

THE GENERAL ASSEMBLY OF PENNSYLVANIA

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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.

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

18 CHAPTER 1

19 GENERAL PROVISIONS

20 Section 101. Short title.

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

23 Section 102. Legislative findings and declaration of purpose.

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

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

29 (2) It is the Commonwealth's responsibility to provide

1 for energy conservation through regulation of design and
2 construction standards.

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

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

12 Section 103. Definitions.

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

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

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

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

1 producing energy or cooling within the structure. As used
2 herein, the generation of substantial heat shall mean
3 generation of more than 6 watts per square foot of floor
4 area.

5 (3) Buildings which are neither heated nor cooled.

6 (4) Historic buildings.

7 (5) Buildings owned by the Federal Government.

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

10 "Department." The Pennsylvania Department of Labor and
11 Industry except that for all units subject to the act of May 11,
12 1972 (P.L.286, No.70), known as the "Industrialized Housing
13 Act," all units subject to the act of May 11, 1972 (P.L.281,
14 No.69), known as the "Uniform Standards Code for Mobile Homes,"
15 and all buildings classified as Use Group R-3, herein,
16 department means the Pennsylvania Department of Community
17 Affairs.

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

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

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

29 "Life-cycle cost." The cost of a building including its
30 initial cost, the cost of the energy consumed over its economic

1 life and the cost of its operation and maintenance.

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

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

8 "Renovation."

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

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

17 CHAPTER 2

18 ENERGY CONSERVATION STANDARDS

19 SUBCHAPTER A

20 GENERAL PROVISIONS

21 Section 201. Provisions.

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

29 The provisions regulating the construction of buildings
30 classified as Use Group R-3 are contained in Subchapter J,

1 section 240.

2 SUBCHAPTER B

3 PLANS AND SPECIFICATIONS

4 Section 202. Submission.

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

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

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

24 Section 203. Contents.

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

1 equipment and system controls and other pertinent data to
2 indicate conformance with the requirements herein.

3 SUBCHAPTER C
4 DEFINITIONS RELATING TO
5 ENERGY CONSERVATION STANDARDS

6 Section 204. Definitions relating to standards.

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

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

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

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

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

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

30 "Coefficient of utilization" (CU). The ratio of the luminous

1 flux (lumens) from a luminaire received on the work plane to the
2 lumens emitted by the luminaire's lamps alone.

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

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

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

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

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

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

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

30 "Illumination." The density of the luminous flux incident on

1 a surface. It is the quotient of the luminous flux by the area
2 of the surface when the latter is uniformly illuminated.

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

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

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

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

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

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

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

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

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

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

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

30 "Resistance, thermal" (R). A measure of the ability to

1 retard the flow of heat. The R value is the reciprocal of a heat
2 transfer coefficient, as expressed by U. ($R = 1/U$).

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

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

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

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

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

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

1 activities include, but are not limited to, building-window
2 siting and orientation, selection of glazing materials, design
3 of overhangs, sun screens or placement of shrubbery.

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

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

12 SUBCHAPTER D

13 BUILDING ENVELOPE

14 Section 205. General provisions.

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

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

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

29 The required thermal transmittance value (U_o) of any one
30 component, such as roof/ceiling, wall or floor may be increased

1 and the U_o value for other components decreased provided that
2 the overall heat gain or loss for the entire building envelope
3 does not exceed the total resulting from conformance to the
4 required U_o values.

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

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

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

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

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

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

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

30 Section 206. Criteria for residential buildings.

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

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

Table 1
Maximum Allowable " U_o " Values for
Gross Exterior Wall Assemblies

	Detached one & two family	All other residential
Annual heating degree days*		
4000	0.25	0.31
5000	0.23	0.29
6000	0.22	0.27
7000	0.20	0.26

*As specified in Chapter 43 ASHRAE Handbook-Systems.

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

(d) Floors over unheated spaces.--The floor of a heated or mechanically cooled space located over an unheated space shall

1 have a combined thermal transmittance value (U_o) not to exceed
2 0.08.

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

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

8 Table 2

9 Minimum Allowable " R " Values of Perimeter

10 Insulation for Slab-On Grade Floors

11 Annual heating degree days	Heated slab	Unheated slab
12 4000*	5.5	3.5
13 5000	6.3	4.2
14 6000	7.0	4.9
15 7000	7.8	5.5

16 *Table values may be interpolated.

