade portions are not included within the definition of elementary school.

(i) "Fuel distributor" means any person who delivers oil or other fuel for use in a covered building.

(j) "Heating season" means those periods when the HVAC system in a covered building is operated such that no space cooling energy is used in that building.

(k) "Humidity" means a measure of the water-vapor content of air.

(l) "HVAC" means Heating, Ventilating and Air Conditioning.

(m) "HVAC System" means a system that provides either collectively or

individually the processes of space heating, ventilating and/or air conditioning within or associated with a building.

(n) "Hospital and health care facility" means a building such as a general hospital, tuberculosis hospital or any other type of hospital, clinic, nursing or convalescent home, hospice or other facility duly authorized to provide hospital or health care services under the laws of the jurisdiction in which the institution or facility is located.

(o) "Hotel or other lodging facility" means a building where sleeping and lodging accommodations are provided to the public, or to the members of a private membership organization or other private facility, in the ordinary course of business.

(p) "Occupied period" means that time of the day or night when the covered building or portion thereof is used for its ordinary function or functions, but not including such service functions as cleaning and maintenance.

(q) "Operator" means any person, whether lessee, sublessee or assignee, agent or other person, whether or not in physical possession of a covered building, who has control, either directly or indirectly through an agent, of heating, cooling or hot water equipment servicing the covered building.

(r) "Owner" means any person, whether or not in physical possession of a covered building, in whom is vested legal title, and who has control, either directly or indirectly through an agent, of heating, cooling or hot water equipment servicing the covered building.

(s) "Person" means any individual, corporation, company, association, firm, partnership, society, trust, joint venture, or joint stock company, the United States or any State or political subdivision thereof, the District of Columbia, Puerto Rico, any U.S. territory or possession, or any agency of the United States or any state or political subdivision thereof, or any other organization or institution.

(t) "Public utility" means a publicly or privately owned and operated utility which is engaged in the sale of electric power or natural gas to end-users.

(u) "Relative humidity" means the ratio of the amount of water vapor in the air at a specific temperature to the maximum water vapor capacity of the air at that temperature.

(v) "Residential building" means any building used for residential purposes but does not include any portion of such building used for commercial, industrial or other business purposes and which, with respect to the heating and cooling

requirements of these regulations, has separate heating or cooling space-conditioning control devices or, with respect to water temperature restrictions, has separate hot water temperature control devices.

(w) "Room" means that portion of the interior space which is contained within the exterior surfaces of a building, which is contained within floor to ceiling partitions, and which is conditioned directly or indirectly by an energy using system.

(x) "Secretary" means the Secretary of the Department of Energy.

(y) "Solar energy" means energy derived from the sun directly through the solar heating of air, water or other fluids; indirectly through the use of electricity produced by solar photovoltaic or solar thermal processes; or indirectly through the use of wind, biomass or small scale water power.

(z) "Space-conditioning control device" means a device for directly or indirectly controlling the room temperature and/or humidity by means of the HVAC system.

(aa) "Special equipment" means equipment for which carefully controlled temperature levels are necessary for proper operation or maintenance.

(bb) "State" means any state, the District of Columbia, Puerto Rico, or any territory or possession of the United States.

(cc) "Temperature control device" means a thermostat or any other device used to regulate the operation of heating or cooling equipment or a hot water heater.

(dd) "Unoccupied" means those periods of the day or night other than the occupied period.

(ee) "Wet-bulb temperature" means the temperature of air as measured by a wet-bulb thermometer, which is a thermometer having the bulb covered with a cloth, usually muslin, that is saturated with water.

Subpart B—Heating and Cooling Restrictions

§ 490.11 HVAC systems without capability for simultaneous heating and cooling.

In covered buildings with HVAC systems without the capability for simultaneously heating and cooling the building:

(a) No operator shall set space-conditioning control devices so that energy is consumed to raise the room dry-bulb temperature above 85° F.

(b) No operator shall set space-conditioning control devices so that energy is consumed to lower the room dry-bulb temperature below 78° F.

Provided, That energy may be consumed to lower the room dry-bulb temperature below 78° F to the extent necessary to lower the room dew-point temperature to 65° F.

§ 490.12 HVAC systems with capability for simultaneous heating and cooling.

In covered buildings with HVAC systems capable of simultaneous heating and cooling of the building or portions thereof, operators shall set space-conditioning control devices in accordance with the following requirements:

(a) (1) Except as otherwise provided in this section, no operator shall set space-conditioning control devices so that energy is consumed to raise the room dry-bulb temperature above 65° F.

