Clean Energy Future Committee

Date: Friday January 22, 2021
Time: 8:00 a.m.
Location: Conducted via remote participation

To register for the Zoom Meeting:
https://us02web.zoom.us/meeting/register/tZwpcOupqz8jG9JG8Dk4hwBRVKzjCHuQ3oCy

After registering, you will receive a confirmation email containing information about joining the meeting.

Members of the public are asked to send written comment to: kpruitt@town.arlington.ma.us.

Notice to the Public on meeting privacy
In the interests of preventing abuse of videoconferencing technology (e.g. "Zoom Bombing") all participants, including members of the public, wishing to participate via Zoom must register for each meeting and will notice multi-step authentication protocols. Please allow additional time to join the meeting. Further, members of the public who wish to participate without providing their name may still do so by telephone at 929-436-2866 Meeting ID: 884 7215 4916.

Documents related to the below agenda items follow as attachments to this document.

Agenda

8:00 – 8:05: Meeting ground rules

8:05 – 8:10: Review & Approve Minutes from 12/18/2020 meeting

8:10 – 8:40: Expectations / Committee Priorities for 2021

8:40 – 9:15: Review draft Net Zero Action Plan
Establish interim GHG emissions targets?
Assign timelines for GHG mitigation measures in Net Zero Roadmap?

Next meeting: February 26

Attachments:
1) Governor Charles Baker's 3/12/2020 Executive Order Suspending Certain Provisions of the Open Meeting Law
2) Draft minutes from 12-18-2020 meeting
3) Draft Net Zero Action Plan

OFFICE OF THE GOVERNOR
COMMONWEALTH OF MASSACHUSETTS
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CHARLES D. BAKER
GOVERNOR

KARYN E. POLITO
LIEUTENANT GOVERNOR

ORDER SUSPENDING CERTAIN PROVISIONS OF THE OPEN MEETING LAW, G. L. c. 30A, § 20

WHEREAS, on March 10, 2020, I, Charles D. Baker, Governor of the Commonwealth of Massachusetts, acting pursuant to the powers provided by Chapter 639 of the Acts of 1950 and Section 2A of Chapter 17 of the General Laws, declared that there now exists in the Commonwealth of Massachusetts a state of emergency due to the outbreak of the 2019 novel Coronavirus ("COVID-19"); and

WHEREAS, many important functions of State and Local Government are executed by "public bodies," as that term is defined in G. L. c. 30A, § 18, in meetings that are open to the public, consistent with the requirements of law and sound public policy and in order to ensure active public engagement with, contribution to, and oversight of the functions of government; and

WHEREAS, both the Federal Centers for Disease Control and Prevention ("CDC") and the Massachusetts Department of Public Health ("DPH") have advised residents to take extra measures to put distance between themselves and other people to further reduce the risk of being exposed to COVID-19. Additionally, the CDC and DPH have advised high-risk individuals, including people over the age of 60, anyone with underlying health conditions or a weakened immune system, and pregnant women, to avoid large gatherings.

WHEREAS, sections 7, 8, and 8A of Chapter 639 of the Acts of 1950 authorize the Governor, during the effective period of a declared emergency, to exercise authority over public assemblages as necessary to protect the health and safety of persons; and

WHEREAS, low-cost telephone, social media, and other internet-based technologies are currently available that will permit the convening of a public body through virtual means and allow real-time public access to the activities of the public body; and

WHEREAS section 20 of chapter 30A and implementing regulations issued by the Attorney General currently authorize remote participation by members of a public body, subject to certain limitations;

NOW THEREFORE, I hereby order the following:

(1) A public body, as defined in section 18 of chapter 30A of the General Laws, is hereby relieved from the requirement of section 20 of chapter 30A that it conduct its meetings in a public place that is open and physically accessible to the public, provided that the public body makes provision to ensure public access to the deliberations of the public body for interested members of the public through adequate, alternative means.

Adequate, alternative means of public access shall mean measures that provide transparency and permit timely and effective public access to the deliberations of the public body. Such means may include, without limitation, providing public access through telephone, internet, or satellite enabled audio or video conferencing or any other technology that enables the public to clearly follow the proceedings of the public body while those activities are occurring. Where allowance for active, real-time participation by members of the public is a specific requirement of a general or special law or regulation, or a local ordinance or by-law, pursuant to which the proceeding is conducted, any alternative means of public access must provide for such participation.

A municipal public body that for reasons of economic hardship and despite best efforts is unable to provide alternative means of public access that will enable the public to follow the proceedings of the municipal public body as those activities are occurring in real time may instead post on its municipal website a full and complete transcript, recording, or other comprehensive record of the proceedings as soon as practicable upon conclusion of the proceedings. This paragraph shall not apply to proceedings that are conducted pursuant to a general or special law or regulation, or a local ordinance or by-law, that requires allowance for active participation by members of the public.

A public body must offer its selected alternative means of access to its proceedings without subscription, toll, or similar charge to the public.

(2) Public bodies are hereby authorized to allow remote participation by all members in any meeting of the public body. The requirement that a quorum of the body and the chair be physically present at a specified meeting location, as provided in G. L. c. 30A, § 20(d) and in 940 CMR 29.10(4)(b), is hereby suspended.

(3) A public body that elects to conduct its proceedings under the relief provided in sections (1) or (2) above shall ensure that any party entitled or required to appear before it shall be able to do so through remote means, as if the party were a member of the public body and participating remotely as provided in section (2).

(4) All other provisions of sections 18 to 25 of chapter 30A and the Attorney General's implementing regulations shall otherwise remain unchanged and fully applicable to the activities of public bodies.

This Order is effective immediately and shall remain in effect until rescinded or until the State of Emergency is terminated, whichever happens first.

Given in Boston at 5:49 PM this 12th day of March, two thousand and twenty.

CHARLES D. BAKER
GOVERNOR
Commonwealth of Massachusetts

Clean Energy Future Committee
Meeting Minutes

Draft – for approval at the 1/22/2021 meeting

December 18, 2020
8:00 – 9:18 a.m.
Virtual Meeting – Hosted on Zoom

Members present: Jim DiTullio, Ken Pruitt, Dave Levy, Emily Sullivan, Shelly Dein, Dan Amstutz, Pasi Miettinen, Ryan Katofsky, Coralie Cooper, Nellie Akenhead, Marc Breslow, Adam Chapdelaine, Dianne Mahon

Also attending: Jennifer Raitt

Members not present: Marc Breslow

The meeting convened at 8:06 a.m.

Video Meeting Procedures
Mr. Pruitt read a set of prepared remarks explaining the procedures that the Committee would follow to hold a virtual meeting. Governor Baker signed an Executive Order in response to the COVID-19 pandemic allowing virtual meetings, which suspended the usual Open Meeting Law requirement that a quorum of committee members be physically present in order to hold an official committee meeting.

Meeting Minutes
Mr. Pruitt displayed the minutes from the November 20 Meeting. Mr. Pruitt highlighted specific edits suggested by Mr. Amstutz and Ms. Sullivan. Mr. Katofsky suggested an additional edit to the minutes regarding the description of the discussion about Warrant Article 5. Mr. Miettinen motioned to approve the minutes as amended. Ms. Dein seconded the motion. A roll call vote was taken. The Committee unanimously approved the November 20 meeting minutes as amended.

Agenda Item 1: Potential 2021 Town Meeting Warrant Article

Mr. Miettinen presented his concept for a proposed Warrant Article for the Town Meeting in 2021. Mr. Pruitt highlighted that this proposed measure is one of the 31 measures in the draft Net Zero Action Plan that the Committee is working on. Mr. Miettinen provided the context of why he is proposing this Warrant Article, which is that 1) many homes in Arlington are on non-conforming lots based on current zoning, and 2) current zoning rules functionally prevent existing homes on non-conforming lots from being renovated in ways that would allow them to achieve net zero emissions. Mr.

Miettinen highlighted that buildings, specifically homes, are the number one source of greenhouse gas emissions in Arlington.

Mr. Miettinen noted that an average of 8 existing buildings in Arlington would need to be converted to net zero buildings per week in order to convert all 12,000 buildings in Arlington to net zero by 2050. He highlighted his concern that zoning rules for non-conforming lots will need to be changed if to allow for conversion of buildings to net zero. He noted that new homes can be built on non-conforming lots, but that they cannot have new foundations. Without the ability to have new, highly-insulated foundations, it is very difficult if not impossible to retrofit many older buildings to become net zero emissions. Mr. Miettinen also noted that most new construction on non-conforming lots does not have to comply with new, more stringent building codes because the construction is considered as renovation instead of new construction. This is true for energy efficiency standards, and also safety standards, such as driveway steepness which only apply to new construction.

Mr. Miettinen noted that the new energy code diverges depending on if a house is on a new foundation or not a new foundation, because the former is considered new construction and subject to more stringent energy efficiency standards in the building code. He said that energy efficiency requirements in the building code become more stringent roughly every three years with each new version of the building code, but these changes do not currently translate into greater efficiency for new construction on non-conforming lots because that construction is considered renovation instead of new construction. Mr. Levy asked a question regarding feasibility of achieving a net zero home or close to it without a new foundation. Mr. Miettinen noted that without a fully insulated foundation, which is almost impossible to achieve without creating a new foundation, it would be almost impossible to construct a net zero house.

Mr. Amstutz asked if the 12,000 buildings figure cited by Mr. Miettinen is the total number of buildings or units, which is not the same thing for multi-unit buildings. Mr. Miettinen said he was focusing on number of buildings, regardless of if they are commercial, multi-family or single family.

Mr. Miettinen noted that the proposed Warrant article is focused on R0, R1 and R2 zoning, given that trying to modify zoning to promote net zero construction in other zones is more complex. Mr. Miettinen presented his warrant article concept, which focuses on existing lots with existing buildings. He noted that his warrant article would allow new foundations on lots where new homes would be built on the same footprint of the existing home, or if all current zoning dimensional requirements were met (even if the 50 foot frontage or 5,000 square foot total area requirements were not met).

