

**Resolution Relating to**

DECARBONIZING ALL BUILDINGS IN BURLINGTON BY  
2030

**RESOLUTION 7.04**

Sponsor(s): Councilors Hanson,  
Bergman, Traverse

Introduced: 05/09/22

Referred to: \_\_\_\_\_

Action: adopted as amended

Date: 05/09/22

Signed by Mayor: 05/20/22

**CITY OF BURLINGTON**

In the year Two Thousand Twenty-Two .....

Resolved by the City Council of the City of Burlington, as follows:

1 That WHEREAS, the City Council has declared that a climate emergency exists which threatens our community  
2 and human health and safety, biodiversity, and our common environment; and

3 WHEREAS, the heating of buildings accounts for the second largest share of greenhouse gas emissions in  
4 the city; and

5 WHEREAS, the City Council has set the goal of achieving net zero fossil fuel use in the heating sector  
6 by 2030; and

7 WHEREAS, the City of Burlington and the Burlington Electric Department have adopted a goal to  
8 reduce and eventually eliminate fossil fuel use in heating and ground transportation (the “Net Zero Energy”  
9 Goal”) as set forth in the Net Zero Energy Roadmap, dated September 5th, 2019; and

10 WHEREAS, on May 10, 2021, the Burlington City Council approved an ordinance, known as “rental  
11 weatherization” which requires rental property owners to maintain thermal energy efficiency standards; and

12 WHEREAS, on June 28, 2021, the Burlington City Council approved an ordinance requiring primary  
13 heating systems in new buildings to be powered by renewable energy; and

14 WHEREAS, the 2021 update to the Net Zero Energy roadmap shows that natural gas usage in  
15 buildings has declined slightly since 2018, but not at the pace needed to achieve net zero by 2030; and

16 WHEREAS, a suite of additional policies must be implemented in the coming months and years in  
17 order to achieve net zero energy in the heating of Burlington buildings by 2030; and

18 WHEREAS, on March 2, 2021, Burlington voters approved a proposed change to the City charter that  
19 would allow the City to regulate thermal energy systems in both new and existing buildings; and

20 WHEREAS, on April 20, 2022, the Governor signed the voter- and legislature-approved charter  
21 change into law, creating the opportunity for the City to develop strong building decarbonization policies; and

22 WHEREAS, on March 2, 2021, Burlington voters approved the following ballot advisory question:

23 “Shall the voters of the City of Burlington advise the City Council and Mayor’s Administration, in its  
24 regulation of thermal energy systems in residential and commercial buildings, to create policies, programs,  
25 and incentives focused on delivering the benefits of the transition to clean energy to low- and moderate

26 income Burlingtonians, to Black, Indigenous, and people of color, and to otherwise disadvantaged community  
27 members?";

28        NOW THEREFORE BE IT RESOLVED, the Burlington City Council respectfully requests for the  
29 Administration to develop a public education campaign on how the heating of buildings accounts for the  
30 second largest share of greenhouse gas emissions in the city, their consequences in our environment and what  
31 are the merits and opportunities for new policy development for the City of Burlington; and

32        BE IT FURTHER RESOLVED, for this Public Education Campaign to take the form of town halls,  
33 summits, accessible written materials and community engagement with Burlington Neighborhood Planning  
34 Assemblies before any policy is developed that requires an approval of the voters of the City of Burlington;  
35 and

36        BE IT FURTHER RESOLVED that the City Council respectfully requests that the Burlington Electric  
37 Department, in collaboration with the Department of Permitting and Inspections, the Mayor's Administration,  
38 and City Councilors, develop a set of policy proposals for the City Council to consider which would accelerate  
39 the decarbonization of buildings in Burlington, with an initial focus on new construction, major renovations,  
40 large commercial buildings, and City buildings, and with the goal of decarbonizing all buildings by 2030; and

41        BE IT FURTHER RESOLVED that these policy proposals include policies that could be passed  
42 quickly as well as those that would take more time to develop, such as those requiring voter approval; and

