
THE GENERAL ASSEMBLY OF PENNSYLVANIA

HOUSE BILL

No. 80

Session of
1979

INTRODUCED BY MESSRS. ITKIN, J. L. WRIGHT, B. F. O'BRIEN, BURNS,
McCALL, SWEET, SEVENTY, IRVIS, MANDERINO, CESSAR AND PERZEL,
FEBRUARY 5, 1979

AS REPORTED FROM COMMITTEE ON MINES AND ENERGY MANAGEMENT,
AS AMENDED, JUNE 29, 1979

AN ACT

1 Providing for the regulation for energy conservation purposes of
2 the construction of buildings, the establishment of a
3 Building Energy Conservation Committee and a Board on
4 Variances, appeals and for penalties.

5 TABLE OF CONTENTS

6 Chapter 1. General Provisions

7 Section 101. Short title.

8 Section 102. Legislative findings and declaration of
9 purpose.

10 Section 103. Definitions.

11 Chapter 2. Energy Conservation Standards

12 Subchapter A. General Provisions

13 Section 201. Provisions.

14 Subchapter B. Plans and Specifications

15 Section 202. Submission.

16 Section 203. Contents.

17 Subchapter C. Definitions Relating to Energy Conservation

1 Standards

2 Section 204. Definitions relating to standards.

3 Subchapter D. Building Envelope

4 Section 205. General provisions.

5 Section 206. Criteria for residential buildings.

6 Section 207. Other buildings.

7 Section 208. Air leakage.

8 Subchapter E. Warm Air Heating, Ventilating and Air

9 Conditioning Systems and Equipment

10 Section 209. General provisions.

11 Section 210. Design requirements.

12 Section 211. Cooling with outdoor air.

13 Section 212. Mechanical ventilation.

14 Section 213. Simultaneous heating and cooling.

15 Section 214. Recovered energy.

16 Section 215. New energy.

17 Section 216. Reheat systems.

18 Section 217. Dual duct and multizone systems.

19 Section 218. Recooling systems.

20 Section 219. Multiple zones.

21 Section 220. Concurrent operation.

22 Section 221. Equipment performance requirements.

23 Section 222. Duct insulation.

24 Section 223. System controls.

25 Section 224. Steam and hot water heating piping.

26 Subchapter F. Plumbing Systems

27 Section 225. Purpose.

28 Section 226. Fixtures.

29 Section 227. Insulation.

30 Section 228. Equipment.

1 Section 229. Controls.

2 Subchapter G. Electrical Systems

3 Section 230. System requirements.

4 Subchapter H. Lighting

5 Section 231. ~~Light~~ LIGHTING power budget. <—

6 Section 232. Calculation methods.

7 Section 233. Building interiors.

8 Section 234. Building exteriors.

9 Section 235. Exceptions to criteria.

10 Section 236. Calculation procedure.

11 Subchapter I. Alternative Systems

12 Section 237. Performance alternative.

13 Section 238. Nondepletable sources.

14 Section 239. Documentation.

15 Subchapter J. Use Group R-3 Prescriptive Standards

16 Section 240. Minimum insulation requirements for Use

17 Group R-3.

18 Chapter 3. Application of Standards: Establishment of

19 Committee and Penalties

20 Section 301. Modification of standards; criteria.

21 Section 302. Application of energy conservation standards.

22 Section 303. Energy conservation manual for buildings.

23 Section 304. Building Energy Conservation Committee.

24 Section 305. Certification.

25 Section 306. Use Group R-3; Notice; Warranty.

26 Section 307. Variances.

27 Section 308. Building permits.

28 Section 309. Permits for use or occupancy.

29 Section 310. Failure to submit certification.

30 Section 311. Inspections.

1 Section 312. Appeals.
2 Section 313. Penalties.
3 Section 314. Enforcement.
4 Section 315. Civil action.
5 Chapter 4. Adoption of Future Standards
6 Section 401. Adoption and promulgation of standards.
7 Chapter 5. Local Election
8 Section 501. Election; Use Group R-3.
9 Section 502. Election; cities of the first, second and
10 second class A.
11 Section 503. Powers of municipalities.
12 Section 504. Variances.
13 Section 505. Disposition of fines AND FEES. <—
14 Chapter 6. Report to General Assembly
15 Section 601. Report to General Assembly
16 Section 602. Effective date.

17 The General Assembly of the Commonwealth of Pennsylvania
18 hereby enacts as follows:

19 CHAPTER 1

20 GENERAL PROVISIONS

21 Section 101. Short title.

22 This act shall be known and may be cited as the "Building
23 Energy Conservation Act."

24 Section 102. Legislative findings and declaration of purpose.

25 (a) Findings.--The Legislature hereby determines that:

26 (1) Energy shortages in the domestic supply present far-
27 reaching problems that promise to persist. These energy
28 shortages affect the continued efficient operation of the
29 Commonwealth's economy and social structure.

1 (2) It is the Commonwealth's responsibility to provide
2 for energy conservation through regulation of design and
3 construction standards.

4 (3) The Legislature intends, by this act, to respond to
5 these shortages by devising a specific responsible energy
6 conservation policy for building systems.

7 (b) Purpose.--The purpose of this act is to grant to the
8 Commonwealth of Pennsylvania and direct it to exercise specific
9 authority in building construction to assure that such
10 construction is performed using materials and techniques that
11 will provide for energy conservation in the future operation and
12 maintenance of said buildings.

13 Section 103. Definitions.

14 The following words and phrases when used in this act shall
15 have, unless the context clearly indicates otherwise, the
16 meanings given to them in this section:

17 "Building." Any structure that provides facilities or
18 shelter for public assembly or for educational, business,
19 mercantile, institutional, warehouse or residential occupancy,
20 or industrial use including, but not limited to, those portions
21 of factory and industrial occupancy such as office space except
22 for:

23 (1) Buildings and structures or portions thereof whose
24 peak design rate of energy usage is less than one watt per
25 square foot or 3.4 BTU/hr per square foot of floor area for
26 all purposes.

27 (2) Structures or those portions of structures used for
28 housing equipment or machinery, or in which manufacturing or
29 processing is done, where the operation of such equipment or
30 machinery, or the manufacturing or processing procedures

employed require the use of or generate substantial heat producing energy or cooling within the structure. As used herein, the generation of substantial heat shall mean generation of more than 6 watts per square foot of floor area.

(3) Buildings which are neither heated nor cooled.

(4) Historic buildings.

(5) Buildings owned by the Federal Government.

"Construction." The erection, fabrication or renovation of a building.

"Department." The Pennsylvania Department of Labor and Industry except that for all units subject to the act of May 11, 1972 (P.L.286, No.70), known as the "Industrialized Housing Act," all units subject to the act of May 11, 1972 (P.L.281, No.69), known as the "Uniform Standards Code for Mobile Homes," and all buildings classified as Use Group R-3, herein, department means the Pennsylvania Department of Community Affairs.

"Design." Calculations and resultant drawings and specifications which are used for the construction of a building.

"Historic building." Any building determined by the State Historic Preservation Officer to meet the criteria for listing on the National Register of Historic Places but only to the extent that compliance with this act would prevent preservation of the historic or architectural integrity of the building.

"Licensed design professional." A person licensed as an architect or professional engineer pursuant to the appropriate licensure act.

"Life-cycle cost." The cost of a building including its

1 initial cost, the cost of the energy consumed over its economic
2 life and the cost of its operation and maintenance.

3 "Municipality." A city, borough, incorporated town or
4 township.

5 "Performance standards." Parameters within which designers
6 of buildings shall work. The specific practices that a designer
7 employs shall not be prescribed as long as the result is within
8 the parameters established by the standards.

9 "Renovation."

10 (1) The rehabilitation of an existing building which
11 requires more than 25% of the gross floor area or volume of
12 the entire building to be rebuilt. Cosmetic work such as
13 painting, wall covering, wall paneling, floor covering, and
14 suspended ceiling work shall not be included; or

15 (2) any addition to an existing building. The provisions
16 of this act shall only apply to such portion of the building
17 being renovated and not to the entire building.

18 CHAPTER 2

19 ENERGY CONSERVATION STANDARDS

20 SUBCHAPTER A

21 GENERAL PROVISIONS

22 Section 201. Provisions.

23 Except for Use Group R-3, the following provisions regulate
24 the design and construction of the exterior envelopes and
25 selection of HVAC, service water heating, electrical
26 distribution, and illumination systems and equipment required
27 for the purpose of effective use of energy and shall govern the
28 construction of all buildings, or portions thereof, as provided
29 herein.

30 The provisions regulating the construction of buildings

1 classified as Use Group R-3 are contained in Subchapter J,
2 section 240.

3 SUBCHAPTER B
4 PLANS AND SPECIFICATIONS

5 Section 202. Submission.

6 (a) Plans.--Plans, specifications, computations where
7 necessary, and any changes thereto together with the necessary
8 certification required by section 305 shall be submitted for all
9 buildings except those classified as Use Group R-3 to indicate
10 conformance with this chapter and other applicable chapters of
11 this act, except as provided in subsections (b) and (c).

12 (b) Standard design.--Whenever a person is constructing a
13 building in accordance with plans, specifications and
14 computations which he has submitted within the previous two
15 years, such plans need not be resubmitted but such person shall
16 indicate upon the certificate required by section 305 that they
17 meet the standards currently in effect and identify the
18 previously submitted plans, specifications and computations.

19 (c) Prescriptive standards.--When the prescriptive standards
20 provided in the Energy Conservation Manual established by
21 section 303 are employed in the construction of a building only
22 such information as shall be required by the department shall be
23 submitted. The prescriptive standards applicable to Use Group R-
24 3 buildings are contained in section 240.

25 Section 203. Contents.

26 The plans and specifications, where required by section 202,
27 shall show in sufficient detail all pertinent data and features
28 of the building and the equipment and systems as herein
29 governed, including but not limited to: exterior envelope
30 component materials, U values of elements, R values of

1 insulating materials, size and type of apparatus and equipment,
2 equipment and system controls and other pertinent data to
3 indicate conformance with the requirements herein.

4 SUBCHAPTER C
5 DEFINITIONS RELATING TO
6 ENERGY CONSERVATION STANDARDS

7 Section 204. Definitions relating to standards.

8 The following words and phrases when used in this chapter
9 shall have, unless the context clearly indicates otherwise, the
10 meanings given to them in this section:

11 "Coefficient of beam utilization" (CBU). The ratio of the
12 luminous flux (lumens) reaching a specified area directly from a
13 floodlight or projector to the total beam luminous flux.

