

Ind 50, 51, 61, 63

STATE OF WISCONSIN)
)
DEPARTMENT OF INDUSTRY,) SS
LABOR AND HUMAN RELATIONS)

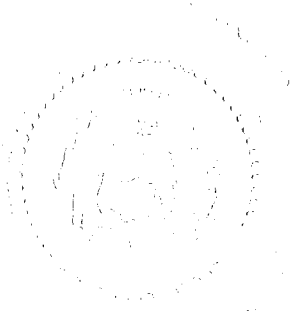
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TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, Zel S. Rice II, Secretary of the Department of Industry, Labor and Human Relations, and custodian of the official records of said department, do hereby certify that the attached rules to Wisconsin Administrative Code Chapters Ind 50-64--Building and Heating, Ventilating and Air Conditioning Code, were adopted by this department on March 3, 1978.

I further certify that said copy has been compared by me with the original on file in this department and that the same is a true copy thereof and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the department at the Capitol, in the City of Madison, this 3 day of March, A.D., 1978.



Zel S. Rice II
for _____
Zel S. Rice II, Secretary

ORDER OF

DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS

Pursuant to authority vested in the Department of Industry, Labor and Human Relations by sections 101.01 to 101.211, Wis. Stats., the Department of Industry, Labor and Human Relations hereby repeals, amends, creates and adopts rules of Wisconsin Administrative Code Chapters Ind 50-64--Building and Heating, Ventilating and Air Conditioning Code.

The rules attached hereto shall become effective July 1, 1978, as provided in section 227.026, Wis. Stats.

Subsection Ind 50.12 (3) (f) Note #5 is created to read:

Note #5: Also see section Ind 63.01 for energy conservation requirements pertaining to the submittal of architectural, mechanical and electrical plans and specifications.

Subsection Ind 50.12 (4) (b) is amended to read:

(b) Thermal performance data. Thermal performance calculations shall be submitted in accordance with the requirements of section Ind 63.12.

Subsections Ind 51.02 (16) and (17) are repealed.

Chapter Ind 61--Community-Based Residential Facilities (CBRF), is created to read:

CHAPTER IND 61

COMMUNITY-BASED RESIDENTIAL FACILITIES (CBRF)

Ind 61.001 SCOPE.

- (1) CBRF serving 9-20. The requirements of this chapter shall apply to all community-based residential facilities, herein afterwards referred to as CBRF, providing care, treatment and services to 9 through 20 unrelated adults, to be located in existing buildings.

leg Note: Refer to the rules of the department of health and social services for requirements pertaining to CBRF to be located in existing buildings providing care, treatment and services to 3 through 8 unrelated adults.

- (a) Except for section Ind 51.01, the requirements of chapters Ind 51, Ind 52, Ind 53 and Ind 64 do not apply to existing conditions unless specifically referred to in this chapter. Additions, alterations and remodelings shall conform to the current applicable portions of these sections.

- (2) Newly constructed CBRF. All newly constructed CBRF providing care, treatment and services to 3 or more unrelated adults shall be within the scope of chapter Ind 57.

leg Note #1: This code is not intended to limit the power of cities, villages and towns to make, or enforce, additional or more stringent regulations, provided the regulations do not conflict with this code, or with any other rule of the department or law.

Note #2: CBRF intending to utilize federal funds may have to comply with other requirements in addition to those outlined herein, such as NFPA 101--Life Safety Code, ANSI standards for barrier-free design, and miscellaneous federal regulations.

Ind 61.01 DEFINITIONS.

- (1) Ambulatory. Ambulatory means able to walk without assistance or difficulty.
- (2) Capacity. The capacity for CBRF is that maximum number of residents as allowed by rules of the department of health and social services.
- (3) Classes of CBRF. (a) Class A. Class A CBRF serve residents all of whom are ambulatory, capable of following directions and taking independent action for self-preservation under emergency conditions.
- (b) Class B. Class B CBRF serve residents one or more of whom are semi-ambulatory or nonambulatory, but all of whom are mentally and physically capable of taking independent action for self-preservation under emergency conditions.
- (c) Class C. Class C CBRF serve residents one or more of whom are not physically or mentally capable of taking independent action for self-preservation under emergency conditions.

- (4) Community-based residential facility. A community-based residential facility is any place where 3 or more unrelated adults reside in which care, treatment or services above the level of room and board but not including nursing care are provided to persons residing in the facility as a primary function of the facility. "Community-based residential facility" does not include a nursing home, except that the department of health and social services may designate a category or categories of intermediate care facilities which serve fewer than 20 residents and which otherwise meet the definition of this subsection to be licensed and regulated as community-based residential facilities. The reception and care or treatment of a person in a convent or facility owned or operated exclusively by and for members of a religious order shall not constitute the premises to be a "community-based residential facility."
- (5) Department. Department means the department of industry, labor and human relations, unless otherwise designated.
- (6) Electrical service. Electrical service means the conductors and equipment for delivering electrical energy from the supply system to and including the wiring system of the CBRF.
- (7) Existing building. An existing building, for the purposes of this code (chapter Ind 61), is one which was constructed and occupied, or ready for occupancy, at least 24 months prior to the date of first application for licensure as a CBRF. Existing buildings which do not satisfy these requirements shall be considered new construction as specified in section Ind 61.001 (2).
- (7a) Existing building, currently licensed. A facility licensed or certified within 24 months prior to the effective date of these rules (chapter Ind 61) is considered an existing building for the purposes of this code (chapter Ind 61).
- (8) Floors and stories. (a) Attic floor. Attic floor(s) containing habitable rooms and that are occupied shall be counted as a story.

(b) Basement floor. A basement is a floor level partially or totally below grade and not having any required exit(s) for any floor level above it.

(c) First floor. The first floor is the lowest floor having one or more required exits for that floor and for any floor(s) above or below it.
- (9) Habitable floor space. Habitable floor space is the area of habitable rooms with a ceiling height more than 5 feet 6 inches, used for the purposes of sleeping, living, cooking or dining.
- (10) Habitable room. A habitable room is any room used for the purposes of sleeping, living, cooking or dining, excluding such places as closets, bath or toilet rooms, pantries, stairways, corridors, service rooms, laundries, utility rooms, cellars or basements unless finished for occupancy, storage spaces, foyers, unfinished attics, administrative offices, garages and similar spaces.
- (11) Nonambulatory. Nonambulatory means not able to walk at all.
- (12) Outside windows. Outside windows are windows which open directly to the outdoors or to unheated enclosed spaces, such as exterior balconies or sun porches.

- (13) Primary function. Primary function is the basic or essential care, treatment or service provided to residents of the facility.
- (14) Semiambulatory. Semiambulatory means able to walk with difficulty or able to walk only with assistance of aids such as crutches, canes or walkers.

Ind 61.10 BUILDING CONSTRUCTION AND SITE.

- (1) Condition of building and site. All buildings utilized as CBRF shall be structurally sound without visible evidence of structural failure or deterioration.
 - (a) All courts, yards, or other areas on the premises shall be properly drained or graded to divert water away from the building.
 - (b) Fences, other minor construction, driveways, parking areas and similar paved areas shall be properly maintained in a safe condition.
 - (c) Walks shall provide convenient all-weather access to buildings and shall be properly maintained in a safe condition.
 - (d) Exterior surfaces of buildings and structures not inherently resistant to deterioration shall be treated with a protective coating of paint or other suitable preservative which will provide adequate resistance to weathering. Any exterior surface treated with paint or other preservative shall be maintained so as to prevent chipping, cracking or other deterioration of the exterior surface or the surface treatment. All paint or other preservative shall be applied in a workmanlike fashion. Lead-based paint shall not be used.
 - (e) Every interior floor, wall and ceiling shall be kept in proper repair. Interior walls and ceiling in spaces subjected to moisture shall be provided with water-resistant, hard surfaces and shall have no serious surface irregularities or cracking.