(2) Except as otherwise provided in this section, no operator shall set space-conditioning control devices so that energy is consumed to lower the room dry-bulb temperature below 78° F. Provided, That energy may be consumed to lower the room dry-bulb temperature below 78° F to the extent necessary to lower the room dew-point temperature to 65° F.

(b) (1) Operators of fan-coil, induction baseboard or similarly operated units shall set space-conditioning control devices in accordance with the requirements of subsection (a), or alternatively in the following manner:

(i) No heat is provided to the heating coil during the cooling season.

(ii) No liquid coolant is provided to the cooling coil at coolant temperatures below 55° F, and

(iii) No heat is supplied to a room if the room dry-bulb temperature is greater than 65° F.

(2) Operators of fan-coil, induction baseboard or similarly operated units may alternate at any time between the requirements of paragraph (a) and paragraph (b)(1) of this section.

(c) Operators of heat-pump systems shall set space-conditioning control devices in accordance with the requirements of paragraph (a) of this section.

(d)(1) In lieu of complying with the requirements of subsection (a) of this section, operators of HVAC systems in which the room temperature is controlled by the supply air temperature or volume ("all-air" systems, including those with reheat) may set space-conditioning control devices so that

(i) The dry-bulb temperature of the air leaving the cooling coils is 60° F or greater,

(ii) During the cooling season, the heating coil is turned off and the space-

conditioning control device is set to 78° F, and

(iii) During the heating season, if the heating coil is turned on, the space-conditioning control device is set to 65° F.

(2) Operators of HVAC systems in which the room temperature is controlled by the supply air temperature or volume may alternate at any time between the requirements of subsection (a) and paragraph (d)(1) of this section.

(c)(1) Notwithstanding the requirements of any other subsection of this section, where a licensed professional engineer certifies by analysis that operation of a covered building in accordance with the requirements of paragraph (e)(2) during periods prescribed in the analysis will result in the consumption of less energy than compliance with the requirements of paragraphs (a) through (d) of this section, that building may be operated in accordance with the requirements of subsection (e)(2) during those periods.

(2) For covered buildings qualified under the provisions of paragraph (e)(1), space-conditioning control devices shall be set at levels consistent with maximum energy savings, and the cooling system shall be adjusted such that

(i) No liquid coolant is provided to the cooling coil at coolant temperatures below 55° F; or

(ii) The dry-bulb temperature of the air leaving the cooling coils is 60° F or greater.

(3) Operators of covered buildings qualified under the provisions of paragraph (e)(1) may alternate at any time between the requirements of subsection (a) and subsection (e)(2) of this section.

(4) The certified analysis by a licensed professional engineer shall be made available to DOE or its delegates upon request.

(5) It shall be deemed a violation of the requirements of this Part for a licensed professional engineer to falsely certify the analysis authorized by paragraph (e)(1).

§ 420.13 Requirement for accuracy of space-conditioning control devices.

(a) The operator of a covered building shall maintain space-conditioning control devices within reasonable tolerances of accuracy.

(b) No person may alter a space-conditioning control device with the intent of having that device function inaccurately.

§ 420.14 Regulation of building temperature during unoccupied periods.

(a) During periods any covered building is unoccupied eight hours or more before the next normal occupied period:

(1) The heating system for that building shall not be operated if the anticipated minimum outdoor air dry-bulb temperature for the unoccupied period is greater than 55° F, and the cooling system for that building shall not be operated. The requirements of this subsection may be satisfied by turning off the circulating air or circulating water system.

(2) If the anticipated minimum outdoor air dry-bulb temperature for the unoccupied period is less than 55° F, the space-conditioning control devices for the heating system for that building shall be set such that one of the following results:

(i) The room dry-bulb temperature is less than 55° F;

(ii) The heated supply-air dry-bulb temperature is less than 100° F;

(iii) The heating-water dry-bulb temperature is less than 120° F; or

(iv) The space-conditioning control devices are set at less than 55° F, or at their lowest set point.

(3) HVAC system operation during unoccupied periods is permitted where requested by the public utility or district heating system servicing the building for purposes of load management.

(4) Notwithstanding the requirements of this section:

(i) HVAC system operation during unoccupied periods is permitted to the extent necessary to prevent damage to the covered building or its contents;

(ii) The HVAC system may begin operating at such time so that the temperature levels authorized by this Subpart may be reached at a time simultaneous with the beginning of the occupied period.

§ 420.15 Auxiliary heaters.