14 "Coefficient of performance" (COP) - cooling. The ratio of
15 the rate of net heat removal to the rate of total energy input,
16 expressed in consistent units and under designated rating
17 conditions.

18 "Coefficient of performance" (COP) - heat pump, heating. The
19 ratio of the rate of net heat output to the rate of total energy
20 input, expressed in consistent units and under designated rating
21 conditions.

22 The rate of net heat output shall be defined as the change in
23 the total heat contents of the air entering and leaving the
24 equipment not including supplementary heat.

25 Total energy input shall be determined by combining the
26 energy inputs to all elements, except supplementary heaters, of
27 the heat pump, including, but not limited to, compressors,
28 pumps, supply air fans, return air fans, outdoor air fans,
29 cooling tower fans and the heating, ventilating and air
30 conditioning system equipment control circuit.

1 "Coefficient of utilization" (CU). The ratio of the luminous
2 flux (lumens) from a luminaire received on the work plane to the
3 lumens emitted by the luminaire's lamps alone.

4 "Color rendition." General expression for the effect of a
5 light source on the color. Appearance of objects in conscious or
6 subconscious comparison with their color appearance under a
7 reference light source.

8 "Degree day, heating." A unit, based upon temperature
9 difference and time, used in estimating fuel consumption and
10 specifying nominal heating load of a building in winter. For any
11 one day, when the mean temperature is less than 65 F., there
12 exist as many degree days as there are Fahrenheit degrees
13 difference in temperature between the mean temperature for the
14 day and 65 F.

15 "Energy efficiency ratio" (EER). The ratio of net cooling
16 capacity in Btuh to total rate of electric input in watts under
17 designated operating conditions.

18 "Equivalent sphere illumination" (ESI). The level of sphere
19 illumination which would produce task visibility equivalent to
20 that produced by a specific lighting environment.

21 "Exterior envelope." The elements of a building which
22 enclose conditioned spaces through which thermal energy may be
23 transferred to or from the exterior.

24 "Floodlighting." A lighting system designated to light an
25 area using projector type luminaires usually capable of being
26 pointed in any direction.

27 "Floor area, gross." Gross floor area shall be the floor
28 area within the perimeter of the outside walls of the building
29 under consideration, without deduction for hallways, stairs,
30 closets, thickness of walls, columns or other features.

1 "Illumination." The density of the luminous flux incident on
2 a surface. It is the quotient of the luminous flux by the area
3 of the surface when the latter is uniformly illuminated.

4 "Light loss factor" (LLF). A factor used in calculating the
5 level of illumination after a given period of time and under
6 given conditions. It takes into account temperature and voltage
7 variations, dirt accumulation on luminaire and room surfaces,
8 lamp depreciation, maintenance procedures and atmosphere
9 conditions.

10 "Luminaire." A complete lighting unit consisting of a lamp
11 or lamps together with the parts designed to distribute the
12 light, to position and protect the lamps and to connect the
13 lamps to the power supply.

14 "Multiglazing." An arrangement whereby two or more sheets of
15 glazing material are affixed in or on to a window frame to
16 create one or more closed insulating air spaces. Multiglazing
17 can be achieved by installing a preassembled sealed insulating
18 glass unit, consisting of two or more layers of glazing
19 materials with insulating, closed air space in between, or by
20 affixing one or more additional glazing materials onto a single
21 glazed window sash, creating one or more closed insulating air
22 spaces.

23 "Packaged terminal air conditioner." A factory selected
24 combination of heating and cooling components, assemblies or
25 sections, intended to serve a room or zone.

26 "Power." In connection with machines, power is the time rate
27 of doing work. In connection with the transmission of energy of
28 all types, power refers to the rate at which energy is
29 transmitted; in customary units, it is measured in watts (W) or
30 British thermal units per hour (Btuh) and in SI units is

1 measured in watts (W).

2 "Reflectance." The ratio of the light reflected by a surface
3 to the light falling upon it.

4 "Reheat." The application of sensible heat to supply air
5 that has been previously cooled below the temperature of the
6 conditioned space by either mechanical refrigeration or the
7 introduction of outdoor air to provide cooling.

8 "Residential buildings." All buildings and structures or
9 parts thereof shall be classified in the residential (R) use
10 group in which families or households live, or in which sleeping
11 accommodations are provided for individuals with or without
12 dining facilities, excluding those that are classified as
13 institutional buildings. Residential buildings shall be
14 classified as follows:

15 (1) Use group R-1 structures. This use group shall include
16 all hotel and motel buildings, lodging houses, boarding houses
17 and dormitory buildings arranged for the shelter and sleeping
18 accommodation of more than 20 individuals.

19 (2) Use group R-2 structures. This use group shall include
20 all multiple-family dwellings having more than two dwelling
21 units and not included in use group R-3; and shall also include
22 all dormitories, boarding and lodging houses arranged for
23 shelter and sleeping accommodation by more than five and not
24 more than 20 individuals.

25 (3) Use group R-3 structures. This use group shall include
26 all buildings arranged for the use of one or two family dwelling
27 units including not more than five lodgers or boarders per
28 family and all rowhouses and townhouses used for residential
29 purposes whenever each unit has its own individual and self
30 supporting heating, ventilating and air conditioning systems.

1 "Resistance, thermal" (R). A measure of the ability to
2 retard the flow of heat. The R value is the reciprocal of a heat
3 transfer coefficient, as expressed by U. ($R = 1/U$).

4 "Thermal transmittance" (U). Overall coefficient of heat
5 transmission or thermal transmittance (air to air) expressed in
6 units of BTU per hour per square foot per degree F. It is the
7 time rate of heat flow. The U value applies to combinations of
8 different materials used in series along the heat flow path and
9 also to single materials that comprise a building section and
10 include cavity air spaces and surface air films on both sides.

11 "Thermal transmittance" (U_o). Overall (average) heat
12 transmission or thermal transmittance of a gross area of the
13 exterior building envelope, expressed in units of BTU per hour
14 per square foot per degree F.

15 The U_o value applies to the combined effect of the time rate
16 of heat flows through the various parallel paths, such as
17 windows, doors and opaque construction areas, comprising the
18 gross area of one or more exterior building components, such as
19 walls, floor or roof/ceiling.

20 "Thermostat." An instrument which measures changes in
21 temperature and controls devices for maintaining a desired
22 temperature.

23 "Veiling reflections." Regular reflections superimposed upon
24 diffuse reflections from an object that partially or totally
25 obscure the details to be seen by reducing the contrast. This
26 sometimes is called "reflected glare."

27 "Window management." Any one or combination of acts and
28 activities whose purpose is to take maximum advantage of the
29 energy conserving aspects of utilizing solar energy to heat a
30 building and/or utilize solar illumination within a building to

1 augment energy-consuming lighting systems. Such acts and
2 activities include, but are not limited to, building-window
3 siting and orientation, selection of glazing materials, design
4 of overhangs, sun screens or placement of shrubbery.

5 "Work plane." The plane at which work usually is done and at
6 which the illumination is specified and measured. Unless
7 otherwise indicated, this is assumed to be a horizontal plane 30
8 in. (0.76 m) above the floor.

9 "Zone." A space or group of spaces within a building with
10 heating or cooling requirements sufficiently similar so that
11 comfort conditions can be maintained throughout by a single
12 controlling device.

13 SUBCHAPTER D

14 BUILDING ENVELOPE

15 Section 205. General provisions.

16 (a) Purpose of subchapter.--The intent of this subchapter is
17 to provide minimum requirements for exterior envelope
18 construction in the interest of energy conservation.

19 In addition to the criteria set forth in this subchapter
20 provisions shall be made to maximize the energy conserving
21 benefits of solar daylight and passive solar heat gain through
22 window management. The proposed design may also take into
23 consideration the thermal mass of the building in considering
24 energy conservation. The administering agency shall provide the
25 guidelines necessary to implement these provisions.

26 (b) Thermal performance.--All buildings and structures that
27 are heated or mechanically cooled shall be constructed so as to
28 provide the required thermal performance of the various
29 components.

30 The required thermal transmittance value (U_o) of any one

1 component, such as roof/ceiling, wall or floor may be increased
2 and the U_o value for other components decreased provided that
3 the overall heat gain or loss for the entire building envelope
4 does not exceed the total resulting from conformance to the
5 required U_o values.

6 (c) Different requirements.--A building that is designed to
7 be both heated and cooled shall meet the more stringent of the
8 heating or cooling requirements of the exterior envelope as
9 provided in this subchapter when requirements differ.

10 (d) Exterior walls.--For the purpose of this subchapter the
11 gross area of exterior walls consists of all opaque wall areas,
12 including foundation walls above grade, peripheral edges of
13 floors, window areas including sash, and door areas, where such
14 surfaces are exposed to outdoor air and enclose a heated or
15 mechanically cooled space.

16 (e) Roof assembly.--For the purpose of this subchapter a
17 roof assembly shall be considered as all components of the
18 roof/ceiling envelope through which heat flows, thereby creating
19 a building transmission heat loss or gain, where such assembly
20 is exposed to outdoor air and encloses a heated or mechanically
21 cooled space.

22 The gross area of a roof assembly consists of the total
23 interior surface of such assembly, including skylights, exposed
24 to the heated or mechanically cooled space.

25 Where air ceiling plenums are employed, the roof or ceiling
26 assembly shall:

27 (1) For thermal transmittance purposes not include the
28 ceiling proper nor the plenum space as part of the assembly.

29 (2) For gross area purposes be based upon the interior
30 face of the upper plenum surface.

1 Section 206. Criteria for residential buildings.

2 (a) Applicability.--The requirements herein shall apply to
3 all buildings and structures or portions thereof of use groups
4 R-1 and R-2 that are heated or mechanically cooled when not more
5 than 3 stories or 40 feet in height.

6 (b) Walls.--The gross area of exterior walls above grade,
7 including foundation walls, shall have a combined thermal
8 transmittance value (U_o) not exceeding those specified in Table
9 1.

10 Table 1

11 Maximum Allowable " U_o " Values for
12 Gross Exterior Wall Assemblies

	Detached	All other	<—
Annual heating degree days*	one & two family	residential	<—
		R-1 AND R-2	<—
4000	0.25	0.31	<—
5000	0.23	0.29	<—
6000	0.22	0.27	<—
7000	0.20	0.26	<—

20 *As specified in Chapter 43 ASHRAE Handbook-Systems.