Note: The use of "indoor-outdoor" carpeting, or other such carpeting approved for application on floors subjected to moisture, is acceptable.
 - (f) Every foundation wall, exterior wall, floor and roof shall be watertight, rodentproof and reasonably weathertight and shall be kept in proper repair.
 - (g) Every exterior window, exterior door and exterior basement hatchway shall be watertight, rodentproof and reasonably weathertight and kept in proper repair. Every interior door shall be kept in proper repair. All installed door and window hardware shall be maintained in proper working condition.
 - (h) Every inside and outside stair, every porch and every appurtenance to the building shall be so maintained as to be safe in use.
 - (i) Abrasive strips or nonskid surfaces to reduce or prevent slipping shall be used when slippery surfaces present a hazard.

(2) Garages and accessory buildings. Garages and accessory buildings located on the same property with a CBRF shall comply with the following:

(a) Attached garages.

1. Common walls between a CBRF and an attached garage shall be protected with not less than one layer of 5/8-inch type X gypsum board with taped joints, or equivalent, on the garage side and with not less than one layer of 1/2-inch gypsum board with taped joints, or equivalent, on the CBRF side. Such walls shall provide a complete separation.
2. Floor-ceiling assemblies between garages and CBRF shall be protected with not less than one layer of 5/8-inch type X gypsum board on the garage side of the ceiling or roof framing.
3. Openings between attached garages and CBRF shall be protected by self-closing, 1-3/4-inch solid wood core doors or with self-closing doors of equivalent fire-resistive rating.

Note: A spring of sufficient strength to close the door and activate the door latch will be acceptable for meeting the self-closing portion of this requirement.

4. The level of the garage floor shall be at least 1-1/2 inches below any adjoining floor level.

a. Exception. Basement garage floors need not comply with this rule if pitched towards the garage door or provided with a floor drain.

(b) Detached garages.

1. Detached garages shall be located a minimum of 3 feet 0 inches from the CBRF.
2. Detached garages less than 3 feet 0 inches from the CBRF shall comply with the requirements for attached garages as found in section Ind 61.10 (2) (a).

(c) Detached accessory buildings.

1. Detached accessory buildings in which fueled, motorized vehicles and appliances (snowmobiles, power lawn mowers, motorcycles, snow blowers and similar equipment) are stored shall be located a minimum of 3 feet 0 inches from the CBRF.
2. Detached accessory buildings in which fueled, motorized vehicles and appliances are stored, less than 3 feet 0 inches from the CBRF, shall comply with the requirements for attached garages as found in section Ind 61.10 (2) (a).

Note: See sections Ind 54.50, 55.05 and 60.10 for separation requirements from other occupancies.

- (3) Smoke separation. (a) A door shall be provided at any interior stair between the basement(s) and the first floor. This door shall be provided with a latch and an automatic closing device and normally be kept closed.
- (b) Any shaft (clothes chute, dumbwaiter, laundry chute and similar shafts) leading to the basement(s) shall be provided with a door on each level above the lowest floor. The door(s) shall be provided with a latch and an automatic closing device and shall normally be kept closed.

Note: A spring of sufficient strength to close the door and activate the door latch will be acceptable for meeting the automatic closing device portion of these requirements.

Ind 61.11 MINIMUM CLASS OF CONSTRUCTION. Class of construction for CBRF shall comply with Table 61-I.

TABLE 61-I
MINIMUM CLASS OF CONSTRUCTION (Ind 51.03)

Number of Stories	Minimum Type of Construction for Class of CBRF		
	Class A	Class B	Class C
1	8	8	3(c), (d)
2	8	8(b), (c)	2(e)
3	5(a)	2(d)	2
4	5	2	2
5 to 8	2	2	2
Over 8	1	1	1

- (a) Type 8 construction will be permitted if the basement is protected by a complete automatic sprinkler system or if all ceilings, including basements, are completely protected with 1/2-inch gypsum wallboard, or equivalent, and all stairway exits are interior stairs, one of which is completely enclosed, with at least one-hour rated construction, to a first-story outside exit.
- (b) Type 8 construction will be permitted if building is protected by a complete automatic sprinkler system or if only ambulatory residents are permitted above the first story and in the basement.
- (c) Types 5 and 6 construction will be permitted if of totally noncombustible construction.
- (d) Type 8 construction will be permitted if building is protected by a complete automatic sprinkler system and provided only ambulatory residents are permitted above the first story and in the basement.
- (e) Types 3, 5 and 6 construction will be permitted if of totally noncombustible construction and the building is protected by a complete automatic sprinkler system.

Note: The following brief descriptions of construction types are included as guidelines only. Designers and builders should refer to Ind 51.03 and Table 51.03-A for detailed descriptions and requirements for the various construction types.

Type 8 - Wood framed walls, floors, roofs and partitions, including wood framed exterior walls faced with masonry veneers (typical residential construction).

Type 6 - Metal framed walls and roofs with steel structural framing; sheet metal covered exterior walls and roof (typical pre-engineered metal building).

Type 5 - Exterior walls entirely of masonry (concrete block, brick, concrete, etc.); floor and roof systems of wood, steel or concrete; interior partitions are wood framed. (Buildings with wood floor and roof systems or with wood framed partitions are not considered noncombustible.)

Type 3 - Totally noncombustible building with floors, roof and structural framing protected with hourly rated fireproofing material.

Types 2 and 1 - The same as Type 3 but with higher degrees for fireproofing.

Ind 61.12 EXITING AND DOORS.

(1) Number, type and access to exits.

(a) All CBRF, and each floor level having habitable rooms, shall have at least 2 means of exit which provide unobstructed travel to the outside at street or grade level.

1. Exception. A single exit will be permitted from basements or attics utilized for recreational, nonsleeping purposes only.

2. A wooden balcony or a flat roof, within 10 feet of grade, or an exterior wood stair may serve as one of the required exits from the second floor of a 2-story CBRF, except Class B and C CBRF with non-ambulatory residents on the second floor.

(b) Exits shall be standard exits to grade (doors), stairways as specified in section Ind 61.12 (3), or fire escapes. (See exception under section Ind 61.12 (1) (a) 1.)

(c) No exit passageway shall be through a private room or bath/toilet room(s).

(d) Exit passageways and stairways to the outside exits shall be at least 3 feet wide, except existing secondary exit passageways, stairways and doors may be reduced to 2 feet 4 inches in width.

(e) The required width shall be maintained clear and unobstructed at all times.

(2) Doors. (a) Outside exit doors and doors in exit access corridors shall be at least 2 feet 8 inches in width, except as provided in section Ind 61.12 (1) (d) for existing secondary exit doors.

(b) All doors shall have such fastenings or hardware that they can be opened from the inside and one hand without the use of a key.

(c) Closet doors shall be openable from the inside.

(d) All interior doors equipped with locks shall be designed to permit opening of the locked doors from either side in case of emergency.

(3) Stairs: general.

