

# 2022 Denver Energy Code - Training Q&A

## Commercial Electrification 5/24/2023



Question	Answer
How will oversizing heat pumps to meet heating capacity effect the efficiency of the same unit while it is in cooling? How will this effect electrification?	Variable capacity heat pumps which limit power consumption based on building loads. Additionally, supplemental gas or electric heat is allowed in recognition that while cold climate heat pumps are available in the market, future developments are coming.
sounded like both electric and gas storage water heating is barred. Also on-demed gas and electric and not allowed. So what is allowed?	Heat pumps and gas and electric boilers are allowed. Section C404.10 has multiple exceptions. Electric resistance storage water heating is allowed when energy compliance is demonstrated through the performance path. On demand electric water heaters are allowed when installed within 10' of point of use.
"when cost effective" is an interesting qualifier. Can someone speak to the criteria that's been used to determine the threshold for this?	In the 2022 Denver Energy Code, when replacing existing unitary AC / condensing units serving a heated space, gas furnaces, and gas water heaters, submitting an Electrification Feasibility Report is an option. However, this report is non-binding.  The requirement for replacing existing unitary AC / condensing units serving a heated space, gas furnaces, and gas water heaters with heat pumps when cost-effective occurs in 2025.  An economic hardship exemption will not be available for a system that can be replaced with an electric heat pump at near cost parity, which will be defined as the cost of a replacement of a natural gas space or water heating system to a partially electric heat pump system, including all incentives, that is within five (5)—fifteen (15) percent of a like-for-like natural gas space or water heating system replacement, including the social cost of carbon dioxide of the like-for-like gas system replacement over its lifetime. Source: <a href="https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU">https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU</a>
When building a new multifamily building does the pool heating equipment need to be all electric?	<i>Answered Live (see recording)</i> <b>Follow up answer:</b> To clarify the response given in the meeting, while pool heaters are defined as "service water heating" equipment, C404.10 only applies to water heaters supply potable water. Therefore, pool heaters are not required to be electrified.
Is there still space within the New Building Electrification Pilot for more projects to apply?	<a href="#">live answered - Yes, the pilot program is still accepting applications. 50% of funds are prioritized for affordable housing or other equity priority building types. Learn more and apply on the New Building Electrification Rebates website.</a>
what is the difference between a "boiler" and a "water heater"?	Boiler' is as defined by the IMC - additional clarification: For application of C404.10, exception 11 was added: 11. Water heating equipment with at least one of the following: a heat input of 200,000Btu/hr or greater; or an operating temperature of 210 degrees F or greater; or a nominal storage capacity of 120 gallons or greater.
For a heat pump water heater, what if exhausting cold air from heat pump operation is too difficult?	Exhausting cold air is not required if heat pump water heaters if sufficient volume is provided. See section C404.12.
Does that mean in 2025 permits would require plan review for replacing hot water systems such as steam hydronic FCU's?	Replacing gas fired boilers will be required to be submitted for plan review beginning in 2025 per the Energize Denver Ordinance. <a href="https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU">https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU</a> The replacement of hydronic fan coils "like for like" would continue to be allowed to be replaced as a quick permit without plan review. Relocation or new hydronic fan coils will require plan review and the permitting process has not changed.
Will we have Xcel on a call to assure all new developers that regardless of our new building location, they have the proper infrastructure to provide the increased power to our new buildings?	Many projects can be built all-electric today without the need for grid reinforcements as the grid is sufficiently robust in the area of that project to support the development without any upgrades, but as you may have experienced, sometimes there can be challenges. Denver seeks to collaborate with the building community to identify infrastructure barriers and best practices. We will be bringing recommendations to the Colorado Public Utilities Commission ("PUC") as it investigates potential policy, program, and tariff changes needed to prepare the distribution grid for building and transportation electrification in the next year. If this is something you are interested in please contact <a href="mailto:electrification@denvergov.org">electrification@denvergov.org</a> Specifically, we are gauging interest from representatives in the building community to participate in a coalition with the following goals: Identify key challenges related to electric system infrastructure that prevent or delay the development of electrified buildings (e.g., lack of information on load capacity, requirements to pay for grid reinforcement costs, practices in determining transformer sizing); Discuss potential technical solutions to manage building demand and minimize design load on electric infrastructure; and Establish and prioritize a set of recommended changes to policies and processes to reduce identified barriers.
Are there any big changes we can anticipate impacting this subject matter in the Denver 2022 amendment changes that City Council will vote on on June 5th?	The June 2023 proposed updates are corrections and clarifications, not big changes. These are available at <a href="http://denvergov.org/buildingcode">denvergov.org/buildingcode</a> .
Can we get an exemptions for the 2025 target compliance, if we are waiting for the Steam-to-Electricity Pilot to open and rebates for steam buildings to become available delaying multifamily upgrades?	Please contact <a href="mailto:energizedenver@denvergov.org">energizedenver@denvergov.org</a> or 844-536-4528 to discuss your situation and learn about alternate compliance and timeline adjustments.
For new construction, will electric reheat need to be limited to 5 W/SF or less? Or is that only when specific Additional Efficiency Credits are being pursued?	C403.2.4 for space heat equipment has several exceptions for electric reheat. These are 1) a budget of 5 W/sf of electric resistance space heat and 2) electric resistance for buildings that comply with a performance path. The Additional Efficiency Credit C406.13 Electric Space Heating has a budget for electric resistance of 5 W/sf for VAV systems and 1.35 W/sf for all other areas.