43        BE IT FURTHER RESOLVED that these policy proposals include policies that deliver the benefits of  
44 the transition to clean energy to low- and moderate-income Burlingtonians, to Black, Indigenous, and people  
45 of color, and to otherwise disadvantaged community members; and

46        BE IT FURTHER RESOLVED that the City Council respectfully requests that the Burlington Electric  
47 Department present an initial report back on policy proposals for new construction, major renovation,  
48 municipal buildings, and large commercial buildings, including proposals that may require voter approval, to  
49 the City Council no later than the regular City Council meeting on July 18<sup>th</sup>, 2022.

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**ORIGINAL**

**DISTRIBUTION:**

I hereby certify that this resolution has been sent to the following department(s) on

BED General Manager Springer

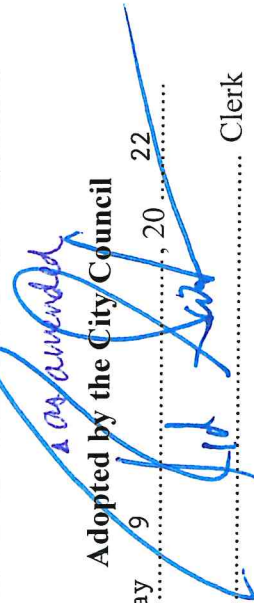
**RESOLUTION RELATING TO**

Decarbonizing All Buildings In Burlington By 2030

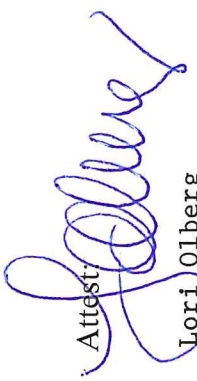
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*As Amended*  
**Adopted by the City Council**  
 May 9, 2022  
  
 Clerk

Approved: *May 20th 2022*  
  
 Mayor

Attest:  
  
 Lori Olberg

Licensing, Voting and Records Coordinator Vol. .... Page .....

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## MEMORANDUM

To: Burlington City Council

From: Darren Springer, General Manager  
Chris Burns, Director of Energy Services  
Jen Green, Director of Sustainability and Workforce Development  
Bill Ward, Director of Permitting & Inspections  
Patricia Wehman, Housing Division Manager

Date: July 18, 2022

Subject: Initial Progress Report on Thermal Charter Change Work/City Council Resolution Relating to Decarbonizing All Buildings in Burlington by 2030

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Burlington Electric Department (BED) and Department of Permitting and Inspections (DPI) are pleased to provide this report to update the City Council on our work to-date related to the 5.9.22 Council Resolution to Decarbonize All Buildings in Burlington by 2030. The Resolution is included as an attachment to this memo.

### Background

In September of 2019 BED and the City of Burlington issued the Net Zero Energy Roadmap<sup>1</sup>, which laid out pathways to achieving Burlington's ambitious Net Zero Energy 2030 goal. The Roadmap was adopted by the City Council in September 2019, and BED has issued annual updates on emissions progress.<sup>2</sup>

While transportation emissions are the largest source of emissions nationally, in Vermont, and in Burlington, the Roadmap distinguished between emissions from Burlington residents travel and the miles traveled in the City by visitors and commuters. The Roadmap primarily accounts for emissions from Burlington residents travel (in or out of the City), because BED and the City have a greater ability to affect those emissions than the emissions from visitors.

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<sup>1</sup> The Roadmap, produced by Synapse Energy Economics, with transportation sector support from RSG, is available at [www.burlingtonelectric.com/nze](http://www.burlingtonelectric.com/nze).

<sup>2</sup> the latest update is available here - [https://go.boarddocs.com/vt/burlingtonvt/Board.nsf/files/CDSHEU48303A/\\$file/NZE%202022%20Roadmap%20Update%20-%20Updated.pdf](https://go.boarddocs.com/vt/burlingtonvt/Board.nsf/files/CDSHEU48303A/$file/NZE%202022%20Roadmap%20Update%20-%20Updated.pdf).