- (a) Treads and risers. All required interior and exterior exit stairways shall have a minimum tread width (exclusive of nosing or projection) of 9 inches and a maximum riser height of 8 inches.
 - 1. Exception. Stairs serving basements and attics without habitable rooms may have a minimum tread width (exclusive of nosing or projection) of 8 inches and a maximum riser height of 9 inches.
- (b) Handrails. One or more handrails, at least 29 inches above the nose of the tread, shall be provided on all stairways. Handrails shall be provided on the open sides of stairways and platforms.
- (c) Winder stairs.
 - 1. Winders in stairways shall be provided with handrails on both sides, at least 29 inches above the nose of the tread.
 - 2. Winders in stairways used as required exits shall have treads of at least 7 inches in width at a point one foot from the narrow end of the tread.
- (d) Spiral stairs. Spiral stairs shall be prohibited for use as required exit stairs.

(4) Stairs: enclosure.

- (a) Three-story CBRF shall have at least one stairway exit, enclosed with at least one-hour rated construction, leading to a first-story outside exit.
- (b) CBRF, 4 or more stories in height, shall have all stairways enclosed with at least one-hour rated construction. All required exit stairways shall have such enclosures leading to a first-story outside exit.

Note: Buildings of Type 1 and 2 construction require 2-hour rated stair enclosures in accordance with Ind 51.03 (1) and (2).

- (5) Illumination. All exit passageways and stairways shall be capable of being illuminated at all times.

Ind 61.13 SIZES OF ROOMS.

(1) Habitable floor space.

- (a) Each sleeping room for ambulatory residents shall contain not less than 60 square feet of habitable floor space; and each sleeping room for semi-ambulatory or nonambulatory residents shall contain not less than 90 square feet of habitable floor space.
- (b) In addition to the area required in section Ind 61.13 (1) (a), the CBRF shall provide habitable floor space, other than sleeping rooms, of not less than 60 square feet of area for each ambulatory resident and of not less than 90 square feet in area for each semiambulatory or nonambulatory resident.
- (c) All habitable rooms shall have an average ceiling height of not less than 7 feet 0 inches.

Ind 61.14 SMOKE DETECTORS.

- (1) Number required. All CBRF shall be provided with approved smoke detectors throughout. At least one detector shall be provided at each floor level in the vicinity of the stairway.

Note: The department accepts smoke detectors listed by independent testing laboratories, such as Underwriters' Laboratories, Inc.

- (2) Installation and testing. Smoke detectors shall be installed and tested in accordance with the manufacturer's recommendations and tested not less than once per month.

Note: The department recommends locating, installing and maintaining smoke detectors in accordance with the National Fire Protection Association standards NFPA No. 72-E and No. 74.

Ind 61.15 WINDOWS.

- (1) Minimum size. Every living and sleeping room shall have outside window(s) with a total sash area of at least 10% of the floor area of the room. The openable area of such windows shall be equal to not less than 5% of the floor area of the room served.
- (2) Minimum opening for sleeping rooms. At least one window in each sleeping room shall be openable from the inside without the use of tools and shall provide a clear opening of not less than 16 inches in the least dimension.
- (3) Storm windows and screens. All windows serving habitable rooms shall be provided with storm windows in winter and openable windows serving habitable rooms shall be provided with insect-proof screens in summer.

(a) Exception. Insulated windows need not be provided with storm windows.

Ind 61.16 PRIVACY. Privacy for sleeping rooms shall be provided by full-height partitions and rigid, swing-type room doors.

Ind 61.17 SANITARY FACILITIES.

- (1) Bath and toilet rooms. (a) Every CBRF shall have at least 2 separate bath and toilet rooms, or combination bath/toilet rooms, which are accessible from public (non-sleeping) areas.

(b) Door locks shall be provided to ensure privacy.
- (2) Number of fixtures. Every CBRF shall have at least 2 water closets (toilets), 2 lavatories (sinks) connected to hot and cold water and 2 bathing facilities (bathtubs or showers) connected to hot and cold water; however, the ratio of occupants to water closets and lavatories shall be not less than one water closet and one lavatory per 8 occupants.
- (3) Location of bath and toilet rooms. Bath and toilet rooms shall be so distributed that the maximum vertical travel distance to them from sleeping rooms is not more than one floor level.

Ind 61.18 REQUIREMENTS FOR BARRIER-FREE ENVIRONMENT.

- (1) Scope. The requirements of this section are intended to ensure that all CBRF licensed for mentally retarded or physically disabled residents shall be accessible and usable by such residents.
- (2) Definitions. (a) Primary floor. The primary floor is any floor level at least 50% of which is used for habitable floor space.
- (3) Requirements for accessibility. All CBRF shall comply with the requirements found in Table 61.18.

TABLE 61.18

Barrier-Free Requirements	Class of CBRF		
	A	B	C
Ramped or grade-level entrance from street, alley or ancillary parking to a primary floor.	Not required	Not required ¹	Required
Stepped entrance to a primary floor within 2'-0" of grade	Not required	Required ¹	Not permitted
All passageway doors on primary floor minimum 2'-8" wide.	Not required	Not required ^{2,3}	Required
All passageway doors on primary floor minimum 2'-6" wide.	Not required	Required ²	Not permitted ³
Elevators, ramps or lifts to other floor levels.	Not required	Required ⁴	Required ⁴
Interior access to all common-use areas	Not required	Required	Required
Interior access to at least one bathing and toilet facility	Not required	Required	Required
Grab bars for toilet and bath fixtures.	Not required	Required ⁵	Required ⁵
Compliance with Ind 52.04 (8)	Not required	Required ⁶	Required ⁶

¹Ramped or grade-level entrance required if residents are not capable of negotiating stairs.

²Two-foot 8-inch doors required if residents in wheelchairs are allowed.

³Two-foot 6-inch sleeping room doors permitted for rooms used by ambulatory residents.

⁴May be omitted if use of other floors is restricted to ambulatory or semiambulatory residents physically capable of negotiating stairs or if there are no one-of-a-kind, common-use areas located on those floors.

⁵Not required in rooms used only by ambulatory residents.

⁶Not required in rooms used only by ambulatory residents or residents not confined to a wheelchair.

- (4) Ramp requirements. Ramps, as required in Table 61.18, shall comply with the following:
- (a) Ramp slope. Ramps shall have a slope of not more than one foot of rise in 12 feet of run. An interior ramp with a slope of one foot of rise in 8 feet will be permitted. The ramps shall have a slip-resistant surface and shall have no side slope.
 - (b) Ramp width. Ramps shall be at least 4 feet wide, of which not more than 4 inches on each side may be occupied by a handrail.
 - (c) Ramp handrails. Ramps shall have a handrail on each side which shall be at least 2 feet 6 inches high (preferable height, 2 feet 8 inches). Handrails on unenclosed ramps shall include an intermediate parallel rail at mid height.
 - (d) Ramp clearance. Where ramps are provided to doorways, the ramp on each side of the doorway shall be level for a distance of 5 feet from the door.
 - (e) Ramp platforms. Ramps having a 1:8 slope shall have a 5-foot long level platform at 16-foot intervals. Ramps having a 1:12 slope shall have a level platform at 30-foot intervals. Both types of ramps shall have a level platform at least 5 feet long where they turn and at least 5 feet of level clearance at the bottom of the ramps.

Ind 61.19 KITCHEN AND COOKING AREAS. All CBRF shall have a kitchen or an area set aside for cooking and dining accessible from public (non-sleeping) areas. Kitchens or cooking areas shall be provided with one sink, in good working condition, connected to hot and cold water; utility service connections; and space for a stove and a refrigerator.

