

APPENDIX "A"

DEPARTMENT OF PUBLIC WORKS GUIDELINES
FOR THE CONSERVATION OF ENERGY IN
FEDERAL BUILDINGS*Introduction*

The Department has investigated possibilities for reducing the consumption of energy in its buildings on a short term basis. Typical buildings and their systems were simulated, taking into consideration design standards, a number of possible operating conditions and the pick-up capacity of plants and systems. Theoretically, recommended conditions could produce BTU savings of the order of 40%. Further savings can be achieved by improving plant efficiencies and power factors. Additional emphasis is to be placed on maintenance procedures which have a direct bearing on efficiency of energy usage. Subsequent paragraphs outline in more detail guidelines to be followed in reaching the objectives.

Plant Efficiency

Improved efficiency of fuel utilization is to be accomplished by tuning up all of the boilers in the Department's heating plants and/or boiler rooms.

Three main aspects are involved. These are:

- (a) adjusting burners for the optimum fuel/air ratio;
- (b) calibrating and adjusting combustion instrumentation and controls to maintain this ratio over the full firing range and
- (c) cleaning heat transfer surfaces.

*Load Reduction**General*

For most office type buildings, the greatest energy requirements in descending order are for lights, ventilation (outside) air, heat loss through walls, roofs, windows, doors, etc., and the electrical requirements for the operation of mechanical systems and equipment. Conservation resolves itself around reducing requirements in these four areas. Generally, the major reductions in energy consumption can be obtained by shutting off all lights and electrical equipment when not required and only using that which is absolutely necessary; reducing the quantity of outside air brought into the building for ventilation purposes and only bringing this air into the building when the building is occupied; reducing the temperature inside the building to 68°F—70°F and lowering the temperature another 5°F during the time that the building is unoccupied. Each building has its own characteristics because of design, construction, location, and schedule of operation, consequently there may be limitations to the things that can be done immediately to reduce energy needs. For this reason the following guidelines have been developed defining the objectives to be reached wherever possible.

Larger Buildings (more than 25,000 square feet).

- (a) *Perimeter Areas:* (outside wall office space)

Ventilation

- Set rate at 0.1 CFM/sq. ft. maximum between 8:00 a.m. and 5:00 p.m. weekdays. (CFM—cubic feet of air per minute)

- Shut off outside air dampers completely from 5:00 p.m. to 8:00 weekdays and during weekends and holidays.

Thermostats

- Reduce thermostat setting to maintain a maximum of 70°F between 8:00 a.m. and 5:00 p.m. weekdays.
- Set back the temperature to 65°F between 6:00 p.m. and 5:00 a.m. weekdays and during weekends and holidays.

Air systems

- Shut off all air systems from 6:00 p.m. to 7:00 a.m. weekdays except for air heating systems (dual duct type). Also shut off the primary air system of induction systems.
- Shut off all air systems including primary air of induction systems during weekends and holidays except for air heating systems (dual duct type) which have to remain in operation but set back thermostats to maintain 65°F as stated above.

- (b) *Core Areas:* (interior office space)

Ventilation

- Operate same as the perimeter areas except where these areas are served by a separate system in which case outside air is to be allowed to meet cooling requirements as detailed below under air systems.

Thermostats

- No reduction is required in thermostat setting for these areas. Reheat coils should not be allowed to function by completely cutting off their energy source.

Air Systems

- Shut off air systems from 6:00 p.m. to 7:00 a.m. weekdays and during the weekends and holidays.
- Reset supply air temperature not lower than 68°F. This also applies to the cold deck of dual duct systems.
- Set return air and outside air dampers to maintain supply air at 68°F without using any additional heat. This also applies to the cold deck of dual duct systems serving core areas.
- Shut off all energy sources to all terminal reheat coils and central reheat coils except for the reheat coils of the hot deck in single fan dual duct systems where reheat should not exceed return air conditions.

Smaller Buildings

- Set thermostat to maintain 68°F—70°F between 8:00 and 5:00 p.m. weekdays in office type accommodation. For all other times, set back the temperature to 63°F—65°F.
- Clean humidifier and replace elements, if necessary. Maintain 30% relative humidity and reduce this to a