No auxiliary heating devices such as portable electric heaters, heat lamps or other devices whose principal function at the time of operation is to produce space heating may be operated except at such times that use of energy for heating purposes is authorized under the other sections of this Subpart or when the covered building is unoccupied.

§ 420.16 Use of ventilating equipment.

Nothing in this Subpart shall be deemed to prohibit the use of ventilating fan or pump power to heat a building to a dry-bulb temperature above 65° F or to cool a building to a dry-bulb temperature below 75° F.

§ 420.17 Measurement techniques.

(a) Where a space-conditioning control device controls the temperature for more than one room the measurement may be taken in the room containing the device or any other room controlled by that device. The room with the highest temperature when cooling and the lowest temperature when heating may be measured for purposes of determining compliance with the requirements of this Subpart.

(b) Except as otherwise provided in this section, compliance with the requirements of this Subpart shall be determined by reading the set-point of the space-conditioning control device which controls the temperature for the room.

(c) Any of the following methods for measuring dry-bulb temperature, dew-point temperature, relative humidity and wet-bulb temperature may be utilized in lieu of a reading of the set-point on the space-conditioning control device. An operator shall be deemed to have complied with any temperature or humidity requirement of this Subpart so long as any one measurement technique indicates compliance with the relevant temperature or humidity requirement.

(1) Dry-bulb temperature shall be measured by:

(i) A thermometer placed within 24 inches of the space-conditioning control device;

(ii) The average of thermometer readings taken two feet away from and at the center of each external wall in the room, and at the center of the room; or

(iii) If there are no external walls, the temperature at the center of the room.

(2) Dew-point temperature shall be measured by:

(i) Observing the temperature of a glass at which condensation first occurs while cooling the glass;

(ii) By a dew-point indicating instrument; or

(iii) By inference from the wet-bulb temperature or the relative humidity.

(3) The relative humidity shall be measured by:

(i) A humidity-indicating instrument (hygrometer); or

(ii) By inference from the dew-point or wet-bulb temperature.

(4) The wet-bulb temperature shall be measured by:

(i) A wet-bulb-temperature-indicating instrument (psychrometer); or

(ii) By inference from the dew-point temperature or relative humidity measurement.

(5) The dew-point temperature, relative humidity and wet-bulb temperature may be measured within 24 inches of the humidity space-

conditioning control device if located in the room, or in the same locations as used in the measurement of the dry-bulb temperature.

(6) To account for HVAC system cycling, all temperature and humidity readings may be taken as the average of several measurements taken at equal time intervals.

§ 490.18 Exemptions from heating and cooling restrictions.

(a) The requirements of this Subpart shall not apply to:

(1) Covered buildings or portions thereof which are neither heated nor cooled or which are equipped with space heating devices and space cooling devices with total rated output less than 3.5 BTU per hour (1 watt) per square foot of gross floor area.

(2) Buildings containing HVAC systems capable of using outdoor air or evaporation of water for cooling effect without operation of a vapor compression or absorption-refrigeration system, but this exemption applies only with respect to cooling, and only during those periods when the outdoor air and/or evaporation effect provides the only source for cooling.

(3) Buildings containing HVAC systems capable of using energy that otherwise would be wasted, but only during those periods when the otherwise wasted energy provides the only source of heating or cooling energy.

(4) Buildings containing HVAC systems capable of using solar energy, but only during those periods when solar energy provides the only source of heating or cooling energy.

(b) For buildings or portions of buildings where the capacity of the HVAC system is insufficient to maintain the building or portion thereof at the minimum temperature levels for cooling authorized by this regulation when the building or portion thereof is occupied, the operator of said building may cool the building or portion of the building to a temperature level below 78° F before the building or portion of the building is occupied: *Provided, that said reduced temperature level may only be maintained for the period of time necessary so that the temperature will reach the minimum level permitted by this regulation during the building's occupied period.*

(c) Exemptions under this section may not be claimed when energy, other than waste, solar, pump or fan energy is used to operate a vapor compressor or absorption refrigerator.

Subpart C—Domestic Hot Water

§ 490.21 Regulation of hot water controls.

(a) The operator of a covered building shall set hot water temperature control devices so that the temperature of domestic hot water in such covered building does not exceed the greater of:

(i) 105° F, or

(ii) The lowest setting on the hot water temperature control device.

(b) The operator shall, where practicable, shut off domestic hot water circulating pumps during periods when a covered building is to be unoccupied for more than eight hours when such actions will not cause damage to the building, its systems, or internal processes or articles.

§ 490.22 Measurement of domestic hot water temperature.