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

21 Section 207. Other buildings.

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

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

29 Table 3

30 Maximum Allowable " U_o " Values

1	for Gross Exterior Wall Assemblies		
2		3 stories or	More than
3	Annual heating degree days	40 ft. or less	3 stories or
4			40 ft.
5	4000	0.31	0.38
6	5000	0.29	0.36
7	6000	0.27	0.33
8	7000	0.26	0.31

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

13 Table 4
14 Maximum Allowable " U_o " Values
15 for Roof/Ceiling Assemblies

16	Annual heating degree days	Maximum U_o
17	4000*	0.092
18	5000	0.084
19	6000	0.076
20	7000	0.068

21 *Table values may be interpolated.

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

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

29 The insulation shall extend downward from the top of the slab
30 for a minimum distance of 24 inches or downward to the bottom of

1 the slab then horizontally beneath the slab for a minimum total
2 distance of 24 inches.

3 Table 5

4 Minimum Allowable "R" Values of Perimeter

5 Insulation for Slab-On Grade Floors

6 Annual heating degree days	Heated slab	Unheated slab
7 4000*	5.5	3.5
8 5000	6.3	4.2
9 6000	7.0	4.9
10 7000	7.8	5.5

11 *Table values may be interpolated.

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

$$17 \text{ OTTV} = \frac{(U_w \times A_w \times \text{TDEQ}) + (A_f \times S_f \times S_c) + (U_f \times A_f \times \Delta T)}{A_o}$$

18
19 OTTV = Overall thermal transfer value where:

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

22 A_w = Opaque wall area, ft² (m²)

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

25 A_f = Fenestration area, ft² (m²)

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

27 TABLE FOR TEMPERATURE DIFFERENCE

28 Wall Construction-mass per unit area	TDEQ
29 LB/FT ² Kg/m ²	F C
30 0-25 0-125	44 24.5

1	26-40	126-195	37	21.0
2	41-70	196-345	30	17.0
3	71 and above	346 and above	23	13.0

4 Weight of wall construction shall be determined from the
5 1972 ASHRAE Handbook of Fundamentals, Chapter 22.

6 Sc = Shading coefficient of the fenestration

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

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

14 * Values from 1972 ASHRAE Handbook of
15 Fundamentals, Chapter 33.

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

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

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

29 $(U_w \times A_w \times TDEQ) + (U_{w2} \times A_{w2} \times TDEQ2), \text{ etc.}$

30 (g) Cooling criteria for roof/ceilings.--All buildings and

1 structures that are mechanically cooled shall have a combined
2 thermal transmittance value (U_o) for roof/ceiling assemblies the
3 same as specified in Table 4 for heating.

4 Section 208. Air leakage.

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

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

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

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

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

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

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

28 (d) Caulking and sealants.--Exterior joints around windows
29 and door frames, between wall cavities and window or door
30 frames, between wall and foundation, between wall and roof,

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

5 SUBCHAPTER E
6 WARM AIR HEATING, VENTILATING AND AIR CONDITIONING
7 SYSTEMS AND EQUIPMENT

8 Section 209. General provisions.

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

23 Section 210. Design requirements.

24 In determining design conditions for calculations under this
25 section the following design temperatures shall apply:

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

30 (2) Indoor design temperature shall be 70 degrees F. for

1 heating and 78 degrees F. for cooling.

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

8 Section 211. Cooling with outdoor air.

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

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

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

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

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

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

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

29 (6) When all space cooling is accomplished by a
30 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
through 220.

Section 216. Reheat systems.

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

8 Section 217. Dual duct and multizone systems.

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

14 Section 218. Recooling systems.

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

20 Section 219. Multiple zones.

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

29 Section 220. Concurrent operation.

30 Concurrent operation of independent heating and cooling

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

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

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

11 Section 221. Equipment performance requirements.

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

18 (b) Systems equipment - electrical.--Heating ventilating and
19 air conditioning systems equipment whose energy input in the
20 cooling mode is entirely electric shall show a coefficient of
21 performance (COP) and energy efficiency ratio (EER) not less
22 than the values specified in Table 6. These requirements apply
23 to, but are not limited to, unitary cooling equipment (air and
24 water source); packaged air conditioners; and room air
25 conditioners. These requirements do not apply to equipment used
26 in areas having open refrigerated food display cases. For
27 determining coefficient of performance (COP), the rate of net
28 heat removal shall be defined as the change in the total heat
29 contents of the air entering and leaving the equipment (without
30 reheat). Total energy input shall be determined by combining the

1 energy inputs to all elements of the equipment, including but
2 not limited to, compressors, pumps, supply-air fans, cooling
3 tower fans and the system equipment control circuit.

