

Stricken language would be deleted from and underlined language would be added to the law as it existed prior to this session of the General Assembly.

1 State of Arkansas  
2 85th General Assembly  
3 Regular Session, 2005

# A Bill

HOUSE BILL 2591

4  
5 By: Representative M. Martin  
6  
7

## For An Act To Be Entitled

8  
9 AN ACT TO PROMOTE ENERGY EFFICIENT AND HEALTHY  
10 CONSTRUCTION STANDARDS FOR PUBLIC BUILDINGS; AND  
11 FOR OTHER PURPOSES.  
12

## Subtitle

13  
14 AN ACT TO PROMOTE ENERGY EFFICIENT AND  
15 HEALTHY CONSTRUCTION STANDARDS FOR  
16 PUBLIC BUILDINGS.  
17  
18

19 BE IT ENACTED BY THE GENERAL ASSEMBLY OF THE STATE OF ARKANSAS:  
20

21 SECTION 1. Arkansas Code Title 22, Chapter 2, Subchapter 1, is amended  
22 to add an additional section to read as follows:

23 22-2-122. Energy efficient construction standards.

24 (a) The minimum design and construction standards and criteria  
25 established under § 22-2-108 by the Arkansas Building Authority Council and  
26 applied under this chapter shall include the following:

27 (1)(A) The building envelope shall be designed and constructed  
28 with a continuous air barrier to control air leakage into or out of the  
29 conditioned space.

30 (B) An air barrier shall also be provided for interior  
31 partitions between conditioned space and space designed to maintain  
32 temperature or humidity levels which differ from those in the conditioned  
33 space by more than fifty percent (50%) of the difference between the  
34 conditioned space and design-ambient conditions.

35 (C) The air barrier shall:

36 (i) Be continuous, with all joints made air-tight;



1 (ii) Have an air permeability not to exceed 0.004  
 2 cfm/ft2 under a pressure differential of 0.3 in. water. (1.57 psf.) (equal to  
 3 0.02L/s/m2 @ 75 Pa.);

4 (iii)(a) Be capable of withstanding positive and  
 5 negative combined design wind, fan, and stack pressures on the envelope  
 6 without damage or displacement and shall transfer the load to the structure.

7 (b) The air barrier shall not displace  
 8 adjacent materials under full load;

9 (iv) Shall be durable or maintainable; and

10 (v)(a) Shall be joined in an air-tight and flexible  
 11 manner to the air barrier material of adjacent systems, allowing for the  
 12 relative movement of systems due to thermal and moisture variations and  
 13 creep.

14 (b) Connection shall be made between:

15 (1) Foundation and walls;

16 (2) Walls and windows or doors;

17 (3) Different wall systems;

18 (4) Walls and roof;

19 (5) Walls and roof over unconditioned  
 20 space;

21 (6) Walls, floor, and roof across  
 22 construction, control, and expansion joints; and

23 (7) Walls, floors, and roof to utility,  
 24 pipe, and duct penetrations;

25 (2) All penetrations of the air barrier and paths of air  
 26 infiltration or exfiltration shall be made air-tight;

27 (3)(A) Air leakage for fenestration and doors shall be  
 28 determined in accordance with NFRC 400 or ASTM E 283 @ 1.57 psf (75 Pa.)

29 (B) Air leakage shall be:

30 (i) Determined by an independent laboratory  
 31 accredited by a nationally recognized accreditation organization; and

32 (ii) Certified by the manufacturer.

33 (C)(i) Except as provided in subdivision (a)(3)(C)(ii) of  
 34 this section, air leakage shall not exceed:

35 (a) 1.0 cfm/ft2 for glazed swinging entrance  
 36 doors and for revolving doors; and

1 (b) 0.4 cfm/ft2 for all other products under a  
2 pressure differential of 0.3 inches of water (1.57 psf.).

3 (ii) The following shall be excepted from the  
4 requirements of subdivision (a)(3)(C)(i) of this section:

5 (a) Field-fabricated fenestration and doors  
6 that are weather-stripped;

7 (b) For garage doors, air leakage determined  
8 by test at standard test conditions in accordance with NAGDM 105 shall be an  
9 acceptable alternate for compliance with air leakage requirements.