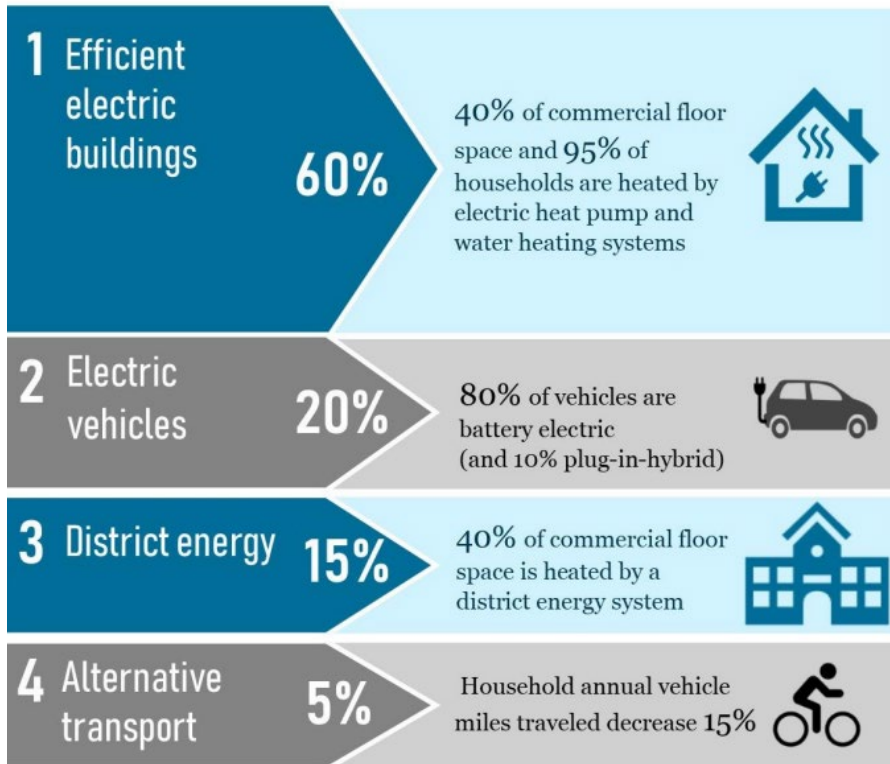
**Burlington Electric Department**  
585 Pine Street Burlington, VT 05401  
burlingtonelectric.com

Phone 802.658.0300



Due to this distinction, building/thermal emissions (the second largest source of emissions in Vermont and in Burlington) pathways represent a larger share of the Roadmap than transportation emissions. Specifically, 75 percent of the Roadmap’s emissions reduction outlined would come from making buildings more efficient, moving buildings to electrification of thermal loads, and moving buildings to renewable fuel use, including specifically district energy as well as other renewable fuels. The following chart outlines the 4 fossil fuel reduction pathways, starting with building electrification:

## 4 Fossil Fuel Energy Reduction Pathways



The Roadmap recognizes that policies at the local, state, and federal levels will have an important role to play, along with incentives and technology development and partnerships in helping Burlington to reach its goals. Of note, the Roadmap specifically calls out the need to enact a policy that would require developers in Burlington to use zero fossil fuels for new construction/major renovation projects.<sup>3</sup> The Roadmap also recommends a policy to require buildings to meet or exceed certain efficiency standards, and move to electrification prior to replacing existing fossil fuel thermal equipment.<sup>4</sup>

In an effort to make progress on the Roadmap recommendations and the Net Zero Energy goal, the Mayor outlined a building emissions reduction proposal<sup>5</sup> in October of 2020, with BED, DPI, and the Office of Planning engaged in supporting that effort. The proposal focused on new construction and incorporated the use of carbon pricing. A portion of the proposal was advanced and eventually became the ordinance requirement<sup>6</sup> for new construction to use a primary