Mr. Katofsky asked about the origin of the efficiency code applying to conforming lots vs. non-conforming lots. Mr. Miettinen noted that the distinction in conformance of energy codes (new construction vs. renovation) is an Arlington interpretation, which has been made over time.

Ms. Aikenhead raised a concern that changing the definition of conforming vs. non-conforming lots based on whether a high energy efficiency standard was met would be

highly controversial. She asked whether it might be better to allow new construction including new foundations on non-conforming lots if they achieved high efficiency, without changing the status of the lot from non-conforming to conforming.

Mr. Miettinen discussed the history of lot size zoning in Arlington, noting examples throughout the town of changes and exceptions that occurred for a variety of reasons. He noted that most non-conforming lots are in East Arlington, although there are many scattered around Arlington.

Mr. Miettinen then asked the Committee to support a warrant article to make this zoning bylaw change. He noted that since this is a zoning warrant article, it will require a two-thirds vote to pass, so there will need to be significant outreach and discussions with a variety of stakeholders.

Mr. Pruitt asked Mr. Miettinen to clarify whether he was asking the Committee for endorsement of the specific language he presented at this meeting, or just to support a warrant article that would achieve the purpose of his concept. Mr. Miettinen stated that he wanted support for the concept, and that the exact language would be worked out over the coming weeks based on input from this committee, the Arlington Redevelopment Board, the Select Board, the Department of Planning and Community Development and other stakeholders.

Ms. Dein applauded Mr. Miettinen's efforts. She said she thought that most new construction on non-conforming lots that would be impacted by this zoning amendment would be undertaken by developers who undertake teardowns rather than existing homeowners. She voiced concern that there are not any incentives for developers to build a net zero home. Mr. Miettinen agreed that he was not aware of any incentives for developers to build net zero homes in Arlington. He then noted that the current building code is the only standard we can apply to new construction.

Ms. Dein pointed out that the draft Net Zero Plan does call for new incentives for construction of high efficiency homes.

Mr. Pruitt, noting the time, asked for any further discussion of this agenda item. Mr. Katofsky made a motion for the CEFC to support this conceptual zoning amendment as presented by Mr. Miettinen. Mr. Levy seconded the motion. Ms. Aikenhead then asked if further language could be introduced or modified prior to final consideration.

Ms. Melofchik, member of the public, voiced concern about greenhouse gases in new cement production and in new construction. Mr. Pruitt said he would forward Ms. Melofchik's email, detailing her concerns, to the Committee.

The Committee then voted unanimously on Mr. Katofsky's Motion for the Clean Energy Future Committee to support the development of a warrant article addressing the inconsistencies of the current zoning bylaw as it applies to conforming vs. non-conforming lots, so that the construction of highly efficient homes would be made more feasible on what are now non-conforming lots.

Based on the length of this discussion, Mr. Katofsky requested that Committee members prepare draft motions before Committee meetings to facilitate more efficient discussions.

Agenda Item Two: New Chapter of the Net Zero Plan

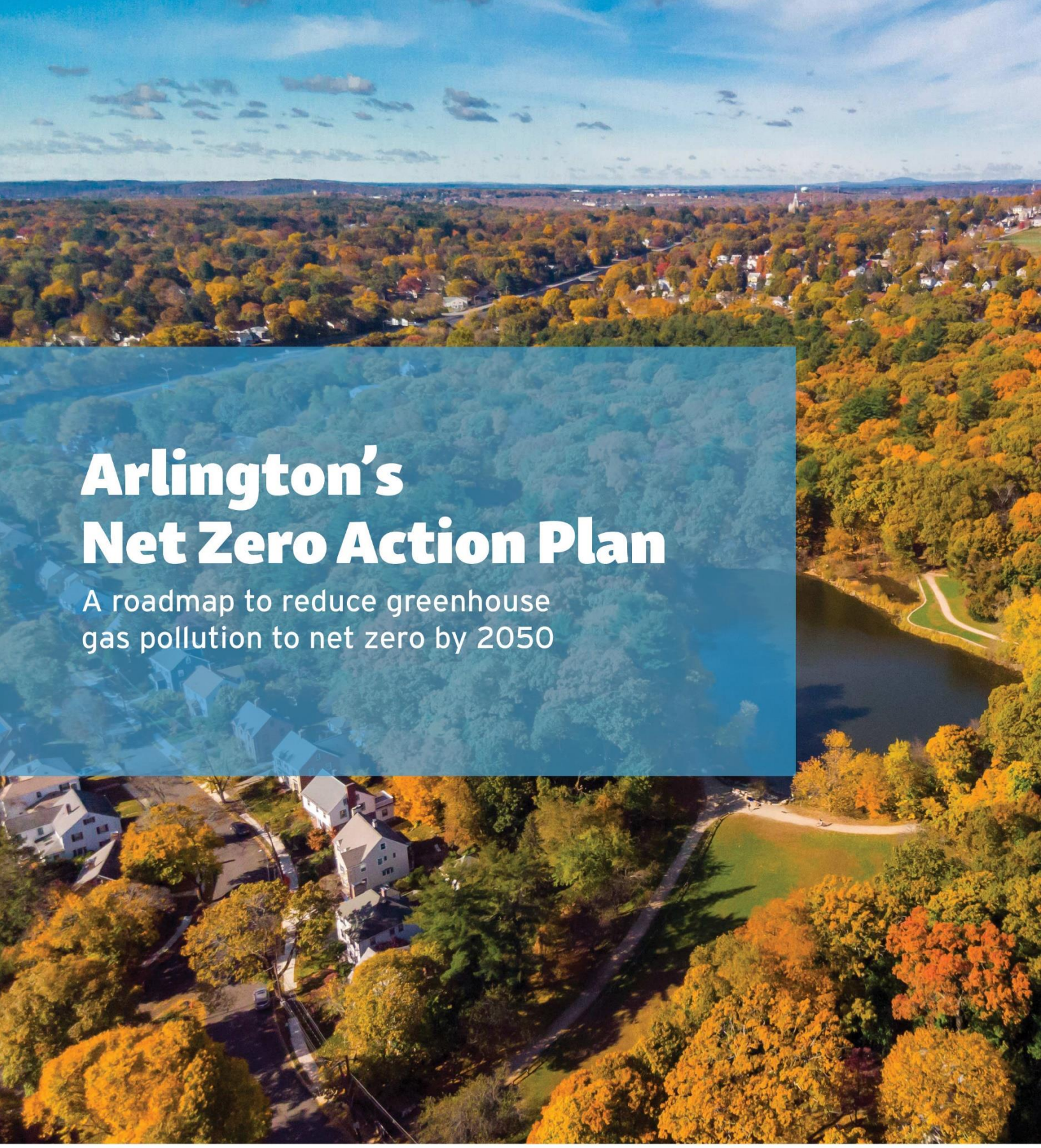
Mr. Pruitt noted that he sent a new chapter of the Net Zero Plan to the Committee earlier in the week. This new chapter is titled Getting to Net Zero. Given the short time remaining in the meeting, Mr. Pruitt asked the Committee to review the chapter later and send suggested edits to him, which he would incorporate into a new draft for Committee review in January. Mr. Miettinen noted that some of the proposed changes to the Net Zero Plan as evidenced in this new chapter were very good. He recommended that future changes to the Plan be limited to improvements to clarity or style, but not change the underlying meaning or principles that the Committee has established earlier, as they were already debated at length in various Committee meetings.

Mr. Amstutz said he has reviewed the new chapter and would send suggested edits. He asked about language at the end of the chapter that seems contradictory – it calls the Net Zero Plan a “living document” but then only recommends edits once every ten years. Mr. Pruitt agreed that this question should be addressed by the Committee at the next meeting.

Ms. Mahon made a motion to adjourn and Mr. Miettinen seconded the motion. The Committee unanimously approved the motion.

The Meeting ended at 9:18am. The next meeting will occur on January 22, 2020.

Submitted by Dave Levy.



Arlington's Net Zero Action Plan

A roadmap to reduce greenhouse gas pollution to net zero by 2050

TOWN OF ARLINGTON MASSACHUSETTS

MAPC
METROPOLITAN AREA PLANNING COUNCIL

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Acknowledgements

This Net Zero Action Plan was developed by the Town of Arlington and the Metropolitan Area Planning Council (MAPC). The Project Team would like to thank the following individuals and groups for their hard work and thoughtful contributions throughout the planning process. The Project Team would also like to thank the approximately 1,000 members of the public who contributed through the online survey in July 2020 and the Virtual Open House held in October/November 2020.

Clean Energy Future Committee
Nellie Aikenhead
Dan Amstutz
Marc Breslow
Adam Chapdelaine
Coralie Cooper
Dan Dunn
Shelly Dein
Jim DiTullio
Ryan Katofsky
Dave Levy
Diane Mahon
Pasi Miettinen
Ken Pruitt
Emily Sullivan

Boards and Committees
Arlington Redevelopment Board (Rachel Zsembery, Chair)
Capital Planning Committee (Timur Yontar, Chair)
Permanent Town Building Committee (Allen Reedy, Chair)
Select Board (Joseph Curro, Leonard Diggins, Stephen DeCourcey, John Hurd (Chair), Diane Mahon)
Sustainable Arlington (Amos Meeks and Brucie Moulton, Co-Chairs)
Transportation Advisory Committee (Howard Muise, Chair)

Community Groups
Arlington Housing Authority
Housing Corporation of Arlington
Mothers Out Front
Climate Action Working Group, First Parish Unitarian Universalist

Community Members
Eugene Benson, Damon Bosetti, John Buck, Bob Cronin, Seth Federspiel, Gary Goldsmith, Patrick Hanlon, Lucy Hutyra, James Johnson, Kristin Kelleher, Shira Lion, Jill Mirak, Robert Mirak, John Murphy, Ben Myers, Cynthia Pasciuto, Jelena Popovic, Irina Sidorenko, Paul Warkentin, David White, John Winslow, Anne Wright

Town Staff
Adam Chapdelaine, Town Manager
James Feeney, Facilities Director
Jillian Harvey, Director of Diversity, Equity & Inclusion Division
Kevin Kelley, Fire Chief
Michael Mason, Chief Financial Officer, Arlington Public Schools
Sandy Pooler, Deputy Town Manager

Metropolitan Area Planning Council
Megan Aki, Cammy Peterson, Nicole Sanchez, Brooks Winner, Lucy Xu

Municipal Partners
Martha Grover, Energy Efficiency Manager, City of Medford
Jillian Wilson-Martin, Sustainability Coordinator, Town of Natick

Department of Planning and Community Development
Jennifer Raitt, Director
Erin Zwirko, Assistant Director
Dan Amstutz, Senior Transportation Planner
Ali Carter, Economic Development Coordinator
Kelly Lynema, Senior Planner
Mary Muszynski, Administrative Assistant
Ken Pruitt, Energy Manager
Emily Sullivan, Environmental Planner and Conservation Agent
Mallory Sullivan, Community Development Block Grant Administrator

Letter from The Future

January 1, 2050

Dear 2021 members of Arlington's Clean Energy Future Committee,

Greetings from the year 2050! What can I share about the Arlington's history since 2021? Well, we continued to dominate in hockey, winning multiple Commonwealth boys and girls championships. We elected three Massachusetts Governors, all graduates of Arlington Public Schools. And we have been consistently named Best Town in Massachusetts from various publications including the Boston Globe.

