

# **Comparison of Houston, Texas Multi-Family Housing Code to the National Healthy Housing Standard and the International Property Maintenance Code**

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## **Summary**

The Houston, Texas Multi-Family Habitability Code supplemented by state laws and regulations has the same or similar requirements to 38 of the 156 applicable mandatory provisions of the National Healthy Housing Standard (NHHS). It did not appear to have any of the 52 stretch provisions of the NHHS. Overall, we found that city code, supplemented with the state's requirements, covered 18% of both mandatory and stretch provisions of the NHHS and 24% of its mandatory provisions.

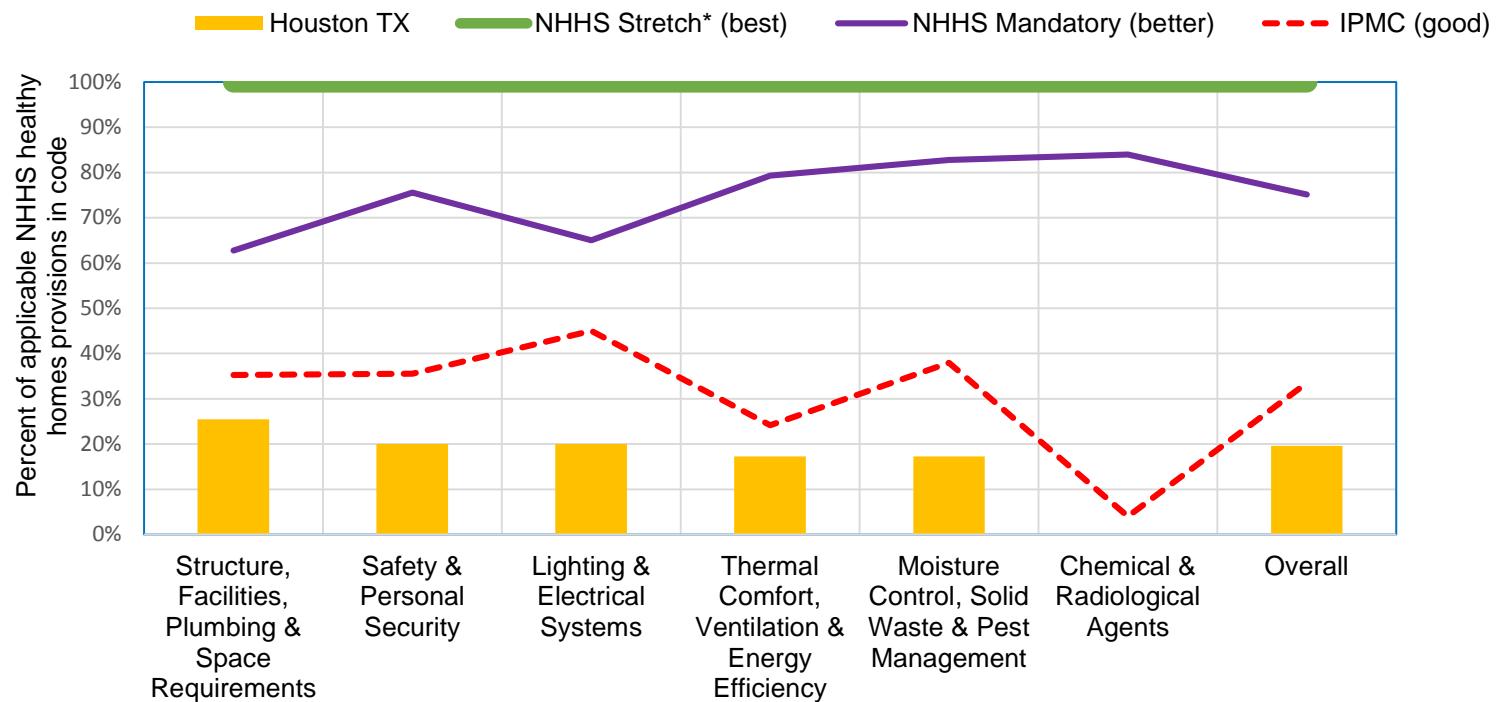
Figure 1 provides a breakdown for each of the six applicable sections of the NHHS. The city code scored highest on the structure, facilities, plumbing and space requirements of the NHHS with 25% of all provisions and about 41% of the mandatory ones. It had a low score of 0% for mandatory provisions for chemical and radiological agent requirements. For your reference, we included a comparison of the NHHS to the International Property Maintenance Code (IPMC) from the International Code Council (ICC). While Houston has adopted other model codes from the ICC including the International Fire Code, it has not adopted the IPMC. It has become the housing code for many communities across the U.S., but, according to ICC, none in Vermont.