4 Table 6
5 Minimum EER and COP for Electric Heating, Ventilating
6 and Air Conditioning System Equipment

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

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

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

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

23 (d) System components.--Heating, ventilating and air
24 conditioning system components whose energy input in the cooling
25 mode is entirely electric shall show a coefficient of
26 performance (COP) and energy efficiency ratio (EER) not less
27 than the values specified in Table 8. For determining
28 coefficient of performance (COP), the rate of heat removal is
29 defined as the difference in total heat contents of the water or
30 refrigerant entering or leaving the component. Total energy

1 input shall be determined by combining the energy inputs to all
 2 elements and accessories of the component, including but not
 3 limited to, compressors, internal circulating pumps, condenser-
 4 air fans, evaporative-condenser cooling heater pumps, purge, and
 5 the component control circuit.

6 Table 8

7 Minimum COP for Electrically Driven Heating, Ventilating
 8 and Air Conditioning System Components

9 Component	10 Condensing means	11 Air	12 Water	13 Evaporation
		ERR COP	EER COP	EER COP
11 Self-contained	Centrifugal	7.5 2.2	12.9 3.8	
12 water chillers				
13	Positive			
14	displacement	7.2 2.1	10.9 3.2	
15 Condenserless	Positive			
16 water chillers	displacement	8.9 2.6	10.9 3.2	
17 Compressor and				
18 condenser units	Positive			
19 65,000 Btu/hr.	displacement	7.8 2.3	11.3 3.3	11.3 3.3
20 (19,050 watts)				
21 and over				

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

25 Table 9

26 Minimum COP for Heat Pumps, Heating Mode

27 Source and outdoor temperature (degree F.)	28 Minimum COP
28 Air source--47 DB/43 WB	2.2
29 Air source--17 DB/15 WB	1.2
30 Water source--60 entering	2.2

1 (f) Supplementary heater.--The heat pump shall be installed
2 with a control to prevent supplementary heater operation when
3 the heating load can be met by the heat pump alone.
4 Supplementary heater operation is permitted during transient
5 periods, such as start-ups, following room thermostat setpoint
6 advance, and during defrost. A two-stage room thermostat, which
7 controls the supplementary heat on its second stage, shall be
8 accepted as meeting this requirement. The cut-on temperature for
9 the compression heating shall be higher than the cut-on
10 temperature for the supplementary heat, and the cut-off
11 temperature for the compression heating shall be higher than the
12 cut-off temperature for the supplementary heat. Supplementary
13 heat may be derived from any source of electric resistance
14 heating or combustion heating.

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

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

23
$$R = \frac{t_i - t_o}{15}$$

24
$$R = \text{-----} (\text{hr}) (\text{sq.ft}) (F)/\text{BTU}$$

25
$$15$$

26 where $t_i - t_o$ is the design temperature differential (absolute
27 value) between the air in the duct and the surrounding air with
28 the following exceptions. Duct insulation, except when needed to
29 prevent condensation, is not required in any of the following
30 cases:

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

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

5 (3) Exhaust air ducts.

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

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

12 Section 223. System controls.

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

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

28 (c) Humidity.--If a heating, ventilating and air
29 conditioning system is equipped with a means for adding moisture
30 to maintain specific selected relative humidities in spaces or

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

9 (d) Temperature zoning.--

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

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

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

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

28 (1) In all buildings and structures, or portions thereof
29 of use group R-3, the thermostat, or an alternate means such
30 as a switch or a clock, shall provide a readily accessible,

1 manual or automatic means for reducing the energy required
2 for heating and cooling during periods of nonuse or reduced
3 need.

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

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

15 Section 224. Steam and hot water heating piping.

16 (a) Piping insulation.--All piping serving as part of a
17 heating or cooling system installed to serve buildings and
18 within buildings shall be thermally insulated as shown in Table
19 10.

20 Table 10

21 Minimum Pipe Insulation

22 Insulation thickness in inches

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

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

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

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

$$26 \quad \frac{4.6 \times \text{Table 10 Thickness}}{\text{Actual R}} = \text{New Minimum Thickness}$$

28 (c) Low thermal resistance.--For materials with thermal
29 resistance less than R=4.0 the minimum insulation thickness
30 shall be increased as follows:

1 shall be equipped with flow control devices to limit total flow
2 to a maximum of 3 Gpm per shower head.