21 (c) Roof/ceiling.--The roof/ceiling assemblies shall have a
22 combined thermal transmittance value (U_o) not to exceed 0.05
23 except that roof/ceiling assemblies in which the finished
24 interior surface is essentially the underside of the roof deck,
25 such as a wooden cathedral ceiling, may have a " U_o " value not to
26 exceed 0.08. These values presume no significant thermal
27 transmission through framing members, skylights or other
28 interruptions in the roof envelope. If such interruptions occur,
29 calculations must be made showing conformance to the required
30 " U_o " values.

1 (d) Floors over unheated spaces.--The floor of a heated or
2 mechanically cooled space located over an unheated space shall
3 have a combined thermal transmittance value (U_o) not to exceed
4 0.08.

5 (e) Slab-on grade floors.--

6 (1) For slab-on grade floors, the perimeter of the floor
7 shall be insulated with a material having a thermal
8 resistance value (R) not less than those specified in Table
9 2.

10 Table 2

11 Minimum Allowable " R " Values of Perimeter

12 Insulation for Slab-On Grade Floors

13 Annual heating degree days	Heated slab	Unheated slab
14 4000*	5.5	3.5
15 5000	6.3	4.2
16 6000	7.0	4.9
17 7000	7.8	5.5

18 *Table values may be interpolated.

19 (2) The insulation shall extend downward from the top of
20 the slab for a minimum distance of 24 inches or downward to
21 the bottom of the slab then horizontally beneath the slab for
22 a minimum total distance of 24 inches.

23 Section 207. Other buildings.

24 (a) Coverage.--The heating and cooling requirements herein
25 shall govern all buildings and structures or portions thereof
26 other than defined by section 206.

27 (b) Heating criteria for walls.--All buildings and
28 structures that are heated shall have a combined thermal
29 transmittance value (U_o) for the gross area of exterior walls
30 not exceeding those specified in Table 3.

Table 3

Maximum Allowable "Uo" Values
for Gross Exterior Wall Assemblies

Annual heating degree days	3 stories or	More than
	40 ft. or less	3 stories or 40 ft.
4000	0.31	0.38
5000	0.29	0.36
6000	0.27	0.33
7000	0.26	0.31

(c) Heating criteria for roof/ceiling.--All buildings and structures that are heated shall have combined thermal transmittance value (Uo) for roof/ceiling assemblies not exceeding those specified in Table 4.

Table 4

Maximum Allowable "Uo" Values
for Roof/Ceiling Assemblies

Annual heating degree days	Maximum Uo
4000*	0.092
5000	0.084
6000	0.076
7000	0.068

*Table values may be interpolated.

(d) Heating criteria for floors over unheated spaces.--The floor of a heated space located over an unheated space shall have a thermal transmittance value (Uo) not exceeding 0.08.

(e) Heating criteria for slab-on grade floors.--For slab-on grade floors, the perimeter of the floor shall be insulated with a material having a thermal resistance value (R) not less than those specified in Table 5.

The insulation shall extend downward from the top of the slab for a minimum distance of 24 inches or downward to the bottom of the slab then horizontally beneath the slab for a minimum total distance of 24 inches.

Table 5

Minimum Allowable "R" Values of Perimeter

Insulation for Slab-On Grade Floors

Annual heating degree days	Heated slab	Unheated slab
4000*	5.5	3.5
5000	6.3	4.2
6000	7.0	4.9
7000	7.8	5.5

*Table values may be interpolated.

(f) Cooling criteria for walls.--All buildings and structures that are mechanically cooled shall have an overall thermal transfer value for the gross area of exterior walls not exceeding 33.5 BTU's per hour per square foot based on the following equation:

$$OTTV = \frac{(U_w \times A_w \times TDEQ) + (A_f \times S_f \times S_c) + (U_f \times A_f \times \Delta T)}{A_o}$$

OTTV = Overall thermal transfer value where:

U_w = The thermal transmittance of all elements of the opaque wall area Btu/h. ft².F (W/m²K)

A_w = Opaque wall area, ft² (m²)

U_f = The thermal transmittance of the fenestration area Btu/h. ft².F (W/m²K)

A_f = Fenestration area, ft² (m²)

TDEQ = Value given in the following table, F, (c):

TABLE FOR TEMPERATURE DIFFERENCE

Wall Construction-mass per unit area	TDEQ
--------------------------------------	------

1	LB/FT2	Kg/m2	F	C
2	0-25	0-125	44	24.5
3	26-40	126-195	37	21.0
4	41-70	196-345	30	17.0
5	71 and above	346 and above	23	13.0

6 Weight of wall construction shall be determined from the
7 1972 ASHRAE Handbook of Fundamentals, Chapter 22.

8 Sc = Shading coefficient of the fenestration

9 Delta T = Temperature difference between exterior and interior
10 design conditions, F, for which the following
11 temperatures shall apply:

12		Indoor	Outdoor
13		F C	
14	Winter	72 22.0	97 1/2%*
15	Summer	78 25.5	2 1/2%*

16 * Values from 1972 ASHRAE Handbook of
17 Fundamentals, Chapter 33.

18 SF = Solar factor value given Btu/h.ft2 (W/m2).
19 (use 127 Btu/h.ft2)

20 AO = Gross area of exterior walls, ft2 (m2). The gross
21 area of exterior walls consists of all opaque wall
22 areas (including foundation walls, between floor span-
23 drels, peripheral edges of floors, etc.), window
24 areas (including sash), and door areas, where such
25 surfaces are exposed to outdoor air and enclose a
26 heated and/or mechanically cooled space (including
27 interstitial areas between two such spaces).

28 Note: Where more than one type of wall and/or fenestration
29 is used, the respective term or terms shall be expanded
30 into sub-elements, as:

1 $(U_w \times A_w \times TDEQ) + (U_{w2} \times A_{w2} \times TDEQ2), \text{ etc.}$

2 (g) Cooling criteria for roof/ceilings.--All buildings and
3 structures that are mechanically cooled shall have a combined
4 thermal transmittance value (U_o) for roof/ceiling assemblies the
5 same as specified in Table 4 for heating.

6 Section 208. Air leakage.

7 (a) Application.--The requirements of this section shall
8 apply to all buildings and structures and apply only to those
9 locations separating outdoor ambient conditions from interior
10 spaces that are heated or mechanically cooled and are not
11 applicable to separation of interior spaces from each other.

12 (b) Standard.--Compliance with the criteria for air leakage
13 shall be determined by ASTM E-283, Standard Method of Test for
14 Rate of Air Leakage through Exterior Windows, Curtain Walls and
15 Doors, at a pressure differential of 1.567 lb/ft² which is
16 equivalent to the effect of a 25 m.p.h. wind.

17 (c) Acceptance criteria.--The following criteria shall
18 represent the maximum allowable air leakage:

19 (1) The air infiltration rate for windows shall not
20 exceed 0.5 cfm per foot of sash crack.

21 (2) The air infiltration rate for sliding glass doors in
22 residential buildings shall not exceed 0.5 cfm per square
23 foot of door area.

24 (3) The air infiltration rate for swinging doors in
25 residential buildings shall not exceed 1.25 cfm per square
26 foot of door area.

27 (4) The air infiltration rate for swinging, revolving or
28 sliding doors in other than residential buildings shall not
29 exceed 11 cfm per lineal foot of door crack.

30 (d) Caulking and sealants.--Exterior joints around windows

1 and door frames, between wall cavities and window or door
2 frames, between wall and foundation, between wall and roof,
3 between wall panels, at penetrations or utility services through
4 walls, floors and roofs, and all other openings in the exterior
5 envelope shall be caulked, gasketed, weatherstripped, or
6 otherwise sealed.

7 SUBCHAPTER E

8 WARM AIR HEATING, VENTILATING AND AIR CONDITIONING

9 SYSTEMS AND EQUIPMENT

10 Section 209. General provisions.

11 This subchapter applies to air duct systems employing
12 mechanical means for the movement of air used for warm air
13 heating, ventilating, air conditioning systems, exhaust systems
14 and combination heating and air conditioning systems, except
15 that this subchapter shall not apply to systems for the removal
16 of flammable vapors or residues or to systems for conveying
17 dust, stock or refuse by means of air currents. Heating,
18 ventilating and air conditioning systems of all buildings and
19 structures or portions thereof shall be designed and installed
20 for efficient use of energy as herein provided. For special
21 applications such as hospitals, laboratories, thermally
22 sensitive equipment, computer rooms, and manufacturing
23 processes, the design concepts and parameters shall conform to
24 the requirements of the application at minimum energy levels.

25 Section 210. Design requirements.

26 In determining design conditions for calculations under this
27 section the following design temperatures shall apply:

28 (1) Outdoor design temperature shall be selected for
29 listed locations in Chapter 33 of the ASHRAE Handbook of
30 Fundamentals, from columns of 97 1/2% values for heating and

2 1/2% values for cooling.

(2) Indoor design temperature shall be ~~70~~ 72 degrees F. <—
for heating and 78 degrees F. for cooling.

(3) Indoor design relative humidity for heating shall not exceed 30%. For cooling, the actual design relative humidity within the comfort envelope as defined in ASHRAE Standard 55-74 "Thermal Environmental Conditions for Human Occupancy" shall be selected for the minimum total heating, ventilating, and air conditioning system energy use.

Section 211. Cooling with outdoor air.

(a) Fan system design.--Each fan system shall be designed to use up to and including 100% of the fan system capacity for cooling with outdoor air automatically whenever its use will result in lower usage of energy than would be required under its normal operation.

(b) Exceptions.--Cooling with outdoor air is not required under any one or more of the following conditions:

(1) Fan system capacity less than 5,000 Cfm or 134,000 Btu/Hr total cooling capacity.

(2) The quality of the outdoor air is so poor as to require extensive treatment of the air.

(3) The need for humidification or dehumidification requires the use of more energy than is conserved by outdoor air cooling.

(4) The use of outdoor air cooling may affect the operation of other systems (such as return or exhaust air fans or supermarket refrigeration) so as to increase the overall energy consumption of the building.

(5) Internal/external zone heat recovery or other energy recovery is used.

(6) When all space cooling is accomplished by a circulating liquid which transfers space heat directly or indirectly to a heat rejection device such as a cooling tower without the use of a refrigeration system.

Section 212. Mechanical ventilation.

Each mechanical ventilation system shall be equipped with a readily accessible means for either shut-off or volume reduction and shut-off when ventilation is not required.

Section 213. Simultaneous heating and cooling.

Systems that employ both heating and cooling simultaneously in order to achieve comfort conditions within a space shall be limited to those situations where more efficient methods of heating and air conditioning cannot be effectively utilized to meet system objectives. Simultaneous heating and cooling by reheating or recooling supply air or by concurrent operation or independent heating and cooling systems serving a common zone shall be restricted as specified herein.