Hi, just to confirm, this is all for new construction?	<i>Answered Live (see recording)</i>
For large boiler systems and central utility plants that are installed with gas, are their guidelines for the increase in electric service size that will be required for electric ready? This could add additional electrical services and electrical gear to these builds that are based on speculative future loads if "electric ready" needs to be accounted for from the electric service, through the distribution panels to a labeled junction box in the area. Policy or guidelines for these CUP style systems would be useful for large commercial projects.	<i>Answered Live (see recording)</i>
"when cost effective" is an interesting qualifier. Can someone speak to the criteria that's been used to determine the threshold for this?	<i>Answered Live (see recording)</i>
What determines "when its cost effective"?	<i>Answered Live (see recording)</i>
What determines "when its cost effective"?	<i>Answered Live (see recording)</i>  <b>Follow up answer:</b> An economic hardship exemption will not be available for a system that can be replaced with an electric heat pump at near cost parity, which will be defined as the cost of a replacement of a natural gas space or water heating system to a partially electric heat pump system, including all incentives, that is within five (5)—fifteen (15) percent of a like-for-like natural gas space or water heating system replacement, including the social cost of carbon dioxide of the like-for-like gas system replacement over its lifetime. Source: <a href="https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU">https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREEXBU</a>
When replacing equipment in existing buildings. who determines what is cost effective?	<i>Answered Live (see recording)</i>
Are you able to define the conditional "where cost effective"?	<i>Answered Live (see recording)</i>
What is the affect on restuarants/food service venues where gas cooking is common?	<i>Answered Live (see recording)</i>
Adding on to the restaurant question, gas hot water heaters are included in the code, even though gass cooking is not, correct?	<i>Answered Live (see recording)</i>
does COMCHECK determine if it's right-sized or not?	<i>Answered Live (see recording)</i>
Just so I am clear, depending on if my building is submitting for permit in 2024 or earlier I only need to account for either the 2022 Denver Energy Code OR Energize Denver NOT for both since the Energy Code basically mandates electrification today, vs Energize Denver suggesting it at equipment end of life, correct?	<i>Answered Live (see recording)</i>
When building a new multifamily building code, would any of the following gas equipment require additional electric infrastructure: outdoor kitchen (BBQ), outdoor fire pits, amenity fireplace? thanks	<i>Answered Live (see recording)</i>
Will this presentation be available after to share?	We will be posting the recorded presentation and slides on <a href="https://denvergov.org/EnergyCode">Denvergov.org/EnergyCode</a> in the upcoming weeks.
Were the proposed amendments to the 2022 code passed by City Council earlier this week?	City Council approval of proposed updates are anticipated in early June
Were the proposed amendments to the 2022 code passed by City Council earlier this week?	That's correct. This week was first reading. Second reading and vote is scheduled for June 20th.
Please include the URL path to the location of this presentation, dropped into the chat if possible.	We will be posting the recorded presentation and slides on <a href="https://denvergov.org/EnergyCode">Denvergov.org/EnergyCode</a> in the upcoming weeks.
Does space heating via hot water fall under water heating or space heating?	Space heating with hot water or other sources fall under space heating requirements. Service water heating requirements are for hot water that is not comfort heating.
So once Jan 1st, 2024 comes, all buildings must begin switching out gas for electric with space heating?	Yes, 1/1/2024 is when C403.2.3 Partial Electrification for Space Heating becomes effective
So once Jan 1st, 2024 comes, all buildings must begin switching out gas for electric with space heating?	Note that this only applies if/when you are pulling permits -- new buildings or replacements. You are not required to swap out existing equipment if it's still working fine for you.
I understand if you are planning on replacing a furnace starting in 1/1/24 it needs to be electric, but if you do not have a plan in place to replace, are you saying we have to put one in place and make the change in 1/1/24 or face a monetary penalty? If we are an older building, don't we have more time than 6 months to replace if we are meeting our site EUI target?	Existing equipment does not need to be replaced until the time the building owner decides. We'll cover code requirements for existing building equipment replacement in a few slides.
Are you allowed to use a gas storage water heater if it is to be used for space heat and domestic hot water?	A combination gas storage water heater used for space heating and service water heating would be allowed if it meets the exceptions of C404.10 service water heating. The space heating requirements for electrification only apply to the warm air furnaces and not gas boiler heat.