3 Section 227. Insulation.

4 (a) Piping insulation.--Piping in required return
5 circulation systems shall be insulated so that heat loss is
6 limited to a maximum of 25 Btuh per square foot of external pipe
7 surface for above ground piping and a maximum of 35 Btuh per
8 square foot of external pipe surface for underground piping.
9 Maximum heat loss shall be determined at a temperature
10 differential equal to the maximum water temperature minus a
11 design ambient temperature no higher than 65 degrees F. except
12 that conformance with table 10 for "low temperature piping
13 system" shall be deemed as complying with this section.

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

19 Section 228. Equipment.

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

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

29 (c) Gas and oil-fired water heaters.--All gas and oil-fired
30 automatic storage heaters shall have a recovery efficiency, ER,

1 not less than 75% and a stand-by loss percentage S, not
2 exceeding $S=2.3+67/V$ where V=rated volume in gallons. The method
3 of test of ER and S shall be as described in section 2.7 of ANSI
4 Z21.10.3 Circulating Tank, Instantaneous and Large Automatic
5 Storage Type Water Heaters, Approval Requirements for Gas Water
6 Heaters.

7 Section 229. Controls.

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

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

17 SUBCHAPTER G

18 ELECTRICAL SYSTEMS

19 Section 230. System requirements.

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

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

27 (c) Lighting switching.--Switching shall be provided for
28 each lighting circuit, or for portions of each circuit, so that
29 the partial lighting required for custodial or for effective
30 complementary use with natural lighting may be operated

1 selectively.

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

5 SUBCHAPTER H

6 LIGHTING

7 Section 231. Light power budget.

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

11 Section 232. Calculation methods.

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

19 Section 233. Building interiors.

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

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

29 (1) For task lighting, the levels of illumination listed
30 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 purposes floodlighting shall be selected with luminaires having a greater percentage of their beam lumens restricted to the area

1 to be lighted. Such luminaires are defined as those with at
2 least the minimum efficiencies listed in the IES Lighting
3 Handbook.

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

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

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

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

16 Section 235. Exceptions to criteria.

17 (a) Interiors.--The criteria of section 233 shall not apply
18 to the following areas when calculating the load:

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

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

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

29 (b) Exteriors.--The criteria of section 234 shall not apply
30 to the following lamps and luminaires; however, their use shall

1 be accounted for in the calculation of task lighting loads for
2 specific tasks. The allowable load shall be based on the
3 luminary wattage to achieve the levels of illumination as
4 covered in section 233 using a point calculation method given in
5 the IES Lighting Handbook. The excepted lamps and luminaires are
6 as follows:

7 (1) Luminaires for medical and dental purposes.

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

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

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

21 Section 236. Calculation procedure.

22 (a) Illumination levels and areas.--To establish
23 illumination levels and areas, the following procedure shall be
24 used:

25 (1) Determine the visual tasks that are expected to be
26 performed in each space and the number of planned work
27 locations where tasks will be performed. If assumptions are
28 made, their bases shall be indicated.

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

1 (3) Calculate total task areas to be illuminated to the
2 same level by multiplying the number of work locations by 50
3 square feet per work location. (Total task areas shall not
4 exceed actual total space area). If actual task area is
5 greater than 50 square feet the actual area shall be used. If
6 special task lighting or localized lighting is to be
7 employed, use the actual task areas and point calculation
8 procedures.

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

15 (5) Calculate the level of noncritical lighting.

16 (b) Lighting system data.--To establish lighting system
17 data, the following shall be used:

18 (1) Light source and luminaire types to use.

19 (2) Lamp lumens per watt and luminaire coefficients of
20 utilization for room and luminaire mounting height
21 dimensions. Luminaire CUs shall be selected from the IES
22 Lighting Handbook. In all cases, no luminaire shall have a CU
23 for RCR = 1 or less than that given in Table 11 lamp
24 efficacies for the appropriate space.

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

27 (1) Using data from subsection (b), the illumination
28 levels and areas determined in subsection (a), and the
29 criteria of Table 11 on Reflectance, calculate the allowable
30 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 coefficients of utilization (CU).--Coefficients of utilization (CUs) are to be for luminaires for use in the types of spaces listed below, and those luminaires shall have a CU of no less than that listed below (for each type space) for a Room Cavity Ratio (RCR) of 1 and reflectances as in (c).

Space Use	Minimum CU (at RCR = 1)
For spaces with tasks subjected to veiling reflections where design levels of illumination are listed in terms of equivalent sphere illumination (ESI) and where visual comfort is important.	0.55

For spaces without tasks, or with tasks not subjected to veiling reflections, but

1 or other nondepletable energy sources for all or part of their
2 energy sources, such nondepletable energy supplied to the
3 building shall be excluded from the total energy chargeable to
4 the proposed alternative design.