Section 214. Recovered energy.

Recovered energy, provided the new energy expended in the recovery process is less than the amount recovered, may be used for control of temperature and humidity. New energy is defined as energy, other than recovered, utilized for the purpose of heating or cooling.

Section 215. New energy.

(a) Prevention of excess humidity.--New energy may be used, when necessary, to prevent relative humidity from rising above 60% for comfort control or to prevent condensation on terminal units or outlets.

(b) Control of temperature.--New energy may be used for control of temperature if minimized as specified in sections 216

1 through 220.

2 Section 216. Reheat systems.

3 Systems employing reheat and serving multiple zones, other
4 than those employing variable air volume for temperature
5 control, shall be provided with control that will automatically
6 reset the system cold air supply to the highest temperature
7 level that will satisfy the zone requiring the coolest air.
8 Single zone reheat systems shall be controlled to sequence
9 reheat and cooling.

10 Section 217. Dual duct and multizone systems.

11 These systems shall be provided with control that will
12 automatically reset the cold deck air supply to the highest
13 temperature that will satisfy the zone requiring the coolest air
14 and the hot deck air supply to the lowest temperature that will
15 satisfy the zone requiring the warmest air.

16 Section 218. Recooling systems.

17 Systems in which heated air is recooled directly or
18 indirectly, to maintain space temperature, shall be provided
19 with control that will automatically reset the temperature to
20 which the supply air is heated to the lowest level that will
21 satisfy the zone requiring the warmest air.

22 Section 219. Multiple zones.

23 For systems with multiple zones, one or more zones may be
24 chosen to represent a number of zones with similar heating or
25 cooling characteristics. A multiple zone heating, ventilating
26 and air conditioning system that employs reheating or recooling
27 for control of not more than 5,000 Cfm or 20% of the total
28 supply air of the system, whichever is less, shall be exempt
29 from the supply air temperature reset requirements of sections
30 216 through 218.

1 Section 220. Concurrent operation.

2 Concurrent operation of independent heating and cooling
3 systems serving common spaces, and requiring the use of new
4 energy for heating or cooling shall be minimized by one or both
5 of the following:

6 (1) By providing sequential temperature control of both
7 heating and cooling capacity in each zone.

8 (2) By limiting the heating energy input, through
9 automatic reset control of the heating medium temperature (or
10 energy input rate), to only that necessary to offset heat
11 loss due to transmission and infiltration and, where
12 applicable, to heat the ventilation air supply to the space.

13 Section 221. Equipment performance requirements.

14 (a) Application.--The requirements of this section apply to
15 equipment and component performance for heating, ventilating and
16 air conditioning systems. Where equipment efficiency levels are
17 specified, data furnished by the equipment supplier or certified
18 under a nationally recognized certification program or rating
19 procedure shall be used to satisfy these requirements.

20 (b) Systems equipment - electrical.--Heating ventilating and
21 air conditioning systems equipment whose energy input in the
22 cooling mode is entirely electric shall show a coefficient of
23 performance (COP) and energy efficiency ratio (EER) not less
24 than the values specified in Table 6. These requirements apply
25 to, but are not limited to, unitary cooling equipment (air and
26 water source); packaged air conditioners; and room air
27 conditioners. These requirements do not apply to equipment used
28 in areas having open refrigerated food display cases. For
29 determining coefficient of performance (COP), the rate of net
30 heat removal shall be defined as the change in the total heat

1 contents of the air entering and leaving the equipment (without
2 reheat). Total energy input shall be determined by combining the
3 energy inputs to all elements of the equipment, including but
4 not limited to, compressors, pumps, supply-air fans, cooling
5 tower fans and the system equipment control circuit.

6 Table 6
7 Minimum EER and COP for Electric Heating, Ventilating
8 and Air Conditioning System Equipment

9 Standard rating capacity	EER	COP
10 Under 65,000 Btu/hr (19,050 watts)	6.1	1.8
11 65,000 Btu/hr (19,050 watts) and over	6.8	2.0

12 (c) Other system equipment.--Heat operated cooling equipment
13 shall show a coefficient of performance (COP) in the cooling
14 mode not less than the values specified in Table 7. These
15 requirements apply to, but are not limited to, absorption,
16 engine-driven and turbine-driven equipment. The coefficient of
17 performance (COP) is determined excluding the electrical
18 auxiliary inputs.

19 Table 7
20 Minimum COP for Heating, Ventilating and Air Conditioning
21 System Heat Operated Cooling Equipment

22 Heat source	Minimum COP
23 Direct fired (gas, oil)	0.40
24 Indirect fired (steam, hot water)	0.65

25 (d) System components.--Heating, ventilating and air
26 conditioning system components whose energy input in the cooling
27 mode is entirely electric shall show a coefficient of
28 performance (COP) and energy efficiency ratio (EER) not less
29 than the values specified in Table 8. For determining
30 coefficient of performance (COP), the rate of heat removal is

1 defined as the difference in total heat contents of the water or
 2 refrigerant entering or leaving the component. Total energy
 3 input shall be determined by combining the energy inputs to all
 4 elements and accessories of the component, including but not
 5 limited to, compressors, internal circulating pumps, condenser-
 6 air fans, evaporative-condenser cooling heater pumps, purge, and
 7 the component control circuit.

8 Table 8

9 Minimum COP for Electrically Driven Heating, Ventilating
 10 and Air Conditioning System Components

11 Component	12 Condensing means	13 Air	14 Water	15 Evaporation
		ERR COP	EER COP	EER COP
13 Self-contained	Centrifugal	7.5 2.2	12.9 3.8	
14 water chillers				
15	Positive			
16	displacement	7.2 2.1	10.9 3.2	
17 Condenserless	Positive			
18 water chillers	displacement	8.9 2.6	10.9 3.2	
19 Compressor and				
20 condenser units	Positive			
21 65,000 Btu/hr.	displacement	7.8 2.3	11.3 3.3	11.3 3.3
22 (19,050 watts)				
23 and over				

24 (e) Heat pumps.--Heat pumps whose energy input is entirely
 25 electric shall show a coefficient of performance (COP), heating,
 26 not less than the values specified in Table 9.

27 Table 9

28 Minimum COP for Heat Pumps, Heating Mode

29 Source and outdoor temperature (degree F.)	Minimum COP
30 Air source--47 DB/43 WB	2.2

1 Air source--17 DB/15 WB 1.2

2 Water source--60 entering 2.2

3 (f) Supplementary heater.--The heat pump shall be installed
4 with a control to prevent supplementary heater operation when
5 the heating load can be met by the heat pump alone.

6 Supplementary heater operation is permitted during transient
7 periods, such as start-ups, following room thermostat setpoint
8 advance, and during defrost. A two-stage room thermostat, which
9 controls the supplementary heat on its second stage, shall be
10 accepted as meeting this requirement. The cut-on temperature for
11 the compression heating shall be higher than the cut-on
12 temperature for the supplementary heat, and the cut-off
13 temperature for the compression heating shall be higher than the
14 cut-off temperature for the supplementary heat. Supplementary
15 heat may be derived from any source of electric resistance
16 heating or combustion heating.

17 (g) Combustion heating equipment.--All gas and oil-fired
18 comfort heating equipment shall show a minimum combustion
19 efficiency of 75% at maximum rated output. Combustion efficiency
20 shall be determined in accordance with the ASHRAE Standard 90.
21 Section 222. Duct insulation.

22 (a) Insulation.--All duct systems, or portions thereof,
23 exposed to nonconditioned spaces shall be insulated to provide a
24 thermal resistance, excluding film resistance, of

25
$$R = \frac{t_i - t_o}{15}$$

26 where R = -----(hr) (sq.ft) (F)/BTU

27 15

28 where t_i - t_o is the design temperature differential (absolute
29 value) between the air in the duct and the surrounding air with
30 the following exceptions. Duct insulation, except when needed to

1 prevent condensation, is not required in any of the following
2 cases:

3 (1) Where ti-to is 25 degrees F. or less.

4 (2) When the heat gain or loss of the ducts, without
5 insulation, will not increase the energy requirements of the
6 building.

7 (3) Exhaust air ducts.

8 (4) Supply or return air ducts installed in crawl spaces
9 with insulated walls, basements or cellars in one and two-
10 family dwellings.

11 (b) Vapor barriers.--Where required to prevent condensation,
12 insulation with vapor barriers shall be installed in addition to
13 insulation required above.

14 Section 223. System controls.

15 (a) Application.--All heating, ventilating and air
16 conditioning systems shall be provided controls as specified
17 herein.

18 (b) Temperature.--Each heating, ventilating and air
19 conditioning system shall be provided with at least one
20 thermostat for the regulation of temperature. Each thermostat
21 shall be capable of being set from 55 degrees F. to 75 degrees
22 F. where used to control heating only and from 70 degrees F. to
23 85 degrees F. where used to control cooling only. Where used to
24 control both heating and cooling it shall be capable of being
25 set from 55 degrees F. to 85 degrees F. and shall be capable of
26 operating the system heating and cooling in sequence. It shall
27 be adjustable to provide a temperature range of up to 10 degrees
28 F. between full heating and full cooling, except as allowed in
29 section 220.

30 (c) Humidity.--If a heating, ventilating and air

1 conditioning system is equipped with a means for adding moisture
2 to maintain specific selected relative humidities in spaces or
3 zones, a humidistat shall be provided. This device shall be
4 capable of being set to prevent new energy from being used to
5 produce space relative humidity above 30% R.H. Where a
6 humidistat is used in a heating, ventilating and air
7 conditioning system for controlling moisture removal to maintain
8 specific selected relative humidities in spaces or zones, it
9 shall be capable of being set to prevent new energy from being
10 used to produce a space relative humidity below 60%.

11 (d) Temperature zoning.--

12 (1) In all buildings and structures of use group R-3, at
13 least one thermostat for regulation of space temperature
14 shall be provided for each separate heating, ventilating and
15 air conditioning system. In addition, a readily accessible
16 manual or automatic means shall be provided to partially
17 restrict or shut-off the heating or cooling input to each
18 zone or floor, excluding unheated or uncooled basements and
19 garages.

20 (2) In all buildings and structures of use group R-2,
21 each individual dwelling unit shall be considered separately
22 and shall meet the requirements for one and two-family
23 dwellings above.

24 (3) In all buildings and structures other than use group
25 R-3 and in spaces other than dwelling units in use group R-2,
26 at least one thermostat for regulation of space temperature
27 shall be provided for each separate heating, ventilating and
28 air conditioning system and for each floor of the building.