(a) The temperature of domestic hot water shall be taken as the domestic hot water storage tank temperature measured in the hot water supply line, at the tank temperature control point, or at the tap nearest the tank discharge point.

§ 490.23 Maintenance of hot water temperature control devices.

(a) The operator of a covered building shall maintain all domestic hot water temperature control devices in that building within reasonable tolerances of accuracy.

(b) No person may alter a hot water temperature control device with the intent of having that device function inaccurately.

§ 490.24 Exemption from hot water restrictions.

(a) The provisions of this Subpart shall not apply in a covered building where the domestic hot water heating equipment also provides hot water for manufacturing, industrial or commercial processes and such processes or process clean-up procedures require hot water temperatures in excess of those prescribed in this Subpart.

(b) The provisions of this Subpart shall not apply in a covered building where domestic hot water is the only source available for dishwashing or other purposes in such covered building and state or local health regulations prescribe a minimum temperature level above 105° F for dishwashing or such other purposes. Domestic hot water control devices shall be set so as not to exceed the minimum level required by the state or local health regulations.

(c) The provisions of this Subpart shall not apply to combination domestic water heating/space heating boilers during the heating season.

(d) The provisions of this Subpart shall not apply at such times that solar energy provides the only source for domestic hot water heating energy. At such times that a hot water heating system using a non-solar energy source is being operated in conjunction with solar energy, this exemption shall not apply.

(e) The provisions of this Subpart shall not apply to domestic hot water heating systems capable of using heat that otherwise would be wasted, but only at such time when the waste heat provides the only source of hot water heating energy.

(f) Exemptions under this section may not be claimed when energy, other than waste, solar, pump or fan energy is used to operate a vapor compressor or absorption refrigerator.

Subpart D—Exemptions

§ 490.31 General exemptions.

(a) In addition to the exemptions provided in other Subparts, and subject to the limitations of this Subpart, the following exemptions from the requirements of Subparts B or C are available to any person for a building or portion of a building in accordance with the provisions of this section:

(1) Where a "manufacturer's warranty", service manual or equipment service contract requires specific temperature levels to prevent damage to special equipment.

(2) Where maintenance of certain temperature and humidity levels is critical to materials and equipment used in manufacturing, industrial or commercial processes.

(3) Where maintenance of certain temperature and humidity levels is required for the proper storage or handling of food or other agricultural commodities, raw materials, goods in process and finished goods.

(4) Any other circumstances where special environmental conditions are required to protect plant life essential to the operation of a business within a covered building, materials or animal life.

(5) Where maintenance of certain temperature levels is required:

(i) To protect the health of persons in offices of physicians, dentists and other members of health care professions licensed by the state to provide health-related services;

(ii) To protect the health of persons engaged in rehabilitative physical therapy in physical therapy facilities and

(iii) With respect to restrictions on heating only, to protect the health of

persons utilizing indoor swimming pools.

(c) Where the structure or insulation of the building will be damaged.

(b) Exemptions claimed under Subparts B, C and D of this Part shall become effective when claimed.

(c) Any person claiming an exemption under any provision of Subparts B, C or D of this Part shall provide the owner or operator of the covered building with all necessary information relating to the exemption including:

(1) The nature of the exemption and the section of the regulations claimed as the basis for exemption;

(2) The portions of the building for which the exemption is claimed;

(3) The required temperature levels in the exempt portions of the building consistent with maximum energy savings.

(d) The owner or operator of a covered building shall, upon request of DOE or its delegate, make available any information provided to the owner or operator under subsection (c).

(e) Any person who claims an exemption to which he is not entitled is subject to the penalties provided in Subpart G of this Part.

(f) Where the person entitled to an exemption under this Part is not the owner or operator of the covered building(s) to which the exemption applies, the owner or operator of the covered building(s) is authorized to adjust space-conditioning control devices and hot water temperature control devices in accordance with § 490.34.

(g) Any operator, other than an operator who claims an exemption, shall not be liable for violation of this Part as the result of acting in reliance upon an exemption which subsequently is determined to be invalid.

§ 490.32 Specific exceptions.

(a) In addition to the general exemptions available under § 490.31 or under Subparts B and C, any person who would experience special hardship, inequity or an unfair distribution of the burden as a result of the requirements of Subparts B and C of this Part may submit an "Application for Exemption" in accordance with Subpart D of Part 205 of this Chapter. An exemption shall not become effective until such time as it is granted by DOE.