Ind 61.20 FIRE EXTINGUISHERS. A portable, dry chemical fire extinguisher, with a minimum 2A, 20 B-C rating, shall be provided on each occupied floor level. On the floor containing the kitchen, the fire extinguisher shall be located in the kitchen or cooking area.

Ind 61.21 MAINTENANCE AND CLEANLINESS. All CBRF, and all parts thereof, shall be maintained and kept in good repair, shall be kept clean, and shall also be kept free from any accumulation of dirt, trash or debris.

Ind 61.22 BUILDING SERVICE EQUIPMENT. Each gas line providing service piping connections for appliances shall have a separate shut-off (stop cock) for each appliance served.

Ind 61.23 POTABLE WATER AND PLUMBING. Where a public water supply is available it shall be used to provide a continuing and adequate supply of potable water. When a public water system is not available the well, or wells, shall be approved by the department of natural resources. Water samples from an approved well shall be tested at the state laboratory of hygiene, or a state approved laboratory, at least annually. The water supply shall be bacteriologically safe prior to use.

Note: Refer to Wis. Adm. Code chapter H-62--Design, Construction, Installation, Supervision and Inspection of Plumbing, for requirements pertaining to the plumbing system.

Ind 61.24 HEATING AND VENTILATING.

(1) Heating. (a) General. All occupied rooms in CBRF shall be provided with a permanently connected heating system.

(b) Operation and maintenance.

1. The heating system shall be maintained in a clean and safe condition. A minimum temperature, as specified in the licensing rules, shall be maintained in all CBRF.
2. Replacement equipment shall be of an approved type.

Note: The department recognizes listings of independent testing agencies such as American Gas Association (AGA) and Underwriters' Laboratories (UL).

(c) Chimneys and breeching.

1. Chimneys (masonry or factory-built) and breeching shall be kept in good repair and shall be of the type required for the type of connected heating equipment.
2. Every chimney shall be provided with an access panel to permit inspection and servicing.

(d) Clearance to combustibles and combustible construction.

1. Heating equipment shall be installed in accordance with the manufacturer's recommendations to provide minimum clearance. In the absence of manufacturer's recommendations, a minimum clearance of 36 inches shall be provided.
 - a. Exception: Existing installations providing less than 36 inches of clearance will be accepted if there is no physical evidence of problem (charring, etc.).
2. New combustible construction, such as partitions, shelving or storage lockers, shall not encroach upon the required clearance.

(e) Safety features.

1. All oil- and gas-fired equipment shall be provided with automatic controls that will shut off the fuel supply to the burner in case of ignition failure.
2. Steam boilers shall be provided with pressure gage(s) and safety valve(s).
3. Hot-water boilers shall be provided with pressure-temperature relief valve(s).
4. Fixed electric heating equipment shall be of a type equipped with safety and temperature controls.

5. Gas-fired fireplaces shall be provided with automatic controls that will shut off the fuel supply in case of flame-out and shall be properly vented.
6. Solid-fuel fireplaces shall be equipped with safety screen(s).
- (f) Space heaters. Portable and fixed fuel-fired, and portable electric space heaters are prohibited in CBRF.
 1. Exception. Fixed, gas-fired pre-vented wall heaters may be used.
- (2) Ventilation: general requirements.
 - (a) Kitchen or cooking areas. Kitchens or cooking areas shall be provided with at least one openable outside window, an exhaust fan vented to the outside, or a means of filtered mechanical air circulation.
 - (b) Bath and toilet rooms. Bath and toilet rooms shall have at least one openable outside window at least 2 square feet in area, or a mechanical or gravity exhaust vented to the outside, or an approved ductless exhaust fan.

Ind 61.25 ELECTRICAL.

- (1) General. (a) Every CBRF shall be supplied with electrical service, wiring, outlets and fixtures which shall be properly installed and shall be maintained in good and safe working condition.
 - (b) The electrical service shall be of the proper size to handle the load connected to it.

Note: As a guide to the owner/operator for determining the adequacy of existing electrical service, the habitable rooms should have electrical service capable of providing at least 3 watts per square foot of total floor area in addition to that provided for air conditioning, ranges, fixed electric heaters and motor-driven equipment 1/8 hp or over.
- (2) Protection. The branch circuits shall be protected by S-type or equivalent safety type, tamper-proof fuses, or circuit breakers not to exceed the ampacity of the smallest wire size in the circuit.
- (3) Minimum number of fixtures and outlets. The minimum number of fixtures and outlets shall be as follows:
 - (a) Every lavatory, bathroom, kitchen or kitchenette, dining room, laundry room, and furnace room shall contain at least one approved ceiling or wall-type electric light fixture equipped with sufficient lamps or tubes to provide no less than 5 footcandles at floor level at center of room. Where more than one fixture is used or required, they shall be equally spaced as far as practicable. (A switched outlet may be substituted for ceiling or wall fixture in lavatories, bathrooms and dining rooms.)
 - (b) Electric duplex outlet receptacles shall be provided as follows. (To determine room area, measurements shall be taken at room perimeter and shall include doors and door-alcoves.)
 1. Living room, one per 75 sq. ft. of floor area or major fraction (minimum of 2).

2. Dining room, one per 75 sq. ft. of floor area or major fraction (minimum of 2).
3. Kitchen, one per 8 lineal feet or fraction of countertop and preparation area, including island-type areas. In addition, kitchens used for dining purposes, one per 75 sq. ft. of floor area or major fraction. Separate outlets shall be provided for refrigerators.

Note: Preparation areas include countertops and all other similar areas at counter height.

4. Bedroom, one per 75 sq. ft. of floor area or major fraction (minimum of 2).
 5. Laundry, one.
 6. Toilet rooms, one (may be part of wall fixture if 72 inches or less from floor).
 7. Other habitable rooms, minimum of 2.
- (4) Outlet and switch locations; exposed wiring. (a) Outlets. Convenience outlets shall be located to discourage use of extension cords.
- (b) Switches. Switches or equivalent devices for turning on one light in each room or passageway shall be located so as to conveniently control the lighting in the area.
- (c) Exposed wiring. All temporary wiring and exposed, abandoned wiring shall be removed.

Ind 61.26 RETROACTIVITY. The rules of this chapter shall apply to buildings with occupancies under the scope of this chapter now in existence and to buildings hereafter converted to use as a CBRF.

Chapter Ind 63 is created to read:

CHAPTER IND 63

ENERGY CONSERVATION

PART I--SCOPE AND PURPOSE

Ind 63.001 SCOPE.

- (1) General. The provisions of this chapter shall apply to all public buildings and places of employment. These provisions are not retroactive unless specifically stated in the administrative rule. Where different sections of this chapter specify different requirements, the most restrictive requirement shall govern.
- (2) Exempt buildings and structures. Buildings and structures, or portions thereof, which are neither heated nor cooled are exempt from the requirements of this chapter.
- (3) Applications to existing buildings. (a) Additions to existing buildings or structures may be made without making the entire building or structure comply, but the addition shall comply with the requirements of this chapter.

(b) Any change of occupancy or use of any existing building or structure within the scope of this chapter which would require an increase in energy consumption shall not be permitted unless such building or structure is made to comply with the requirements of this chapter.

Note: It is the intent of the department to have every new building or addition and every change of occupancy meet the energy conservation requirements of this chapter. It is not the intent to prevent a previously built building from installing air conditioning, nor to cause equipment with several years of remaining service to be discarded due to not being able to meet the required efficiencies of this chapter. However, occupancy changes such as building a warehouse and later remodeling it into an office space will not be permitted unless all the requirements of this chapter are met.