One of the reasons we received these awards was our success in reducing greenhouse gas pollution to net zero. We have you to thank for that. I am sure that writing the Net Zero Action Plan was difficult, required a lot of your time, and tested your ability to reach consensus in a collaborative manner. Writing from the year 2050, I can tell you that effort was well worth your time.

Your Plan gave us a new set of tools and inspired the entire community to think differently about how we could live our daily lives. We found a way to improve our quality of life while greatly reducing our carbon footprint. And we did it in a way that benefitted everyone in the community equitably.

You helped us rethink the way we build, heat and cool our homes and businesses. We started by requiring new buildings and major renovations to be fossil-fuel-free. Over time we found ways to eliminate fossil fuels in existing homes and businesses (that was much harder). All buildings in Arlington are now greenhouse gas emissions-free.

We made sure Town government led by example. Starting in 2021 new Town buildings and major renovations were almost entirely all-electric. It took much longer to retrofit some older buildings, but we got there. Per the Plan, by 2030 the Town was purchasing only zero emissions vehicles, and by 2035 the last diesel truck in the fleet was retired. The Town fleet is now fully zero emissions.

We also transformed the way residents of all ages get around. We worked hard to implement both the Net Zero Action Plan and Connect Arlington. By implementing both plans, we took a variety of steps to pivot away from gasoline-based vehicles. We did this by making Arlington a better place to walk, bicycle, scooter, and take public transportation (which is now also zero emissions thanks to investments by the MBTA). Quite a few people still drive cars, but they are all fully zero emissions (mostly electric) and for many, car sharing has become the norm. We still don't have flying cars – sorry.

There have been big changes in our energy supply. Arlington led the state in procuring renewable electricity through the Arlington Community Electricity program, reaching a default of 100 percent renewable by 2030. We also led a coalition of cities and towns in an advocacy campaign that persuaded the legislature to mandate 100 percent renewable electricity statewide by 2040 (mostly offshore wind, solar PV, hydro power and solar water heating). Even more remarkable was the way entire neighborhoods in Arlington joined shared ground source heat pump projects that replaced oil or natural gas systems. Arlington's pilot projects helped accelerate a transition to heat pumps as the primary heating and cooling system in buildings across the Commonwealth.

These achievements were not always easy, but it is amazing looking back at how even small progress snowballed into transformational accomplishments. Change can be tough, but you gave us the right ideas and tools. A tremendous number of people helped achieve the net zero goal in their own ways.

Thank you again for your hard work. Your Net Zero Action Plan was the right plan at the right time. We are truly grateful for your efforts.

Best regards,

Charles Spy-Ponder
Arlington, MA

Getting to Net Zero

The Town of Arlington has committed to reaching net zero greenhouse gas (GHG) pollution[1] by 2050. What exactly does this mean for our community? Why does our local goal matter? What does Arlington need to do to reach that goal? This Net Zero Action Plan aims to answer these questions and to create a roadmap for Arlington to reach net zero by 2050.

WHY NET ZERO?

Climate scientists have made it clear that the world needs to reduce global GHG pollution to net zero by 2050 to avoid catastrophic climate change. The planet has already warmed by about 1° Celsius (C) since fossil fuels like coal, oil, and gas began being burned in large quantities~~amounts beginning~~ starting in the mid-1800s.[2] Scientists have projected that if we can keep warming below 1.5° C~~elsius~~, the worst impacts of climate change like extreme floods, wildfires, and droughts can be avoided.[3] The Intergovernmental Panel on Climate Change's 2019 special report, ***Global Warming of 1.5°C,***[4]~~,~~ says that in order to give ourselves a chance to limit global warming to 1.5° C~~elsius~~ worldwide we will need to reduce GHG pollution 45% by 2030 and to net zero by 2050. Said another way, ~~This means that~~ there is a limited "carbon budget," or cumulative amount of GHG pollution that can ~~afford to~~ be emitted~~put into the air~~ without passing 1.5° C~~elsius~~ of warming. Consistent with worldwide efforts to reduce GHG pollution, ~~Given this limited carbon budget and in order to start reducing our GHG pollution sooner rather than later,~~ Arlington has committed to achieving net zero carbon emissions by 2050.[5]

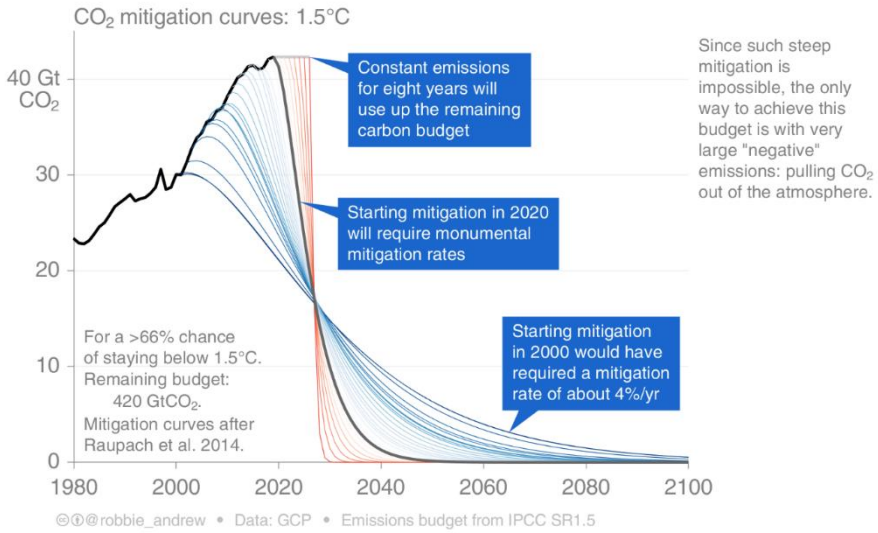
[1] In this Plan, the terms "greenhouse gas (GHG)," "carbon dioxide," "carbon dioxide equivalent (CO2e)" and "carbon" are used somewhat interchangeably. The greenhouse gas carbon dioxide is by far the most significant source of GHG pollution from all sources in Arlington. For a good primer on the primary greenhouse gases, see the summary from the U.S. Environmental Protection Agency, *Overview of Greenhouse Gases*, available at https://www.epa.gov/ghgemissions/overview-greenhouse-gases

[2] National Aeronautics and Space Administration (NASA) World of Change website: https://earthobservatory.nasa.gov/world-of-change/global-temperatures#:~:text=According%20to%20an%20ongoing%20temperature,2%C2%B0%20Fahrenheit)%20since%201880.

[3] National Aeronautics and Space Administration (NASA) *A Degree of Concern: Why Global Temperatures Matter*, https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter/

[4] Intergovernmental Panel on Climate Change Special Report: *Global Warming of 1.5°* C. https://www.ipcc.ch/sr15/.

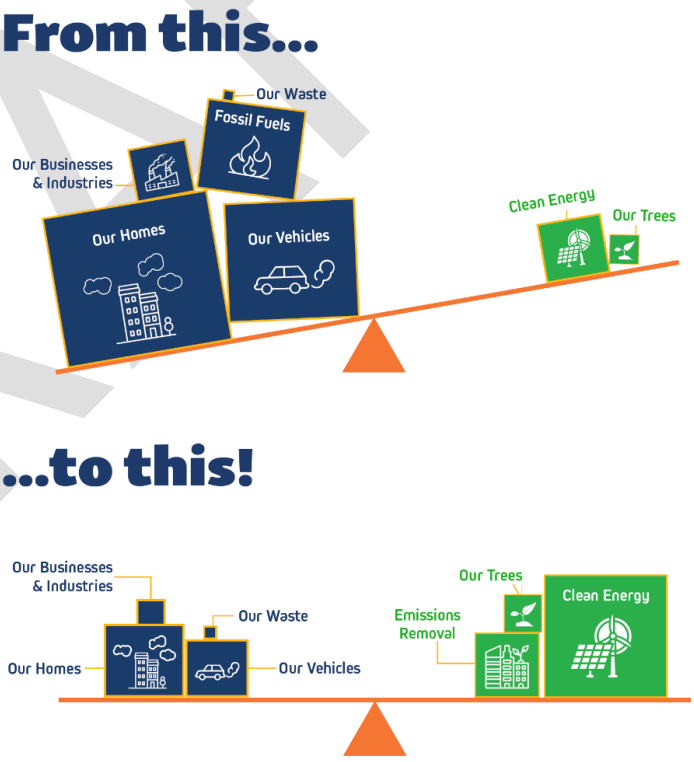
[5] On January 22, 2018, Arlington's Select Board voted to commit the Town to achieving net zero greenhouse gas emissions by 2050.



