



Disaster and Fire Safety Commission

CONSENT CALENDAR

June 1, 2021

To: Honorable Mayor and Members of the City Council

From: Disaster and Fire Safety Commission

Submitted by: Jose Bedolla, Chairperson, Disaster and Fire Safety Commission

Subject: Referral Response: Amending Chapter 19.34 of the Berkeley Municipal Code to Expand Automatic Gas Shut-Off Valve Requirements in Multifamily, Condominium and Commercial Buildings Undergoing Renovations

RECOMMENDATION

The proposed ordinance modifications in the referral dated October 29, 2019, shown in Attachment 2 to the staff report (the Referral), can be briefly summarized as:

- Expand the Gas Shut-Off Valve requirements to remove exceptions for multi-family, condominium, and commercial buildings

The Disaster and Fire Safety Commission (DFSC) recommends that changes of the Berkeley Municipal Code be referred to the City Manager and Planning Department to be modified in accordance with the Referral as part of the 2022 Code adoption cycle, including the following changes:

1. Do not allow excess flow valves to substitute for motion-activated shut-off valves as a way to comply with this ordinance.
2. Clarify requirements for excess flow valves and motion activated (seismic) valves.
3. Include a provision to include gas valves for common areas when required for any individual unit of a building.
4. Do not include any requirements regarding sale or transfer of the building.
5. Remove the dollar limit on the modifications and replace with a requirement to comply any time a plumbing or mechanical permit is issued.

In addition, the Commission recommends the inclusion of wording in the Berkeley Emissions Saving Ordinance (BESO) to require that in any transfer of property, that the property be required to equipped with a seismic gas shutoff valve.

FISCAL IMPACTS OF RECOMMENDATION

Staff savings realized from first responders not having to shut off valves manually in case of emergency.

Costs will include staff time to submit ordinance to the Building Standards Commission. In addition, building inspector staff time will be necessary to ensure compliance with new provisions.

CURRENT SITUATION AND ITS EFFECTS

Currently, BMC 19.34.040 requires automatic gas shut-off valves in all new construction or existing buildings that undergo repair or alteration exceeding \$50,000 consistent with sewer lateral requirements. However, it makes several exceptions for multi-unit buildings, as described in Attachment 2. As a result, residents of multi-unit buildings as well as neighboring buildings that may be impacted by a gas-driven fire after an earthquake, are not protected by a gas shut-off valve requirement.

BACKGROUND

In October of 2019 the Disaster and Fire Safety Commission received a referral from Councilmembers Harrison, Wengraf, Hahn, and Bartlett on modifications to the BMC 19.34.040 Gas Shut-Off Valves ordinance.

The Referral's proposed ordinance modifications expands the Gas Shut-Off Valves requirement by removing several exceptions, including an exception for multi-unit buildings.

The Referral was discussed by the DFSC in the 12/4/19, 1/22/20, and 2/26/20 meetings. Several meetings subsequent were cancelled due to Covid-19.

At the March 24, 2021 regular meeting of the Disaster and Fire Safety Commission, the commission took the following action:

Action: Recommend that changes of the Berkeley Municipal Code be referred to the City Manager and Planning Department to be modified in accordance with the Referral as part of the 2022 Code adoption cycle: Couzin

Second: Stein

Vote: 9 Ayes - Couzin, Dean, Bradstreet, Degenkolb, Grimes, Bedolla, Simmons, Rader, Stein.

Additional background can be found in the Referral, Attachment 1.

ENVIRONMENTAL SUSTAINABILITY

In addition to potentially saving lives and property, increasing gas shut-off valve use may reduce the spread of house-fires and wildland-urban interface fires, reducing the pollution, hazardous waste, loss of habitat, and other environmental damage caused by uncontrolled fires, and reducing greenhouse gas emissions caused by gas leaks after an earthquake.

RATIONALE FOR RECOMMENDATION

The DFSC generally concurs with the rationale for this recommendation described in the Referral. The modifications to the ordinance are intended to increase the use of automatic gas shutoff valves to help reduce or prevent gas-related fires in the event of an earthquake.

In a major earthquake, gas piping is subjected to forces which may result in significant leaks of natural gas. These leaks can in turn result in serious fires or explosions.