Ind 63.002 PURPOSE. The purpose of this chapter is to provide design requirements which will promote efficient utilization of energy in public buildings and places of employment.

- (1) General. The intent of this chapter is to provide minimum requirements for construction and equipment to conserve energy.
- (2) Flexibility in use. It is intended that this chapter be flexible and permit the use of innovative approaches and techniques to achieve effective utilization of energy.
- (3) Conflict with other rules. This chapter is not intended to conflict with any safety or health requirements. Where such conflict occurs, the safety and health requirements shall govern.

Ind 63.01 PLANS AND SPECIFICATIONS.

- (1) Architectural and mechanical. Architectural and mechanical plans and specifications shall be submitted in accordance with the requirements outlined in section Ind 50.12 and shall contain details and data to demonstrate compliance with the requirements of this chapter. Such information shall include, but is not limited to: design criteria, exterior envelope component materials, resistance values of insulating materials, and the thermal performance value of the building envelope. Size and type of equipment, system and equipment controls and equipment efficiencies shall be submitted with the mechanical plans.

Note: The resistance values for insulating materials are expressed in Fahrenheit degrees per Btu/(hour)(square foot).

- (2) Electrical. At least 3 sets of electrical plans and specifications shall be submitted for review and approval for all buildings in excess of 25,000 cubic feet. Plans and specifications shall contain information to demonstrate compliance with the requirements of this chapter. Such information shall include, but is not limited to: lighting wattages and calculations, switching, metering, and controls.

Note: The review of electrical and lighting plans will be for the sole purpose of determining compliance with the applicable energy conservation rules of this chapter. The review will not include determination of compliance with the Wisconsin State Electrical Code, Volume 2.

PART II--DEFINITIONS

Ind 63.02 DEFINITIONS.

- (1) Coefficient of performance (COP). Coefficient of performance is the ratio of net energy output to the net energy input, expressed in consistent units and under standard rating conditions.
- (2) Cooling load. Cooling load is the rate at which heat must be removed from the space to maintain a selected indoor air temperature.
- (3) Energy. Energy is the capacity for doing work; taking a number of forms which may be transformed from one into another, such as thermal (heat), mechanical (work), electrical, and chemical; in customary units, measured in kilowatt hours (kwh) or British thermal units (Btu).
- (4) Energy efficiency ratio (EER). The energy efficiency ratio is the ratio of net cooling capacity in Btu per hour to total rate of electric input in watts under designated operating conditions.
- (5) Nondepletable energy sources. Nondepletable energy sources are sources of energy (excluding minerals) derived from incoming solar radiation, including photosynthetic processes; from phenomena resulting therefrom, including wind, waves and tides, lake or pond thermal differences; and energy derived from the internal heat of the earth, including nocturnal thermal exchanges.

- (6) Recovered energy. Recovered energy is the energy utilized which would otherwise be wasted from an energy utilization system.
- (7) Service water heating. Service water heating is the supply of hot water for domestic or commercial purposes other than comfort heating and processing.
- (8) Thermal performance. Thermal performance is the design heat loss, excluding infiltration and ventilation, through above-grade gross walls and roofs facing heated interiors.
- (9) Zone. A zone is a space or group of spaces within a building with heating or cooling requirements sufficiently similar so that comfort conditions can be maintained throughout by a single controlling device. As a minimum, each floor of a building shall be considered as a separate zone.

PART III--DESIGN CONDITIONS

Ind 63.10 SCOPE. The criteria of this part establish the minimum requirements for the thermal design of the exterior envelope of buildings and establish criteria for the design of the heating, ventilating and air-conditioning systems and their parts.

Ind 63.11 GENERAL REQUIREMENTS.

- (1) Building use. When a building houses more than one use, each portion of the building shall conform to the requirements for the use housed therein.
- (2) Moisture condensation. The design of buildings for energy conservation shall not create conditions of accelerated deterioration from moisture condensation.
- (3) Infiltration. All exterior windows and doors shall be designed to limit air leakage into or from the building.
- (4) Design temperature differentials. (a) Winter. The winter design temperature differential shall be determined using the indoor design temperature as given in Table 1 of chapter Ind 64 and the outdoor design temperature as given in the following Figure 1.
 (b) Summer. The summer design temperature differential shall be determined using an indoor design temperature of 78° F and the outdoor design temperature as given in the following Figure 1.

Ind 63.12 DESIGN CRITERIA.

- (1) Thermal performance. The thermal performance values for the exterior envelope of the building shall be as specified in Table 63.12-A.

TABLE 63.12-A
THERMAL PERFORMANCE VALUES

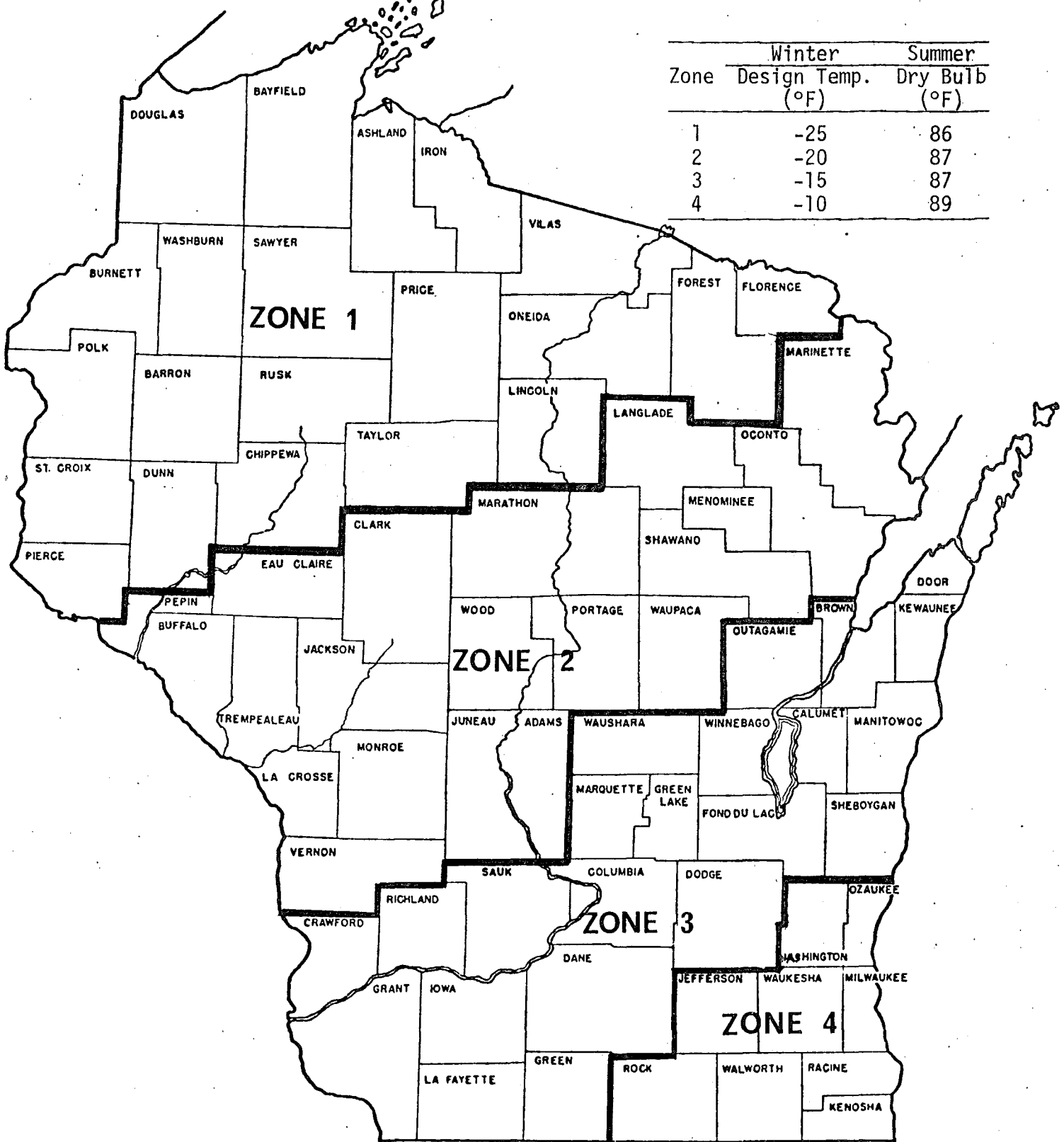
Number of Stories	Thermal Performance Values [†]
1-2	12
3-4	13
5-7	16
8-12	18
13-20	20
Over 20	21