29 (e) Set-back and shut-off.--

30 (1) In all buildings and structures, or portions thereof

of use group R-3, the thermostat, or an alternate means such as a switch or a clock, shall provide a readily accessible, manual or automatic means for reducing the energy required for heating and cooling during periods of nonuse or reduced need.

(2) In all other buildings and structures, or portions thereof each heating, ventilating and air conditioning system shall be equipped with a readily accessible means of reducing the energy used for heating, ventilating and air conditioning during periods of nonuse or alternate uses of the building spaces or zones served by the system, such as with manually adjustable automatic timing devices, manual devices for use by operating personnel, or automatic control systems.

(3) Lowering thermostat set points to reduce energy consumption of heating systems shall not cause energy to be expended to reach the reduced setting.

Section 224. Steam and hot water heating piping.

(a) Piping insulation.--All piping serving as part of a heating or cooling system installed to serve buildings and within buildings shall be thermally insulated as shown in Table 10.

Table 10

Minimum Pipe Insulation

Insulation thickness in inches

Fluid		for pipe sizes					
Piping temperature	range,	Runouts	1" and	1 1/4-	2 1/2-	5"	8" and
system types	F.	up to 2"	less	2	4	6	larger
Heating systems							
Steam &							

1	hot water							
2	High pressure/							
3	temp	306-450	1 1/2	1 1/2	2	2 1/2	3 1/2	3 1/2
4	Med. pressure/							
5	temp	251-305	1 1/2	1 1/2	2	2 1/2	3	3
6	Low pressure/							
7	temp	201-250	1	1	1 1/2	1 1/2	2	2
8	Low tem-							
9	perature	120-200	1/2	3/4	1	1	1	1 1/2
10	Steam con-							
11	densate	Any	1	1	1	1 1/2	1 1/2	2
12	(for feed							
13	water)							
14	Cooling systems							
15	Chilled							
16	water,	40-55	1/2	1/2	3/4	1	1	1
17	Refrigerant,							
18	or brine	Below 40	1	1	1 1/2	1 1/2	1 1/2	1 1/2

19 Insulation thicknesses are based on insulation having thermal
20 resistances in the range of 4.0 to 4.6 per inch of thickness on
21 a flat surface at a mean temperature of 75 degrees F. Minimum
22 insulation thickness shall be increased for materials having R
23 values less than 4.0 or may be reduced for materials having R
24 values greater than 4.6 per inch of thickness as follows:

25 (b) High thermal resistance.--For materials with thermal
26 resistance greater than R=4.6, the minimum insulation thickness
27 may be reduced as follows:

$$28 \quad \frac{4.6 \times \text{Table 10 Thickness}}{\text{Actual R}} = \text{New Minimum Thickness}$$

30 (c) Low thermal resistance.--For materials with thermal

1 resistance less than $R=4.0$ the minimum insulation thickness
2 shall be increased as follows:

$$\begin{array}{lcl} 3 & \frac{4.0 \times \text{Table 10 Thickness}}{\text{Actual R}} & = \text{New Minimum Thickness} \\ 4 & & \end{array}$$

5 Piping insulation, except when needed to prevent condensation,
6 is not required in any of the following cases:

7 (1) Piping installed within heating, ventilating and air
8 conditioning equipment.

9 (2) Piping at temperatures between 55 degrees F. and 120
10 degrees F.

11 (3) When the heat loss or heat gain of the piping,
12 without insulation, does not increase the energy requirements
13 of the building.

14 (4) Piping installed in basements or cellars in one and
15 two-family dwellings.

16 (d) Vapor barriers.--Where required to prevent condensation,
17 insulation with vapor barriers shall be installed in addition to
18 insulation required above.

19 SUBCHAPTER F

20 PLUMBING SYSTEMS

21 Section 225. Purpose.

22 This subchapter sets forth provisions for design and
23 equipment selection for energy conservation in service water
24 heating systems.

25 Section 226. Fixtures.

26 (a) Lavatories.--Lavatories in restrooms of public
27 facilities shall be equipped with self-closing outlet devices
28 which limit the flow of hot water to a maximum of 0.5 Gpm,
29 devices which limit the outlet temperature to a maximum of 110
30 degrees F. and self-closing valves which limit the quantity of

1 hot water to a maximum of 0.25 gallon.

2 (b) Showers.--Showers used for other than safety reasons
3 shall be equipped with flow control devices to limit total flow
4 to a maximum of 3 Gpm per shower head.

5 Section 227. Insulation.

6 (a) Piping insulation.--Piping in required return
7 circulation systems shall be insulated so that heat loss is
8 limited to a maximum of 25 Btuh per square foot of external pipe
9 surface for above ground piping and a maximum of 35 Btuh per
10 square foot of external pipe surface for underground piping.

11 Maximum heat loss shall be determined at a temperature
12 differential equal to the maximum water temperature minus a
13 design ambient temperature no higher than 65 degrees F. except
14 that conformance with table 10 for "low temperature piping
15 system" shall be deemed as complying with this section.

16 (b) Tanks.--Unfired hot water storage tanks shall be
17 insulated so that heat loss is limited to a maximum of 15 Btuh
18 per square foot of external tank surface area. For purposes of
19 determining this heat loss, the design ambient temperature shall
20 be no higher than 65 degrees F.

21 Section 228. Equipment.

22 (a) Pump operation.--Circulating hot water systems shall be
23 arranged so that the circulating pump can be conveniently turned
24 off either automatically or manually when the hot water system
25 is not in operation.

26 (b) Electric water heaters.--All automatic electric storage
27 water heaters shall have a stand-by loss not exceeding 4 watts
28 per square foot of tank surface area. The method of test of
29 stand-by loss shall be as described in section 4.3.1 of ANSI
30 C72.1 Household Automatic Electrical Storage-Type Water Heaters.

1 (c) Gas and oil-fired water heaters.--All gas and oil-fired
2 automatic storage heaters shall have a recovery efficiency, ER,
3 not less than 75% and a stand-by loss percentage S, not
4 exceeding $S=2.3+67/V$ where V=rated volume in gallons. The method
5 of test of ER and S shall be as described in section 2.7 of ANSI
6 Z21.10.3 Circulating Tank, Instantaneous and Large Automatic
7 Storage Type Water Heaters, Approval Requirements for Gas Water
8 Heaters.

9 Section 229. Controls.

10 (a) Temperature controls.--All hot water supply systems
11 shall be equipped with automatic temperature controls capable of
12 adjustments from the lowest to the highest acceptable
13 temperature settings for the intended use.

14 (b) Shut down.--A separate switch shall be provided to
15 terminate the energy supplied to electric hot water supply
16 systems. A separate valve shall be provided to turn off the
17 energy supplied to the main burner of all other types of hot
18 water supply systems.

19 SUBCHAPTER G

20 ELECTRICAL SYSTEMS

21 Section 230. System requirements.

22 (a) Service voltage.--Where a choice of service voltage is
23 available, the voltage resulting in the least energy loss shall
24 be used.

25 (b) Voltage drop.--In any building, the maximum total
26 voltage drop shall not exceed 3% in branch circuits or feeders,
27 for a total of 5% to the farthest outlet based on steady state
28 design load conditions.

29 (c) Lighting switching.--Switching shall be provided for
30 each lighting circuit, or for portions of each circuit, so that

1 the partial lighting required for custodial or for effective
2 complementary use with natural lighting may be operated
3 selectively.

4 (d) Separate metering.--In all multi-family dwellings
5 provisions shall be made to determine the electrical energy
6 consumed by each tenant.

7 SUBCHAPTER H

8 LIGHTING

9 Section 231. ~~Light~~ LIGHTING power budget. <—

10 A lighting power budget is the upper limit of the power to be
11 available to provide the lighting needs in accordance with a
12 given set of criteria and given calculation procedure.

13 Section 232. Calculation methods.

14 The criteria specified below shall be utilized for
15 computation of the lighting power budget. All calculations shall
16 be in accordance with accepted engineering practice. When
17 insufficient information is known about the specific use of the
18 building space (e.g., number of occupants, space function,
19 location of partitions), the budget shall be based on the
20 apparent intended use of the building space.

21 Section 233. Building interiors.

22 (a) Procedure.--The allowable electric power for lighting
23 shall be established by using the criteria and the calculation
24 procedures specified in section 236. The value shall be based on
25 the use for which the space within the building is intended and
26 on efficient energy utilization.

27 (b) Illumination level criteria.--For the purpose of
28 establishing a budget, levels of illumination shall be those
29 listed in fig. 9-80 of the IES Lighting Handbook, and those
30 levels shall be used as follows:

(1) For task lighting, the levels of illumination listed are for specific tasks. These levels are for the task areas defined in the IES Lighting Handbook or, where not defined, at all usable portions of task surfaces. In some cases, the levels of illumination are listed for locations (e.g., auditoriums). These levels are to be considered as average levels.

(2) For general lighting, in areas surrounding task locations, the average level of general lighting, for budget purposes only, shall be one-third the level for the tasks performed in the area but in no case less than 20-foot candles. Where more than one task level occurs in a space, the general level shall be one-third the weighted average of the specific task levels.

(3) For noncritical lighting, in circulation and seating areas, where no specific visual tasks occur, the average level of illumination shall be one-third of the average general lighting in the adjacent task spaces but in no case less than ten-foot candles.

(4) For the purpose of establishing a power budget, only lamp efficacies and coefficients of utilization (CU) specified in Table 11, shall be assumed.

Section 234. Building exteriors.

(a) Basis on use.--In exterior spaces, the lighting power budget shall be based on the use of which the space is intended (for task performance, safety, or security) and on efficient energy utilization.

(b) Criteria.--The same criteria as those for interior spaces apply for illumination levels and lighting systems with the addition of luminaires for flood lighting. For power budget

1 purposes floodlighting shall be selected with luminaires having
2 a greater percentage of their beam lumens restricted to the area
3 to be lighted. Such luminaires are defined as those with at
4 least the minimum efficiencies listed in the IES Lighting
5 Handbook.

6 (c) Facade lighting.--Facade lighting for budget purposes
7 shall be no greater than 2% of the total interior load of the
8 building.

9 (d) Calculation procedure.--In establishing a lighting power
10 budget the following procedures shall be used:

11 (1) For overhead lighting the procedure specified in
12 section 236 shall be followed, but using reflectances as
13 found.

14 (2) For flood lighting the beam lumen method, as shown
15 in the IES Lighting Handbook and a coefficient of beam
16 utilization (CBU) of 0.75 shall be used for floodlighting
17 calculations.