Tables 1 to 6 provide a detailed comparison for each of the six sections of the NHHS including an additional comparison to the IPMC. The seventh section deals with the relative duties of owners and occupants. The city code had seven of the 10 NHHS provisions. We did not include it as a table or in the figure, since it is addresses who is responsible rather than the conditions of the property. It is included in the overall numbers.

Minimum housing standards built on the latest health research when coupled with an effective inspection and enforcement program are essential tools to protect the health and safety of residents. Some of the low scores are due to the broad language in many of the city's code requirements. The ambiguity may have been resolved through precedent and guidance that we did not review. The scores may also be because NCHH had difficulty finding the applicable provisions of the Life Safety Appendix to the Building Code, swimming pool standard in Chapter 43, and the security device provisions of the Texas Property Code.

If Houston is considering upgrading its housing code to better protect city residents, it should consider the provisions of the NHHS to identify opportunities. The information in Tables 1 to 6 should be the starting point for that consideration. Clarifying relative responsibilities of owners and occupants would also be helpful. The National Center for Healthy Housing is able to assist in this effort.

**Figure 1: Comparison of Houston, Texas code to IPMC and NHHS**



Notes:

Percentages exclude those not applicable. See Tables 1 to 6 for details.

IPMC = International Property Maintenance Code (2015 version). See <http://shop.iccsafe.org>.

NHHS = National Healthy Homes Standard (2014 version)

\* "NHHS Stretch" includes mandatory and stretch provisions of NHHS.

## Interesting provisions in Houston's Multi-Family Habitability Code

One benefit of NCHH's evaluations is identifying innovative provisions in local codes that may be considered in future editions of the NHHS or be recommended to other communities.

Therefore, NCHH identified the following provisions in Houston's code that were interesting. NCHH would appreciate any information the city has that evaluates the effectiveness of the provisions.

- The code is limited to multi-family buildings; those with three or more units. Is there any code for one- and two family rental property? Or owner-occupied homes?
- NCHH had difficulty finding the applicable provisions of the Life Safety Appendix to the Building Code, swimming pool standard in Chapter 43, and the security device provisions of the Texas Property Code. Is it likely that landlords might have similar difficulty? Has the city developed materials to help landlords know all of the requirements?
- Section 10-361 prohibits tenants and landlords from using the property for open storage of a dead tree, building material, inoperable motor vehicle, board, refrigerator or stove. How does this provision work in practice? Are problems common?
- Section 10-363 sets detailed standards on holes, excavations, wells and unused septic tanks or grease traps. NCHH has not seen a similar provision as this before. Was it the result of specific challenges? How does it work in practice?
- Section 10-363 requires cross-ventilation of not less than 1½ square feet for each 25 linear feet of wall in each basement or crawl space not mechanically ventilated. Has this been effective to prevent mold growth in crawl spaces? Are sealed crawl spaces becoming more common?
- Section 20-481(6) provides specific standards for "rat stoppage." Have those barriers been effective?
- Section 10-752 bans hoarding and defines the term to be an accumulation that is reasonably likely to create a hazard to the safety or health of an occupant in another dwelling unit on the property. Hoarding is a challenge for many communities. How does the approach work in practice?

