Denver Building Code Update

A2L Refrigerant Allowance & Energy Code Clarifications

Presented by: Community Planning and Development

Prepared for: LUTI Committee

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Introduction

The Denver Building Code updates described in this presentation are in direct response to new regulations from the Environmental Protection Agency that go into effect January 1st, 2025; and minor energy code* updates that clarify regulations and correct typos.

(*These revisions are unrelated to litigation regarding Energize Denver and electrification provisions.)

Agenda

- What are A2L refrigerants and where are they used?
- Why is the market shifting to A2L refrigerants?
- Challenges in the current Denver Building Code and Fire Code
- Errata proposed to help support the community with the market shift to A2L refrigerants
- Recommended updates to the Denver Energy Code

What is an A2L Refrigerant?

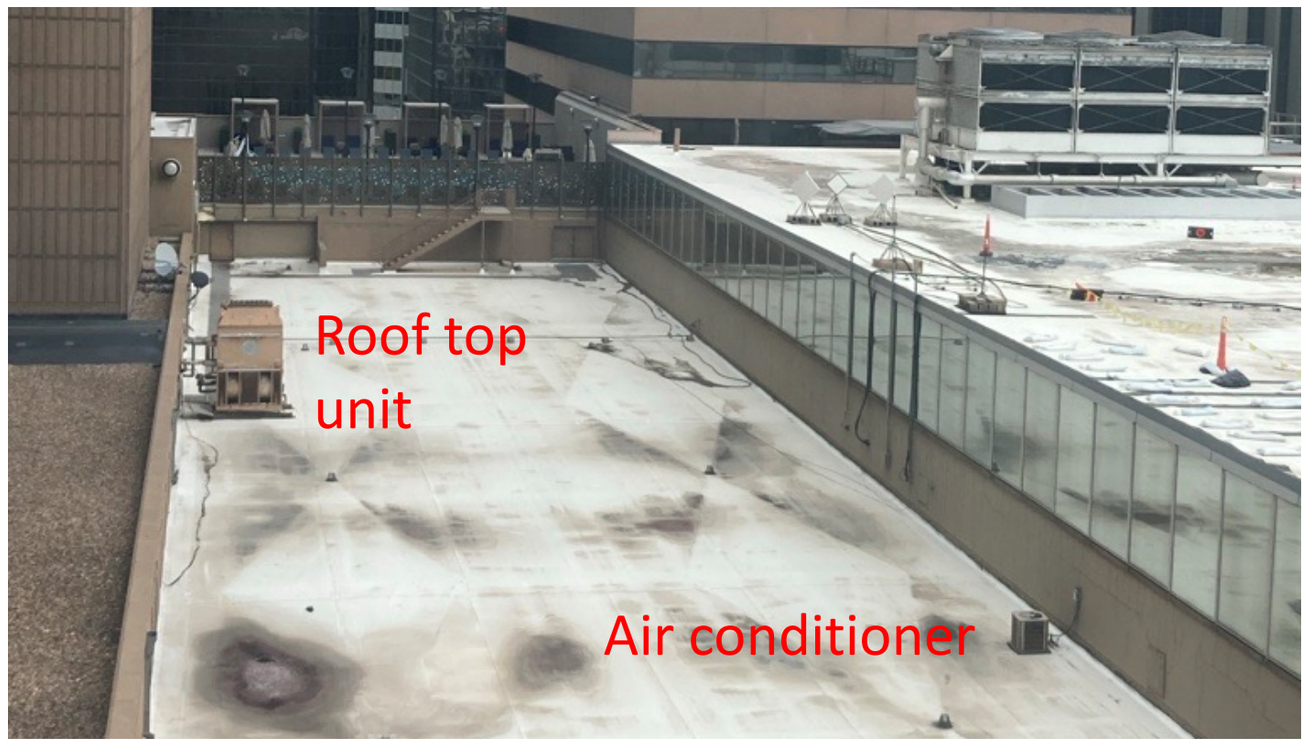
A2L is a refrigerant category in ASHRAE 34

- A= Non-toxic
- 2=Flammable
- L=Low burning velocity

Use of Refrigerants

Refrigerants are used to transfer heat and are found in the following examples of building systems.

- Air conditioning systems
- Heat pumps
- Commerical Coolers/freezers



Flammable Refrigerants in a Building?

- Refrigerants used today are potent green house gases (GHG). As a result, the Environment Protection Agency (EPA) passed regulations that will prohibit the manufacture of heat pumps and air conditioning systems utilizing those refrigerants, starting January 1, 2025.

- A2L refrigerants are a less potent and meet EPA's Global Warming Potential requirements; therefore, they will become the dominant refrigerant used in air conditioning and heat pump systems. A2L refrigerants are not widely used in building systems today because they are flammable.

- The revisions proposed to Denver's Building and Fire Codes are in response to the EPA regulations and proactively support our stakeholders who will be required to use A2L refrigerants in the coming months and years.

Why Change the Current Mechanical Code?

- The current Denver Mechanical Code restricts the use of A2L refrigerants to small systems by not distinguishing A2L refrigerants from flammable refrigerants. Small residential type systems would be allowed while larger commercial systems would be prohibited.

- The Denver Mechanical Code requires A2L refrigerant piping connecting 3 or more stories to be routed in a ventilated shaft.

- Design professionals' inability to provide code compliant designs, or to be prohibited from using common systems with A2L refrigerant, will cause projects an undue burden in time and money.

Mechanical Code Changes for A2L Refrigerants

- Bring the most current A2L refrigerant regulations from ASHRAE 15-2022* into the current Denver Mechanical Code.
- ASHRAE 15-2022 is a national standard continually updated by a committee of technical industry experts that uses technology and current construction practices to better address safety concerns while expanding the use of A2L refrigerants.
- ASHRAE 15-2022 will simplify design and compliance pathways.
- Time is critical, as the industry is already transitioning to A2L refrigerants in response to the EPA's January 1, 2025 deadline date.

*ASHRAE 15-2022 is the nationally developed and adopted Safety Standard for Refrigeration Systems

Why Change the Current Building and Fire Code?

- The 2022 Denver Building & Fire Code - as currently adopted - do not include A2L updates.
- Specific provisions in the 2024 International Building, Fire, and Residential codes have been updated to address the storage and use of A2L refrigerants.

Key Changes in 2024 'I-Codes':

- The maximum allowable quantities for storage of A2L refrigerants have significantly increased for commercial occupancies
- The 2024 International Residential Code has been updated for current appliance listings and guidance for installation of systems utilizing A2L refrigerants.

Recommended Updates for A2L refrigerants

- Update the 2022 Denver Mechanical Code by requiring compliance with ASHRAE 15-2022 when using A2L refrigerants.
- Update the 2022 Denver Commercial Building Code and the 2022 Denver Fire Code by integrating 2024 I-Code updates addressing the use and storage of A2L refrigerants
- Update 2022 Denver Residential Code by integrating 2024 International Residential Code provisions addressing the installation of systems utilizing A2L refrigerants.

Limited Denver Energy Code Updates

For Correctness and Clarity:

- Fix typo in C406.1 Additional Energy Credits
- Clarify provisions that apply to C502 commercial additions
- Fix typo in R404.6.2 Solar-ready zone area
- Clarify R404.7 by identifying the compliance path; and clarify R408.1 and R408.10.2 by revising wording
- Clarify R408.8.2 High performance electric space heating for maximum electric resistance supplemental heating

Thank you

Questions?

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