18 Section 235. Exceptions to criteria.

19 (a) ~~Interiors~~ SPACES.--The criteria of section 233 shall not <—
20 apply to the following areas when calculating the load:

21 (1) Portions of residential occupancies except for
22 kitchens, bathrooms, and laundry areas and public spaces
23 including lobbies, halls, stairways, basement areas, and
24 utility rooms.

25 (2) Residential type spaces similar to those stated in
26 paragraph (1) in institutions, such as hospitals, hotels,
27 funeral homes, churches, museums, etc.

28 (3) Theater auditoriums, entertainment and audiovisual
29 presentations where the lighting is an essential technical
30 element for the function performed.

1 (b) ~~Exteriors~~ LUMINAIRES.--The criteria of section 234 shall <—
2 not apply to the following lamps and luminaires; however, their
3 use shall be accounted for in the calculation of task lighting
4 loads for specific tasks. The allowable load shall be based on
5 the ~~luminary~~ LUMINAIRE wattage to achieve the levels of <—
6 illumination as covered in section 233 using a point calculation
7 method given in the IES Lighting Handbook. The excepted lamps
8 and luminaires are as follows:

9 (1) Luminaires for medical and dental purposes.

10 (2) Luminaires for highlighting applications, such as
11 sculpture exhibits, art exhibits, and individual items of
12 display merchandise.

13 (3) Luminaires for specialized lighting applications
14 (color matching, where electrical interference cannot be
15 tolerated, etc.).

16 (c) Control of reflectances.--The criteria of Table 11 shall
17 not apply in spaces where it is impractical to control
18 reflectances and where a dirty atmosphere cannot be avoided.
19 Where this condition exists, the values for reflectances and
20 light loss factors shall be those expected to be found and shall
21 be approved by the department. The calculation shall make a note
22 of this deviation.

23 Section 236. Calculation procedure.

24 ~~(a) Illumination levels and areas. To establish <—~~
25 ~~illumination levels and areas, the following procedure shall be~~
26 ~~used:~~

27 TO ESTABLISH A LIGHTING POWER BUDGET THE FOLLOWING PROCEDURES <—
28 SHALL BE USED:

29 (A) TO DETERMINE ILLUMINATION LEVELS AND AREAS:

30 (1) Determine the visual tasks that are expected to be

performed in each space and the number of planned work locations where tasks will be performed. If assumptions are made, their bases shall be indicated.

(2) Select the illumination level, in foot-candles for those expected tasks in accordance with section 233(b)(1).

(3) Calculate total task areas to be illuminated to the same level by multiplying the number of work locations by 50 square feet per work location. ~~(Total task areas shall not~~ <—

~~exceed actual total space area). If actual task area is greater than 50 square feet the actual area shall be used.~~

USE ACTUAL TASK AREA IF GREATER THAN 50 SQUARE FEET. IF THE <—
SUM OF ALL TASK AREAS IS GREATER THAN 50% OF THE TOTAL SPACE AREA, THEN THE TASK AREA PER WORK LOCATION SHALL BE REDUCED PROPORTIONATELY, SO THAT THE TOTAL TASK AREA IS LIMITED TO ONE-HALF THE TOTAL SPACE AREA. If special task lighting or localized lighting is to be employed, use the actual task areas and point calculation procedures.

(4) Calculate the level of general lighting by multiplying the task lighting level by one-third, where there is only one task level, or by taking one-third of the sum of the products of the task levels as provided for in paragraph (2) and their areas as provided for in paragraph (3) divided by the total task areas.

(5) Calculate the level of noncritical lighting.

~~(b) Lighting system data. To establish lighting system data, the following shall be used:~~ <—

(B) TO DETERMINE LIGHTING SYSTEM DATA: <—

(1) ~~Light~~ DETERMINE LIGHT source and luminaire types to use. <—

(2) ~~Lamp~~ DETERMINE LAMP lumens per watt and luminaire <—

coefficients of utilization for room and luminaire mounting height dimensions. Luminaire CUs shall be selected from the IES Lighting Handbook. In all cases, no luminaire shall have a CU for RCR = 1 or less than that given in Table 11 lamp efficacies for the appropriate space.

~~(c) Allowable wattage. To establish allowable wattage, the following shall be used:~~

(C) TO DETERMINE ALLOWABLE WATTAGE:

(1) Using data from subsection (b), the illumination levels and areas determined in subsection (a), and the criteria of Table 11 on Reflectance, calculate the allowable wattages using the lumen method.

(2) Calculate the total space wattage by adding the task, general and noncritical lighting loads.

(3) Add the wattage of luminaires allowed in section 235(b).

Table 11

(a) Lamp efficacies.--The following are initial lumen output per watt input, including ballast losses:

Application	Lumens per Watt
Where moderate color rendition is appropriate	55
Where good color rendition is appropriate	40
Where high color rendition is appropriate, spaces are less than 50 square feet or where use of low wattage High Intensity Discharge (HID) lamps under 250 W or fluorescent lamps under 40 W is appropriate	25

~~(b) Luminary~~ LUMINAIRE coefficients of utilization (CU).--
Coefficients of utilization (CUs) are to be for luminaires for

1 use in the types of spaces listed below, and those luminaires
 2 shall have a CU of no less than that listed below (for each type
 3 space) for a Room Cavity Ratio (RCR) of 1 and reflectances as in
 4 (c).

Space Use	Minimum CU (at RCR = 1)
-----------	----------------------------

7 For spaces with tasks subjected to veiling 8 reflections where design , WHERE RECOMMENDED levels of 9 illumination are listed in terms of 10 equivalent sphere illumination (ESI), and 11 where visual comfort is important.	<— 0.55
---	----------------------------

12 For spaces without tasks, or with tasks 13 not subjected to veiling reflections, but 14 where visual comfort is important.	<— 0.63
---	------------------------

15 For spaces without tasks and where visual 16 comfort is not a criterion	<— 0.70
---	--------------------

17 (c) Other criteria: ~~reflectances. For interior spaces, the~~ <—
 18 ~~following initial cavity and surface reflectances shall be~~
 19 ~~assumed:~~

20 (1) REFLECTANCES. FOR INTERIOR SPACES, THE FOLLOWING 21 INITIAL CAVITY AND SURFACE REFLECTANCES SHALL BE ASSUMED: 22 Ceiling cavity reflectance 23 Wall reflectance 24 Floor cavity reflectance	<— 80% 50% 20%
--	---

25 ~~Light Loss Factor.~~ <—

26 (2) LIGHT LOSS FACTOR. A light loss factor (LLF) of 0.70 27 shall be used.	<—
--	----

28 SUBCHAPTER I
 29 ALTERNATIVE SYSTEMS

30 Section 237. Performance alternative.

1 Alternative building systems and equipment design may be
2 approved by the department when they can be shown to have energy
3 consumption not greater than that of a similar building with
4 similar forms of energy requirements, designed in accordance
5 with the provisions of this act or when they can be shown to
6 have energy consumption not greater than that which shall be
7 established by the department with the approval of the Building
8 Energy Conservation Committee, for the purposes of this section:
9 Provided, however, That for all buildings classified as Use
10 Group R-3 alternate building systems and equipment design which
11 satisfy the criteria of this section shall not require the
12 approval of the department but the use of such an alternate
13 building system or equipment design shall be indicated in the
14 warranty provided in section 306.

15 Section 238. Nondepletable sources.

16 When such alternative systems utilize solar, geothermal, wind
17 or other nondepletable energy sources for all or part of their
18 energy sources, such nondepletable energy supplied to the
19 building shall be excluded from the total energy chargeable to
20 the proposed alternative design.

21 Section 239. Documentation.

22 Proposed alternative designs, submitted to the department as
23 requests for exception to the standard design criteria, must be
24 accompanied by an energy analysis prepared in accordance with
25 the ASHRAE Standard 90-75.

26 SUBCHAPTER J

27 USE GROUP R-3 PRESCRIPTIVE STANDARDS

28 Section 240. Minimum insulation requirements for Use Group R-3.

29 Use Group R-3 buildings shall be constructed utilizing the
30 following minimum insulation standards:

1	Ceilings	R - 19
2	Exterior Walls	R - 13
3	Floors Over Unheated Basements	
4	and Crawl Spaces *	R - 11
5	* Basements containing a furnace	
6	and/or hot water heater may be	
7	considered heated	
8	Edge Insulation for:	
9	Heated Slabs	R - 6.3
10	Unheated Slabs	R - 4.2
11	Windows	Multiglazing
12	Entrance Doors	R - 2.5
13	Sliding Glass Doors (if applicable)	Multiglazing
14	Ducts in Unheated Areas	R - 3

15 CHAPTER 3

16 APPLICATION OF STANDARDS: ESTABLISHMENT

17 OF COMMITTEE AND PENALTIES

18 Section 301. Modification of standards; criteria.

19 (a) Recommendations to General Assembly.--The department,

20 with the approval of the Building Energy Conservation Committee

21 established pursuant to section 304, after one or more public

22 hearings, may recommend to the General Assembly modifications to

23 the energy conservation standards contained in Chapter 2 hereof.

24 Any recommended modification to the energy conservation

25 standards shall meet the following criteria:

26 (1) It shall be consistent with the latest and most

27 effective technology.

28 (2) It shall not be in conflict with existing safeguards

29 for public health and safety.

30 (3) It shall be economically feasible as determined by

1 life-cycle-cost procedures.

2 (4) It shall be sufficiently stringent to effect a
3 significant savings of energy resources.

4 (5) It shall be a performance standard for the design of
5 buildings and systems within buildings to assure maximum
6 practical conservation of energy.

7 (6) Consideration shall be given to building and energy
8 standards promulgated by national and other state
9 governmental agencies, private organizations and any other
10 available energy data, as well as the total energy allocation
11 approach.

12 (b) Federal performance standards.--In the event that the
13 Federal Government promulgates performance standards that are
14 inconsistent or more stringent than the standards detailed in
15 this act, and the Federal Government mandates the states to
16 enact legislation to comply with its standards, then the
17 department, with the approval of the Building Energy
18 Conservation Committee, may modify the energy conservation
19 standards contained in this bill without the approval of the
20 General Assembly, in order to comply with the Federal standards.
21 Section 302. Application of energy conservation standards.