## Background

With funding from the U.S. Department of Housing and Urban Development (HUD), Healthy Housing Solutions, Inc. (Solutions) contracted with the National Center for Healthy Housing (NCHH) to compare the housing code enforced by the Houston against the National Healthy Housing Standard (NHHS) and the International Property Maintenance Code. For the housing code, we used the following:

- Houston Municipal Code, Chapter 182 Housing Standards, at <http://ecode360.com/print/NA2698?guid=8730323&children=true>

NCHH compared the combined requirements against the NHHS that was first published in 2014<sup>1</sup> by NCHH and the American Public Health Association (APHA) to translate the latest public health information on the impacts of housing on resident health and safety into housing code parlance. It is designed to complement the International Property Maintenance Code and other policies already in use by local and state governments and federal agencies for the upkeep of

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<sup>1</sup> See <http://www.nchh.org/Policy/NationalHealthyHousingStandard.aspx>.

existing homes. It consists of seven sections with a total of 209 provisions: 157 of which are mandatory and 52 of which are stretch or optional provisions.

NCHH also compared the code against the International Property Maintenance Code (IPMC),<sup>2</sup> which is one in the suite of codes developed by the International Code Council (ICC) for property design, construction, and maintenance. The IPMC applies statewide in five states (Maryland, New York, Rhode Island, Virginia, and West Virginia) and the District of Columbia as well as many local governments in 31 other states. ICC first published it in 1998 and updates it every three years; the most recent version is the 2015 edition. The IPMC consists of eight chapters, including ones for administration, definitions, and referenced standards, and has an optional appendix that addresses the boarding of windows and doors of vacant structures. The IPMC's provisions apply "to all existing residential and nonresidential structures and all existing premises and constitute minimum requirements and standards for premises, structures, equipment and facilities for light, ventilation, space, heating, sanitation, protection from the elements, a reasonable level of safety from fire and other hazards, and for a reasonable level of sanitary maintenance; the responsibility of owners, an owner's authorized agent, operators and occupants; the occupancy of existing structures and premises, and for administration, enforcement and penalties."<sup>3</sup>

Using the NHHS and IPMC, NCHH developed three benchmarks and, for simplicity, rated them "good," "better," and "best":

- 1) IPMC requirements (good);
- 2) NHHS mandatory provisions (better); and
- 3) NHHS stretch and mandatory provisions (best).

### **Comparison grouped by six sections of the NHHS**

The NHHS consists of 209 provisions: 157 mandatory and 52 stretch or optional that are grouped in seven sections. For purposes of our analysis, we dropped the first section dealing with relative duties of the owner and the occupant, because city code does not clearly make that distinction. Presumably, it rests with the judgment of the city.

For each of the NHHS provisions, we sought to identify requirements in the Houston code (as supplemented by the state laws and regulations) and determine if the code was (1) same; (2) similar; (3) not same or similar; or (4) not applicable (usually because it applied to the responsibilities of the owner and occupant and not the condition of the property). Because the IPMC is a good housing quality code, we also include a comparison of the NHHS provisions to it. The following six tables summarize the results for the IPMC and Houston code for each of the six NHHS sections. We did not identify provisions in the local code not contained in the NHHS.

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<sup>2</sup> See <http://shop.iccsafe.org/codes/2012-international-codes/2012-international-property-maintenance-code.html>.

<sup>3</sup> IPMC, Section 101.2.

