

BY AUTHORITY

ORDINANCE NO.
SERIES OF 2022

COUNCIL BILL NO. CB22-0967
COMMITTEE OF REFERENCE:

BUSINESS, ARTS, WORKFORCE & AVIATION SERVICES

A BILL

For an ordinance amending Chapter 10 of the Denver Revised Municipal Code to clarify energy efficiency requirements of existing buildings.

BE IT ENACTED BY THE COUNCIL OF THE CITY AND COUNTY OF DENVER:

Section 1. That section 10-20, D.R.M.C. concerning electrification requirements of existing buildings is amended by deleting the language stricken and adding the language underlined to read as follows:

Sec. 10-20. – Electrification requirements for existing buildings.

(a) Applicability. This section will apply to all existing buildings regulated by the International Building Code or the International Existing Building Code.

(b) Definitions. The following words and phrases as used in this section 10-20 have the following meanings:

(1) *Boiler* shall have the same meaning as provided in the Denver Building and Fire Code.

(2) *Condensing unit* shall have the same meaning as provided in the Denver Building and Fire Code, but which only serves a heated space.

(3) *Electrification retrofit feasibility report* means a report ~~submitted to the department of community planning and development (CPD), in consultation with the executive director of the office of climate action, sustainability, and resiliency,~~ that analyzes the feasibility of using an provides: an alternate schematic design for the proposed gas-fired equipment that utilizes electric heat pump when certain appliances are proposed to be replaced without an electric heat pump, and that also lists the following: equipment and an analysis of the cost of the appliance equipment with and without an electric heat pump, the and annual energy cost of the appliance with and without an electric heat pump, and the social cost of carbon

1 dioxide over the life of the appliance with and without an electric heat pump ~~the~~
2 ~~equipment for both the proposed gas-fired system and the alternate electric~~
3 ~~schematic design.~~

4 (4) *Electrify or electrification* means to replace a natural gas-powered space or
5 water heating system with an electrically powered space or water heating system.

6 (5) *Instantaneous water heater ~~heated~~* means a product which utilizes oil, gas,
7 or electricity to heat potable water for use outside the heater upon demand that
8 contains no more than one (1) gallon of water per four thousand (4,000) Btu per
9 hour of input.

10 (6) *Packaged terminal air conditioner ~~conditioned~~* means a wall sleeve and a
11 separate unencased combination of heating and cooling assemblies specified by
12 the builder and intended for mounting through the wall, which are limited to the
13 following: a prime source of refrigeration, separable outdoor louvers, forced
14 ventilation, and heating availability energy.

15 (7) *Social cost of carbon dioxide* means either seventy-nine dollars (\$79.00)
16 per metric ton of carbon dioxide with an annual escalation rate of two and one-half
17 (2.5) percent from January 1, 2022, or the social cost of carbon dioxide as
18 determined by the public utilities commission of the State of Colorado, whichever
19 is greater.

20 (8) *Storage water heater ~~heated~~* means a product which utilizes oil, gas, or
21 electricity to heat potable water for use outside the heater upon demand which
22 heat and store water at a thermostatically controlled temperature.

23 (9) *Unitary air conditioner ~~conditioned~~* means a system that consists of heat
24 exchangers, blowers, filters, supply, exhaust and return ducts, and shall include
25 any apparatus installed in connection therewith, other than a packaged terminal
26 air conditioner, but which only serves a heated space. A unitary air conditioner may
27 consist of: a single-package unit; an outdoor unit and one (1) or more indoor units;
28 or an indoor unit only.

29 (10) *Warm-air furnace* means a completely self-contained heating unit that is

1 designed to supply heated air to spaces remote from or adjacent to the appliance
2 location.

3 (c) No later than ~~March~~ January 1, 2023, the Denver Building and Fire Code
4 shall be amended to implement the following electrification requirements:

5 (1) Replacement of natural gas-fired space and water heating equipment shall
6 be submitted to Community Planning and Development (CPD) for review prior to
7 permitting, except that this requirement shall not apply to the replacement of a gas-
8 fired boiler used for space or water heating with another boiler of the same type.

9 (2) Replacement of a unitary air conditioner or condensing unit shall be
10 submitted to CPD for review prior to permitting.

11 (3) All storage electric water heaters installed in commercial and multifamily
12 buildings must be compatible at a minimum with ANSI/CTA-2045-B, level 1
13 demand response protocol, or a similar protocol, with appropriate exceptions when
14 demand response is not appropriate based on the application.

15 (4) (3) When an indoor gas-fired warm air furnace is proposed to be replaced with
16 another gas-fired warm-air furnace, the replacement is required to provide one (1)
17 of the following: (i) low-nitrogen oxide emissions, of no more than fourteen (14)
18 nanograms of nitrogen dioxide per joule of useful heat delivered to the heated
19 space; (ii) an Annual Fuel Utilization Efficiency of not less than ninety (90) percent;
20 or (iii) evidence to the building official that an equivalent system will be provided.
21 The requirements of this subsection shall not apply to an indoor gas-fired make-
22 up air unit.