[†] Expressed in Btu/hour/square foot of above-grade exterior envelope.

FIGURE 1

OUTDOOR DESIGN CONDITIONS

Zone	Winter	Summer
	Design Temp. (°F)	Dry Bulb (°F)
1	-25	86
2	-20	87
3	-15	87
4	-10	89



- (a) Exception. The thermal performance value may be increased provided the U-value for floors over unheated spaces is decreased so that the total heat gain or loss for the entire building envelope and floor area does not exceed the total heat gain or loss resulting from conformance to the values specified in (1) and (2) of this section.
- (2) Floors over unconditioned spaces. The overall heat transmission coefficient (U-value) for floors of heated or mechanically cooled spaces over unconditioned spaces shall not exceed 0.08 Btu/H-Ft²-F°.
- (3) Slab-on-grade perimeter insulation. For slab-on-grade floors, the thermal resistance of the insulation around the perimeter of the floor shall not be less than the values shown in Table 63.12-B. The insulation shall extend downward from the top of the slab for a minimum distance of 24 inches, or downward to the bottom of the slab then horizontally beneath the slab for a minimum total distance of 24 inches.

TABLE 63.12-B
PERIMETER INSULATION REQUIREMENTS

Slab-on-grade Perimeter Insulation	Zone 1	Zone 2	Zone 3	Zone 4
$R = \frac{^{\circ}\text{F Ft}^2 \text{ Hour}}{\text{Btu}}$	6.7	6.2	5.9	5.2

PART IV--HEATING AND AIR-CONDITIONING EQUIPMENT AND SYSTEMS

Ind 63.20 EQUIPMENT EFFICIENCIES.

- (1) Electrical equipment. All electrical heating and cooling equipment shall comply with the minimum coefficients of performance (COP) or energy efficiency ratios (EER) established in this section.
 - (a) Air-conditioning equipment. Air-conditioning equipment shall have minimum EER and COP values as indicated in Table 63.20-A.
 - (b) Heat pumps. Heat pumps in the cooling mode shall have EER and COP values as indicated in Table 63.20-A based on the standard rating conditions specified in Table 63.20-B. Heat pumps in the heating mode shall be rated at the standard rating conditions and have a minimum COP as shown in Table 63.20-C.

TABLE 63.20-A
MINIMUM EER AND COP FOR ELECTRIC HEATING, VENTILATING AND
AIR-CONDITIONING SYSTEM EQUIPMENT, COOLING MODE[†]

Standard Rating Capacity	EER	COP
Under 65,000 Btu/hour (19,050 watts)	6.1	1.8
65,000 Btu/hour (19,050 watts) and over	6.8	2.0

[†] Adapted from Table 6.2, ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

TABLE 63.20-B
HVAC SYSTEM EQUIPMENT STANDARD RATING CONDITIONS[†]--COOLING^{††}

Item	Temperatures			
	Dry Bulb	Wet Bulb	Inlet	Outlet
Air Entering Equipment °F(°C)	80(26.7)	67(19.4)	--	--
Condenser Ambient (Air Cooled) °F(°C)	95(35.0)	75(23.9)	--	--
Condenser Water (Water Cooled) °F(°C)	--	--	85(29.4)	95(35.0)

[†]Standard ratings are at sea level.

^{††}Reproduced with permission from ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

TABLE 63.20-C
MINIMUM COP FOR HEAT PUMPS, HEATING MODE[†]

Source and Outdoor Temperature F	Minimum COP
Air Source (return air 70° F) 47 db/43 wb	2.2
Air Source (return air 70° F) 17 db/15 wb	1.2
Water Source 60° Entering	2.2

[†]Adapted from Tables 6.7 and 6.8, ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

- (2) Combustion heating equipment. All gas-fired and oil-fired heating equipment shall have a minimum combustion efficiency of 75% at maximum rated output.
- (3) Heat-operated equipment, cooling mode. Heat-operated cooling equipment shall have a COP cooling not less than the values shown in Table 63.20-D when tested at standard rating conditions. These requirements apply to, but are not limited to, absorption equipment, engine-driven equipment and turbine-driven equipment.
- (4) Electrically operated systems components, cooling mode. Components of heating, ventilating and air-conditioning systems having entirely electric energy input shall have a COP cooling not less than the values shown in Table 63.20-E when tested at the standard conditions shown in Table 63.20-F.

TABLE 63.20-D
MINIMUM COP FOR HEATING, VENTILATING AND AIR-CONDITIONING SYSTEMS, HEAT-OPERATED COOLING EQUIPMENT[†]

Heat Source	Minimum COP
Direct-fired (gas, oil)	0.40
Indirect-fired (steam, hot water)	0.65

[†]Adapted from Table 6.6, ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

TABLE 63.20-E
 MINIMUM COP FOR ELECTRICALLY DRIVEN HEATING, VENTILATING
 AND AIR-CONDITIONING SYSTEM COMPONENTS[†]

Component	Condensing Means	Air		Water		Evaporative	
		EER	COP	EER	COP	EER	COP
Self-Contained Water Chillers	Centrifugal	7.5	2.2	12.9	3.8	--	--
	Positive Displacement	7.2	2.1	10.9	3.2	--	--
Condenserless Water Chillers	Positive Displacement	8.9	2.6	10.9	3.2	--	--
Compressor and Condenser Units 65,000 Btu/hour (19,050 watts and over)	Positive Displacement	7.8	2.3	11.3	3.3	11.3	3.3

[†] Adapted from Tables 6.4 and 6.5, ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

TABLE 63.20-F
 APPLIED HVAC SYSTEM COMPONENTS
 STANDARD RATING CONDITIONS[†]--COOLING^{††}

Item		Centrifugal or Self-Contained Reciprocating Water Chiller	Condenserless Reciprocating Water Chiller
Leaving Chilled Water Temp	°F	44	44
Entering Chilled Water Temp	°F	54	54
Leaving Condenser Water Temp	°F	95	--
Entering Condenser Water Temp	°F	85	--
Fouling Factor, Water			
Nonferrous Tubes	*	0.0005	0.0005
Steel Tubes	*	0.0010	0.0010
Fouling Factor, Refrigerant	*	0.0000	0.0000
Condenser Ambient (Air or Evap. Cooled)	°F	95 db/75 wb	--
Compressor Saturated			
Water Cooled (or Evap. Cooled)	°F	--	105
Discharge Temp	°F	--	120

[†] Standard ratings are at sea level.

*H-Ft²-F°/Btu.