22 The energy conservation standards contained herein or as
23 promulgated by the department with the approval of the Building
24 Energy Conservation Committee shall apply to new buildings or to
25 renovations on which actual construction and/or design has not
26 commenced prior to their effective dates. No department, board,
27 agency or commission other than as provided herein, shall
28 promulgate or adopt any rules or regulations which ~~deal with any~~ <—
29 ~~subject matter contained in this act.~~ ARE INCONSISTENT WITH THE <—
30 STANDARDS CONTAINED IN CHAPTER 2, SUBCHAPTERS D THROUGH J OR

1 PROMULGATED UNDER CHAPTER 4 OF THIS ACT EXCEPT AS MANDATED BY
2 FEDERAL LAW.

3 Section 303. Energy conservation manual for buildings.

4 (a) Production of manual.--Concurrent with the adoption of
5 the energy conservation codes required by this act, the
6 department IN CONJUNCTION WITH THE GOVERNOR'S ENERGY COUNCIL <—
7 shall produce an energy conservation manual for use by
8 designers, builders, contractors of residential and
9 nonresidential buildings, and municipalities of the
10 Commonwealth. This manual shall contain the established
11 standards and accepted practices. The manual shall further
12 contain prescriptive standards which, if complied with, will
13 result in conformance with the performance standards contained
14 herein or as promulgated by the department and shall be written
15 in such manner as to be easily understood by persons possessing
16 a minimal technical background. The manual shall be furnished
17 upon request to members of the public at a price sufficient to
18 cover the cost of printing.

19 (b) Review of manual.--The manual shall be reviewed by the
20 department and the Building Energy Conservation Committee at
21 least annually and shall be updated as significant new energy
22 conservation information becomes available.

23 (c) Educational programs.--The department IN CONJUNCTION <—
24 WITH THE GOVERNOR'S ENERGY COUNCIL shall provide seminars and
25 other educational programs throughout the Commonwealth to
26 provide information and counseling to builders, architects,
27 other licensed design professionals, local building officials
28 and other persons affected by this act on the standards
29 contained herein or as promulgated by the department.

30 Section 304. Building Energy Conservation Committee.

1 (a) Composition of committee.--In order to further the
2 coordinated and effective administration of this act, there is
3 hereby established WITHIN THE GOVERNOR'S ENERGY COUNCIL a <—
4 Building Energy Conservation Committee. It shall consist of at <—
5 ~~least seven~~ ELEVEN members, the membership of which shall be <—
6 appointed by the Governor. The committee shall consist of the
7 following members or their designees:

8 (1) Two representatives of State Government.

9 (2) One representative of local government.

10 (3) One licensed professional engineer.

11 (4) One building contractor.

12 (5) One licensed ~~design professional~~. ARCHITECT. <—

13 (6) One representative of the energy supply industry.

14 ~~In addition, the Governor shall be empowered to add committee~~ <—
15 ~~members if the workload of the committee justifies such~~
16 ~~condition, except that he shall be limited to adding a maximum~~
17 ~~of one member under each membership category.~~

18 (7) FOUR REPRESENTATIVES OF SUCH OTHER AGENCIES AND <—
19 ORGANIZATIONS OR INDIVIDUALS AS THE GOVERNOR MAY FIND ARE
20 NECESSARY AND PROPER TO CARRY OUT THE PURPOSES OF THE
21 COMMITTEE.

22 (b) Powers and duties.--In addition to the powers and duties
23 enumerated in this act, the Building Energy Conservation
24 Committee shall:

25 (1) Be responsible for the regular exchange of
26 information and plans regarding building energy conservation,
27 for the development, review and approval of proposed and
28 existing standards, guidelines, regulations, and manuals.

29 (2) Elect from its members a Board on Variances.

30 (c) Expenses.--The members of the committee shall not

1 receive any compensation for their services but shall be
2 reimbursed for their actual and necessary expenses incurred in
3 the performance of their duties. Provided, however, when acting
4 on matters concerning variances members of the Board on
5 Variances shall receive \$50 per day plus their actual and
6 necessary expenses.

7 Section 305. Certification.

8 (a) Applicability.--The provisions of this section shall
9 apply to all buildings subject to this act except those
10 classified as Use Group R-3.

11 (b) Compliance with act.--It shall be the duty of the
12 licensed design professional retained in connection with the
13 design or construction of a building to certify the drawings,
14 specifications and other data showing compliance with the
15 provisions of this act, except as provided in subsection (e).

16 ALL SUCH INFORMATION REQUIRED IN THIS PROVISION TO BE SUBMITTED <—
17 TO THE DEPARTMENT MUST BE ACCOMPANIED BY A FILING FEE OF \$10.
18 THE FILING FEE MAY BE SUBJECT TO CHANGE BY THE BUILDING ENERGY
19 CONSERVATION COMMITTEE UPON THE RECOMMENDATION OF THE DEPARTMENT
20 TO THE BUILDING ENERGY CONSERVATION COMMITTEE, PROVIDED,
21 HOWEVER, THAT ADVANCE NOTICE OF SUCH CHANGE HAS APPEARED IN THE
22 PENNSYLVANIA BULLETIN. If the building is subject to the
23 provisions of the act of April 27, 1927 (P.L.465, No.299),
24 referred to as the Fire and Panic Act, the certification
25 required hereunder shall be submitted on a form with the
26 application for plan approval under the said Fire and Panic Act.

27 (c) Inspection.--Each licensed design professional retained
28 by the owner or his designee, where any of such are retained
29 during the construction of a building, shall make periodic
30 inspections of the building progression to insure compliance

1 with this act, except as provided in subsection (e).

2 (d) Final certification.--Each licensed design professional
3 retained by the owner shall make a final certification of every
4 completed building showing compliance with the provisions of
5 this act, except as provided in subsection (e).

6 (e) Certification by builder.--If a licensed design
7 professional is not retained in connection with the design and
8 construction of a building, it shall be the responsibility of
9 the builder or owner, if he is the builder, to perform the
10 inspections and certification required by this section INCLUDING <—
11 PAYMENT OF THE FILING FEE.

12 Section 306. Use Group R-3; notice; warranty.

13 (a) Notice.--Prior to construction of any building
14 classified as Use Group R-3, the builder shall notify the
15 department by certified mail of his intent to begin
16 construction. Such notice shall INCLUDE A FILING FEE OF \$5 AND <—
17 contain the name of the owner of the building and its location.
18 THE FILING FEE MAY BE SUBJECT TO CHANGE BY THE BUILDING ENERGY <—
19 CONSERVATION COMMITTEE, UPON THE RECOMMENDATION OF THE
20 DEPARTMENT TO THE BUILDING ENERGY CONSERVATION COMMITTEE,
21 PROVIDED, HOWEVER, THAT ADVANCE NOTICE OF SUCH CHANGE HAS
22 APPEARED IN THE PENNSYLVANIA BULLETIN.

23 (b) Warranty.--At the time a contract for the construction
24 of any building classified as Use Group R-3 is entered into, the
25 builder shall warrant to the owner in writing that the building
26 shall be constructed in accordance with the provisions of this
27 act. Such warranty shall be a document separate from the
28 contract and shall be in the following form:

29 I, (Builder) , hereby warrant to (Owner) that the
30 premises known as (Description)

1 shall be constructed in accordance with the provisions of the
2 Act of _____, 19__, No.____, known as the "Building Energy
3 Conservation Act." This law provides building ~~and equipment~~ <—
4 standards to make your home energy efficient and also provides
5 you with legal remedies if your home is not built according to
6 the State standards. If you would like the State to do an
7 energy audit of your home to determine if it conforms to State
8 standards, you may call the Pennsylvania Department of
9 Community Affairs at (Telephone) , and they will perform an
10 inspection of your home for a fee of ~~\$25~~ \$35. <—

11 Indicate if alternate building system or equipment design is
12 being employed.

13 (c) If the builder is also the owner of the building at the
14 time of construction, he shall provide the warranty required by
15 subsection (b) at the time of its initial sale to a new owner.
16 Such warranty shall be in substantially the same form as
17 provided in subsection (b).

18 (d) Failure to provide notice.--The Department of Community
19 Affairs, after hearing, may assess a civil penalty payable to
20 the Commonwealth of Pennsylvania not to exceed \$100 upon any
21 builder who fails to give the notice required by subsection (a).
22 In determining the amount of the civil penalty, the Department
23 of Community Affairs shall consider the willfulness of the
24 violation and the cost incurred by the department in discovering
25 the violation.

26 (e) Failure to provide warranty.--Whenever a builder fails
27 to provide the warranty required by subsections (b) or (c) such
28 required warranty shall constitute an implied warranty and the
29 owner's right to proceed under section 315(a) shall not be
30 affected. If it is established by a preponderance of the

1 evidence that the builder's failure to provide the warranty was
2 willful, then damages in twice the amount provided in section
3 315 may be awarded.

4 Section 307. Variances.

5 (a) Requests.--Any request for a variance from the energy
6 conservation standards contained herein shall be made to the
7 Board on Variances of the Building Energy Conservation Committee
8 and a decision on such request shall be made within 30 days of
9 its filing.

10 (b) Criteria.--A variance shall be granted only if it is
11 found that:

12 (1) compliance with the provisions of this act would
13 result in extreme hardship to the owner; and

14 (2) the granting of such variance would not result in a
15 significant increase in the energy usage of the building.

16 Section 308. Building permits.

17 Any building permit issued by the Commonwealth or any of its
18 political subdivisions shall have printed upon its face notice
19 that the provisions of this act must be complied with.

20 Section 309. Permits for use or occupancy.

21 Before any building or structure hereafter constructed, other
22 than a building classified as Use Group R-3, shall be used or
23 opened for occupancy, the owner thereof shall notify the
24 department of the completion of the building for the purposes of
25 this act and submit the necessary certification therewith:

26 Provided, however, That if a municipality elects to administer
27 the provisions of this act under Chapter 5 such notice and
28 certification shall be submitted to the municipality which shall
29 forward a copy of the notice to the department. No permit for
30 use or occupancy shall be granted until such submission has been

1 made. No building official of the Commonwealth or any of its
2 political subdivisions shall issue a permit until he has
3 received proof of such compliance. Where the certificate has
4 been submitted to the department, presentation to the building
5 official of the mailing receipt together with a copy of the
6 certification required by section 305 shall establish proof of
7 compliance for the purposes of this section. Upon such
8 presentation any building official of the Commonwealth or any of
9 its political subdivisions shall issue a permit for use or
10 occupancy, provided all other criteria for such a permit have
11 been satisfied and said building official shall notify the
12 department that he has issued the same.

13 Section 310. Failure to submit certification.

14 Whenever the owner of any building, other than a building
15 classified as Use Group R-3, shall fail to give the notice and
16 submit the necessary certification in accordance with section
17 309 and shall nevertheless proceed with the use or occupancy of
18 the building, the department or the municipality shall serve
19 notice on the said owner that he is in violation of this act and
20 order him to comply therewith.