23 (5) When a gas-fired warm air furnace is proposed to be replaced with another
24 gas-fired warm-air furnace, Additionally, at least two (2) of the following are
25 required; but when a unitary air conditioner or condensing unit is proposed to be
26 replaced with another unitary air conditioner or condensing unit, then only one (1)
27 of the following is required:

- 28 i. Submitting an electrification retrofit feasibility report.

1 ii. Sizing the furnace equipment based on the current space
2 conditioning needs of the building with Denver Building and Fire Code
3 requirements, and an analysis prepared by a registered design professional
4 of the existing building's envelope, ventilation requirements, and load
5 calculations based on ASHRAE/ACCA 183 or approved equivalent.

6 iii. Pressure testing of all natural gas piping.

7 (6 4) When a gas-fired storage water heater or instantaneous water heater is
8 proposed to be replaced with another gas-fired storage water heater or
9 instantaneous water heater, at least one (1) of the following is required:

10 i. Submitting an electrification retrofit feasibility report.

11 ii. Pressure testing of all natural gas piping.

12 ~~(7 5) Exemptions for emergency replacement and economic hardship shall be~~
13 ~~provided. The building official shall consult with the executive director of the office~~
14 ~~of climate action, sustainability, and resiliency in deciding whether or not to~~
15 ~~approve an economic hardship exemption.~~

16 (d e) No later than January 1, 2025, the Denver Building and Fire Code shall be
17 amended to implement the following electrification requirements:

18 (1) When a gas-fired warm air furnace located outside a building is proposed
19 to be replaced with a new gas-fired warm air furnace, the new gas-fired warm air
20 furnace may only provide supplementary heat, and the primary heating system
21 shall be electric.

22 (2) When a unitary air conditioner or condensing unit ~~servicing a heated space~~ is
23 proposed to be replaced, the unit shall include electric equipment capable of
24 providing space heating, and any other heating equipment serving the space shall
25 be reconfigured to provide only supplementary heat.

26 (3) When a storage water heater or instantaneous water heater is proposed to
27 be replaced, it shall be replaced with an electric water heater.

1 (4) The electrification requirements of subsections (c)(1)—(3) above may be
2 met by a heat pump or by electric resistance space or water heating equipment. If
3 the electrification requirements are met by electric resistance space or water
4 heating equipment, then the system shall be provided with an onsite renewable
5 energy system sized to provide not less than one hundred (100) percent of the
6 annual energy use of the electric resistance space or water heating equipment,
7 with the following exceptions: an onsite renewable energy system is not required
8 where heat pumps are not available for that system type, or where new electric
9 resistance equipment is replacing existing electric resistance equipment. An onsite
10 renewable energy system used to comply with this section shall not be used to
11 meet any other regulatory requirement.

12 (5) When a gas-fired boiler used for space heating is replaced with another
13 gas-fired boiler, at least two (2) of the following are required:

- 14 i. Submitting an electrification retrofit feasibility report.
- 15 ii. Sizing the equipment based on the current space conditioning needs
16 of the building with Denver Building and Fire Code requirements, and an
17 analysis prepared by a registered design professional of the existing
18 building's envelope, ventilation requirements, and load calculations based
19 on ASHRAE/ACCA 183 or approved equivalent.
- 20 iii. Pressure testing of all natural gas piping.

21 (6) When a gas-fired boiler used for water heating is replaced with another gas-
22 fired boiler, at least one (1) of the following is required:

- 23 i. Submitting an electrification retrofit feasibility report;
- 24 ii. Pressure testing of all natural gas piping.

25 (7) An electrification retrofit feasibility report looking at the feasibility of installing
26 an electric packaged terminal heat pump (PTHP) or single-package vertical heat
27 pump (VTHP) space system that provides both heating and cooling shall be
28 submitted when an electrically operated packaged terminal air conditioner (PTAC)

1 or single-package vertical air conditioner (VTAC) that serves a heated space is
2 proposed to be replaced.

3 (8) Exemptions for emergency replacement and economic hardship shall be
4 provided. An economic hardship exemption will not be available for a system that
5 can be replaced with an electric heat pump at near cost parity, which will be defined
6 as the cost of a replacement of a natural gas space or water heating system to a
7 partially electric heat pump system, including all incentives, that is within five (5)—
8 fifteen (15) percent of a like-for-like natural gas space or water heating system
9 replacement, including the social cost of carbon dioxide of the like-for-like gas
10 system replacement over its lifetime. An economic hardship exemption will not be
11 available for a system where a heat pump is unavailable and where the cost of an
12 electric resistance system is at 'near cost parity' for that system type, which will be
13 defined as the cost of an electric resistance system, including all incentives, that
14 is within five (5)—fifteen (15) percent of a like-for-like gas system replacement plus
15 the social cost of carbon of that like-for-like system over its lifetime. The building
16 official shall consult with the executive director of the office of climate action,
17 sustainability, and resiliency in deciding whether or not to approve an economic
18 hardship exemption.