This chart demonstrates the "carbon budget" concept, showing that the longer we wait to act, the less time we give ourselves and the harder it will be to avoid passing 1.5° Celsius of warming. Source: Robbie Andrew, CICERO Center for International Climate Research.[6]

What does "net zero" mean?

Reaching "net zero" GHG pollution means that our community will reduce its GHG pollution as much as possible and remove or offset[7] any remaining pollution by 2050 (ideally sooner). This will require a major shift in the way we heat and cool our homes, how we get around, and where our energy comes from. It also presents a huge opportunity to change our community for the better. By achieving net zero GHG pollution, we can also have cleaner air, healthier people, and a more equitable and prosperous community for everyone.



Getting there equitably

Climate change is an existential challenge, but it is also an opportunity to re-imagine Arlington's future, and to make that future both safe and equitable for all who live and work in our

[6] Robbie, Andrew. Center for International Climate Research, Global Carbon Project. CO2 *Mitigation Curves: 1.5° C.* https://folk.universitetetioslo.no/roberan/img/GCB2019/PNG/s00_2019_Mitigation_Curves_1.5C.png

[7] Two common ways to offset GHG pollution are to invest in planting trees, which remove carbon dioxide from the air as they grow, and to invest in renewable energy projects like zero-emissions solar or wind power that displace electricity generated by fossil fuels.

community. Massachusetts municipalities are increasingly undertaking climate mitigation and adaptation strategies[8] and are starting to seek out ways in which to advance equity within those measures. By centering equity in this Plan, we can build a future that is not only safer for all, but also allows each individual in Arlington to thrive. An equitable net zero carbon future must be our goal.

In equitable planning, we must be ~~conscientious~~ conscious of the history of our region, the differences in how populations are able to respond to a changing climate, and the needs of residents and businesses. We recognize that the effects of climate change ~~systemically~~ disproportionately impact Environmental Justice communities and other vulnerable populations ~~inequitably~~. There are over 7,000 Arlington residents who live in Environmental Justice communities, or about 17% of the population.[9] According to the 2014-2018 American Community Survey, more than 2,000 Arlington residents live below the poverty line.[10] Socially or economically disadvantaged people are likely to experience greater harm from climate change, ~~especially~~ including from increased temperatures and the comparative inability to afford air conditioning.[11]

In this context, action to mitigate climate change by reducing GHG pollution will benefit socially or economically-disadvantaged people. But we must also assess the potential social equity impacts of climate mitigation strategies and ensure those strategies do not negatively impact the most vulnerable among us, for example by significantly increasing the cost of housing or utilities. In addition, the action items in this Plan, including community campaigns such as Electrify Arlington, should be structured and marketed so that all Arlington residents and businesses can take advantage of them. There are challenges to including the broadest possible range of people as Arlington ~~markets~~ implements the measures in this Plan, including reaching those with a primary language other than English, homes without high speed (or any) Internet access, and the huge challenge of marketing energy efficiency and renewable energy programs to renters and landlords, who have a split incentive (tenants typically pay for utilities, but landlords typically pay for building upgrades). For our Plan to be actionable and for our vision of the future to be equitable, we must center equity throughout the planning and implementation of our net zero strategies.

How do we get there?

A lot can change in 30 years. This Plan builds on nearly 20 years of Town progress on emissions reductions and serves as an organizing framework~~is a starting point~~ on our path to net zero that Arlington will revisit and adjust as we continue to move forward in the coming years. We know that we need to make our buildings and vehicles, the two major sources of GHG pollution in our community, much more efficient and powered by renewable electricity.

To reach our net zero goal, the Town will have to make some key changes including:

1. **Making our homes and buildings super-efficient**
2. **Electrifying heating and cooking**
3. **Electrifying transportation**

[8] Climate "mitigation" refers to actions that reduce GHG pollution. Climate "adaptation" (~~often~~ also referred to as climate "resilience") refers to actions that help a community prepare for and minimize the negative impacts of climate change.

[9] Based on 2010 U.S. Census data available here: https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts

[10] American Community Survey, 2014-2018, accessed via MAPC Data Common: https://datacommon.mapc.org/browser/datasets/57

[11] *Environmental Justice and Climate Change*, California Office of Environmental Health Hazard Assessment: https://oehha.ca.gov/environmental-justice/climate-change

4. Helping~~Giving~~ people drive less by giving them better options~~choices about how they get around~~
5. Producing more renewable energy locally

Making homes and buildings super-efficient. Massachusetts has some of the oldest homes in the US. More than half of the homes in Arlington were built before 1939,[12] meaning that if they have not been significantly upgraded and made efficient, many of them waste significant~~lots of~~ energy through drafty windows and doors, spotty or non-existent insulation, out-of-date lighting fixtures, and aging heating systems that rely on ~~heavily-polluting~~ fossil fuels like oil and natural gas. Making existing buildings much more energy efficient and building new buildings to high efficiency standards will help us reduce emissions and make energy bills more affordable for everyone over the long term. In turn, this reduces the size (and cost) of new heating and cooling equipment when they need replacing.

Electrifying heating and cooking. Burning oil and natural gas to heat our homes and cook our food creates tens of thousands of tons of GHG pollution every year in Arlington.[13] Burning fossil fuels for cooking can also create harmful indoor air pollution.[14] Switching to electric heating and cooking appliances like heat pumps and induction cooktops immediately reduces carbon pollution and improves indoor air quality, and these benefits only get better as our electric grid gets cleaner. ~~Oil and gas are cheap now, but they may not be in the future and the simple truth is that we need to stop burning fossil fuels as quickly as possible.~~

Electrifying transportation. Gasoline- and diesel-powered cars, trucks, and buses~~, trains, and other forms of transportation~~ account for more than a third of our community's GHG pollution. Electric cars and buses are cleaner, cheaper to run over time, and require less maintenance. Electric vehicles (EVs) are no longer a niche market for early adopters, ~~with~~and the ~~range~~ number of makes and models ~~available at comparable prices to gasoline- and diesel-powered vehicles is~~ set to increase immensely in the next five years as EVs approach purchase price parity with comparable gasoline- and diesel-powered vehicles. A community-wide transition to electric transportation means providing easily understandable information about ~~electric vehicles~~EVs to the public, access to local charging stations ~~for EV owners~~, and creating electric transportation options for those who do not own vehicles.

[12] 2016 Arlington Housing Production Plan, p. 24. https://www.arlingtonma.gov/home/showdocument?id=30611

[13] Town of Arlington 2017 Greenhouse Gas Inventory, Version 4.1. August 10, 2020. Metropolitan Area Planning Council.

[14] See *Indoor Air Pollution from Cooking*, California Air Resources Board https://ww2.arb.ca.gov/resources/documents/indoor-air-pollution-cooking.

Helping people drive less by giving them better options~~Giving people choices about how they get around~~. Even though Arlington is a leader in promoting travel by foot, bicycle, and public transit (see "What Have We Already Done" – "Mobility Progress," below), driving remains the transportation mode of choice for most trips. We must further expand low-to no-carbon mobility options like walking, biking, and public transit since those are some of the best ways to reduce transportation pollution. Reducing the number of trips that people make by car is an immediate measure to reduce transportation pollution as electrification of the system progresses. By designing ~~greener and~~ people-centered streets and sidewalks, we can make walking, biking, and public transit as easy as, and more enjoyable than, taking a solo trip in a personal vehicle. This can impact travel not only for Arlington residents but also for people who travel through Arlington. These alternatives to driving will help reduce GHG emissions and air pollution while also making residents healthier and more connected to their community.

Producing more renewable energy locally. Renewable energy comes from endlessly sustainable sources such as wind, the sun's heat or light (i.e., solar), or the earth beneath our feet (i.e., geothermal). Our electricity is getting cleaner and greener all the time thanks to state and local policies, including our community's successful Arlington Community Electricity (ACE) program. However, natural gas still provides most of our electricity in New England. Developing local renewable energy like rooftop solar photovoltaic and solar hot water and supporting renewable energy projects throughout New England through the ACE program and state policy advocacy will help our community speed up the process of switching to clean energy.

How Much Will This Cost?

As we developed this Net Zero Action Plan a number of stakeholders asked an important question: how much will it cost for Arlington to reach its net zero goal by 2050? The short answer is: we don't know how much it will cost to implement this Plan. There likely will be added costs associated with certain measures, but there will also be cost savings. For example, at present the cost of building a new energy-~~ ~~efficient, all-electric single-family home is comparable to the cost of ~~a~~ building a home heated with natural gas, and lifetime operating costs to the owner are often lower.[15] This is true even if the federal or state government never implements carbon pollution pricing or other fossil fuel restrictions, which would make the economics of all-electric construction even more favorable. The cost of electricity from new renewable energy facilities is often lower than the cost of electricity from conventional generation and the trend is towards lower costs in

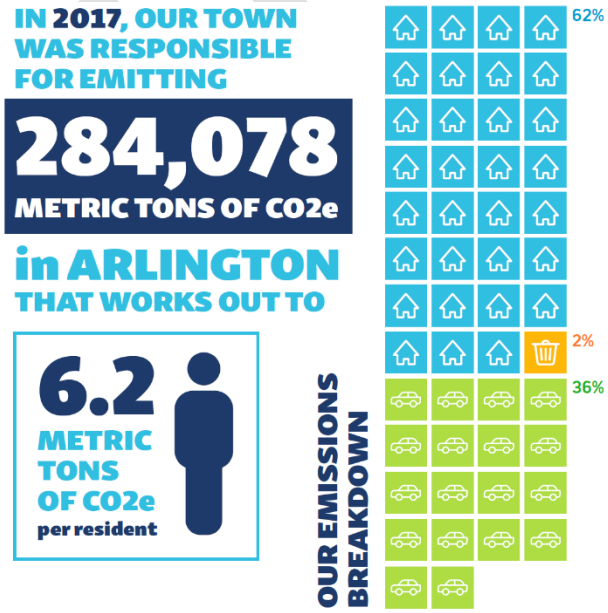
[15] See Rocky Mountain Institute's 2018 study *The Economics of Electrifying Buildings*: https://rmi.org/insight/the-economics-of-electrifying-buildings/. See also the Building Electrification Initiative *Salt Lake City Electric Home Study*. 11/5/2019. https://www.sltrib.com/news/environment/2020/03/10/slc-building-developers/. See also Synapse Energy Economics. *Decarbonization of Heating Energy Use in California Buildings*. 10/16/2018. https://www.synapse-energy.com/about-us/blog/decarbonization-heating-energy-use-california-buildings-new-report.

the future as the technology continues to improve.[16] Similarly, the cost of ~~electric vehicles (~~EVs~~)~~ has been steadily dropping, and they~~EVs~~ are ~~actually~~ expected to be less expensive to purchase than comparable gasoline vehicles after 2025.[17] EVs are already less expensive to maintain and fuel.