A good article about the dangers of gas fires in an earthquake and the performance of Motion Activated Gas Shutoff Valves can be found here:

<http://www.strandearthquake.com/psgsv.html>.

The DFSC differs from the Referral regarding excess flow valves:

The ordinance modifications in the Referral allow the use of excess flow shut-off valves in place of motion-activated shut-off valves. The DFSC recommends against allowing excess flow valves to substitute for motion-activated shut-off valves.

Excess flow valves are appropriate for connection to individual appliances and are readily available incorporated in appliance connection lines. However, these valves would have to allow for a very large flow if connected to a whole house, and the leaks resulting from an earthquake may not be adequate to trigger an excess flow valve, while still being large enough to create a severe potential for fire or explosion.

Therefore, we recommend against allowing excess flow valves at the whole-house level to satisfy the requirements of the ordinance. Our edits in Attachment 1 incorporate this suggestion.

The DFSC believes that setting a minimum project value to trigger the installation of seismic gas shutoff valves is not the right way to trigger that requirement. In practice, the installation of a Seismic Gas Shutoff Valve is a simple task for a plumbing or mechanical contractor, however it is not within the designated ability of many other contractors. The \$10,000 minimum value set could easily be exceeded by work done by persons not approved to contract for such work, which could add significantly to the cost of a contract. On the other hand, the work required to install a seismic shutoff valve is generally less than an hour for a mechanical or plumbing contractor and the valve itself will usually cost less than \$150. The change in cost to the property owner should be minor compared to the cost of the other work performed under mechanical or plumbing permits. Therefore, it makes sense to require that having an operational seismic gas shutoff valve in place to receive a final signoff on a permit is not a significant burden to the property owner.

Finally, the DFSC has been informed that the building department does not get involved with transfer of property except as permit applications are filed. Any requirements affecting the transfer of property, especially those involving natural gas service, should be addressed through the Office of Energy and Sustainable Development.

ALTERNATIVE ACTIONS CONSIDERED

n/a This is in response to a City Council referral.

CITY MANAGER

The City Manager concurs the content and recommendations of the Commission's Report.

CONTACT PERSON

Keith May, Secretary, Disaster and Fire Safety Commission, 510-981-5508

Attachments:

1. 10/19/2019 referral to the Disaster and Fire Safety Commission



Kate Harrison
Councilmember District 4

CONSENT CALENDAR
October 29, 2019

To: Honorable Mayor and Members of the City Council
From: Councilmembers Harrison, Wengraf, Hahn, and Bartlett
Subject: Amending Chapter 19.34 of the Berkeley Municipal Code to Expand Automatic Gas Shut-Off Valve Requirements in Multifamily, Condominium and Commercial Buildings Undergoing Renovations and to All Existing Buildings Prior to Execution of a Contract for Sale or Close of Escrow

RECOMMENDATION

Refer to the Disaster and Fire Safety Commission to consider an ordinance amending Berkeley Municipal Code (BMC) 19.34.040 to expand requirements for automatic natural gas shut-off valves or excess flow valves in multifamily, condominium and commercial buildings undergoing renovations and in all existing buildings prior to execution of a contract for sale or close of escrow. Ask the Commission to consider other triggers as appropriate.

POLICY COMMITTEE RECOMMENDATION

On October 3, 2019, the Facilities, Infrastructure, Technology, Environment & Sustainability Committee adopted the following action: M/S/C (Harrison/Robinson) to send the item with a Positive Qualified Recommendation back to the City Council with the following amendments.

Amend the recommendation revised to read as follows:

1. Refer to the Disaster and Fire Safety Commission to consider an ordinance amending Berkeley Municipal Code (BMC) 19.34.040 to expand requirements for automatic natural gas shut-off valves or excess flow valves in multifamily, condominium and commercial buildings undergoing renovations and in all existing buildings prior to execution of a contract for sale or close of escrow and to ask the Commission to consider other triggers as appropriate.

Amend the Financial Implications to read:

Staff savings realized from responders not having to shut off gas in an emergency.

Vote: All Ayes.

BACKGROUND

The California Building Standards Code, or Title 24 of the California Code of Regulations, specifies the standards for buildings and other structures in California. Title 24 is intended to protect public health, safety, and general welfare building occupants, and is updated at the state level and adopted by local jurisdictions every three years. Municipalities are permitted to make local amendments to the Building Standards Code¹ as deemed necessary for general welfare, as long as they are submitted to the California Building Standards Commission with the necessary findings. The ideal time to update local buildings codes is before the next code cycle. Berkeley will adopt the 2019 code on January 1, 2020.