5 Section 239. Documentation.

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

10 SUBCHAPTER J

11 USE GROUP R-3 PRESCRIPTIVE STANDARDS

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

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

15 Ceilings R - 19

16 Exterior Walls R - 13

17 Floors Over Unheated Basements

18 and Crawl Spaces * R - 11

19 * Basements containing a furnace

20 and/or hot water heater may be

21 considered heated

22 Edge Insulation for:

23 Heated Slabs R - 6.3

24 Unheated Slabs R - 4.2

25 Windows Multiglazing

26 Entrance Doors R - 2.5

27 Sliding Glass Doors (if applicable) Multiglazing

28 Ducts in Unheated Areas R - 3

29 CHAPTER 3

30 APPLICATION OF STANDARDS: ESTABLISHMENT

1 OF COMMITTEE AND PENALTIES

2 Section 301. Modification of standards; criteria.

3 (a) Recommendations to General Assembly.--The department,
4 with the approval of the Building Energy Conservation Committee
5 established pursuant to section 304, after one or more public
6 hearings, may recommend to the General Assembly modifications to
7 the energy conservation standards contained in Chapter 2 hereof.
8 Any recommended modification to the energy conservation
9 standards shall meet the following criteria:

10 (1) It shall be consistent with the latest and most
11 effective technology.

12 (2) It shall not be in conflict with existing safeguards
13 for public health and safety.

14 (3) It shall be economically feasible as determined by
15 life-cycle-cost procedures.

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

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

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

26 (b) Federal performance standards.--In the event that the
27 Federal Government promulgates performance standards that are
28 inconsistent or more stringent than the standards detailed in
29 this act, and the Federal Government mandates the states to
30 enact legislation to comply with its standards, then the

1 department, with the approval of the Building Energy
2 Conservation Committee, may modify the energy conservation
3 standards contained in this bill without the approval of the
4 General Assembly, in order to comply with the Federal standards.

5 Section 302. Application of energy conservation standards.

6 The energy conservation standards contained herein or as
7 promulgated by the department with the approval of the Building
8 Energy Conservation Committee shall apply to new buildings or to
9 renovations on which actual construction and/or design has not
10 commenced prior to their effective dates. No department, board,
11 agency or commission other than as provided herein, shall
12 promulgate or adopt any rules or regulations which deal with any
13 subject matter contained in this act.

14 Section 303. Energy conservation manual for buildings.

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

30 (b) Review of manual.--The manual shall be reviewed by the

1 department and the Building Energy Conservation Committee at
2 least annually and shall be updated as significant new energy
3 conservation information becomes available.

4 (c) Educational programs.--The department IN CONJUNCTION <—
5 WITH THE GOVERNOR'S ENERGY COUNCIL shall provide seminars and
6 other educational programs throughout the Commonwealth to
7 provide information and counseling to builders, architects,
8 other licensed design professionals, local building officials
9 and other persons affected by this act on the standards
10 contained herein or as promulgated by the department.

11 Section 304. Building Energy Conservation Committee.

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

- 19 (1) Two representatives of State Government.
- 20 (2) One representative of local government.
- 21 (3) One licensed professional engineer.
- 22 (4) One building contractor.
- 23 (5) One licensed design professional.
- 24 (6) One representative of the energy supply industry.

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

29 (7) FOUR REPRESENTATIVES OF SUCH OTHER AGENCIES AND <—
30 ORGANIZATIONS OR INDIVIDUALS AS THE GOVERNOR MAY FIND ARE

1 NECESSARY AND PROPER TO CARRY OUT THE PURPOSES OF THE
2 COMMITTEE.

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

6 (1) Be responsible for the regular exchange of
7 information and plans regarding building energy conservation,
8 for the development, review and approval of proposed and
9 existing standards, guidelines, regulations, and manuals.

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

11 (c) Expenses.--The members of the committee shall not
12 receive any compensation for their services but shall be
13 reimbursed for their actual and necessary expenses incurred in
14 the performance of their duties. Provided, however, when acting
15 on matters concerning variances members of the Board on
16 Variances shall receive \$50 per day plus their actual and
17 necessary expenses.

18 Section 305. Certification.

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

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

27 ALL SUCH INFORMATION REQUIRED IN THIS PROVISION TO BE SUBMITTED
28 TO THE DEPARTMENT MUST BE ACCOMPANIED BY A FILING FEE OF \$10.