(b) If the person submitting the "Application for Exemption" is not the owner or operator of the covered building(s) to which the requested exemption is to apply, and if the exemption is granted by DOE, then the owner or operator of the covered

building(s) to which the exemption is granted shall maintain and hot water temperature control devices in accordance with the provisions of the exemption provided by DOE.

(c)(1) Any person who receives an approved exemption under subsection (a) shall provide the owner or operator of the covered building with all necessary information relating to the exemption including:

(i) The nature of the exemption;

(ii) The portions of the building for which the exemption is claimed;

(iii) The authorized temperature levels in the exempted portions of the building as determined by the terms of the exemption or consistent with maximum energy savings.

(2) The owner or operator of a covered building shall, upon request of DOE or its delegate, make available any information provided to the owner or operator under subsection (1).

§ 490.33 Limitation of exemption or exception.

(a) Where a portion of a covered building qualifies for an exemption under § 490.31 or any provision of Subparts B and C, or for an exception under § 490.32, the operator may set temperature levels other than those prescribed in Subparts B and C only for such portions of the covered building as necessary to maintain temperatures for the exempted sections. In those covered buildings where the space-conditioning control device or hot water temperature control device controls both the exempt and non-exempt portions of the building, the entire building or portion of the building may operate as if exempted from the temperature requirements of Subparts B and C.

(b) DOE may limit the exemption or exception granted by this Part to all or any portion of a covered building. DOE may specify heating, cooling or hot water temperature controls to be applicable to the exempted portion of a covered building.

§ 490.34 Scope of exemptions or exceptions.

The operator of a covered building subject to an exemption or exception pursuant to this Part shall, where practicable, maintain the temperature levels prescribed in Subparts B and C, or such other levels consistent with maximum energy savings.

§ 490.35 Exemption procedures for states.

(a) A state may seek for itself or a political subdivision an exemption from the application of this Part in such state or political subdivision during a period

for which the President of the United States or his delegate to the President a comparable program of such state or political subdivision is in effect.

(b) A state seeking an exemption for itself or a political subdivision on the ground that a comparable program is in effect shall submit to the Secretary a "Request for State Exemption" which shall include the following information:

(1) A full description of the comparable program, including the authority which allows for the mandatory imposition of the program;

(2) An estimate of the types and amount of energy which such program will conserve;

(3) The effective dates of the program;

(4) A description of energy conservation measures implementable at the state or local level and their expected energy savings;

(5) A comparison of energy savings estimated to result in that state from compliance with these regulations and estimated energy savings under the proposed comparable program which demonstrates that the comparable program conserves at least as much energy in the state or political subdivision as these regulations. The comparisons shall be performed using a consistent methodology for estimating building energy consumption.

(6) Such other information as the Secretary may require.

(c) A request for exemption by a state shall be sent to Secretary, Department of Energy, Washington, D.C. 20585.

(d) For purposes of this section:

(1) "Comparable program" means a program which deals with the same subject matter as these regulations, which is mandatory, and which conserves at least as much energy in the state or political subdivision thereof as adherence to the requirements of these regulations would be expected to conserve in such state or political subdivision;

(2) "Same subject matter" means heating, cooling and hot water temperature restrictions in covered buildings.

Subpart E—General Provisions

§ 490.41 Joint and several liability.

The owner and operator shall be jointly and severally liable for the execution of operator responsibilities under this Part where an agency relationship exists between the owner and operator.

§ 490.42 Reporting requirement.

Any public utility or any fuel distributor shall make available to the

DOE, upon request, customer lists or other information deemed necessary by DOE to administer and enforce these regulations.

§ 490.51 Self-Certification and Filing of Building Compliance Information Form.

(a)(1) The owner or operator of a covered building shall, within 30 days of the effective date of this regulation, complete in accordance with forms and instructions provided by DOE, and post in a prominent location within the covered building, a "Certificate of Building Compliance" certifying compliance with the requirements of this Part.

(2) The "Certificate of Building Compliance" shall set forth exemptions claimed by any persons within the covered building, or any authorized exceptions claimed by persons within the building.

(b) In addition to the requirements of subsection (a), the owner or operator of a covered building shall, within 90 days of the effective date of this regulation, submit to DOE in accordance with forms and instructions to be provided by DOE a "Building Compliance Information Form" describing the building, the means adopted to comply with the regulations and any exemptions or exceptions claimed by persons in that building.

(c) It shall be deemed a violation of this Part for an owner or operator to knowingly provide false, misleading or incomplete information on the "Building Compliance Information Form" or the "Certificate of Building Compliance."