More importantly,~~Also~~ the costs of doing nothing, or too little, are very high in terms of public health, environmental degradation and infrastructure damage, which is why the national governments of nearly every country, including the U.S., signed the Paris Climate Accord to reduce GHG pollution in 2015. It will likely cost us more if we do not take decisive action to curb climate change than if we do. However, as the Town implements the Net Zero Plan through 2050, we must be sensitive to financial impacts on government, residents and businesses and be prepared to modify the Plan as needed, while still targeting net zero emissions by 2050~~or delay certain measures until proper incentives are available or costs drop further~~.

WHERE ARE WE STARTING?

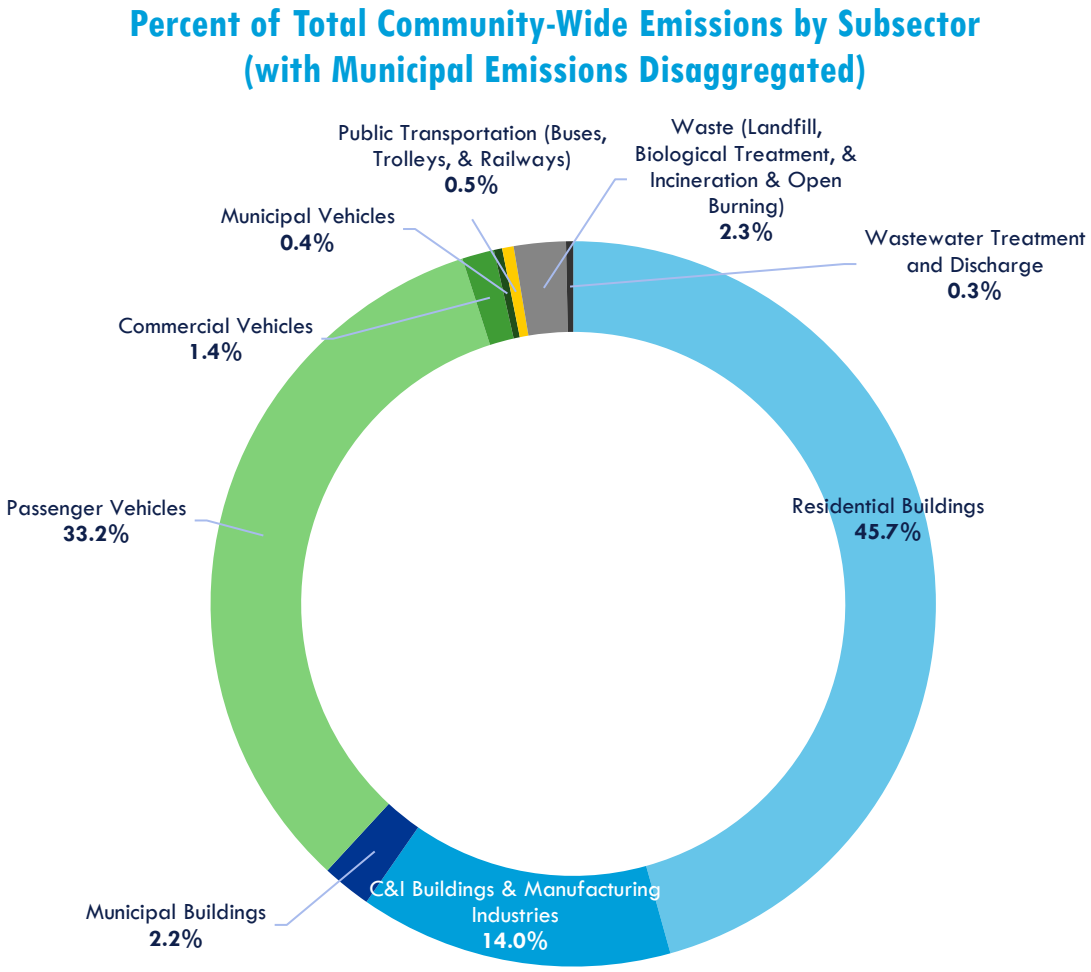
We inventoried our community's greenhouse gas pollution in calendar year 2017 and here is what we found:



- Buildings are the largest source of GHG pollution (about 62 percent). Natural gas for heating accounts for about 50% of pollution from buildings. The remainder comes primarily from a combination of heating oil and emissions associated with electricity generation.
- On-road transportation is another major source of GHG pollution, almost 36 percent.
- ~~Buildings and transportation together accounted for almost all GHG pollution in Arlington in 2017 – about 97 percent of all pollution.~~ Solid waste disposal, at 2.2 percent, accounted for most of the remaining 3 percent of GHG pollution.
- Residential emissions, including buildings and personal vehicles are nearly 80 percent of total emissions.
- As shown in the figure below, municipal operations are estimated to be less than 3 percent of total emissions, meaning that while the Town can do its part to reduce its own emissions, to achieve net zero, action must be taken by town residents and businesses.

[16] Lazard Corporation. *Levelized Cost of Energy and Levelized Cost of Storage – 2020.* 10/19/2020. https://www.lazard.com/perspective/levelized-cost-of-energy-and-levelized-cost-of-storage-2020/

[17] Bloomberg NEF. *Electric Cars to Reach Price Parity by 2025.* 2017. ~~study.~~ https://about.bnef.com/blog/electric-cars-reach-price-parity-2025/



2017 sources of greenhouse gas emissions from Arlington. Source: Produced using MAPC's Community GHG Inventory Tool version 4.1 – August 2020.

WHAT HAVE WE ALREADY DONE?

Arlington is already a leader in reducing GHG pollution. In 2000 Arlington joined the United Nations-sponsored Cities for Climate Protection. In 2005 our community adopted its first climate action plan, the Arlington Sustainability Action Plan (ASAP).[18] The ASAP called for a 10% reduction in GHG pollution by 2010, and 20% by 2020, and based on available data the Town met both targets. In 2010 with a municipal pledge to meet five energy and climate commitments, Arlington was designated a Green Community by the state Department of Energy Resources. The Town has used grants from the Green Communities program to support a wide range of energy efficiency improvements across Town facilities and to support clean transportation within the municipal fleet. In 2012 Arlington ran a successful Solarize Arlington campaign to promote residential rooftop solar. In 2013 the Town committed resources to hiring a part-time~~regional~~ energy manager that served multiple communities. This position was restructured in 2015 to become a full-time employee in Arlington who ~~assists with~~leads the implementation of renewable energy and energy

[18] The Arlington Sustainability Action Plan is available here: https://www.arlingtonma.gov/home/showdocument?id=32307

~~reducing~~ efficiency initiatives across all~~in~~ Town operations~~-owned buildings~~. In 2017 the Town launched the Arlington Community Electricity program, which has resulted in a substantial increase in the percentage of clean electricity purchased by Arlington residents and businesses. In 2018, the Select Board voted to have Arlington join the Metropolitan Mayors Coalition (MMC), comprised of Boston and surrounding communities, and to commit Arlington to achieving net zero GHG pollution by 2050 (a requirement for joining the MMC). In 2019 Arlington participated in a popular HeatSmart campaign to promote clean heating and cooling systems. And this year, in 2021, the Town is releasing this Net Zero Action Plan to achieve net zero GHG pollution by 2050.

Buildings progress – As noted above, Arlington became a state-designated Green Community in 2010. Even before then, the Town had implemented a variety of energy efficiency upgrades including building heating and lighting projects, and early adoption of LED traffic and crosswalk signals, as well as LED streetlights. Since ~~then~~ becoming a Green Community, the Town has received over $1.7 million in Green Communities grant funding and over $300,000 in utility funding for energy efficiency projects in Town-owned buildings. Collectively these projects save the Town over $400,000 per year in reduced energy costs and have reduced GHG pollution by more than 1,400 metric tons per year. Projects have included the installation of highly efficient boilers, advanced building automation systems, replacement/repair of steam traps, steam pipe insulation, HVAC retro-commissioning, LED lighting and much more. The new 415,000 square foot Arlington High School, currently under construction and scheduled for completion in 2024, will be all-electric, with no on-site combustion of fossil fuels, and heated and cooled with electric heat pumps. As a result, the new school, the Town's~~municipal government's~~ largest energy user, will reduce its energy use and GHG pollution per square foot by more than half, and will achieve net zero GHG emissions as the electricity grid decarbonizes.

Residential buildings have also benefitted from Town-sponsored projects, including the 2012 Solarize campaign that promoted the installation of rooftop solar panels, and the 2019 HeatSmart campaign that promoted clean heating and cooling systems like heat pumps and solar hot water. Both campaigns resulted in hundreds of projects at homes throughout Arlington, saving homeowners money and reducing GHG pollution.