29 THE FILING FEE MAY BE SUBJECT TO CHANGE BY THE BUILDING ENERGY

30 CONSERVATION COMMITTEE UPON THE RECOMMENDATION OF THE DEPARTMENT

<—

1 TO THE BUILDING ENERGY CONSERVATION COMMITTEE, PROVIDED,
2 HOWEVER, THAT ADVANCE NOTICE OF SUCH CHANGE HAS APPEARED IN THE
3 PENNSYLVANIA BULLETIN. If the building is subject to the
4 provisions of the act of April 27, 1927 (P.L.465, No.299),
5 referred to as the Fire and Panic Act, the certification
6 required hereunder shall be submitted on a form with the
7 application for plan approval under the said Fire and Panic Act.

8 (c) Inspection.--Each licensed design professional retained
9 by the owner or his designee, where any of such are retained
10 during the construction of a building, shall make periodic
11 inspections of the building progression to insure compliance
12 with this act, except as provided in subsection (e).

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

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

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

24 (a) Notice.--Prior to construction of any building
25 classified as Use Group R-3, the builder shall notify the
26 department by certified mail of his intent to begin
27 construction. Such notice shall INCLUDE A FILING FEE OF \$5 AND <—
28 contain the name of the owner of the building and its location.
29 THE FILING FEE MAY BE SUBJECT TO CHANGE BY THE BUILDING ENERGY <—
30 CONSERVATION COMMITTEE, UPON THE RECOMMENDATION OF THE

1 DEPARTMENT TO THE BUILDING ENERGY CONSERVATION COMMITTEE,
2 PROVIDED, HOWEVER, THAT ADVANCE NOTICE OF SUCH CHANGE HAS
3 APPEARED IN THE PENNSYLVANIA BULLETIN.

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

10 I, (Builder) , hereby warrant to (Owner) that the
11 premises known as (Description)
12 shall be constructed in accordance with the provisions of the
13 Act of _____, 19__, No.____, known as the "Building Energy
14 Conservation Act." This law provides building ~~and equipment~~ <—
15 standards to make your home energy efficient and also provides
16 you with legal remedies if your home is not built according to
17 the State standards. If you would like the State to do an
18 energy audit of your home to determine if it conforms to State
19 standards, you may call the Pennsylvania Department of
20 Community Affairs at (Telephone) , and they will perform an
21 inspection of your home for a fee of ~~\$25~~ \$35. <—

22 Indicate if alternate building system or equipment design is
23 being employed.

24 (c) If the builder is also the owner of the building at the
25 time of construction, he shall provide the warranty required by
26 subsection (b) at the time of its initial sale to a new owner.
27 Such warranty shall be in substantially the same form as
28 provided in subsection (b).

29 (d) Failure to provide notice.--The Department of Community
30 Affairs, after hearing, may assess a civil penalty payable to

1 the Commonwealth of Pennsylvania not to exceed \$100 upon any
2 builder who fails to give the notice required by subsection (a).
3 In determining the amount of the civil penalty, the Department
4 of Community Affairs shall consider the willfulness of the
5 violation and the cost incurred by the department in discovering
6 the violation.

7 (e) Failure to provide warranty.--Whenever a builder fails
8 to provide the warranty required by subsections (b) or (c) such
9 required warranty shall constitute an implied warranty and the
10 owner's right to proceed under section 315(a) shall not be
11 affected. If it is established by a preponderance of the
12 evidence that the builder's failure to provide the warranty was
13 willful, then damages in twice the amount provided in section
14 315 may be awarded.

15 Section 307. Variances.

16 (a) Requests.--Any request for a variance from the energy
17 conservation standards contained herein shall be made to the
18 Board on Variances of the Building Energy Conservation Committee
19 and a decision on such request shall be made within 30 days of
20 its filing.

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

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

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

27 Section 308. Building permits.

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

1 Section 309. Permits for use or occupancy.

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

7 Provided, however, That if a municipality elects to administer
8 the provisions of this act under Chapter 5 such notice and
9 certification shall be submitted to the municipality which shall
10 forward a copy of the notice to the department. No permit for
11 use or occupancy shall be granted until such submission has been
12 made. No building official of the Commonwealth or any of its
13 political subdivisions shall issue a permit until he has
14 received proof of such compliance. Where the certificate has
15 been submitted to the department, presentation to the building
16 official of the mailing receipt together with a copy of the
17 certification required by section 305 shall establish proof of
18 compliance for the purposes of this section. Upon such
19 presentation any building official of the Commonwealth or any of
20 its political subdivisions shall issue a permit for use or
21 occupancy, provided all other criteria for such a permit have
22 been satisfied and said building official shall notify the
23 department that he has issued the same.