Natural gas in buildings poses significant risks to health and safety. A recent ordinance adding Chapter 12.80 to the Berkeley Municipal Code phases out natural gas in new buildings.² This will make Berkeley's new building stock safer and greener over time, but there is an outstanding need to prevent seismic and other disasters in existing buildings.

Gas shut-off valves are a component of a plumbing system capable of preventing the flow within a gas piping system. Shut-off valves allow for a resident to stop the flow of gas in their homes in case of an emergency, such as an earthquake or a gas leak.

All existing buildings, if they have natural gas, should have a shut-off valve of some kind. However, manual shut-off valves require timely attention during a seismic event, physical access and exertion, and mechanical knowledge to operate. In case of a natural disaster, relying purely on manual shut-off valves can be dangerous. For example, following the 2010 San Bruno explosion, Pacific Gas & Electric officials testified before the National Transportation Safety Board that "gas feeding the flames could have been shut off an hour earlier if PG&E had automatic or remotely controlled valves on the pipeline that exploded."³ Since the San Bruno explosion, gas companies across California have urged a fast transfer to automatic shut-off valves.

Currently, BMC 19.34.040 requires automatic gas shut-off valves in all new construction or existing buildings that undergo repair or alteration exceeding \$50,000 consistent with sewer lateral requirements. However, it makes blanket exceptions for buildings with individually metered residential units when the building contains five or more residential units, unless the units are condominiums, putting renters at risk of physical harm.

¹ "Local Amendments to Building Standards—Ordinances," California Building Standards Commission, <https://www.dgs.ca.gov/BSC/Codes/Local-Jurisdictions-Code-Ordinances>.

² Susie Cagle, "Berkeley became first US city to ban natural gas. Here's what that may mean for the future," The Guardian, <https://www.theguardian.com/environment/2019/jul/23/berkeley-natural-gas-ban-environment>.

³ Paul Rogers, "PG&E officials grilled about automatic shut of valves," Mercury News, March 1, 2011, <https://www.mercurynews.com/2011/03/01/pge-officials-grilled-about-automatic-shut-off-valves-3/>.

In recommending this exception for multi-unit buildings in 2010, City staff intended to reduce the cost burden to property owners. For example, City staff were concerned that the ordinance would require very large multifamily buildings to install shut-off valves in every unit in a 50 unit building when completing a \$50,000 renovation.⁴

While financial costs are important, there will also likely be significant costs to human life and property resulting from natural gas infrastructure during seismic events that far outweigh the costs to property owners for installing shut-off valves. A more-tailored and comprehensive approach was adopted by the City of Los Angeles's 1997 policy in the wake of the Northridge Earthquake, requiring valves in all multifamily, condominium and commercial units when a permit for any addition, alteration or repair valued in excess of \$10,000 is taken out affecting the entire building, or in specific units affected by work in excess of \$10,000.⁵

This item proposes to apply the \$50,000 threshold for all work affecting multifamily, condominium and commercial buildings exclusive of work affecting the units and apply a \$10,000 threshold to work in excess of \$10,000 inclusive of any individual unit. In addition, this item proposes maintaining the current single-family home requirement when a permit is taken out of any addition, alteration or repair valued in excess of \$50,000.

Consistent with the Los Angeles code, the item removes the exception for commercial occupancies and uses in mixed use buildings of residential and non-residential occupancies with a single gas service line larger than 1 1/2 inches that serves the entire building. Berkeley City staff in 2010 previously suggested that pipes larger than 1 1/2 inches were marginally more expensive to retrofit with valves and therefore warranted an exception. Though upon further review, the few additional hundred dollars in labor and materials per valve does not warrant an exception due to ongoing risks to health and safety.

