

Lamp type	Lumens watt	Improvement over tungsten
Tungsten lamp	12	X1
Modern fluorescent lamp	85	X7
Mercury halide lamp	100	X8
High pressure sodium lamp	110	X9
Low pressure sodium lamp	180	X15

(36) **Industrial Buildings Heating**—Includes measures to improve the energy conservation of industrial buildings such as: fixing holes in roofs, walls and windows; fitting flexible doors, fitting controls to heating systems; use of “economizer units” which circulate hot air back down from roof level to ground level; use of controlled ventilation; insulation of walls and roof; use of “optimisers” or optimum start controls in heating systems, so that the heating switch-on is dictated by actual temperature conditions rather than simply by time.

(37) **Hull Cleaning and Antifouling Coating**—Includes measures to reduce energy consumption through periodic cleaning of hulls and propellers or through the use of antifouling coatings.

(38) [Reserved]

(39) **Building Temperature Restrictions on Thermostat Setting for Heating, Cooling and Hot Water**—Includes enforcement of suggested restriction levels: 65 degrees for heating, 78 degrees for cooling, and 105 degrees or ban for hot water.

(40) Such other measures as DOE may from time-to-time add to this appendix, or as the Federal agency concerned may find to be energy-saving or efficient.

APPENDIX D TO PART 436—ENERGY PROGRAM CONSERVATION ELEMENTS

(a) In all successful energy conservation programs, certain key elements need to be present. The elements listed below must be incorporated into each agency conservation program and must be reflected in the 10-year plan prescribed in §436.102. Those organizations that have already developed programs should review them to determine whether the present management systems incorporate these elements.

(1) **Top Management Control.** Top management must have a personal and sustained commitment to the program, provide active direction and motivation, and require regular review of overall energy usage at senior staff meetings.

(2) **Line Management Accountability.** Line managers must be accountable for the energy conservation performance of their organizations and should participate in establishing realistic goals and developing strategies and budgets to meet these goals.

(3) **Formal Planning.** An overall 10-year plan for the period 1980-1990 must be developed and formalized which sets forth perform-

ance-oriented conservation goals, including the categorized reduction in rates of energy consumption that the program is expected to realize. The plan will be supplemented by guidelines enumerating specific conservation procedures that will be followed. These procedures and initiatives must be life cycle cost-effective as well as energy efficient.

(4) **Goals.** Goals must be established in a measurable manner to answer questions of “Where are we?” “Where do we want to go?” “Are we getting there?” and “Are our initiatives for getting there life cycle cost-effective?”

(5) **Monitoring.** Progress must be reviewed periodically both at the agency headquarters and at local facility levels to identify program weakness or additional areas for conservation actions. Progress toward achievement of goals should be assessed, and explanations should be required for non-achievement or unusual variations in energy use. Monitoring should include personal inspections and staff visits, management information reporting and audits.

(6) **Using Technical Expertise.** Personnel with adequate technical background and knowledge of programmatic objectives should be used to help management set technical goals and parameters for efficient planning and implementation of energy conservation programs. These technicians should work in conjunction with the line managers who are accountable for both mission accomplishment and energy conservation.

(7) **Employee Awareness.** Employees must gain an awareness of energy conservation through formal training and employee information programs. They should be invited to participate in the process of developing an energy conservation program, and to submit definitive suggestions for conservation of energy.

(8) **Energy Emergency Planning.** Every energy management plan must provide for programs to respond to contingencies that may occur at the local, state or National level. Programs must be developed for potential energy emergency situations calling for reductions of 10 percent, 15 percent and 20 percent for up to 12 months. Emergency plans must be tested to ascertain their effectiveness.

(9) **Budgetary and Fiscal Support.** Resources necessary for the energy conservation program must be planned and provided for, and the fiscal systems adjusted to support energy management investments and information reporting.

(10) **Environmental Considerations.** Each agency shall fulfill its obligations under the National Environmental Policy Act in developing its plan.