24 Section 310. Failure to submit certification.

25 Whenever the owner of any building, other than a building
26 classified as Use Group R-3, shall fail to give the notice and
27 submit the necessary certification in accordance with section
28 309 and shall nevertheless proceed with the use or occupancy of
29 the building, the department or the municipality shall serve
30 notice on the said owner that he is in violation of this act and

1 order him to comply therewith.

2 Section 311. Inspections.

3 The department may perform a nondestructive inspection within
4 two years of the date of completion of construction of any
5 building constructed after the effective date of this act to
6 determine compliance with the provisions of this act, provided
7 at least 30 days notice has been given to the owner. The <—

8 ~~department may also perform such inspections at the request of~~
9 ~~the owner of any building subject to this act for a fee of \$25.~~

10 THE DEPARTMENT MAY ALSO CAUSE SUCH AN INSPECTION TO BE PERFORMED <—
11 AT THE REQUEST OF THE OWNER OF ANY BUILDING SUBJECT TO THIS ACT.
12 THE FEE FOR AN INSPECTION UNDER SECTION 306(B) FOR R-3 BUILDINGS
13 IS \$35. THE INSPECTION FEE FOR ALL OTHER BUILDINGS SUBJECT TO
14 THIS ACT SHALL BE DETERMINED BY THE DEPARTMENT AT SUCH AN AMOUNT
15 AS TO COVER THE NECESSARY COSTS OF THE INSPECTION.

16 Section 312. Appeals.

17 Review of any decisions rendered under the provisions of this
18 act shall be brought in the court of common pleas of the county
19 wherein the building is situated. Such review shall be limited
20 to determining whether any such decision was arbitrary and
21 capricious.

22 Section 313. Penalties.

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

26 (b) Violations of act.--Any person who shall willfully or
27 negligently violate any of the provisions of this act, or the
28 rules and regulations or the orders for the enforcement of the
29 said provisions or rules and regulations issued by duly
30 authorized officers of the department or who shall hinder, delay

1 or interfere with any officer charged with the enforcement of
2 this act in the performance of his duty, shall, upon conviction
3 thereof, be punished by a fine of not more than \$300 and costs.
4 In the event of violation of more than one provision of this
5 act, the violation of each provision shall be deemed a separate
6 and distinct offense for the purposes of this section.

7 (c) Institution of proceedings.--Prosecutions for violations
8 of this act or the rules and regulations of the department may
9 be instituted by the Secretary of Labor and Industry or under
10 his directions by an authorized representative of the
11 department. Upon conviction after a hearing in a court of
12 competent jurisdiction, the sentences provided in this act shall
13 be imposed and shall be final unless an appeal be taken in the
14 manner prescribed by law.

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

18 (e) False certification.--Any architect or other licensed
19 design professional who willfully provides a false certification
20 for any building subject to the provisions of this act shall be
21 subject to the suspension or revocation of his license by the
22 State Board of Examiners of Architects or other applicable State
23 licensing board.

24 Section 314. Enforcement.

25 (a) Applicability.--The provisions of this act shall apply
26 to every building enumerated in this act, including buildings
27 owned in whole or in part by the Commonwealth or any political
28 subdivision thereof, and with the exception of those buildings
29 classified as Use Group R-3, shall be enforced by the Secretary
30 of Labor and Industry, by and through his authorized

1 representatives.

2 (b) Powers of officers.--For the purpose of enforcing the
3 provisions of this act, all the officers charged with its
4 enforcement shall have the power to enter any of the buildings
5 enumerated in this act, and no person shall hinder or delay, or
6 interfere with any of the said officers in the performance of
7 his duty, nor refuse any pertinent information necessary to
8 determine whether the provisions of this act and the rules and
9 regulations herein provided for, are or will be complied with.

10 Section 315. Civil action.

11 (a) Use Group R-3.--The owner of any building subject to the
12 requirements of section 306 who is aggrieved as the result of
13 such building not being properly designed or constructed in
14 conformance with this act shall have a right of action for
15 breach of warranty. Remedies may include specific performance or
16 an award of damages in an amount not less than \$300. Attorney's
17 fees shall be recoverable in any action in which the owner
18 prevails. Any such award shall further provide for payment of
19 the actual costs in excess of \$25 incurred by the department if
20 it inspected the building for the owner and the owner shall
21 remit such amount to the department.