Mobility progress – Arlington is a leader in promoting travel by foot, bicycle, and public transit. The Minuteman Bikeway, which opened in 1992, is a 10-mile protected shared-use~~bicycle~~ path that runs from Bedford to the Alewife MBTA station in Cambridge; it runs the entire length of Arlington from the Lexington line to Alewife station. The Bikeway is enormously popular; during just a four-month period in 2019 a total of 322,241 trips by people biking and walking were recorded on~~bicyclists and pedestrians used~~ the Bikeway for recreation and to commute to work. Recent roadway projects have made significant improvements for walking and bicycling travel, including the Mass Ave redesign in East Arlington that added bike lanes to Mass Ave and the Safe Travel Project that improved the Bikeway connection through Arlington Center. Bike lanes have been added along other parts of Mass Ave and the Arlington Center Sidewalk Project made major upgrades to sidewalk accessibility in the Center along Mass Ave east of Mystic and Pleasant Street. The public transit network in Arlington is extensive, with ten~~nine~~ MBTA bus routes that run~~go~~ through town, some of which stop at the Alewife T station, ~~a major commuter line~~which provides rapid transit service into Cambridge and Boston. In 2018 the Town ran a successful priority bus lane pilot project along the eastbound side of Massachusetts Avenue in East Arlington which significantly reduced commute times. In 2019 the priority bus lane was made permanent.

Arlington has been an early adopter of bike share programs, having partnered with dockless bike sharing vendor Lime in 2018 and with Bluebikes in 2020, which uses docking stations for its bicycles~~, in 2020~~. Arlington has had among the highest utilization rates of all communities with bike sharing programs.

Arlington has also been a leader in the adoption and promotion of electric vehicles, both for the municipal fleet and to provide public charging stations ~~for the public~~. In 2002~~10~~ Arlington adopted a municipal vehicle efficiency policy that requires Town departments to purchase fuel-efficient vehicles,[19] and in many cases vehicles purchased have been hybrid, plug-in hybrid, and battery electric vehicles. The Town has also purchased and installed four dual-port publicly available EV charging stations capable of charging a total of eight electric vehicles simultaneously. The new Arlington High School, slated for completion in 2024, will add ten additional publicly available dual-port EV charging stations.

Clean energy progress – In December 2015 Arlington installed solar photovoltaic arrays on six school buildings. These six solar arrays generate approximately 821,000 kWh of carbon-free electricity per year, reducing GHG pollution by approximately 250 metric tons. The new Arlington High School will significantly expand the Town's solar production, with extensive installations of both rooftop and parking canopy solar arrays that will result in a more than doubling of total solar production by the Town to almost 2 million kWh per year.

In 2017 Arlington launched the Arlington Community Electricity[20] program, which pools~~uses~~ the ~~bulk~~ purchasing power of Arlington's residents and small businesses to negotiate favorable electricity supply rates and which includes more renewable energy than required by state law. In 2017 the default renewable electricity content was 5% above state requirements. Starting in December 2019, the default extra renewable electricity content increased to 11% above state requirements (for 27% total renewable electricity content). In addition, over seven hundred homes have voluntarily opted-up to either 50% or 100% renewable electricity under the ACE program. Since program inception, ~~Implementation of~~ the ACE program has resulted in the purchase and use of 26 million kWh of extra renewable energy above state requirements, which resulted in 8,000 metric tons less GHG pollution than otherwise would have been the case ~~since the program started~~. On an annual basis, enough extra renewable electricity is purchased through the ACE program to completely offset the electricity used by 2,000 average Arlington homes.

WHAT HAVE WE HEARD FROM THE COMMUNITY?

As described above in *What have we already done?* Arlington has a long history of successful action to save energy and reduce greenhouse gas pollution. As we worked to draft this Net Zero Action Plan, we sought feedback from the community and key stakeholders to gauge support for both the net zero goal, and the specific measures in the Plan.

Initial lists of potential GHG pollution reduction measures were suggested by the Metropolitan Area Planning Council (MAPC), based on research into net zero plans from municipalities around the country. The Clean Energy Future Committee (CEFC), which includes representatives from several stakeholder groups in town, debated and revised these measures into shorter lists. In July 2020, MAPC and the Department of Planning and Community Development (DPCD) administered a community-wide survey to gauge public support for action to reduce GHG pollution and for different types of GHG pollution reduction measures under consideration (667 individuals participated). From October 26 through November 13, 2020, MAPC and the DPCD administered a Virtual Open House to solicit community input on the specific measures in the draft Net Zero Action Plan (approximately 320 individuals participated). Finally, from September through December 2020, the CEFC presented the draft Net Zero Action Plan to a wide range of stakeholder groups for their input, including Town boards and commissions, Town departments, local sustainability groups, property

[19] Passed by Arlington Town Meeting on April 29, 2002, now Title I, Article 19 of the Town Bylaws.
[20] Formerly known as Arlington Community Choice Aggregation.

owners and developers, members of faith communities, and others (see the *Acknowledgements* chapter for a full list).

Community and stakeholder input wasswere consistent: by an overwhelming majority, respondents view climate change as a serious crisis and support the goal of reducing GHG pollution in Arlington to net zero by 2050 (In the July 2020 survey, 87 percent of respondents rated climate change as "Extremely Important" to them personally). In addition, all 31 GHG pollution reduction measures in the Net Zero Action Plan were supported by a majority of survey and open house respondents, and during stakeholder discussions, with most measures receiving overwhelming support. Support was strong for building efficiency and electrification measures, for making walking, biking and public transit more attractive, for planting more trees, and for greening Arlington's electricity supply. Numerous people expressed gratitude and excitement about the Net Zero Action Plan in general – they were glad the Town was committed to net zero GHG pollution by 2050 and wanted to see the entire Plan implemented as soon as possible.

A few other key takeaways from theour community and stakeholder outreach:

- Several commentersA significant number of respondents urged the Town to take stronger actions to reduce GHG pollution and for the actions to be implemented sooner than called for in the Plan.
- In contrast, a small minority of respondents strongly oppose the entire Plan, citing personal liberty and opposing government mandates or requirements to combat climate change.
- Several commentersQuite a few people voiced strong support for the Plan but urged caution about added costs to residents and businesses. The CEFC shares those concerns (see "*How much will this cost?*" and "*Getting there equitably*" in this chapter). Arlington will need to be thoughtful and mindful of these impactscareful as it implements the Plan to minimize added costs, and to help lower- and middle-income residents managepeople afford any added costs that may result.

The November Net Zero Plan Virtual Open House included an opportunity for participants to write a "Postcard from the Future" to themselves, like the one from the CEFC at the beginning of this Plan. There were many eloquent and inspiring responses, exemplified by this one:

> "In 2050, Arlington has all of the great traits it does now with significant improvements. Buildings throughout the community are extremely efficient and powered by clean, electric systems which don't pollute, are very affordable to run, and results in a comfortable and healthy living environment. Individual cars and all of the space they took up with driveways and parking lots are a thing of the past, as most people walk and bike around green, shared streets to get around. There is a speedy electric bus system connecting the neighborhoods to Mass Ave and other arteries and from there into Cambridge and Boston. For longer trips, residents can easily hail an electric, self-driving car that meets their needs. As a result of these changes, there is a lot more green space throughout town for all people to enjoy, as well as significantly more affordable housing. Arlington is a diverse and welcoming community where people of a multitude of backgrounds feel comfortable and thrive. While the change from 2020 seems huge, it was all accomplished with the basic technology and policy tools available then, combined with an acceptance that change was both necessary and positive. I'm so glad that you've made it!"

Community and stakeholder input on the Net Zero Action Plan indicates a high level of support for both the net zero by 2050 goal, and the specific GHG pollution reduction measures in this Plan. This support bodes well for the next phase of Arlington's net zero journey: successful implementation of the 31 GHG pollution reduction measures in the Plan.

A Roadmap to Net Zero

The following chapter, the Net Zero Roadmap, lays out 31 measures that will reduce GHG pollution from our buildings, our transportation system, and our energy supply. These measures will set Arlington firmly on a path toward achieving net-zero GHG pollution by 2050. We should acknowledge, however, that even successfully implementing this Plan will not fully achieve that goal. There will ultimately need to be changes in state (and perhaps federal) law, new and improved technologies, lower costs for some existing technologies, and sustained public education to inform and change ingrained attitudes and perceptions. This Plan is an excellent start, and implementing it will substantially reduce GHG pollution, build valuable knowledge and expertise, and help build public support for new actions that can be included in future updates of the Net Zero Plan.

Net Zero Action Roadmap

Implementing the Plan

While the Clean Energy Future Committee (CEFC) is charged with guiding Arlington to net zero GHG pollution by 2050, implementing the Net Zero Action Plan will require multiple Town bodies, regional partners and networks and private partners, including residents and businesses, to help achieve the goals.

It will also require strategic use of limited resources ~~over time~~. The 31 measures in this Plan cannot be implemented all at once and are not intended to be. In consultation with Town staff and key stakeholders, the CEFC classified measures included in this Plan as either "High Priority" or "Priority" to help make decisions about what to work on first, though other factors will be considered including available resources (e.g., grants, financing) and the availability of volunteers and Town staff to work on specific projects. High priority measures are those that the CEFC recommends Arlington should focus on implementing first because of their potential impact on GHG pollution and/or because they are important enabling actions that will make it easier to implement other priority actions later.

Measuring progress

- The key measure of success will be reductions in GHG pollution from all sources in Arlington. Depending on available resources, the Town will measure that success by regularly updating the Town's GHG inventory at least every five years, with a goal of updating the inventory every 2-3 years. Further, the Town may also choose to establish a dashboard or other method of tracking and reporting progress on implementing individual GHG reduction measures in this Plan. Appendix A includes performance indicators for all GHG reduction measures.

Revisiting the Plan

- This Plan is intended to be a living document that the Town may modify should circumstances warrant it. A change in state law, for example, may render one or more GHG reduction measures moot. Major technological innovations in heat pumps, battery technology or any number of other areas may also warrant amendments to the Plan. The CEFC recommends that this Plan be revisited and revised at a minimum once every five~~10~~ years ~~(in 2030 and 2040)~~.

