

Town of Lyons, Colorado  
Board of Trustees  
BOT Agenda Cover Sheet  
Agenda Item No: IX. 1.  
Meeting Date: 1 May 2023

**TO:** Mayor Rogin and Members of the Board of Trustees

**FROM:** Aaron Caplan, Engineering, Building & Utilities Director

**DATE:** 21 Apr 2023

**ITEM:** 2<sup>nd</sup> Reading— Ordinance 1145 - An Ordinance of the Town of Lyons, Colorado Adopting the 2021 Suite of International Building Safety Codes

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☒ ORDINANCE  
☐ MOTION / RESOLUTION  
☐ INFORMATION

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- I. **REQUEST OR ISSUE:** Adopt the 2021 suite of International Building Safety Codes (I-Codes) with certain modifications to these codes that are in the Towns best interest.
- II. **RECOMMENDED ACTION / NEXT STEP:** Host public hearing and consider approval of Ordinance 1145.
- III. **FISCAL IMPACTS:**
- IV. **BACKGROUND INFORMATION:**

An addendum has been added to follow this cover memo with information on possible amendments to the International Building and Fire Code for affordable housing, tiny homes, and accessory dwelling units.

The 2021 IBC® (International Building Code) contains many important changes such as:

- Puzzle rooms (escape rooms) are now defined and regulated as special amusement areas, requiring compliance with Section 411 and special means of egress requirements.
- For the purposes of determining the allowable number of control areas in a building, each portion separated by one or more firewalls is now considered a separate building.
- In Group E occupancies, enhanced classroom acoustics in compliance with ICC A117.1 are to be provided in all classrooms having a volume of 20,000 cubic feet or less.
- The requirements for metal composite materials and systems (MCM) installed on the exterior walls of Types I, II, III, and IV construction were simplified, and sprinkler allowances were deleted
- The use of intermodal shipping containers as buildings is now specifically addressed through provisions intended to supplement existing applicable IBC requirements.
- Automatic sprinkler protection is now required in Group S-2 open parking garages where any fire area exceeds 48,000 square feet.
- The 2017 edition of ICC A117.1 was adopted.

- Parapets of a minimum height are now required for aggregate-surfaced roofs to prevent blow-off.
- Mixed occupancy buildings with assembly spaces are placed in Risk Category III when the total public assembly occupant load is greater than 2500 people.
- The 2021 IBC snow map is updated to match ASCE 7-16 snow maps by adding a reference to ASCE 7 snow tables in states with large case study areas.
- Secondary rain loads are updated to be consistent with ASCE 7.
- Special inspection requirements were added to address the anchorage and connection of mass timber structural elements.
- Installation of firestop, fire-resistant joint systems, and perimeter fire barrier systems in residential-use buildings now requires special inspection in Group R fire areas having an occupant load exceeding 250 people.
- Frost protection for egress doors was added to the foundation requirements.
- ACI standards ACI 117 and ITG 7 were added by reference to provide acceptable tolerances for concrete construction.
- Three new types of construction (Types IV-A, IV-B, and IV-C) allow mass timber buildings of taller heights, more stories above grade, and greater allowable areas compared to existing provisions for heavy timber buildings.

The 2021 IRC® (International Residential Code) contains many important changes such as:

- Braced wall lines must be placed on a physical wall or placed between multiple walls.
- The rated separation for two-family dwellings is 1 hour whether or not a lot line exists between units.
- Emergency escape and rescue openings require a clear 36-inch-wide path to a public way.
- An engineered design is required for storm shelters.
- A habitable attic is limited to one-half the area of the story below and the dwelling requires sprinklers.
- Updated Wind Speed maps match IBC and ASCE 7 maps.
- Deck design now considers snow load, tributary area for footing and post height, and guard details.
- Specific requirements for deck guardrails were added.
- Component and cladding wind pressures in Table R301.2(2) are updated for new design wind speeds and hip or gable roof profiles.
- Minimum footing size tables are revised to more accurately reflect current practice.
- Cripple wall requirements apply only to exterior cripple walls.
- New appendices for cob construction and 3D printed construction are added.
- A 30 percent reduction of airflow is permitted for balanced ventilation systems.
- Commercial gas cooking appliances are prohibited.
- The head pressure for a water test of DWV systems increased to 10 feet.
- Air vacuum testing is now permitted for plastic piping DWV systems.
- Section P2904 for dwelling sprinklers is expanded to more closely align with NFPA 13D.
- An emergency service disconnect is required in a readily accessible outdoor location.
- A surge-protective device (SPD) is now required at the service panel.
- The number of receptacle outlets required for peninsular and island countertops in kitchens is determined by the area of the countertop surface.
- GFCI protection is now required for damp and wet locations not included in the other 10 areas requiring GFCI protection.