**Table 1: Comparison of Structure, Facilities, Plumbing, and Space Provisions**

NHHS	IPMC	Houston, Texas
Summary - 32 mandatory - 19 stretch	35% same or similar - 18 of 32 mandatory - 0 of 19 stretch.	25% same or similar (0 NA) - 13 of 32 applicable mandatory - 0 of 19 applicable stretch
Structure - 1 mandatory - 0 stretch	1 of 1 applicable mandatory same or similar.	1 of 1 applicable mandatory same or similar
Facilities - 2 mandatory - 0 stretch	1 of 2 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Water heaters other than gas-type to be isolated from habitable rooms and, in multi-family housing, behind a locked door.</li></ul>	1 of 2 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Water heaters other than gas-type to be isolated from habitable rooms and, in multi-family housing, behind a locked door.</li></ul>
Plumbing systems - 5 mandatory - 5 stretch	4 of 5 applicable mandatory same or similar mandatory. <b>Does not require:</b> <ul style="list-style-type: none"><li>Maximum water temperature at shower or bathtub or that tank's relief valve discharge to drip pan, tank, or outside.</li><li>Any of the stretch provisions.</li></ul>	3 of 5 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Maximum water temperature of 120° F at shower or bathtub or that tank's relief valve discharge to drip pan, tank, or outside.</li><li>Faucet discharge above overflow rim.</li><li>Any of the stretch provisions.</li></ul>
Kitchen - 9 mandatory - 5 stretch	3 of 9 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Cabinets or countertops.</li><li>Oven for cooking.</li><li>Exhaust ventilation for range.</li><li>Refrigerator with a freezer.</li><li>Floor that is sealed, water-resistant, nonabsorbent, and cleanable.</li><li>Connections for a refrigeration if one is not provided.</li><li>Any of the stretch provisions.</li></ul>	2 of 9 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Cabinets or countertops.</li><li>Range for cooking food.</li><li>Oven other than microwave.</li><li>Exhaust ventilation for range.</li><li>Refrigerator with a freezer.</li><li>Connections for tenant-supplied refrigerator.</li><li>Floor that is sealed, water-resistant, nonabsorbent, and cleanable.</li><li>Any of the stretch provisions.</li></ul>
Bathroom - 6 mandatory - 2 stretch	5 of 6 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Sink.</li><li>Either stretch provision.</li></ul>	6 of 6 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Either stretch provision.</li></ul>

Minimum space - 7 mandatory - 0 stretch	4 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Access to a habitable room other than through a bathroom.</li> <li>Closet or storage space for clothing and personal belongings.</li> <li>Waterproof and dampness free below-grade habitable rooms.</li> </ul>	0 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Access to a habitable room other than through a bathroom.</li> <li>Access to bathroom without going through bedroom.</li> <li>Closet or storage space for clothing and personal belongings.</li> <li>Waterproof and dampness-free below-grade habitable rooms.</li> <li>Minimum ceiling height of 84".</li> <li>Privacy and adequate space for sleeping and living.</li> <li>Minimum floor area of 70 square feet.</li> </ul>
Floors and floor covering - 1 mandatory - 2 stretch	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Attachment of floor coverings at each threshold with floors capable of being cleaned and free of bulges and buckling and carpets free of tears, folds, or bumps.</li> <li>Either of stretch provisions.</li> </ul>	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Attachment of floor coverings at each threshold with floors capable of being cleaned and free of bulges and buckling and carpets free of tears, folds, or bumps.</li> <li>Either of stretch provisions.</li> </ul>
Noise - 1 mandatory - 5 stretch	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Noise level from exterior sources to be less than 45 dB day-night equivalent sound level.</li> <li>Any of stretch provisions.</li> </ul>	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Noise level from exterior sources to be less than 45 dB day-night equivalent sound level.</li> <li>Any of stretch provisions.</li> </ul>