10 (c)(1) Except as provided in subdivision  
11 (a)(3)(C)(ii)(c)(2) of this section, doors and access openings leading to  
12 shafts, chutes, stairwells, and elevator lobbies shall:

13 (A) Meet the requirements of  
14 the Arkansas Energy Code; or

15 (B) Be equipped with weather  
16 seals.

17 (2) However, weather seals on elevator  
18 lobby doors are not required when a smoke control system is installed in  
19 accordance with 780 CMR 921.7;

20 (4) Cargo doors and loading dock doors shall be equipped with  
21 weather seals to restrict infiltration when vehicles are parked in the  
22 doorway;

23 (5)(A)(i) Except as provided in subdivision (a)(5)(B) of this  
24 section, a door that separates conditioned space from the exterior shall be  
25 protected with an enclosed vestibule, with all doors opening into and out of  
26 the vestibule equipped with self-closing devices.

27 (ii) Vestibules shall be designed so that in passing  
28 through the vestibule it is not necessary for the interior and exterior doors  
29 to open at the same time.

30 (iii) Interior and exterior doors shall have a  
31 minimum distance between them of not less than seven (7) feet (2.1 m) when in  
32 the closed position.

33 (B) However, the following shall be excepted from the  
34 requirements of subdivision (a)(5)(A) of this section:

35 (i) Doors not intended to be used as a building  
36 entrance door, including, but not limited to, doors for mechanical or

1 electrical equipment rooms;

2 (ii) Doors opening directly from a dwelling unit;

3 (iii) Doors that open directly from a space less  
 4 than three thousand (3,000) square feet in area;

5 (iv) Revolving doors or doors adjacent to revolving  
 6 doors; or

7 (v) Doors used primarily to facilitate vehicular  
 8 movement or material handling and adjacent personnel doors;

9 (6) Air-tight operable dampers shall be installed where the air  
 10 barrier is penetrated by:

11 (A) Fixed, open louvers, including, but not limited to,  
 12 elevator shafts and machine rooms;

13 (B) Mechanical system components which allow infiltration  
 14 or exfiltration of air when the systems are inactive, including, but not  
 15 limited to, atrium smoke exhaust systems and make-up air louvers;

16 (C)(i) Outside air intakes, exhaust outlets, relief  
 17 outlets, stair shaft, elevator shaft smoke relief openings, and other similar  
 18 systems.

19 (ii)(a) The systems described in subdivision  
 20 (a)(6)(C)(i) of this section shall have a leakage no greater than 3cfm/ft<sup>2</sup> at  
 21 1.0 in w.g. when tested in accordance with AMCA Standard 500.

22 (b) The systems shall be set in the closed  
 23 position, and shall automatically open upon:

24 (1) The activation of any fire alarm  
 25 initiating device of the building's fire alarm system; or

26 (2) The interruption of power to the  
 27 damper;

28 (7) When installed in the building envelope, recessed lighting  
 29 fixtures shall meet one (1) of the following requirements:

30 (A) Type IC rated, manufactured with no penetrations  
 31 between the inside of the recessed fixture and ceiling cavity and sealed or  
 32 gasketed to prevent air leakage into the unconditioned space; or

33 (B)(i) Type IC rated, in accordance with ASTM E 283 no  
 34 more than 2.0 cfm air movement from the conditioned space to the ceiling  
 35 cavity.

36 (ii) The lighting fixture shall be tested at 75 Pa

1 or 1.57 lbs./ft.2 pressure differences and shall be labeled;

2 (8)(A) All gaps and cavities between rough framing and door and  
 3 window heads, jambs, and sills shall be:

4 (i) Made air-tight;

5 (ii) Filled with insulation; and

6 (iii) Covered with a vapor barrier meeting the criteria  
 7 for vapor barriers;

8 (9) Nothing in this section shall be construed to remove  
 9 insulation requirement as delineated in the Arkansas Building Code;

10 (10)(A) Insulation materials shall be installed in accordance  
 11 with manufacturer's recommendations as to achieve and maintain rated R-value  
 12 of insulation.