The 2021 IMC® (International Mechanical Code) establishes minimum regulations for mechanical systems using prescriptive and performance-related provisions. The IMC was developed with broad-based principles that make possible the use of new materials, methods, and designs. Important changes in the 2021 IMC® include:

- Clothes dryer exhaust terminals are required to be at least 3 feet from any opening into a building.
- Polyurethane spray-applied foam on the exterior of ducts in attics and crawl spaces required to meet specific smoke and flame index limits.
- Fire and smoke dampers must be provided with approved access for inspection and maintenance.
- Refrigerant tables updated to include new refrigerants.
- Addition of condensate termination identification markings and discharge restrictions.
- Approved factory-built combination intake/exhaust terminations permitted, relaxing separation requirement.
- 30% reduction in minimum mechanical ventilation for whole-house balanced ventilation systems.
- Continuous operation requirement for manicure and pedicure station exhaust systems.
- Grease duct horizontal cleanout required within 3 feet of a horizontal discharge fan.

The 2021 IPC® (International Plumbing Code) provides minimum regulations for plumbing facilities and provides for the acceptance of new and innovative products, materials, and systems. In October 2019, the Code Council released an independent study comparing model plumbing codes. It found that over a 12-year period, counties using the IPC saved \$38 billion in construction costs, emitted 1,000,000 fewer tons of carbon dioxide, saw an additional 166,000 jobs, and saved 880 million feet of pipe. On average, a single-family home could save up to \$4,000 in labor, materials, and overhead compared to that same home built to other codes. To learn more about the IPC's impact on construction, the economy, and the environment, read the full report at [www.iccsafe.org/IPC](http://www.iccsafe.org/IPC).

Important changes in the 2021 IPC include:

- Multiple-user toilet facilities to serve all genders are now permitted.
- Two new methods for relining/rehabilitation of existing sewers are added.
- Accommodations for mounted rooftop solar panels over vent terminals are added.
- CSA B805/ICC 805 Rainwater Harvesting Systems is allowed as an alternative design method.
- Plumbing provisions from *ICC A117.1-2017 Standard for Usable and Accessible Buildings and Facilities* are now included.

The 2021 IFC® (International Fire Code) contains regulations to safeguard life and property from fires and explosion hazards. Topics include general precautions, emergency planning and preparedness, fire department access and water supplies, automatic sprinkler systems, fire alarm systems, special hazards, and the storage and use of hazardous materials. Key changes to the IFC include:

- Requirements for Additive Manufacturing (3-D Printing) equipment and operations for both non-industrial and industrial applications are now provided.
- Flame propagation performance of permanently installed artificial combustible vegetation is required to be verified when exceeding certain heights located on roofs or in close proximity to buildings.

- Provisions for emergency responder communication were revised to reflect the expansion of such systems beyond radios and the need for increased performance of such systems.
- Sprinkler requirements for the storage, manufacture, and sale of upholstered furniture and mattresses were updated and clarified. Part of this update is a new exception for single-story self-storage facilities accessed directly from the exterior.
- An automatic sprinkler system is now required for open parking garages exceeding a certain fire area threshold.
- The requirements for an energy storage system (ESS) were further refined to reflect the variety of new technologies and applications (in building and standalone) and the need for proper commissioning and decommissioning of such systems.
- A new chapter was added that provides clarification and specific requirements for the storage of distilled spirits and wines in barrels and casks.
- The provisions for construction fire safety were reorganized and expanded with an emphasis on the owner's responsibilities. The new language requires a site safety plan and the designation of a site safety director.

Key changes in the 2021 IEBC® (International Existing Building Code) include:

- For storm shelters, the required occupant capacity is now limited to the total occupant load of the classrooms, vocational rooms, and offices in the school while the maximum distance of travel was deleted.
- When significant portions of a building's exterior wall coverings or exterior wall envelope are added or replaced, they must comply with the requirements of Chapters 14 and 26 of the IBC.
- Snow loads must be addressed during the repair of substantial structural damage regardless of whether the damage was a result of snow.
- Additions, Level 3 alterations, and Changes of occupancy in Educational occupancies are now required to meet the enhanced classroom acoustic requirements of Section 808 of ICC A117.1.
- Additional equipment may be added to a roof without a full structural analysis when the equipment weighs less than 400 pounds and is less than 10 percent of the total roof dead load.
- With a change of occupancy, a seismic analysis is required for a Group S or Group U occupancy changing to a new occupancy.
- Furniture, such as office cubicles, reception desks, or smaller bookcases, are exempt from a permit and not intended to be a Level 2 alteration.
- Sprinkler requirements for Level 2 and Level 3 alterations are revised for higher hazard areas.

V. **LEGAL ISSUES:** None

VI. **CONFLICTS OR ENVIRONMENTAL ISSUES:** None

VII. **SUMMARY AND ALTERNATIVES:**

- Approve Ordinance 1145 on the second reading
- Deny the ordinance and remain on the 2018 building codes
- Request additional information or changes and reschedule a second reading