**Table 2: Comparison of Safety and Personal Security Provisions**

NHHS	IPMC	Houston, Texas
Summary - 34 mandatory - 11 stretch	36% same or similar - 14 of 34 mandatory - 2 of 11 stretch	20% same or similar (0 NA) - 9 of 34 applicable mandatory - 0 of 11 applicable stretch
Egress - 7 mandatory - 0 stretch	2 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Two means of emergency escape or rescue.</li><li>Openable bedroom window for emergency escape below fourth floor.</li><li>Adequate emergency exit for below-grade bedroom (including two provisions describing dimension).</li></ul>	1 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Openable bedroom window for emergency escape below fourth floor.</li><li>Adequate emergency exit for below-grade bedroom or option for a below-grade door and steps (four provisions).</li><li>Unobstructed egress with doors openable from inside without key or tool.</li></ul>
Locks / Security - 5 mandatory - 0 stretch	3 of 5 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Change of locks at change of tenants.</li><li>Self-closing exterior door that can be opened from inside without lock or tool.</li></ul>	4 of 5 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Self-closing exterior door that can be opened from inside without lock or tool.</li></ul>
Smoke alarm - 4 mandatory - 4 stretch	3 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Visual notification for hearing-impaired occupants.</li><li>Three of stretch provisions.</li></ul>	3 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Visual notification for hearing-impaired occupants.</li><li>Any of the stretch provisions.</li></ul>
Fire extinguisher - 3 mandatory - 1 stretch	0 of 3 applicable mandatory same or similar. Silent on fire extinguishers. <b>Does not require:</b> <ul style="list-style-type: none"><li>Readily accessible, Class ABC fire extinguisher in or near kitchen in other than apartment houses.</li><li>One 10 pound extinguisher near kitchen.</li><li>In multi-family housing, fire extinguishers in common areas on each floor.</li></ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Readily accessible, Class ABC fire extinguisher in or near kitchen in other than apartment houses.</li><li>One 10 pound extinguisher near kitchen.</li><li>In multi-family housing, fire extinguishers in common areas on each floor.</li></ul>
Carbon monoxide alarm - 3 mandatory - 4 stretch	0 of 3 applicable mandatory same or similar. Silent on carbon monoxide alarms. <b>Does not require:</b> <ul style="list-style-type: none"><li>Functioning alarm on each habitable floor and near every bedroom.</li><li>Battery backup if hardwired or long-lasting batteries if not hardwired.</li><li>Visual notification for hearing-impaired occupants.</li></ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Functioning alarm on each habitable floor and near every bedroom.</li><li>Battery backup if hardwired or long-lasting batteries if not hardwired.</li><li>Visual notification for hearing-impaired occupants.</li></ul>
Walking surfaces - 3 mandatory - 2 stretch	2 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Non-skid surfaces on exterior stairway steps.</li><li>Either of two stretch provisions.</li></ul>	1 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Non-skid surfaces on exterior stairway steps.</li><li>Handrails between 34" and 38" from floor or step.</li><li>Either of two stretch provisions.</li></ul>

Guard - 3 mandatory - 0 stretch	2 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Fall prevention device on windows used for emergency exit.</li></ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Guards for 30" drops.</li><li>• Fall prevention device on windows used for emergency exit.</li><li>• Fall prevention device on windows where 72" above exterior grade and 36" interior floor.</li></ul>
Chemical storage - 2 mandatory - 0 stretch	0 of 2 applicable mandatory same or similar. Silent on chemical storage. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Storage space for medicine and household chemicals not be readily accessible to children.</li><li>• Flammable and combustible liquids stored away from habitable spaces and ventilation system.</li></ul>	0 of 2 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Storage space for medicine and household chemicals not be readily accessible to children.</li><li>• Flammable and combustible liquids stored away from habitable spaces and ventilation system.</li></ul>
Pools, hot tubs, and other water features - 4 mandatory - 0 stretch	2 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Anti-entrapment devices on suction outlets.</li><li>• Pool drains and drain covers clearly visible with second anti-entrapment device on blockable single drain.</li></ul>	0 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>• Anti-entrapment devices on suction outlets.</li><li>• Pool drains and drain covers clearly visible with second anti-entrapment device on blockable single drain.</li><li>• Fence around pool if over 24" deep.</li><li>• Luminaries with GFCI protection.</li></ul>

**Table 3: Comparison of Lighting and Electrical Systems Provisions**

NHHS	IPMC	Houston, Texas
Summary - 13 mandatory - 7 stretch	45% same or similar - 9 of 13 mandatory - 0 of 7 of stretch	20% same or similar (0 NA) - 4 of 13 applicable mandatory - 0 of 7 applicable stretch
Electrical system - 3 mandatory - 1 stretch	2 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Separate service for each unit.</li><li>One stretch provision.</li></ul>	1 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Separate service for each unit.</li><li>Ban on temporary wiring or extension cords used as permanent.</li><li>One stretch provision.</li></ul>
Outlets - 3 mandatory - 3 stretch	1 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>GFCI in bathroom unless new.</li><li>GFCI in laundry, garage, crawl spaces, unfinished basement, and outdoors.</li><li>Two separate and remote grounded duplex outlets in habitable rooms.</li><li>Any of stretch provisions.</li></ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>GFCI in bathroom unless new.</li><li>GFCI in laundry, garage, crawl spaces, unfinished basement, and outdoors.</li><li>Two separate and remote grounded duplex outlets in habitable rooms.</li><li>Any of stretch provisions.</li></ul>
Natural lighting - 3 mandatory - 0 stretch	3 of 3 applicable mandatory same or similar.	3 of 3 applicable mandatory same or similar. <b>Does not require:</b>
Artificial lighting - 4 mandatory - 3 stretch	3 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Switches to be located conveniently for safe use.</li><li>Any of stretch provisions.</li></ul>	0 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Switches to be located conveniently for safe use.</li><li>Wall- or ceiling-type light in bathroom</li><li>Adequate lighting on public hall, exterior entry door (two provisions)</li><li>Any of stretch provisions.</li></ul>