(d) DOE will make "Certificates of Building Compliance" and "Building Compliance Information Forms" and instructions available at convenient locations throughout the country. In addition, "Certificates of Building Compliance" and "Building Compliance Information Forms" and instructions for their completion may be obtained from:

Director, Office of Building and Community Systems, Office of Conservation and Solar Applications, 20 Massachusetts Avenue NW, Room 2221C, Washington, D.C. 20555. Attention: EBTR Building Compliance.

Subpart F—Administrative Procedures

§ 490.51 Purpose and scope.

This Subpart establishes the procedures for determining the nature and extent of violations of section 524(c) of the EPCA and the procedures for issuance of a Notice of Violation, Violation Order, Violation Order for Immediate Compliance, Modification or Rescission Decision and Order, and Stay Decision and Order. Nothing in these

regulations shall affect the authority of DOE enforcement officials in coordination with the Department of Justice to initiate appropriate civil or criminal enforcement actions in court at any time.

§ 490.52 Notice of violation.

(a) When any audit or investigation discloses, or the DOE otherwise finds, that any person has engaged, is engaged, or is about to engage in acts or practices contrary to the provisions of Standby Conservation Plan No. 2 (Emergency Building Temperature Restrictions) and implementing regulations in violation of section 524(c) of the EPCA, the DOE may issue a Notice of Violation. Any notice issued under this section shall be in writing and shall set forth the findings of fact and conclusions of law upon which it is based.

(b) Within 10 business days after the service of a Notice of Violation the person upon whom the Notice is served may file a reply with the DOE office that issued the Notice of Violation. The DOE may extend the 10-day period for good cause shown.

(c) The reply shall be in writing and signed by the person filing it. The reply shall contain a statement of all relevant facts pertaining to the acts or practices that are the subject of the Notice of Violation. The reply shall include a statement of the legal, business and other reasons for the acts or practices; a description of the acts or practices; and a discussion of the pertinent provisions and relevant facts reflected in any document submitted with the reply. Copies of all relevant contracts, reports, abstracts, compilations of data and other documents shall be submitted with the reply. The reply shall include a discussion of the relevant authorities which support the position asserted, including rulings, regulations, interpretations, orders and decisions issued by DOE.

(d) The reply shall indicate whether the person requests an informal conference regarding the notice. A request for a conference must be in writing and shall be governed by the provisions of 10 CFR § 205.171, which are incorporated by reference herein and made a part of this subsection.

(e) If a person has not filed a reply with the DOE within the 10-day or other period authorized for reply, the person shall be deemed to have admitted the accuracy of the factual allegations and legal conclusions stated in the Notice of Violation, and the DOE may proceed to issue a Violation Order in accordance with § 490.53.

(f) If the DOE finds, during or after the 10-day or other period authorized for reply, that no violation has occurred, is continuing, or is about to occur, or that for any reason the issuance of a Violation Order would not be appropriate, it shall rescind the Notice of Violation and inform the person to whom the Notice was issued of the rescission.

§ 490.53 Violation Order.

After considering all information received during the proceeding, the DOE may issue a Violation Order. The Violation Order may adopt the findings and conclusions contained in the Notice of Violation or may modify or rescind any such finding or conclusion to conform the Order to the evidence or on the basis of a determination that the finding or conclusion is erroneous in fact or law or is arbitrary or capricious. Such Order shall constitute a final agency order subject to judicial review. Unless otherwise specified, the Violation Order shall be effective 10 business days after the date of issuance. In the alternative, the DOE may determine that no Violation Order should be issued or that the Notice of Violation should be withdrawn for further consideration or modification. Every determination made pursuant to this section shall state the relevant facts and legal bases supporting the determination.

§ 490.54 Violation Order for Immediate Compliance.

(a) Notwithstanding the provisions of § 490.52 or § 490.53, the DOE may issue a Violation Order for Immediate Compliance, which shall be effective upon issuance and until rescinded or suspended, if it finds:

- (1) There is a strong probability that a violation has occurred, is continuing or is about to occur;
- (2) Irreparable harm will occur unless the violation is remedied immediately; and
- (3) The public interest requires the avoidance of such irreparable harm through immediate compliance and waiver of the procedures afforded under § 490.52.

(b) A Violation Order for Immediate Compliance shall be served promptly upon the person against whom such Order is issued by personal service, telex or telegram, with a copy served by registered or certified mail. The copy shall contain a written statement of the relevant facts and the legal basis for the Violation Order for Immediate Compliance, including the findings required by paragraph (a) of this section.