<sup>3</sup> See Net Zero Energy Roadmap, page 37

<sup>4</sup> See Net Zero Energy Roadmap, page 41

<sup>5</sup> <https://www.burlingtonvt.gov/Press/mayor-miro-weinberger-releases-building-electrification-proposal-to-dramatically-reduce-new>

<sup>6</sup> <https://www.burlingtonelectric.com/wp-content/uploads/Signed-CC-Ordinance-Chapter-8.-Building-And-Building-Construction-Addition-of-Article-V.-Heating-Systems-Signed.pdf>

renewable heating system, capable of serving at least 85 percent of the building's load, which became effective in September of 2021.

The portion of the proposal that addressed carbon pricing was determined to require a charter change, and the City proposed a charter change to allow for greater City authority to regulate greenhouse gas emissions in buildings, including the use of carbon pricing. Voters approved this Charter Change on Town Meeting Day in 2021 with approximately 65 percent voting in favor. An advisory ballot item (Question 7) during Town Meeting Day 2021 also passed. It recommended "delivering benefits of the transition to clean energy to low- and moderate income Burlingtonians, Black, Indigenous, and people of color, and to otherwise disadvantaged community members."

The Legislature passed the Charter Change during the 2022 session, and the Governor signed it in April of 2022, and it became Act M-9.<sup>7</sup> The Charter Change requires that any implementation of a carbon fee would need additional voter approval, and otherwise provides the City with broader authority to regulate emissions in residential and commercial buildings.

Following enactment of the Charter Change, the City Council passed, and the Mayor signed, the Resolution Relating to Decarbonizing All Buildings by 2030. It specifically asked BED and DPI to provide recommendations on policies related to new construction, major renovations, city buildings, and large existing commercial buildings. This builds on the work to create the primary renewable heating ordinance for new construction, and the weatherization standards for rental properties, also enacted in 2021.

#### **Work to-date**

BED and DPI note that it has only been approximately two months since the Resolution Relating to Decarbonizing All Buildings by 2030 was enacted, and that in addition to seeking policy recommendations, the Resolution also called for a public education effort on thermal energy use, including potentially summits, town hall meetings, NPA outreach, written materials, and community engagement. The policy recommendations in this area require significant public engagement, research, and consideration of a variety of impacts prior to implementation. With that said, BED and DPI share below our work to-date under this Resolution, our initial thinking relative to policy recommendations, and an outline of additional work and public engagement we plan to undertake.

#### *Research*

BED is fortunate to have the assistance of the Building Electrification Institute (BEI) for this initiative. BEI has also assisted on prior work including the consideration of the primary renewable heating requirement. BEI's staff includes former municipal officials, and they have provided BED examples of policies in other cold-weather cities, including Denver, Boston, and New York, as part of our initial research. All three cities are in the process of implementing ambitious building energy and emissions policies and programs and engaged in extensive stakeholder and public process around their programs.

In particular, we reviewed Boston's building performance standards which apply to non-residential buildings 20,000 square feet and larger. Boston's approach is to have reduction requirements on a regular five-year basis, on the path to net zero by 2050. Boston allows for alternative compliance payments that are equivalent to a carbon fee of \$234 per ton. Buildings have different types of targets based on their building type, and hardship exemptions are available. Boston is resourcing and staffing this policy program.

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<sup>7</sup> <https://legislature.vermont.gov/Documents/2022/Docs/ACTS/ACTM009/ACTM009%20As%20Enacted.pdf>

We also reviewed Denver’s policy which combines a building performance standard for buildings above 25,000 square feet, along with a requirement to replace end of life fossil fuel equipment with electrification options (where cost-effective) for all commercial and multi-family buildings. Denver’s goal is a 30 percent improvement in building energy performance by 2030, not a net zero goal. There will be alternative compliance options, as well as prescriptive options for certain buildings to comply in lieu of meeting the performance standard. Denver also will require replacement of end-of-life fossil fuel systems with heat pump systems where cost-effective with an implementation timeframe between 2025-2027. Denver will ensure electric appliance permitting is equivalent to gas to ensure opportunity for electrification. Denver is providing some incentive support to under-resourced buildings to help with compliance and is hiring staff to implement these policy programs.