**Table 4: Comparison of Thermal Comfort, Ventilation and Energy Efficiency Provisions**

NHHS	IPMC	Houston, Texas
Summary - 23 mandatory - 6 stretch	24% same or similar - 7 of 23 mandatory - 0 of 6 stretch	17% same or similar (0 NA) - 4 of 23 applicable mandatory - 0 of 6 applicable stretch
Heating, ventilation and air conditioning - 1 mandatory - 0 stretch	1 of 1 applicable mandatory same or similar but does not set 48-hour deadline to repair or find alternative safe supply.	1 of 1 applicable mandatory same or similar but does not set 48-hour deadline to repair or find alternative safe supply.
Heating system - 7 mandatory - 4 stretch	3 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>In rentals, set 78°F maximum temperature during heating season.</li> <li>For forced air heat, set standards for filter or require annual replacement.</li> <li>For steam or hot water heating systems, protective covers on hot surfaces.</li> <li>For wood stoves, compliance with federal standards or providing clearances or heat shields between combustibles.</li> <li>Any of stretch provisions.</li> </ul>	3 of 7 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>For forced air heat, set standards for filter or require annual replacement.</li> <li>For steam or hot water heating systems, protective covers on hot surfaces.</li> <li>For wood stoves, compliance with federal standards or providing clearances or heat shields between combustibles.</li> <li>Combustion air must be vented outside considers with NFPA standards.</li> <li>Any of stretch provisions.</li> </ul>
Ventilation - 6 mandatory - 1 stretch	2 of 6 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Capability to remove moisture-laden air.</li> <li>Ventilation to meet standards in ASHRAE 62.2.</li> <li>Rigid or semi-rigid metal duct for clothes dryer exhaust.</li> <li>Supply air for forced air system to be from other than basement.</li> <li>One stretch provision.</li> </ul>	0 of 6 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Capability to remove moisture-laden air.</li> <li>Ventilation to meet standards in ASHRAE 62.2.</li> <li>Rigid or semi-rigid metal duct for clothes dryer exhaust.</li> <li>Supply air for forced air system to be from other than basement.</li> <li>Ban on discharge of gas or particulate wastes and requirement for pest-proofing screens on vent pipe.</li> <li>Ventilation and dryer exhaust going outdoors not to attic.</li> <li>One stretch provision.</li> </ul>

Air sealing - 9 mandatory - 1 stretch	<p>1 of 9 applicable mandatory same or similar. Silent on fire extinguishers. <b>Does not require:</b></p> <ul style="list-style-type: none"> <li>• Sealing openings to limit uncontrolled air movement.</li> <li>• Pads, sweeps, or weather stripping use to minimize air leaks.</li> <li>• Sealing openings to attached garage.</li> <li>• Door to garage with automatic closing mechanism and weather stripping.</li> <li>• Ban on doors or windows from garage to sleeping area.</li> <li>• Sealed and insulated ductwork for forced air system in attached garage</li> <li>• Ban on supply or return vents in a garage serving habitable spaces.</li> <li>• Sealing between dwelling units in multi-family buildings.</li> <li>• One stretch provision.</li> </ul>	<p>0 of 9 applicable mandatory same or similar. <b>Does not require:</b></p> <ul style="list-style-type: none"> <li>• Sealing openings to limit uncontrolled air movement.</li> <li>• Pads, sweeps, or weather stripping use to minimize air leaks.</li> <li>• Sealing openings to attached garage.</li> <li>• Door to garage with automatic closing mechanism and weather stripping.</li> <li>• Ban on doors or windows from garage to sleeping area.</li> <li>• Sealed and insulated ductwork for forced air system in attached garage</li> <li>• Ban on supply or return vents in a garage serving habitable spaces.</li> <li>• Sealing between dwelling units in multi-family buildings.</li> <li>• Weatherproof openings.</li> <li>• One stretch provision.</li> </ul>
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**Table 5: Comparison of Moisture Control, Solid Waste and Pest Management Provisions**