21 Section 311. Inspections.

22 The department may perform a nondestructive inspection within
23 two years of the date of completion of construction of any
24 building constructed after the effective date of this act to
25 determine compliance with the provisions of this act, provided
26 at least 30 days notice has been given to the owner. The <—
27 ~~department may also perform such inspections at the request of~~
28 ~~the owner of any building subject to this act for a fee of \$25.~~

29 THE DEPARTMENT MAY ALSO CAUSE SUCH AN INSPECTION TO BE PERFORMED <—
30 AT THE REQUEST OF THE OWNER OF ANY BUILDING SUBJECT TO THIS ACT.

1 THE FEE FOR AN INSPECTION UNDER SECTION 306(B) FOR R-3 BUILDINGS
2 IS \$35. THE INSPECTION FEE FOR ALL OTHER BUILDINGS SUBJECT TO
3 THIS ACT SHALL BE DETERMINED BY THE DEPARTMENT AT SUCH AN AMOUNT
4 AS TO COVER THE NECESSARY COSTS OF THE INSPECTION.

5 Section 312. Appeals.

6 Review of any decisions rendered under the provisions of this
7 act shall be brought in the court of common pleas of the county
8 wherein the building is situated. Such review shall be limited
9 to determining whether any such decision was arbitrary and
10 capricious.

11 Section 313. Penalties.

12 (a) Applicability.--The provisions of this section shall
13 apply to all buildings subject to this act except those
14 classified as Use Group R-3.

15 (b) Violations of act.--Any person who shall willfully or
16 negligently violate any of the provisions of this act, or the
17 rules and regulations or the orders for the enforcement of the
18 said provisions or rules and regulations issued by duly
19 authorized officers of the department or who shall hinder, delay
20 or interfere with any officer charged with the enforcement of
21 this act in the performance of his duty, shall, upon conviction
22 thereof, be punished by a fine of not more than \$300 and costs.
23 In the event of violation of more than one provision of this
24 act, the violation of each provision shall be deemed a separate
25 and distinct offense for the purposes of this section.

26 (c) Institution of proceedings.--Prosecutions for violations
27 of this act or the rules and regulations of the department may
28 be instituted by the Secretary of Labor and Industry or under
29 his directions by an authorized representative of the
30 department. Upon conviction after a hearing in a court of

1 competent jurisdiction, the sentences provided in this act shall
2 be imposed and shall be final unless an appeal be taken in the
3 manner prescribed by law.

4 (d) Disposition of fines.--All fines collected under this
5 act shall be forwarded to the department who shall pay the same
6 into the State Treasury for the use of the Commonwealth.

7 (e) False certification.--Any architect or other licensed
8 design professional who willfully provides a false certification
9 for any building subject to the provisions of this act shall be
10 subject to the suspension or revocation of his license by the
11 State Board of Examiners of Architects or other applicable State
12 licensing board.

13 Section 314. Enforcement.

14 (a) Applicability.--The provisions of this act shall apply
15 to every building enumerated in this act, including buildings
16 owned in whole or in part by the Commonwealth or any political
17 subdivision thereof, and with the exception of those buildings
18 classified as Use Group R-3, shall be enforced by the Secretary
19 of Labor and Industry, by and through his authorized
20 representatives.

21 (b) Powers of officers.--For the purpose of enforcing the
22 provisions of this act, all the officers charged with its
23 enforcement shall have the power to enter any of the buildings
24 enumerated in this act, and no person shall hinder or delay, or
25 interfere with any of the said officers in the performance of
26 his duty, nor refuse any pertinent information necessary to
27 determine whether the provisions of this act and the rules and
28 regulations herein provided for, are or will be complied with.

29 Section 315. Civil action.

30 (a) Use Group R-3.--The owner of any building subject to the

1 requirements of section 306 who is aggrieved as the result of
2 such building not being properly designed or constructed in
3 conformance with this act shall have a right of action for
4 breach of warranty. Remedies may include specific performance or
5 an award of damages in an amount not less than \$300. Attorney's
6 fees shall be recoverable in any action in which the owner
7 prevails. Any such award shall further provide for payment of
8 the actual costs in excess of \$25 incurred by the department if
9 it inspected the building for the owner and the owner shall
10 remit such amount to the department.

11 (b) Other buildings.--The owner of any building, other than
12 a building classified as Use Group R-3, at the time of its
13 design or construction under the provisions of this act who is
14 aggrieved as the result of such building not being properly
15 designed or constructed in conformance with this act shall have
16 a right of action against any person who is required to submit
17 the certificate required by section 305.

18 (c) Limitation of action.--

19 (1) No action brought under subsection (a) shall be
20 maintained unless brought within three years from the date of
21 the warranty.

22 (2) No action brought under subsection (b) shall be
23 maintained unless brought within three years from the date of
24 completion of the building.

25 CHAPTER 4

26 ADOPTION OF FUTURE STANDARDS

27 Section 401. Adoption and promulgation of standards.

28 The department, with the approval of the Building Energy
29 Conservation Committee, shall, after one or more public
30 hearings, adopt and publish energy conservation standards for

1 all buildings covered by this act in accordance with the
2 provisions of the act of July 31, 1968 (P.L.769, No.240), known
3 as the "Commonwealth Documents Law." The purpose of such
4 standards is to reduce wasteful or uneconomic consumption of
5 energy by balancing the cost of energy procurement against the
6 cost of energy-conserving building practices. The energy
7 conservation standards shall meet the following criteria:

8 (1) They shall be consistent with the latest and most
9 effective technology.

10 (2) They shall not be in conflict with existing
11 safeguards for public health and safety.

12 (3) They shall be economically feasible as determined by
13 life-cycle-cost procedures.

14 (4) They shall be sufficiently stringent to effect a
15 significant savings of energy resources.

16 (5) They shall be a performance standard for the design
17 of buildings and systems within buildings to assure maximum
18 practical conservation of energy.

19 (6) Consideration shall be given to building and energy
20 standards promulgated by national and other State
21 governmental agencies, private organizations and any other
22 available energy data, as well as the total energy allocation
23 approach.

24 CHAPTER 5

25 LOCAL ELECTION

26 Section 501. Election; Use Group R-3.

27 Any municipality of this Commonwealth may elect to administer
28 the provisions of this act relating to Use Group R-3 buildings,
29 as defined in section 103, except for units subject to the act
30 of May 11, 1972 (P.L.286, No.70), known as the "Industrialized

1 Housing Act" and the act of May 11, 1972 (P.L.281, No.69), known
2 as the "Uniform Standards Code for Mobile Homes." Such election
3 shall be made by resolution of the governing body of such
4 municipality which shall be in substantially the following form:

5 The (city, borough, town, or township) of _____
6 hereby elects to administer the provisions of the act
7 of _____, 19__, No. _____ known as the "Building
8 Energy Conservation Act" for Use Group R-3 buildings as defined
9 therein.

10 Section 502. Election; cities of the first, second and second
11 class A.

12 Any city of the first class, second class and second class A
13 may elect to administer the provisions of this act for all
14 buildings subject hereto, except for units subject to the act of
15 May 11, 1972 (P.L.286, No.70), known as the "Industrialized
16 Housing Act" and the act of May 11, 1972 (P.L.281, No.69), known
17 as the "Uniform Standards Code for Mobile Homes." Such election
18 shall be made by resolution of the governing body of such city
19 which shall be in substantially the following form:

20 The city of _____ hereby elects to administer the
21 provisions of the act of _____, 19__, No. _____ known as
22 the "Building Energy Conservation Act."

23 Section 503. Powers of municipalities.

24 Any municipality electing to administer the provisions of
25 this act under section 501 or 502 shall exercise the same powers
26 conferred upon the department by this act, including the power
27 to institute proceedings for violations of the act, with the
28 exception of those powers specified in sections 301, 303 and in
29 Chapter 4. In addition, any such municipality may exercise such
30 other administrative and enforcement procedures as it shall deem

1 necessary to effect the purposes of this act including, but not
2 limited to, prior plan approval, building permit requirements,
3 use or occupancy permit requirements and inspections during the
4 course of construction.

5 Section 504. Variances.

6 Any municipality electing to administer the provisions of
7 this act under section 501 or 502 shall establish a Board on
8 Variances to make determinations on request for variance from
9 the energy conservation standards contained herein or as
10 promulgated by the department with the approval of the Building
11 Energy Conservation Committee, and is authorized exclusive
12 jurisdiction to grant such variances, section 307(a)
13 notwithstanding. A variance shall only be granted if the
14 criteria of section 307(b) have been satisfied.

15 Section 505. Disposition of fines AND FEES. <—

16 Any fines OR FEES collected under this act by any <—
17 municipality electing to administer the provisions of this act
18 under section 501 or 502 shall be retained by the municipality,
19 section 313(d) notwithstanding.

20 CHAPTER 6

21 REPORT TO GENERAL ASSEMBLY

22 Section 601. Report to General Assembly.

23 Thirty months after the effective date of this act, the
24 department shall report to the General Assembly the results of
25 the inspections it has performed under this act together with a
26 report on public compliance with this act. THE REPORT SHALL ALSO <—
27 DOCUMENT THE AMOUNT OF MONEY THAT THE DEPARTMENT RECEIVED
28 PURSUANT TO THIS ACT AND THE DISPENSATION OF THESE FUNDS. IN
29 ADDITION, WITHIN 24 MONTHS OF THE EFFECTIVE DATE OF THIS ACT,
30 THE DEPARTMENT SHALL OBTAIN FROM EVERY MUNICIPALITY ELECTING TO

1 ENFORCE THE PROVISIONS OF THIS ACT A REPORT CONTAINING
2 INFORMATION SIMILAR TO THAT REQUIRED OF THE DEPARTMENT UNDER
3 THIS SECTION. THE DEPARTMENT SHALL INCLUDE SUCH FINDINGS IN ITS
4 REPORT TO THE GENERAL ASSEMBLY.

5 Section 602. Effective date.

6 This act shall take effect as follows:

7 (1) Chapter 2 shall take effect July 1, 1980 and shall
8 remain in full force and effect for a period of one year
9 after which time the provisions of Chapter 2 shall have no
10 legal effect.

11 (2) Section 301 shall take effect January 1, 1980 and
12 its provisions shall remain in full force and effect for a
13 period of 18 months after which time said provisions shall
14 have no legal effect.

15 (3) Chapter 4 shall take effect July 1, 1981.

16 (4) All other provisions of this act shall take effect
17 January 1, 1980.