19 (e ~~d~~) No later than January 1, 2027, the Denver Building and Fire Code shall be
20 amended to implement the following electrification requirements:

21 (1) When a gas-fired boiler used for space heating is proposed to be replaced,
22 the replacement boiler shall meet no less than fifty (50) percent of the annual space
23 heating needs of the building containing the gas-fired boiler. At least fifty (50)
24 percent of the annual space heating needs of the building shall be met with electric
25 space heating equipment. When a replacement gas-fired boiler is installed to
26 provide supplementary heat or due to an approved exemption, at least two (2) of
27 the following are required:

- 28 i. Submitting an electrification retrofit feasibility report ~~that includes a~~
29 ~~schematic design~~ for an electric space heating system that provides one
30 hundred (100) percent of the annual space heating needs of the building.

1 ii. Sizing the equipment based on the current space conditioning needs
2 of the building with Denver Building and Fire Code requirements, and an
3 analysis prepared by a registered design professional of the existing
4 building's envelope, ventilation requirements, and load calculations based
5 on ASHRAE/ACCA 183 or approved equivalent.

6 iii. Pressure testing of all natural gas piping.

7 (2) When a gas-fired boiler used for water heating is proposed to be replaced,
8 the replacement boiler shall meet no less than fifty (50) percent of the annual water
9 heating needs of the building containing the gas-fired boiler. At least fifty (50)
10 percent of the annual ~~space~~ water heating needs of the building shall be met with
11 electric equipment. When a replacement gas-fired boiler is installed, to provide
12 supplementary heat or due to an approved exemption, at least one (1) of the
13 following is required:

14 i. Submitting an electrification retrofit feasibility report ~~that includes a~~
15 ~~schematic design~~ for an electric water heating system that provides one
16 hundred (100) percent of the annual water heating needs of the building.

17 ii. Pressure testing of all natural gas piping.

18 (3) When an electrically operated PTAC or single-package VTAC that serves a
19 heated space is proposed to be replaced, the air conditioner shall be replaced with
20 electric equipment that provides both heating and cooling. Any other space heating
21 equipment shall be configured to operate as supplementary heat.

22 (4) Exemptions for emergency replacement and economic hardship shall be
23 provided as previously included by the amendments listed in subsection (c)(8)
24 above with the potential for variations of calculation of economic hardship. The
25 building official shall consult with the executive director of the office of climate
26 action, sustainability, and resiliency in deciding whether or not to approve an
27 economic hardship exemption.

28 **Section 2.** That section 10-404, D.R.M.C. concerning energy performance targets for
29 existing buildings larger than 25,000 square feet is amended by deleting the language stricken and

1 adding the language underlined in subsection (a) to read as follows:

2 (a) **In General.** Owners of covered buildings with a gross floor area equal to or
3 greater than 25,000 square feet must meet energy performance targets in calendar years
4 2024, 2027 and 2030. The targets will be set for 2030 for every covered building type in
5 Denver such that 30% total energy savings across all covered buildings is achieved.
6 CASR shall establish the rules by which every covered building will be assigned a building
7 type. If a covered building’s type changes over time, then CASR shall update the
8 established target to align to the new building type. CASR will establish each covered
9 building’s required interim targets for 2024 and 2027 by drawing a straight line from that
10 covered building’s 2019 baseline EUI to the final EUI target for that building type. ~~Solar~~
11 Renewable power generation on-site or off-site, as measured in kWh delivered to the grid
12 by the system, will be fully credited towards energy use, lowering the EUI. After 2030,
13 CASR is empowered set new EUI final targets for 2040, 2050 and beyond through a
14 rulemaking process with robust stakeholder input as CASR deems necessary to reach
15 the City’s climate goals.

16 COMMITTEE APPROVAL DATE: August 17, 2022

17 MAYOR-COUNCIL DATE: August 23, 2022

18 PASSED BY THE COUNCIL: _____,
19 _____ - PRESIDENT

20 APPROVED: _____ - MAYOR _____,

21 ATTEST: _____ - CLERK AND RECORDER,
22 EX-OFFICIO CLERK OF THE
23 CITY AND COUNTY OF DENVER

24 NOTICE PUBLISHED IN THE DAILY JOURNAL: _____ ; _____,

25 PREPARED BY: Adam C. Hernandez, Assistant City Attorney DATE: August 25, 2022

26 Pursuant to section 13-9, D.R.M.C., this proposed ordinance has been reviewed by the office of the
27 City Attorney. We find no irregularity as to form, and have no legal objection to the proposed
28 ordinance. The proposed ordinance is not submitted to the City Council for approval pursuant to §
29 3.2.6 of the Charter.

30
31 Kristin M. Bronson, Denver City Attorney

32 BY: *Anshul Bagga*
33 _____, Assistant City Attorney DATE: Aug 24, 2022,