NHHS	IPMC	Houston, Texas
Summary - 24 mandatory - 5 stretch	38% same or similar - 10 of 24 mandatory - 1 of 5 stretch	17% same or similar (0 NA) - 5 of 24 applicable mandatory - 0 of 5 applicable stretch
Moisture - 10 mandatory - 4 stretch	4 of 10 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Ban on visible mold growth and persistent excessive dampness or moisture on interior and exterior surfaces.</li> <li>Cleanup, drying, and repair of building materials discolored or deteriorated by mold or mildew or causing moldy or earthy odor.</li> <li>Repair and removal of moldy material consistent with published guidance.</li> <li>Investigation and correction of underlying cause of dampness or moldy odors.</li> <li>Insulation of cold plumbing and HVAC surfaces to prevent condensation.</li> <li>Crawl spaces to be free of high-moisture conditions or sealed from dwelling areas where the space is not sealed and insulated from outdoors.</li> <li>Two of stretch provisions.</li> </ul>	4 of 10 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Ban on visible mold growth and persistent excessive dampness or moisture on interior and exterior surfaces.</li> <li>Cleanup, drying, and repair of building materials discolored or deteriorated by mold or mildew or causing moldy or earthy odor.</li> <li>Repair and removal of moldy material consistent with published guidance.</li> <li>Investigation and correction of underlying cause of dampness or moldy odors.</li> <li>Insulation of cold plumbing and HVAC surfaces to prevent condensation.</li> <li>Crawl spaces to be free of high-moisture conditions or sealed from dwelling areas where the space is not sealed and insulated from outdoors.</li> <li>Any of stretch provisions.</li> </ul>
Solid waste - 3 mandatory - 1 stretch	1 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Sufficient outside storage of trash and recyclables to hold materials between collections (two provisions).</li> <li>One stretch provision.</li> </ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Sufficient outside and inside storage of trash and recyclable facilities to hold materials between collections (three provisions).</li> <li>One stretch provision.</li> </ul>
Pest management - 11 mandatory - 0 stretch	5 of 11 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Use of trained IPM-trained pest management professional in multi-family housing.</li> <li>Inspection for pests.</li> <li>Ban on accumulation of material for rodent harborage in or about dwelling and premises.</li> <li>Trees, shrubs, and plantings no closer than 6" of dwelling.</li> <li>Sealing of holes and joints with low-VOC caulk or closed-cell insulation.</li> <li>Ban on foggers and organophosphates.</li> </ul>	1 of 11 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>Use of trained IPM-trained pest management professional in multi-family housing.</li> <li>Inspection for pests.</li> <li>Ban on accumulation of material for rodent harborage in or about dwelling and premises.</li> <li>Trees, shrubs, and plantings no closer than 6" of dwelling.</li> <li>Sealing of holes and joints with low-VOC caulk or closed-cell insulation.</li> <li>Ban on foggers and organophosphates.</li> <li>Ban on accumulation of water.</li> <li>No holes or joints in exterior 1/8" or greater.</li> <li>Elimination of infestation using exclusion and IPM.</li> <li>Use of integrated pest management (IPM).</li> </ul>