Net Zero Buildings

The Town of Arlington is committed to implementing actions that advance multiple net zero emissions buildings strategies. In 2017 buildings in Arlington produced an estimated 62 percent of all Town-wide greenhouse gas emissions. Because buildings represent such an important source of emissions, and because converting Arlington's mostly older building stock to net zero emissions will be challenging, the Buildings chapter of Arlington's Net Zero Action Roadmap is divided into two parts:

1. High Priority Measures
2. Priority Measures

All measures in both categories have been deemed valuable by the Clean Energy Future Committee. However, the Committee recommends focusing efforts on the High Priority Measures first and foremost.

Efforts to implement the Priority Measures in this chapter should be actively pursued, but should not interfere with implementation of the High Priority Measures.

Arlington net zero emissions buildings context and priorities

Achieving the Town's goal of net zero GHG emissions by 2050 (in 30 years) requires that all Arlington buildings become net zero emissions buildings by 2050. Today there are approximately 12,000 buildings in Arlington. Reaching that goal requires that every day between now (2020) and 2050, on average, slightly more than one building is converted into a zero-emission building. That is more than 400 buildings a year for 30 years.

A typical Arlington single-family home

Typical Arlington two-family homes

~~Thus, achieving the net zero emission reduction goal is a significant challenge. It requires that the Town prioritize initiatives that will have the greatest impacts and deprioritize those initiatives that do not significantly contribute to the goals.~~

Net zero emissions vs. net zero energy

This Plan proposes two primary approaches to achieving emissions reductions:

1) Reduce onsite energy use as much as practical, and

2) Switch all carbon emitting end uses in all buildings to zero emissions technologies and use zero emission energy sources to power those end uses. Using today's technologies, only a 100% electric building can reach a zero emissions goal, by using a 100% emissions-free electric supply.

~~This Plan primarily focuses on making as many buildings as possible net zero *emissions* by converting as many end uses to electricity as possible.~~ In a net zero emissions home, the owner can buy zero emissions electricity and thus does not have to produce all their electricity on site from zero emissions sources. In contrast, in a net zero *energy* home, all energy needed to operate the home is generated at the site.

This Plan focuses on net zero *emissions* houses because many Arlington homes will not be able to generate all needed emissions-free electricity on the premises. This more expansive goal of net zero *emissions* homes allows homeowners to convert their homes to run on 100% electricity and procure zero emissions electricity from outside their properties to meet the Town's 100% emission reduction goal (for example, through the Town's Arlington Community Electricity program).

Net zero energy capable homes and *plus energy* homes by 2050

Despite the emphasis on emissions reductions, in order to strive towards maximum onsite energy use reduction, this Plan calls for every building in Arlington to be a **net zero energy capable** home by 2050. This means that each building has a goal of reducing its energy consumption to a level where the needed annual energy could be generated on site if the building had suitable southern exposure for solar panels. This Plan defers the setting of a specific standard to a subsequent committee analysis, but example standards could be a Home Energy Rating System (HERS) score of 35 or better, or a Passive House standard of 5.7 kWh per square foot per year in annual energy consumption.[21] This Plan also recognizes that on-site zero emissions energy generation technologies will improve and change over time and thus the standard will need to be adjusted over time.

Furthermore, this Plan encourages those buildings that are able to achieve net zero site energy use to go even further and become a "plus energy house." For example, a "+40 house" would be able to generate 40% more energy than it consumes over a year. These houses would be capable of powering electric vehicles using the on-site electricity generation and therefore eliminating transportation-related GHG emissions as well.

Arlington's new High School will be all-electric

Net Zero Buildings – High Priority Measures

The Town of Arlington commits to implementing actions that advance the following high priority net zero building strategies:

1. **Electrify fossil-fuel end uses,** prioritizing the larger end-uses such as space heating, water heating, clothes dryers and cooking. The goal is for all Arlington homes to be 100% electric. To achieve zero GHG emissions, this also requires the purchasing of 100% emissions-free electricity to power those homes by no later than 2050.

[21] Passive House Alliance. https://www.phius.org. The 60 kWh/m^2/yr standard ~ 5.7 kWh/sft/yr. For a 2,000 square foot home, this would imply maximum annual energy consumption of 11,400 kWh. The Home Energy Rating System (HERS) score is the current building efficiency measurement methodology used in Massachusetts.

2. **Perform deep energy retrofits of existing buildings** to create net zero energy ready buildings.

3. **Allow and enable existing buildings to be net zero emissions,** net zero energy or "plus energy."

Any direct or indirect initiatives that support these high priority items should be prioritized over other possible actions. New technologies or solutions can be added or removed from the priority list as they evolve over the next 30 years.

Importance of near-term action: building stock undergoing significant changes

Timing is of the essence for the above measures. The average home heating system will be replaced once or twice over the next 30-year period, ~~so~~ meaning that there will be up to two chances to convert the heating system to a zero emissions technology. In addition, over the next 30 years, a subset of buildings will undergo a significant renovation or will be replaced with a new building. For these buildings, it is important to ensure that they will be both allowed and encouraged to achieve the highest possible energy and emissions reductions because those buildings may not undergo significant rebuilding for another 50 to 100 years.

NZB 1. Convert existing fossil fuel equipment and appliances to electric. Create an ongoing "Electrify Arlington" program and campaign modeled after the past highly successful Solarize and HeatSmart campaigns.

Initial technology could include heat pumps, with an emphasis on central ducted heat pumps. The program can include additional high efficiency electrification technologies such as heat pump clothes dryers, electric cooking ranges and heat pump water heaters with exterior compressors.

Arlington ~~has~~ achieved significant environmental results with its previous HeatSmart and Solarize campaigns. This has created a successful framework of using local volunteer "coaches" and other community support to help ~~home~~ residential and small scale ~~business owners~~commercial transition from fossil fuels to lower-emission alternatives. Creating an ongoing electrification program using the same framework will enable the Town to continue building on its past electrification efforts. The new "Electrify Arlington" campaign would combine the following into a sustained ongoing campaign:

- An "Electrify Arlington" website with all campaign information. In addition to building electrification information, the website will also include promotion of electric vehicles and the Arlington Community Electricity program (see NZB 4 below).
- Community-based marketing, including a potential Electrify Arlington "Certification" for homes that have gone all-electric and information about available financial incentives (e.g., Mass Save, alternative energy credits)
- A community "electrification coach" advisory service (similar to Solar coach and HeatSmart coach). It is likely that this would require the creation of a new part-time or full-time municipal position
- Heavily discounted appliance and HVAC pricing from participating contractors and manufacturers
- Published equipment and installation prices to create price transparency and more competitive prices.

Other towns in Massachusetts such as Belmont, Concord, Braintree and others have had similar programs to promote heat pumps and electric vehicles, and numerous other communities have had Solarize and HeatSmart programs.

NZB 2. Implement a community-wide energy efficiency outreach program to significantly increase uptake of deep energy retrofits and other significant efficiency measures.

Arlington will work with public and private sector partners to implement a community-wide program to incentivize deep energy retrofits of existing buildings. Partners could include the Mass. Department of Energy Resources, home performance contractors, potentially the Mass Save® program administrators ~~(but only if program offerings include deep energy retrofits), public and private grant-makers and others~~. The Town should consider advocating for~~engaging with~~ the Mass. Department of Public Utilities to change the standards for "cost-effective energy efficiency" measures so that deep energy retrofits are eligible under utility incentive programs. Large-scale adoption of deep energy retrofits in homes and businesses is necessary to accelerate the pace of large emissions reductions in buildings. While there are successful examples of energy efficiency outreach programs such as the Melrose Energy Challenge[22], Arlington will seek to create a program that incentivizes energy retrofit projects to~~that~~ achieve ~~a much~~ larger increases in energy efficiency than is typically seen with MassSave® or other utility energy efficiency programs.

NZB 3. Change zoning or other bylaws that hinder the renovation or construction of net zero energy capable ~~homes~~buildings. Create incentives to encourage renovation and new construction projects to result in net zero energy capable buildings.

Existing Arlington bylaws at times create various barriers to, and/or do not encourage, renovating or constructing net zero energy buildings. For example, high efficiency buildings require insulated foundations[23] but approximately 30%-40% of Arlington's ~~–~~lower-density residential lots[24] are considered "non-conforming" and the zoning bylaw does not allow foundations to be removed and replaced on those lots. The Town is encouraged to amend ~~change its~~ zoning ~~bylaw~~ to allow new net zero emissions ~~homes~~ buildings to be built on new foundations on existing non-conforming lots, and to allow for up to 10 inches of additional exterior insulation to existing building ~~home~~s with a set-back or other non-conformity.

In addition, the Town is encouraged to implement zoning bonus provisions ~~into its zoning bylaw to provide incentives for homeowners and builders, including builders of commercial buildings,~~ to ~~implement~~ incentivize deep energy retrofit measures for existing buildings and~~or to build~~ for new net zero energy buildings ~~on conforming lots~~.[25]

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[22] City of Melrose Website. *Melrose Is Greener than Ever*. 2/15/2018. https://www.cityofmelrose.org/home/news/melrose-greener-ever

[23] For example, Passive House construction requires foundations or slabs to have an insulating R-value between 30 and 50 which can typically only be achieved with new foundations that are insulated from the exterior and from below. In addition, an existing foundation may not have sufficient structural integrity to support a new energy efficient building that may be heavier.

[24] The 30%-40% estimate applies to the approximately 92 percent of residential lots in Arlington that are in Zones R0, R1 and R2 (approximately 11,000 of the approximately 12,000 total residential lots in town are in Zones R0-R2).

[25] ~~Two examples of bonus provisions provided only for illustrative purposes (not necessarily recommended for adoption): a) allowing a portion of finished basement square footage to be excluded from finished square footage calculations for both dimensional requirement calculations and for property tax calculations; and b) increasing the square footage allowable by right for additions from the current 750 to 1,000 square feet if the building meets certain energy efficiency standards or is fully electric.~~

NZB 4. Create a permanent Town "Electrify Arlington" website.