13 (B) Where continuous wall insulation is required in the  
 14 Arkansas Building Code in multi-story buildings, the insulation must be  
 15 continuous across floor structures.

16 (C) Open-blown or poured loose-fill insulation shall not  
 17 be used in attic roof spaces with eave vents when the slope of the ceiling is  
 18 more than three inches (3") in twelve inches (12") unless special provisions  
 19 are made to prevent settling and maintain an air space for ventilation above  
 20 the insulation.

21 (D) Baffling of the vent openings shall be provided to  
 22 deflect the incoming air above the surface of the insulation;

23 (11)(A) Insulation shall be installed in a permanent manner in  
 24 substantial contact with adjacent surfaces in a manner which will prevent  
 25 convection of air around the insulation.

26 (B) Flexible batt insulation installed in floor cavities  
 27 shall be supported in a permanent manner by supports no greater than twenty-  
 28 four inches (24 in.) on center.

29 (C) Batt insulation with an integral vapor barrier shall  
 30 be attached to the winter-warm sides or faces of wall studs, sole plates, top  
 31 plates, lintels, and headers at intervals of eight inches (8") on center.

32 (D) When batt or blanket insulation is of a friction fit  
 33 design and a poly vapor barrier is employed, the vapor barrier shall be  
 34 affixed to the interior face of the wall studs, sole plates, top plates,  
 35 lintels, and the winter-warm side of headers in accordance with the  
 36 insulation manufacturer's recommendations;

1           (12)(A) All equipment, including, but not limited to, lighting  
 2 fixtures, heating equipment, ventilating equipment, air-conditioning  
 3 equipment, wall heaters, ducts, and plenums, shall not be recessed in such a  
 4 manner to affect the insulation thickness unless:

5                   (i) The total combined area affected, including  
 6 necessary clearances, is less than one percent (1%) of the opaque area of the  
 7 assembly;

8                   (ii) The entire roof, wall, or floor is covered with  
 9 insulation to the full depth required; or

10                   (iii) The effects of reduced insulation are included  
 11 in calculations using an area-weighted average method and compressed  
 12 insulation values from the ASHRAE 1997 Handbook of Fundamentals.

13                   (B) In all cases, air leakage through the recessed  
 14 equipment to the conditioned space shall be prevented;

15           (13) The roof shall be insulated in a location other than  
 16 directly on a suspended ceiling with removable ceiling panels; and

17                   (14)(A)(i) Except as provided in subdivision (a)(14)(B) of this  
 18 section, exterior insulation shall be covered with a protective material to  
 19 prevent damage from sunlight, moisture, landscaping operations, equipment  
 20 maintenance, and wind.

21                   (ii) In attics and mechanical rooms, a way to access  
 22 equipment that prevents damaging or compressing the insulation shall be  
 23 provided.

24                   (iii) Foundation vents shall not interfere with the  
 25 insulation.

26                   (iv) Insulation materials in ground contact shall  
 27 have water absorption no greater than three-tenths of one percent (0.3%) when  
 28 tested in accordance with ASTM C272.

29                   (B) However, insulation materials that have a water  
 30 drainage system included shall be exempted from the provisions of subdivision  
 31 (a)(14)(A) of this section.

32           (b) The building envelope shall be deemed to comply with the standard  
 33 if:

34                   (A) The proposed building satisfies the provisions of the  
 35 Arkansas Energy Code; and

36                   (B)(i) The envelope performance factor of the proposed

1 building is less than or equal to the envelope performance factor of the  
2 budget building.

3 (ii) The envelope performance factor considers only  
4 the building envelope components.

5 (iii) Schedules of operation, lighting power,  
6 equipment power, occupant density, and mechanical systems shall be the same  
7 for both the proposed building and the budget building.

8 (iv) The envelope performance factor shall be  
9 calculated using computer programs accepted by the Federal Board of Building  
10 Regulations and Standards.

11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35  
36