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

29 (c) Limitation of action.--

30 (1) No action brought under subsection (a) shall be

1 maintained unless brought within three years from the date of
2 the warranty.

3 (2) No action brought under subsection (b) shall be
4 maintained unless brought within three years from the date of
5 completion of the building.

6 CHAPTER 4

7 ADOPTION OF FUTURE STANDARDS

8 Section 401. Adoption and promulgation of standards.

9 The department, with the approval of the Building Energy
10 Conservation Committee, shall, after one or more public
11 hearings, adopt and publish energy conservation standards for
12 all buildings covered by this act in accordance with the
13 provisions of the act of July 31, 1968 (P.L.769, No.240), known
14 as the "Commonwealth Documents Law." The purpose of such
15 standards is to reduce wasteful or uneconomic consumption of
16 energy by balancing the cost of energy procurement against the
17 cost of energy-conserving building practices. The energy
18 conservation standards shall meet the following criteria:

19 (1) They shall be consistent with the latest and most
20 effective technology.

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

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

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

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

30 (6) Consideration shall be given to building and energy

standards promulgated by national and other State governmental agencies, private organizations and any other available energy data, as well as the total energy allocation approach.

CHAPTER 5

LOCAL ELECTION

Section 501. Election; Use Group R-3.

Any municipality of this Commonwealth may elect to administer the provisions of this act relating to Use Group R-3 buildings, as defined in section 103, except for units subject to the act of May 11, 1972 (P.L.286, No.70), known as the "Industrialized Housing Act" and the act of May 11, 1972 (P.L.281, No.69), known as the "Uniform Standards Code for Mobile Homes." Such election shall be made by resolution of the governing body of such municipality which shall be in substantially the following form:

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

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

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

1 The city of _____ hereby elects to administer the
2 provisions of the act of _____, 19__, No. _____ known as
3 the "Building Energy Conservation Act."

4 Section 503. Powers of municipalities.

5 Any municipality electing to administer the provisions of
6 this act under section 501 or 502 shall exercise the same powers
7 conferred upon the department by this act, including the power
8 to institute proceedings for violations of the act, with the
9 exception of those powers specified in sections 301, 303 and in
10 Chapter 4. In addition, any such municipality may exercise such
11 other administrative and enforcement procedures as it shall deem
12 necessary to effect the purposes of this act including, but not
13 limited to, prior plan approval, building permit requirements,
14 use or occupancy permit requirements and inspections during the
15 course of construction.

16 Section 504. Variances.

17 Any municipality electing to administer the provisions of
18 this act under section 501 or 502 shall establish a Board on
19 Variances to make determinations on request for variance from
20 the energy conservation standards contained herein or as
21 promulgated by the department with the approval of the Building
22 Energy Conservation Committee, and is authorized exclusive
23 jurisdiction to grant such variances, section 307(a)
24 notwithstanding. A variance shall only be granted if the
25 criteria of section 307(b) have been satisfied.

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

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

1 CHAPTER 6

2 REPORT TO GENERAL ASSEMBLY

3 Section 601. Report to General Assembly.

4 Thirty months after the effective date of this act, the
5 department shall report to the General Assembly the results of
6 the inspections it has performed under this act together with a
7 report on public compliance with this act. THE REPORT SHALL ALSO <—
8 DOCUMENT THE AMOUNT OF MONEY THAT THE DEPARTMENT RECEIVED
9 PURSUANT TO THIS ACT AND THE DISPENSATION OF THESE FUNDS. IN
10 ADDITION, WITHIN 24 MONTHS OF THE EFFECTIVE DATE OF THIS ACT,
11 THE DEPARTMENT SHALL OBTAIN FROM EVERY MUNICIPALITY ELECTING TO
12 ENFORCE THE PROVISIONS OF THIS ACT A REPORT CONTAINING
13 INFORMATION SIMILAR TO THAT REQUIRED OF THE DEPARTMENT UNDER
14 THIS SECTION. THE DEPARTMENT SHALL INCLUDE SUCH FINDINGS IN ITS
15 REPORT TO THE GENERAL ASSEMBLY.

16 Section 602. Effective date.

17 This act shall take effect as follows:

18 (1) Chapter 2 shall take effect July 1, 1980 and shall
19 remain in full force and effect for a period of one year
20 after which time the provisions of Chapter 2 shall have no
21 legal effect.

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

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

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