aquatherm/hydronic space heating not discussed/amended	Correct. Space heating electrification (C403.2.4) applies only to warm air furnaces. Electrification of Service water heating requirements of C404.10 would apply.
If a central water heater system is used are you still required to provide the closet location for individual WH in the unit for future?	No. Space requirements only apply to the gas storage water heater location.
Do you know what adjoining communities are planning in this respect. Do they have similar requirements coming as wells?	Many other Colorado jurisdictions have some electrification requirements, electric readiness requirements, or incentives for all-electric paths through the code. Some examples are Boulder, Lakewood, Crested Butte. The Colorado Energy Office is also developing an electric and solar ready code.
oversizing isn't prohibited - especially in the prescriptive path where there is basically nothing limiting the size of the equipment - only the efficiency. This is a big weakness. Oversized equipment doesn't operate as efficiently as right-sized equipment	Right sizing equipment is required in the Energy Code section C403.3.1 for space heating equipment.
Can I ask why on demand electric water heaters don't fit the new standards? I'm a bit unclear.	There is an exception for C404.10 for on demand electric water heaters. "Instantaneous electric water heaters located within 10 feet of the point of use."
When replacing equipment in existing buildings. who determines what is cost effective?	An economic hardship exemption will not be available for a system that can be replaced with an electric heat pump at near cost parity, which will be defined as the cost of a replacement of a natural gas space or water heating system to a partially electric heat pump system, including all incentives, that is within five (5)—fifteen (15) percent of a like-for-like natural gas space or water heating system replacement, including the social cost of carbon dioxide of the like-for-like gas system replacement over its lifetime. Source: <a href="https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREXBU">https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREXBU</a>
Are you able to define the conditional "where cost effective"?	An economic hardship exemption will not be available for a system that can be replaced with an electric heat pump at near cost parity, which will be defined as the cost of a replacement of a natural gas space or water heating system to a partially electric heat pump system, including all incentives, that is within five (5)—fifteen (15) percent of a like-for-like natural gas space or water heating system replacement, including the social cost of carbon dioxide of the like-for-like gas system replacement over its lifetime. Source: <a href="https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREXBU">https://library.municode.com/co/denver/codes/code_of_ordinances?nodeId=TITIREMUCO_CH10BUBURE_ARTIIBUFICO_S10-20ELREXBU</a>
Will these questions and answer be available?	<i>Answered Live (see recording)</i>