Lastly, we reviewed New York City’s building performance standard which applies to buildings over 25,000 square feet, with some specific prescriptive options for affordable housing to comply. The policy goal is to reduce greenhouse gas emissions intensity 80 percent by 2050, with five-year target periods that start in 2024. The standard starts with the most emissions intensive buildings and ramp up from there. The penalty for non-compliance is a fee equivalent to \$268 per ton of carbon and goes to the NYC general fund. With approximately 60 percent of buildings covered by the policy, there is study of whether carbon trading among buildings could work in the New York City market.

#### *Initial Stakeholder Engagement*

By July 18, BED and DPI will have met with UVM, UVM Medical Center, and Champlain College, organizations that would potentially have a number of buildings impacted by new regulations for large existing commercial buildings. As these entities have many buildings that would be affected, it will be important to work with their leadership on designing achievable goals. BED and DPI appreciate their initial feedback and thoughts and are committed to working with them and other stakeholders as we move forward. In addition, as outlined below, BED and DPI are preparing to engage with the broader community to increase awareness of this policymaking effort, and solicit community feedback.

#### *Thoughts on Policy Recommendations*

BED and DPI reiterate that the policy recommendations below focus on new construction, major renovation, city buildings, and large existing commercial buildings. They would not apply otherwise to existing residential buildings or smaller existing commercial buildings. BED continues to support a clean energy transition for those buildings through strong incentive offerings for heat pumps, heat pump water heaters, efficient appliances, induction cooking, and weatherization services in partnership with CVOEO, weatherization providers and Vermont Gas Systems (which runs weatherization programs for the vast majority of Burlington buildings that are connected to gas).

Here are some considerations relative to each category:

- **New Construction:** One way to build on the existing primary renewable heating ordinance for new construction buildings would be to look at options to expand renewable energy use in thermal applications across the new building. This could include heating, water heating, cooking, and other thermal uses.

The definition of which technologies and fuels count for compliance is important and must be clear and transparent so buildings can comply with confidence and understand fully their options. The definition currently utilized in the primary renewable heating ordinance for what options are available for compliance is a good start and is flexible and inclusive of all renewable energy options, including heat pumps, geothermal, modern wood heating, biodiesel, renewable gas, and district energy. This allows a building developer to utilize a conventional system, provided they have a long-term contract for a renewable fuel. We recommend also including renewably-sourced hydrogen, and exploring with potential buildings and Vermont Gas Systems the options for on-site renewable generation to create renewable hydrogen for thermal applications. We also recommend allowing for inclusion of other renewable

energy technologies or fuels that may not yet be commercialized, so they can count toward compliance when available.

- **Major Renovation:** The Departments will examine definitions for what a major renovation constitutes and include a recommendation in the final report. We will consider as well as the limitations of historic buildings for this category. It is possible some of the policy created for new construction could apply to major renovations as well.
- **City Buildings and Large Existing Commercial Buildings:** Options for addressing these buildings include the permit-based approach and a performance standard-based approach discussed in the research section. A permit approach would require that any building in this category use renewable fuels or technologies when pulling a permit to replace an existing fossil fuel thermal system. This is a very prescriptive approach and may be too limiting for our purposes in Burlington. A performance standard approach is less prescriptive and would require a certain percentage reduction in emissions/fossil fuel use within the building by a specific date.