Berkeley is on top of one of California's most dangerous fault lines, the Hayward fault, making it prone to earthquakes. The extreme fire risk associated with natural gas infrastructure is illustrated by the 2017 U.S. Geological Survey stimulation of "a 7.0 quake on the Hayward fault line with the epicenter in Oakland." The agency's report predicted that "about 450 large fires could result in a loss of residential and commercial building floor area equivalent to more than 52,000 single-family homes and cause

⁴ "Installation of Automatic Gas Shut-off Valves," Berkeley Planning and Development Department, July 13, 2010, <https://www.cityofberkeley.info/recordsonline/api/Document/Af7NhvRQQKZ1%C3%81%C3%89xY9QpwmChW6QBqKp%C3%89scsKBclRXOVsvA1QlgXjP%C3%89Rs2zLVn2kCnCNjn918yaZSDbGqiogM WpBM%3D/>

⁵ City of Los Angeles Ordinance No. 171874, December 16, 1997, http://clkrep.lacity.org/onlinedocs/1995/95-0217-S1_ORD_171874_02-05-1998.pdf; See also, City of Los Angeles Plumbing Code Section 94.1217.0.

property (building and content) losses approaching \$30 billion.”⁶ The report identified ruptured gas lines as a key fire risk factor. This finding mirrors the destructive gas fires resulting from the Loma Prieta (1989) and Northridge (1994) earthquakes. According to the most recent census, 59.1% of units in Berkeley are occupied by renters.⁷ It is vital to extend the shut-off valve requirement to rental units to prioritize the health and safety of all Berkeley residents and the broader community.

Beyond extending this protection to large rental buildings during major renovations, this ordinance amends BMC 19.34 to mirror the City of Los Angeles’s code to require installing automatic shut-off valves prior to execution of a contract for sale in all buildings and units therein.

The transfer of property triggers various state and local building code requirements. For example, at time of sale the state health and safety code requires that, gas water heaters are seismically braced, anchored, or strapped.⁸ Other local ordinances related to environment, such as the BMC 19.81: the Building Energy Saving Ordinance, require energy efficiency reports prior to time of sale. The intention of Section 1209.4.2 is to ensure that all buildings that are sold in Berkeley include automatic gas shut-off valves, therefore enhancing seismic safety across the existing building stock.

FINANCIAL IMPLICATIONS

Staff savings realized from first responders not having to shut off valves manually in case of emergency.

Staff time to submit ordinance to the Building Standards Commission. In addition, building inspector staff time will be necessary to compliance with new provisions.

ENVIRONMENTAL SUSTAINABILITY

Mandating shut-off valves in rental units undergoing renovation and all units at sale will prevent the excess release of greenhouse gases (methane) due to gas leaks and fires during seismic events and other related emergencies.

CONTACT PERSON

Councilmember Kate Harrison, Council District 4, (510) 981-7140

ATTACHMENTS

1: Ordinance

⁶ “The HayWired earthquake scenario—Engineering implications,” U.S. Geological Survey, April 18, 2018, <https://pubs.er.usgs.gov/publication/sir20175013v2>.

⁷ “Bay Area Census: City of Berkeley” <http://www.bayareacensus.ca.gov/cities/Berkeley.htm>

⁸ Health and Safety Code § 18031.7, https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=18031.7.&lawCode=HSC

AMENDING CHAPTER 19.34 OF THE BERKELEY MUNICIPAL CODE TO EXPAND
AUTOMATIC GAS SHUT-OFF VALVE REQUIREMENTS IN MULTIFAMILY,
CONDOMINIUM AND COMMERCIAL BUILDINGS UNDERGOING RENOVATIONS
AND TO ALL EXISTING BUILDINGS PRIOR TO EXECUTION OF A CONTRACT FOR
SALE OR CLOSE OF ESCROW

BE IT ORDAINED by the Council of the City of Berkeley as follows:

Section 1. That Berkeley Municipal Code Section 19.36.040 is hereby amended to read as follows:

19.34.040 Gas Shut-Off Valves.

Chapter 12 of the 2016~~9~~ California Plumbing Code is adopted in its entirety subject to the modifications thereto which are set forth below.