^{††} Adapted from Table 6.3, ASHRAE Standard 90-75, Energy Conservation in New Building Design (The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc., 345 East 47th St., New York, NY 10017).

Ind 63.21 CONTROLS. Heating and cooling equipment shall be provided with controls which will automatically reset the supply air temperatures to maintain the lowest energy use and still satisfy the occupancy requirements.

(1) Zone heating and cooling. Simultaneous heating and cooling by reheating or recooling supply air or by concurrent operation of independent heating and cooling systems serving a common zone shall be in accordance with the following:

(a) Reheat systems: Single zone reheat systems shall be controlled to sequence reheat and cooling. Multiple reheat systems serving multiple zones, other than those employing variable air volume for temperature control, shall be provided with controls that will automatically reset the system cold air supply to the highest temperature level that will satisfy the zone requiring the coolest air.

(b) Dual duct and multi-zone systems. These systems shall be provided with control(s) that will automatically reset:

1. The cold deck air supply to the highest temperature that will satisfy the zone requiring the coolest air, and
2. The hot deck air supply to the lowest temperature that will satisfy the zone requiring the warmest air.

(c) Recooling systems: Systems in which heated air is recoolled, directly or indirectly, to maintain space temperature shall be provided with controls that will automatically reset the temperature to which the supply air is heated to the lowest level that will satisfy the zone requiring the warmest air.

1. Exception. A multiple zone heating, ventilating and air-conditioning system that employs reheating or recooling for control of not more than 5,000 cfm or 20% of the total supply air of the system, whichever is less, shall be exempt from the supply air temperature reset requirements of Ind 63.21 (1) (a), (b) and (c).

(d) Heat pump supplemental heater. The heat pump shall be installed with a control to prevent supplemental heater operation when the heating load can be met by the heat pump alone. A two-stage thermostat, which controls the supplementary heat on its second state, will be accepted as meeting this requirement. The cut-on temperature for the compression heating shall be higher than the cut-on temperature for the supplementary heat, and the cut-off temperature for the compression heating shall be higher than the cut-off temperature for the supplementary heat.

Note: Supplemental heater operation is permitted during transient periods, such as start-ups, following room thermostat set point advance, and during defrost.

(2) Concurrent operation. Concurrent operation of independent heating and cooling systems serving common spaces and requiring the use of new energy for heating or cooling shall be minimized by one or both of the following:

- (a) Providing sequential temperature control of both heating and cooling capacity in each zone;

(b) Limiting the heating energy input through automatic reset control of the heating medium temperature (or energy input rate) to only that necessary to offset heat loss due to transmission and infiltration and, where applicable, to heat the ventilation air supply to the space.

(3) Thermostat. At least one thermostat for regulation of space temperature shall be provided for:

(a) Each separate heating, ventilating and air-conditioning system;

(b) Each separate zone. A readily accessible manual or automatic means shall be provided to partially restrict or shut off the input of the heating, cooling, or both, to each floor.

Note: On multi-story buildings where the perimeter system offsets only the transmission losses of the exterior wall, an entire side of the uniform exposure may be zoned separately.

Ind 63.22 INSULATION.

(1) Air-handling duct insulation. All ducts, plenums and similar enclosures installed in or on buildings shall be insulated as follows:

(a) All duct systems, or portions thereof, shall be insulated to provide a thermal resistance, excluding film resistances, of:

$$R = \frac{\Delta T}{15} \quad \text{H-Ft}^2\text{-F}^\circ/\text{Btu}$$

Where ΔT = the design temperature differential between the air in the duct, plenum or similar enclosure and the surrounding air in $^\circ\text{F}$.

(b) Exceptions. Duct insulation is not required:

1. Where ΔT is 25°F or less;

2. When the heat gain or loss of the ducts, plenums and similar enclosures, without insulation, will not increase the energy consumption of the building.

(2) Pipe insulation. All piping within buildings shall be thermally insulated to achieve at least the equivalent insulation values of Table 63.22.

TABLE 63.22

MINIMUM PIPE INSULATION

(The thicknesses specified in this table are based on insulation having thermal resistance in the range of 4.0 H-Ft²- F°/Btu to 4.6 H-Ft²-F°/Btu per inch of thickness)

Piping System Types	Fluid Temperature Range °F	Insulation Thickness in Inches for Pipe Sizes					
		Run-Outs† up to 2"	1" and less	1-1/4 to 2"	2-1/2 to 4"	5" to 6"	8" and larger
Heating Systems:							
Steam and Hot Water							
High Pressure/Temp	306-450	1-1/2	1-1/2	2	2-1/2	3-1/2	3-1/2
Med. Pressure/Temp	251-305	1-1/2	1-1/2	2	2-1/2	3	3
Low Pressure/Temp	201-250	1	1	1-1/2	1-1/2	2	2
Low Temperature	120-200	1/2	3/4	1	1	1	1-1/2
Steam Condensate (for feed water)	Any	1	1	1	1-1/2	1-1/2	2
Cooling Systems:							
Chilled Water	40-55	3/4	3/4	1	1	1-1/2	1-1/2
Refrigerant	Below 40	1	1	1-1/2	1-1/2	1-1/2	1-1/2

† Run-outs not exceeding 12 feet in length to individual terminal units.

Ind 63.23 COOLING WITH OUTDOOR AIR IN CONJUNCTION WITH MECHANICAL COOLING SYSTEMS (ECONOMIZER CYCLE)

- (1) Outdoor air. Each fan system shall be designed to use up to and including 100% of the fan system capacity for cooling with outdoor air automatically whenever its use will result in lower usage of new energy. Activation of economizer cycle shall be controlled by sensing outdoor air enthalpy and dry bulb temperature jointly, or outdoor air dry bulb temperature alone.
 - (a) Exception. Cooling with outdoor air is not required when the fan system capacity is less than 2,000 cfm or 60,000 Btu per hour total cooling capacity.

Note: It is the intent of this section to require cooling with outdoor air for nominal 5-ton units or larger.

Ind 63.24 MAINTENANCE. Equipment shall be labeled to clearly state the required regular maintenance. Such label may be limited to identifying, by title or publication number, the operation and maintenance manual for that particular model and type of product. Maintenance instructions shall be furnished for any equipment which requires preventive maintenance for efficient operation.

PART V--WATER HEATING

Ind 63.30 PURPOSE. The purpose of this part is to provide energy conservation criteria for the design and equipment selection for service water heating.

Ind 63.31 WATER HEATERS, STORAGE TANKS AND BOILERS.

- (1) Combination service water heating/space heating boilers. Space heating boilers shall not be used for service water heating from May 1 to September 30 unless the service water heating load equals or exceeds 30% of the net boiler load.

- (2) Temperature controls. Service water heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use.

Note: The department recognizes the values specified in Table 1, ASHRAE Handbook and Product Directory, Systems Volume, Chapter 37.

- (3) Shut down. A separate means shall be provided to permit turning off the energy supplied to service water heating systems.

Ind 63.32 CONSERVATION OF HOT WATER.

- (1) Showers. Showers used for other than safety reasons shall be equipped with flow control devices to limit total flow to a maximum of 3 gallons per minute per shower head.
- (2) Lavatories. Lavatories (washbasins) in toilet rooms of nonresidential public buildings shall be equipped with outlet devices which limit the flow of hot water to a maximum of 0.5 gallons per minute for mixing devices and a maximum of 1.0 gallon per minute for nonmixing devices.