We are not prepared to recommend a specific approach yet. If the City ultimately adopted a performance standard approach, one option to create flexibility would be to allow building owners that have multiple buildings that are considered large commercial to take a portfolio approach to meeting the standard, instead of building by building. Another consideration whether any exceptions or limitations should apply to historic buildings or affordable housing, or to certain thermal uses such as process steam which may have limited renewable options. Finally, it must be emphasized that given the short timeframe between 2022 and our 2030 goal, implementation of a performance standard approach should focus on near-term technically and economically achievable progress, with options to adjust the stringency of the standard consistent with technology development and the availability of reasonable cost-effective options for compliance.

#### *Cross-Cutting Considerations*

One major consideration across building categories is whether to include an alternative compliance carbon fee, which may be necessary to allow for compliance while recognizing that not all buildings may have cost-effective and technically achievable options. This alternative compliance method is permitted by the Charter Change and is utilized by New York City and Boston. We note that for Burlington, we have already used carbon pricing (at \$100 per ton in 2021 dollars, with an annual inflation adder) as a means of evaluating exemption requests for the primary renewable heating ordinance. A carbon fee alternative compliance option would allow buildings that could not comply with the requirements to pay a fee in lieu of compliance, and would set an economic threshold by which renewable fuels and technologies can be evaluated. The fee could be based on a price per ton of carbon expected to be emitted over the lifetime of the building system. This would require further approval from voters, potentially on Town Meeting Day 2023, prior to implementation. If this option was included, we recommend (to meet the aims of the advisory ballot question), that a portion of the fee proceeds be dedicated to greenhouse gas emission reduction projects in the City benefitting “low- and moderate income Burlingtonians, Black, Indigenous, and people of color, and...otherwise disadvantaged community members.” It is possible that a portion of the fee proceeds could also go to additional incentives to further reduce emissions in other buildings owned by the payer of the fee, or for other emissions reduction projects at the payer’s building(s) outside of those regulated (i.e. to support purchase of electric lawn equipment or electric vehicle charging stations).

A second important consideration is ensuring that any policy implemented continue to allow buildings to access customer incentive programs, including BED’s various electrification incentives. This would be similar to how our City’s rental weatherization standards allow for buildings to continue to access relevant weatherization incentives. BED has resources to support customers in switching to heat pumps, heat pump water heaters, geothermal heating and cooling,



and other measures which reduce fossil fuel use, and those incentives should continue to be accessible for buildings that are subject to City policy development under the Resolution.

### **Next Steps**

BED and DPI propose the following next steps, with timeline included:

- **August – September** - Broader stakeholder engagement to include additional affected stakeholders (perhaps via a working group that meets regularly), and seek their technical input and feedback;
- **August-September** - Continue research and develop firmer policy recommendations;
- **September** - Host a public forum to seek feedback and ideas from the community on policies to reduce emissions in the buildings specified in the Resolution;
- **September-October** – Discuss policy recommendations at NPAs to seek additional feedback on the suite of proposals; and
- **End of October** - Issue final report to Council, including actionable steps to make additional policy via Ordinance and possibly including recommendations for items that may require voter approval at Town Meeting Day 2023.

### **Conclusion**

This policymaking effort is a significant undertaking and requires good public process to reach satisfactory results. There is potential for additional buildings emissions policy and regulation to accelerate our community's progress toward Net Zero Energy. We recognize that building policy should be flexible, inclusive of all renewable technologies and fuels, and cost-effective in achieving emissions reductions. We are fortunate in that a number of large institutions in our community have already made their own major climate commitments, and these policy recommendations should support achieving those goals and Burlington's climate goals.

We are conscious of the advisory question's focus on achieving equity goals in establishing these regulations and believe one opportunity to do so would be the investment of any alternative compliance fees from these regulations in projects that benefit the members of our community identified in ballot question 7 from Town Meeting Day 2021. We also recognize that the district energy project could, if successful, provide an important additional renewable fuel option for larger existing commercial buildings, and as structured could allow other buildings (including City buildings) that are not physically connected to the system to purchase renewable credits from the district energy project.

BED and DPI staff appreciate the opportunity to provide this report to the Council and look forward to continuing to engage in this important work along the timeline outlined above.