(c) The DOE may rescind or suspend a Violation Order for Immediate Compliance if it appears at the criteria set forth in paragraph (a) of this section are no longer satisfied. When appropriate, however, such a suspension or rescission may be accompanied by a Notice of Violation issued under § 490.52.

(d) If at any time in the course of a proceeding commenced by a Notice of Violation the criteria set forth in paragraph (a) of this section are satisfied, the DOE may issue a Violation Order for Immediate Compliance, even if the 10-day period for submitting a reply to that document has not expired.

§ 490.55 Modification or rescission.

(a) Any person to whom a Violation Order or Violation Order for Immediate Compliance is directed may make application for modification or rescission of such Order.

(b) The application shall contain a full and complete statement of all relevant facts pertaining to the circumstances, act or transaction that is the subject of the application and to the DOE action sought; and shall include a discussion of the relevant authorities which support the position asserted, including, but not limited to, DOE rulings, regulations, interpretations and decisions. The applicant shall fully describe the events, acts or transactions that comprise the significantly changed circumstances, as defined in paragraph (e)(2), upon which the application is based. The applicant shall state why, if the significantly changed circumstance is new or newly discovered facts, such facts were not or could not have been presented during the prior proceeding.

(c) The application should indicate whether the person requests an informal conference. A request for a conference must be in writing and shall be governed by the provisions of 10 CFR § 205.171, which are incorporated by reference herein and made a part of this subsection.

(C)(1) If the DOE determines that there is insufficient information upon which to base a decision and if upon request the necessary additional information is not submitted, the DOE may dismiss the application without prejudice. If the failure to supply additional information is repeated or willful the DOE may dismiss the application with prejudice.

(2)(i) If the applicant fails to satisfy the requirements of paragraph (b) of this section, the DOE shall issue an order denying the application. The order shall state the grounds for the denial.

(ii) The order denying the application shall become final within 5 days of its

service upon the applicant, unless within such 5-day period an amendment to correct the deficiencies identified in the order is filed with the DOE.

(iii) Within 5 days of the filing of such amendment, the DOE shall notify the applicant whether the amendment corrects the specified deficiencies. If the amendment does not correct the deficiencies, the notice shall be an order dismissing the application as amended. Such order shall be a final agency order subject to judicial review.

(e) *Criteria.* (1) An application for modification or rescission of an order shall be processed only if the application demonstrates that it is based on significantly changed circumstances.

(2) For purposes of this subpart, the term "significantly changed circumstances" shall mean—

(i) The discovery of material facts that were not known or could not have been known at the time of the proceeding and action upon which the application is based;

(ii) The discovery of a law, regulation, interpretation, ruling, order or decision that was in effect at the time of the proceeding upon which the application is based and which, if such had been made known to the DOE, would have been relevant to the proceeding and would have substantially altered the outcome; or

(iii) There has been a substantial change in the facts or circumstances upon which an outstanding and continuing order of the DOE affecting the applicant was issued, which change has occurred during the interval between issuance of such order and the date of the application and was caused by forces or circumstances beyond the control of the applicant.

(f) Upon consideration of the application and other relevant information received or obtained during the proceeding, the DOE shall issue an order granting or denying the application. The order shall include a written statement setting forth the relevant facts and the legal basis of the order. Such order shall be a final agency order subject to judicial review.

§ 490.56 Stay Pending Judicial Review.

(a) Any person to whom a Violation Order or Violation Order for Immediate Compliance is directed may make application for a stay of such Order pending judicial review.

(b) The application shall contain a full and complete statement of all relevant facts pertaining to the act or transaction that is the subject of the application and to the DOE action sought. Such facts shall include, but not be limited to, all

information that relates to the satisfaction of the criteria in paragraph (e). A copy of the Order from which a stay is sought shall be included with the application.

(c) If the DOE determines that there is insufficient information upon which to base a decision and if upon request additional information is not submitted by the applicant, the DOE may dismiss the application without prejudice. If the failure to supply additional information is repeated or willful the DOE may dismiss the application with prejudice.

(d) The DOE shall grant or deny the application for stay within 5 business days after receipt of the application.

(e) *Criteria.* The grounds for granting a stay are:

(1) A showing that irreparable injury will result in the event that the stay is denied;

(2) A showing that denial of the stay will result in a more immediate serious hardship or gross inequity to the applicant than to the other persons affected by the proceeding;

(3) A showing that it would be desirable for public policy or other reasons to preserve the status quo ante pending a decision on the merits of the appeal or exception;

(4) A showing that it is impossible for the applicant to fulfill the requirements of the original order; and

(5) A showing that there is a likelihood of success on the merits.