**Table 6: Comparison of Chemical and Radiological Agents Provisions**

NHHS	IPMC	Houston, Texas
Summary - 21 mandatory - 4 stretch	4% same or similar - 1 of 21 mandatory - 0 of 4 stretch.	0% same or similar - 0 of 21 applicable mandatory - 0 of 4 applicable stretch
General - 1 mandatory - 0 stretch	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Containment, storage, removal, and mitigation of chemical and radiological agents in a safe and healthy manner consistent with federal, state, and local laws and regulations.</li></ul>	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Containment, storage, removal, and mitigation of chemical and radiological agents in a safe and healthy manner consistent with federal, state, and local laws and regulations.</li></ul>
Lead-based paint - 5 mandatory - 1 stretch	0 of 5 applicable mandatory same or similar. Silent on lead-based paint. <b>Does not require:</b> <ul style="list-style-type: none"><li>Levels of lead deemed hazardous by federal government to be taken care of properly.</li><li>Repair of deteriorated paint using lead-safe work practices.</li><li>Compliance with federal renovation, repair, and painting rule and dust-clearance testing at conclusion of renovation work.</li><li>Ban on particularly dangerous work practices.</li><li>Ban use of lead-based paint.</li><li>Stretch provision.</li></ul>	0 of 5 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Levels of lead deemed hazardous by federal government to be taken care of properly.</li><li>Repair of deteriorated paint using lead-safe work practices.</li><li>Compliance with federal renovation, repair, and painting rule and dust-clearance testing at conclusion of renovation work.</li><li>Ban on particularly dangerous work practices.</li><li>Use of new lead-based paint.</li><li>Stretch provision.</li></ul>
Asbestos - 4 mandatory - 0 stretch	0 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Maintenance of asbestos-containing materials in non-friable condition.</li><li>Abatement of asbestos before any activity that disturbs it.</li><li>Abatement of friable asbestos using licensed asbestos professional.</li><li>Removal and disposal of asbestos in compliance with federal, state, and local requirements.</li></ul>	0 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Maintenance of asbestos-containing materials in non-friable condition.</li><li>Abatement of asbestos before any activity that disturbs it.</li><li>Abatement of friable asbestos using licensed asbestos professional.</li><li>Removal and disposal of asbestos in compliance with federal, state, and local requirements.</li></ul>
Toxic substances in manufactured building materials - 2 mandatory	0 of 2 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Use of low-formaldehyde wood products that comply with federal law.</li><li>Use of building materials with no halogenated flame retardants and low-VOC emissions.</li></ul>	0 of 2 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"><li>Use of low-formaldehyde wood products that comply with federal law.</li><li>Use of building materials with no halogenated flame retardants and low-VOC emissions.</li></ul>

- 0 stretch		
Radon - 1 mandatory - 1 stretch	0 of 1 applicable mandatory same or similar. Silent on radon. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Radon to be tested or high levels to be mitigated.</li> <li>• Stretch provision.</li> </ul>	0 of 1 applicable mandatory same or similar. Silent on radon. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Radon to be tested or high levels to be mitigated.</li> <li>• Stretch provision.</li> </ul>
Pesticides - 3 mandatory - 0 stretch	1 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Use of least toxic pesticides with demonstrated efficacy for pests using IPM.</li> <li>• Proper storage and disposal of pesticides.</li> </ul>	0 of 3 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Use of least toxic pesticides with demonstrated efficacy for pests using IPM.</li> <li>• Proper storage and disposal of pesticides.</li> <li>• Compliance with manufacturer specifications and immediate mitigation of misuse.</li> </ul>
Metham-phetamine - 1 mandatory - 0 stretch	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Certification as safe by approved testing method from hazardous materials used in meth manufacturing prior to occupancy.</li> </ul>	0 of 1 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Certification as safe by approved testing method from hazardous materials used in meth manufacturing prior to occupancy.</li> </ul>
Smoke in multi-family housing - 4 mandatory - 2 stretch	0 of 4 applicable mandatory same or similar. Silent on smoking. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Ban in indoor common area of multi-family housing.</li> <li>• Ban within 25' of entrances, air intakes, and openable windows.</li> <li>• Notice to tenants of smoking policy.</li> <li>• Exemption from early termination penalties for tenants leaving early due to smoke incursion or smoke-free policy.</li> <li>• Any of stretch provisions.</li> </ul>	0 of 4 applicable mandatory same or similar. <b>Does not require:</b> <ul style="list-style-type: none"> <li>• Ban in indoor common area of multi-family housing.</li> <li>• Ban within 25' of entrances, air intakes, and openable windows.</li> <li>• Notice to tenants of smoking policy.</li> <li>• Exemption from early termination penalties for tenants leaving early due to smoke incursion or smoke-free policy.</li> <li>• Any of stretch provisions.</li> </ul>