Note: The requirements of (1) and (2) of this section will be enforced by the department of health and social services as they relate to plumbing fixtures and materials. The same rules will be included in Wis. Adm. Code chapter H 62--Design, Construction, Installation, Supervision and Inspection of Plumbing.

- (3) Heated swimming pools. Heated swimming pools shall comply with the following:
 - (a) Heated swimming pools shall be equipped with controls to limit heating water temperatures to no more than 80° F, except for pools used for therapeutic purposes.
 - (b) Unenclosed heated pools shall be controlled so that the electric resistance or fossil-fueled pool water heating systems are inoperative from September 15 to May 15.

Note: The requirements of (3) of this section will be enforced by the department of health and social services. The same rules will be included in Wis. Adm. Code chapter H 72--Users of Indoor or Outdoor Artificial Swimming Pools.

Ind 63.33 INSULATION.

- (1) Storage tanks. Heat loss from unfired hot water storage tanks shall be limited to 15 Btu per hour per square foot of external tank surface area. The design ambient temperature shall be no higher than 65° F.
- (2) Piping. Piping heat loss for recirculation systems shall be limited to a maximum of 25 Btu per hour per square foot of external pipe surface for above-ground piping and a maximum of 35 Btu per hour per square foot of external pipe surface for underground piping. Maximum heat loss shall be determined at a ΔT equal to the maximum water temperature minus a design ambient temperature no higher than 65° F.

PART VI--ILLUMINATION

Ind 63.40 DISTRIBUTION.

- (1) Power factor. Utilization equipment rated greater than 1,000 watts and lighting equipment greater than 30 watts, with an inductive reactance load component, shall have a power factor of not less than 85% under rated load conditions. Utilization equipment with a power factor of less than 85% shall be corrected to at least 90% under rated load conditions.
- (2) Lighting switching. Switching shall be provided for each lighting circuit, or for portions of each circuit, so that the partial lighting required for custodial or for effective complementary use with natural lighting may be operated selectively.

Note: For purposes of energy conservation, the department recommends separate metering for energy usage for each tenant in any multi-tenant residential building. Where local codes and regulatory agencies permit, tenants should be financially responsible for the energy they use. This recommendation does not include college dormitories, hotels and other transient facilities.

Ind 63.61 LIGHTING. The building lighting shall be designed in accordance with one of the following methods:

- (1) Lighting power budget. For purposes of establishing a budget, the power allowed for the lighting load shall not exceed the value for the space use as indicated in Table 63.41. Each area of space shall be multiplied by its maximum lighting load respective value as indicated in Table 63.41. This calculation shall be made for all areas of the building and these values shall be summed to yield a total allowable lighting wattage. This total allowable lighting wattage is the maximum amount of lighting power for the building, which may then be allocated as desired provided this value is not exceeded.
 - (a) Exception. The following areas or classes of lighting equipment may be exempt from the criteria of (1) of this section:
 1. Local task lighting fixtures applied to an individual location with switching under the user's immediate control, such as, but not limited to, a portable desk lamp, a work light on a machine, or a hospital examination light.
 2. Lighting for special applications where the lighting is an essential technical element for the function performed, such as theatrical performances and spectator sports.
- (2) Illumination budget. If the total allowable lighting wattage value determined by the calculations outlined in (1) above is exceeded, then the illumination shall be determined by a method acceptable to the department.

Note: The department will accept calculations in accordance with chapter 9 of the ASHRAE 90-75 standard.

Note: The material in this section is not intended to be used as a lighting design procedure. The purpose of this section is solely to outline a procedure for determining the maximum power limit for the lighting. It is recommended that lamps of the highest efficacy be used, except where areas or tasks require good to high color rendition.

TABLE 63.41
LIGHTING POWER VALUES

Area/Use	Maximum Connected Lighting Load
Offices	3.0 watts/sq. ft.
Factories, mercantile buildings, classrooms, day care centers and other chapter 54 and 56 occupancies not listed elsewhere in this table.	2.5 watts/sq. ft.
Conference rooms, toilet rooms, theaters and other places of assembly (i.e., entertainment, recreation, worship, or dining areas)	2.0 watts/sq. ft.
Corridors, bulk manufacturing buildings, places of abode or detention, lobby areas, and other chapter 57 and 61 occupancies	1.0 watt/sq. ft.
Dead storage areas.	0.5 watts/sq. ft.
Indoor parking structures and other hazardous occupancies	0.25 watts/sq. ft.
Outdoor parking areas	0.05 watts/sq. ft.
Building perimeter, facade.	5.0 watts/lin. ft.

Ind 63.42 CONTROLS. Circuiting and switching or dimming shall be provided so that lighting can be turned off when a space is empty and not used or so that lighting can be reduced or turned off (manually or automatically) where daylight is adequate and can be used effectively.

Note: The department recommends that switching, circuiting or dimming be provided for lighting in task areas larger than 150 square feet to reduce the lighting level by at least one-half when the task is not being performed or is relocated.

PART VII--NONDEPLETABLE ENERGY SOURCE

Ind 63.50 BUILDINGS UTILIZING SOLAR, GEOTHERMAL, WIND OR OTHER NONDEPLETABLE ENERGY SOURCE. Any building, or portion thereof, utilizing any nondepletable energy source shall meet all the requirements of this chapter. An energy credit will be given to the building envelope in the amount of the net nondepletable energy collected. The nondepletable energy must be derived from a specific collection, storage and distribution system, which may include active and passive systems.

Note: An energy credit to the building envelope in the amount of the net recovered energy will be given to the use of recovery systems which will conserve energy, provided the amount expended is less than the amount recovered when the energy transfer potential and the operating hours are considered.

Ind 63.51 DOCUMENTATION. Proposed alternative designs, submitted as variations to the standard design criteria, shall be accompanied by an energy analysis. This department will accept alternative systems designed according to the requirements of nationally recognized agencies.

PART VIII--SYSTEM ANALYSIS DESIGN

Ind 63.60 ANNUAL ENERGY CONSUMPTION. A building designed in accordance with this part will be deemed as complying with this chapter if the calculated annual energy consumption is not greater than a similar building with enclosure elements and energy consuming systems designed in accordance with parts I through VI of this chapter. If the proposed alternative design results in an increase in consumption of one energy source and a decrease in another energy source, the difference in each energy source shall be converted to equivalent energy units for purposes of comparing the total energy used.

Ind 63.61 SIMULATION. The calculation procedure used to simulate the operation of the building and its service systems through a full year operating period shall be detailed to permit the evaluation of the effect of system design, climatic factors, operational characteristics, and mechanical equipment on annual energy usage. Manufacturer's data or comparable field test data shall be used when available in the simulation of all systems and equipment. The calculation procedure shall be based upon 8,760 hours of operation of the building and its service systems and shall utilize the following input:

- (1) Climatic data: Coincident hourly data for temperatures, solar radiation, wind and humidity of typical days in the year representing seasonal variation.
- (2) Building data: Orientation, size, shape, thermal mass, air moisture and heat transfer characteristics.
- (3) Operational characteristics: Temperature, humidity, ventilation, illumination, control mode for occupied and unoccupied hours.
- (4) Mechanical equipment: Design capacity, partial load profile.
- (5) Building loads: Internal heat generation, lighting, equipment, number of people during occupied and unoccupied periods.

Ind 63.62 DOCUMENTATION. Proposed alternative designs, submitted as requests for exception to the standard design criteria, shall be accompanied by an energy analysis comparison report. The report shall provide technical detail on the building and system design and on the data used.

for Wayne F. McLoun
Zel S. Rice II, Secretary