(f) Upon consideration of the application and other relevant information received or obtained during the proceeding, the DOE shall issue an order granting or denying the application. The order shall include a written statement setting forth the relevant facts and the legal basis of the decision, and the terms and conditions of the stay.

(g) The grant or denial of a stay is not an order of the DOE subject to administrative review.

§ 490.57 Consent Order.

(a) Notwithstanding any other provision of this Subpart, the DOE may at any time resolve an outstanding compliance investigation or proceeding with a Consent Order. A Consent Order must be signed by the person to whom it is issued, or a duly authorized representative, and must indicate agreement to the terms contained therein. A Consent Order need not constitute an admission by any person that DOE regulations have been violated, nor need it constitute a finding by the DOE that such person has violated DOE regulations. A Consent Order shall, however, set forth the

relevant facts which form the basis for the Order. A Consent Order is a final Order of the DOE having the same force and effect as a Violation Order issued pursuant to § 490.53.

(b) At any time and in accordance with the procedures of § 490.55, a Consent Order may be modified or rescinded upon petition by the person to whom the Consent Order was issued, and may be rescinded by the DOE upon discovery of new evidence which is materially inconsistent with the evidence upon which the DOE's acceptance of the Consent Order was based.

(c) Notwithstanding the issuance of a Consent Order, the DOE may seek civil or criminal penalties or compromise civil penalties pursuant to Subpart G concerning matters encompassed by the Consent Order, unless the Consent Order by its terms expressly precludes the DOE from so doing.

(d) If at any time after a Consent Order becomes effective it appears to the DOE that the terms of the Consent Order have been violated, the DOE may refer such violations to the Department of Justice for appropriate action in accordance with Subpart G.

§ 490.53 Remedies.

A Violation Order, a Violation Order for Immediate Compliance, a Modification or Rescission Decision and Order, or a Consent Order may require the person to whom it is directed to make an appropriate adjustment in building or domestic hot water temperature, to post a correct Certificate of Building Compliance, and to take such other action as the DOE determines is necessary to eliminate the effects of a violation.

Subpart G—Investigations, Violations, Sanctions, Injunctions and Judicial Actions

§ 490.61 Investigations.

Investigations will be conducted in accordance with the provisions set forth in 10 C.F.R. § 205.201.

§ 490.62 Violations.

Any practice that circumvents or contravenes or results in a circumvention or contravention of the requirements of any provision of this Part or any order issued pursuant thereto is a violation of the regulations stated in this Part.

§ 490.63 Sanctions.

(a) *General.* Any person who violates any provision of this Part or any Order issued pursuant thereto shall be subject

to penalties and sanctions as provided herein.

(1) The provisions herein for penalties and sanctions shall be deemed cumulative and not mutually exclusive.

(2) Each day that a violation of the provisions of this chapter or any order issued pursuant thereto continues shall be deemed to constitute a separate violation within the meaning of the provisions of this chapter relating to criminal fines and civil penalties.

(b) *Civil penalties.* (1) Any person who violates any provisions of this Part or any order issued pursuant thereto shall be subject to a civil penalty of not more than \$5,000 for each violation.

(2) The DOE may at any time refer a violation to the Department of Justice for the commencement of an action for civil penalties. When the DOE considers it to be appropriate or advisable, it may compromise, settle and collect civil penalties.

(c) *Criminal penalties.* (1) Any person who willfully violates any provision of this Part or any order issued pursuant thereto shall be fined not more than \$10,000 for each violation.

(2) The DOE may at any time refer a willful violation to the Department of Justice for criminal prosecution.

(d) *Other penalties.* Willful concealment of material facts or false or fictitious or fraudulent statements or representations, or willful use of any false writing or document containing false, fictitious or fraudulent statements pertaining to matters within the scope of section 524(c) of the EPCA by any person shall subject such person to the criminal penalties provided in 18 U.S.C. § 1001 (1970).

§ 490.64 Injunctions.

Whenever it appears to the DOE that any person has engaged, is engaged, or is about to engage in any act or practice constituting a violation of any regulation or order issued under this chapter, the DOE may request the Attorney General to bring an action in the appropriate district court of the United States to enjoin such acts or practices and, upon a proper showing, a temporary restraining order or a preliminary restraining order or a preliminary or permanent injunction shall be granted without bond. The relief sought may include, without limitation, a mandatory injunction commanding any person to comply with any such order or regulation.

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