1209.2 General Requirements for Gas Shut-Off Valves. Automatic gas shut-off valves installed either in compliance with this Section or voluntarily pursuant to a plumbing permit issued on or after the effective date of this Section, shall comply with the following:

1209.2.1 All valves shall:

1. Comply with all applicable requirements of the Berkeley Plumbing Code.
2. Be tested and listed by recognized testing agencies such as the Independent Laboratory of the International Approval Services (IAS), Underwriter's Laboratory (UL), International Association of Plumbing and Mechanical Officials (IAPMO) or any other agency approved by the State of California Office of the State Architect (OSA).
3. Be listed by the State of California Office of the State Architect (OSA).
4. Be installed on downstream side of the gas utility meter.
5. Be installed in accordance with the manufacturer's instructions.
6. Be installed in accordance with a plumbing permit issued by the City of Berkeley.
7. Provide a method for expedient and safe gas shut-off in an emergency.
8. Provide a capability for ease of consumer or owner resetting in a safe manner.

1209.2.2 Motion activated seismic gas shut-off valves shall be mounted rigidly to the exterior of the building or structure containing the fuel gas piping, unless otherwise specified in the manufacturer's installation instructions.

1209.3 Definitions

For the purpose of this Section terms shall be defined as follows:

AUTOMATIC GAS SHUT-OFF VALVE shall mean either a motion activated gas shut-off valve or device or an excess flow gas shut-off valve or device.

DOWNSTREAM OF GAS UTILITY METER shall mean all gas piping on the property owner's side of the gas meter and after the service tee.

EXCESS FLOW GAS SHUT-OFF VALVE shall mean an approved valve or device that is activated by significant gas leaks or overpressure surges that can occur when pipes rupture inside a structure. Such valves are installed at each appliance, unless otherwise specified by the manufacturer's installation instructions.

MOTION ACTIVATED GAS SHUT OFF VALVE shall mean an approved gas valve activated by motion. Valves are set to activate in the event of a moderate or strong seismic event greater than 5.0 on the Richter scale.

UPSTREAM OF GAS UTILITY METER shall mean all gas piping installed by the utility up to and including the meter and the utility's service tee.

1209.4 Devices When Required. Approved automatic gas shut-off or excess flow valves shall be installed as follows:

1209.4.1 New Construction. In any new building construction containing gas piping for which a building permit is first issued on or after the effective date of this Section.

1209.4.2 Existing Buildings. In any existing building, when any addition, alteration or repair is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$50,000.

1209.4.2.1 Multifamily, Condominium and Commercial Buildings.

1. In any existing commercial, multifamily and condominium and commercial building, and applicable to all units and tenant spaces therein if the building is individually metered and lacks a central automatic shut-off valve downstream of the utility delivery point, when any addition, alteration or repair exclusive of individual units or tenant spaces is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$50,000.
2. In any existing commercial, multifamily and condominium unit for all gas piping serving only those individual units, when any addition, alteration or repair inclusive of individual units or tenant spaces is made for which a building permit is issued on or after the effective date of this Section and the valuation for the work exceeds \$10,000.

1209.4.3 Sale of Existing Buildings.

The requirement to install seismic gas shutoff or excess flow shutoff valves shall apply

prior to entering into a contract of sale, or prior to the close of escrow when an escrow agreement has been executed in connection with a sale as follows:

1. in any building or structure, and all units therein when gas piping serving those units lacks a central automatic shut-off valve downstream of the utility delivery point; or
2. in an individual condominium unit for all gas piping serving that individual unit.

1209.4.4 Exceptions:

~~1.—Buildings with individually metered residential units when the building contains 5 or more residential units, unless the units are condominiums.~~

~~2.—For residential or mixed use condominium buildings, valves are required when the value of the work exceeds \$50,000 in any single condominium unit or when any work done outside of the units exceeds \$50,000.~~

~~3.—Commercial occupancies and uses in mixed use buildings of residential and non-residential occupancies with a single gas service line larger than 1 1/2 inches that serves the entire building.~~

14. Automatic gas shut-off valves installed with a building permit on a building prior to the effective date of this Section provided the valves remain installed on the building or structure and are adequately maintained for the life of the building or structure.

25. Automatic gas shut-off valves installed on a gas distribution system owned or operated by a public utility.

Section 2. The effective date of this amendment shall be January 1, 2020, or the effective adoption date of the 2019 California Building Standards Code, whichever is sooner.

Section 3. Copies of this Ordinance shall be posted for two days prior to adoption in the display case located near the walkway in front of the Maudelle Shirek Building, 2134 Martin Luther King Jr. Way. Within 15 days of adoption, copies of this Ordinance shall be filed at each branch of the Berkeley Public Library and the title shall be published in a newspaper of general circulation.