The Town of Arlington will create an Electrify Arlington website to house informational resources and other campaign information about ways residents and businesses can electrify building heating, hot water and cooking, improve energy efficiency, purchase electric vehicles, generate renewable power and purchase 100 percent renewable electricity. The website will contain information about how residents and businesses can take advantage of solar power (including PV, thermal and community solar), heat pumps, electric vehicles and other methods to reduce building- and transportation-related GHG emissions. In addition to Arlington-specific links and resources, this will be a "one-stop shopping" portal for residents and businesses to access practical ideas and advice and links to particularly helpful external websites. An example of a similar website already in existence is Newton's Energy Coach site (www.newtonenergycoach.org). Although this measure appears in the Net Zero Buildings section of this Roadmap, it is equally intended to support measures in the Zero Emissions Mobility and Clean Energy Supply sections as well.

NET ZERO BUILDINGS – PRIORITY MEASURES

The Town of Arlington commits to implementing actions that advance the following *additional* net zero buildings strategies:

NZB 5. Retrofit and maintain all buildings owned by the Town to reduce energy use as much as feasible (general target 25% but adjust on case-by-case basis), to maximize the installation of renewable energy technology, and to make new buildings and major renovations fossil fuel-free.

Arlington has made tremendous progress in reducing energy use and GHG emissions from municipal buildings. Since becoming a Green Community in 2010, Arlington has already reduced municipal energy use by about 20 percent through a range of measures. However, there are still many opportunities for further improvement. In existing municipally owned buildings, Arlington will complete energy audits and retro-commissioning projects that ensure that existing energy systems are operating efficiently, perform deep energy retrofits that maximize energy efficiency, and deploy renewable energy projects that provide as much on-site energy as possible.[26] New buildings and major renovations of existing buildings should be fossil fuel-free. The Town will start by conducting energy audits and retro-commissioning schools and other large facilities. The Town will use the audits to identify buildings with high energy consumption and plan for deep energy efficiency retrofits. The Town will also evaluate buildings for on-site renewable energy suitability and build renewable energy projects at municipal properties with sufficient resource potential. The Town will adopt a policy requiring the design of all new municipal buildings and major renovations of existing buildings to be fossil fuel-free. The Town should establish a policy that gives weight to long-term operational savings when evaluating any added first costs of designing buildings to be fossil-fuel-free. Combined with additional renewable energy generation, it may be possible for some municipal buildings to achieve net zero energy. As retrofits and renewable energy projects are completed, and as fossil fuel-free buildings are constructed, the Town will promote these buildings as models for other buildings in the community.

[26] Six schools already have rooftop solar power systems, and the new high school, currently under construction, will have increased solar generating capacity relative to what is on the current building.

NZB 6. Advocate with the Department of Energy Resources, Board of Building Regulation and Standards and state legislature for a state net zero energy stretch code.

A net zero energy stretch code allows communities to ensure that new construction and major renovations will be built to net zero standards and helps ensure that buildings are not locked into high emissions for years into the future. Arlington, working with its legislative delegation, other municipalities, and advocacy groups, will support legislation that establishes a net zero stretch code and the adoption of a net zero stretch code by the Board of Building Regulations and Standards (BBRS).

NZB 7. Evaluate policies that include low- or zero-emissions standards when soliciting and awarding Town contracts for goods and services, and when selling property.

The Town should best use the power it has in purchasing and contracting for goods and services, to reduce and eliminate GHG emissions associated with those goods and services. The town should consider the potential cost impacts and also the impact on small businesses of any policy change. State law requires municipalities to award contracts to the lowest bidder, but the Town can specify conditions and standards to be met by the winning bidder. The Town should work with MAPC to create a consistent set of standards and evaluation methodologies as more municipalities adopt similar requirements, and to facilitate their use in its collective purchasing programs and services for municipalities. The Town should also include net zero energy incentives for the sale and development of its properties to the extent practicable.

NZB 8. Review whether there are unnecessary barriers to energy efficiency and renewable energy technologies in Historic Districts, and if so, whether changes could be made to Design Guidelines that would reduce those barriers.

The Town values both historic preservation as well as eliminating greenhouse gas emissions from buildings. The Town's Historic Districts Commission (HDC) works with building owners to ensure projects can meet their needs while preserving important qualities of the Historic District. As Arlington works to implement this Net Zero Plan, the Town will review HDC Design Guidelines to determine whether any modifications are warranted that would facilitate energy efficiency and renewable energy projects without jeopardizing the HDC's ~~ability to preserve~~ preservation goals in ~~the historic character of~~ Historic Districts.

NZB 9. Prohibit fossil fuel heating systems in new construction and major renovations.

In 2020 the Clean Energy Future Committee supported a proposed bylaw that would ~~have~~, under certain circumstances, prohibit~~ed~~ fossil fuel heating systems in new construction and major renovations. This bylaw passed as part of Warrant Article 5 at the November 2020 Special Town Meeting. Warrant Article 5 also authorized a home rule petition to the state legislature requesting local authority to regulate fossil fuels in new construction and major renovations. The home rule petition was included due to a 2020 ruling by the ~~A similar bylaw passed by Brookline's Town Meeting in 2019 was subsequently blocked by the~~ Massachusetts Attorney General which blocked a similar bylaw passed by Brookline's Town Meeting in 2019 citing ~~due to~~

conflict with state law. Passage of Arlington's home rule petition must occur before Arlington's fossil fuel bylaw can take effect. ~~The CEFC continues to support a prohibition on fossil fuel heating systems in new construction and major renovations.~~ As it awaits approval of its home rule petition, Arlington should investigate other methods of achieving that goal, including advocating for ~~local bylaws, Home Rule petitions, and~~ changes to state law such as the adoption of a net zero energy stretch code.

NZB 10. Allow ~~adjustments~~ amendments to height, setback and density requirements by Special Permit for energy efficiency and renewable energy installations at existing buildings.

In addition to bonus provisions recommended in NZB3, amendments to dimensional and density standards would encourage ~~Allowable~~ installations ~~include (~~that include but are not limited to~~)~~: insulation, solar PV, solar thermal, living roofs, other eco-roofs, energy storage, and air source heat pump equipment. Such adjustments to height, setback and density requirements must meet Special Permit criteria as part of any permit review. ~~not be significantly detrimental to abutters~~. The additional space needed for these technologies is often ~~small.~~minimal. A solar PV system, for instance, requires a few inches of space between the roof surface and the panels to function, and for electrical boxes and a disconnect switch to be installed on the side of a building. By exempting that additional square footage from the total, developers can more easily integrate clean energy technologies into their designs without having to sacrifice interior space.

NZB 11. Require all new commercial buildings and multi-family ~~Apartment~~ b~~B~~uildings above a certain number of units to include solar PV and/or solar thermal (or be "solar ready") on a minimum of 50 percent of roof area.

Solar PV and/or solar thermal can be a cost-effective, zero-carbon energy solution on new commercial and ~~apartment~~ multi-family buildings and will help reduce emissions from new buildings in Arlington. While the CEFC prefers requiring solar PV / solar thermal through this measure, a "solar ready" requirement is also acceptable. The requirement for either of these options would allow for ~~variances~~ exemptions if solar is deemed to be infeasible~~. on a building (note: "feasible" would need to be carefully defined).~~ If solar PV or thermal is feasible on less than 50% of a roof, then the largest feasible percentage shall be required. Alternatively, this requirement could be for "solar ready" roofs that are pre-wired, concentrate rooftop equipment together to maximize space for solar panels, and are engineered to handle the extra load once panels are installed. ~~Note that requiring solar PV and/or solar thermal installation is preferred over a "solar ready" requirement, but both options are presented here.~~

NZB 12. Explore opting-into the state's commercial Property Assessed Clean Energy (PACE) law to support local financing of clean energy projects.

Arlington will explore opting into Property Assessed Clean Energy (PACE), a financing structure that allows businesses to borrow money for clean energy projects and make repayments through an assessment on their

property tax bill.[27] Arlington could opt into PACE by a majority vote of the Select Board. Before opting in, the Town should explore the degree of interest from the business community in this opportunity. PACE allows commercial property owners to make more comprehensive clean energy upgrades and finance them with longer payback periods. PACE financing is expected to be available in Massachusetts in 2020. Check MassDevelopment's website for more information.[28]

NZB 13. Promote the planting of trees on private property through Town programs that provide trees at no charge.

This program would incentivize additional tree planting around buildings to augment street trees. In many cases street trees are either infeasible or space is already taken by trees; this program would promote the planting of trees on private property to increase shade ~~(thereby reducing building energy needed for air conditioning)~~ and sequester carbon. Existing programs such as the Trees Please Fund administered by the ~~DPW~~ Department of Public Works should be reviewed to determine whether enhancements could increase participation.

NZB 14. Partner with local vocational / technical schools to encourage more HVAC and clean tech workers in Arlington and the region.

As Arlington and surrounding communities transition to clean heating and cooling technologies like heat pumps and solar hot water, and as solar power continues to remain popular, there is an opportunity to train and mentor local high school students in the HVAC and clean technology jobs of the future. The need for more workers in heat pump project design, installation and maintenance alone must increase rapidly over the coming decade to meet the need for workers that will be created by the planned large-scale electrification of home heating in Arlington and the region.

NZB 15. Consider establishing a Chapter 40R Smart Growth Zoning Overlay District to allow for dense residential or mixed-use development.

The Smart Growth Zoning Overlay District Act, M.G.L. chapter 40R, encourages communities to create dense residential or mixed-use smart growth zoning districts, including a high percentage of affordable housing units, to be located in transit-oriented locations~~near transit stations~~, in areas of concentrated development such as existing city and town centers, and in other highly suitable locations. ~~Typically districts cannot exceed 15% of local land area.~~

Projects must be developable under the community's smart growth zoning adopted under Chapter 40R, either as-of-right or through a limited plan review process akin to site plan review. The Town can include design ~~guidelines~~ standards that promote buildings that meet Zero Energy, Passive House or other measures consistent with this Net Zero Plan.

[27] U.S. Department of Energy, Better Buildings Website. https://betterbuildingssolutioncenter.energy.gov/financing-navigator/option/cpace

[28] MassDevelopment, Property Assessed Clean Energy Website. https://www.massdevelopment.com/what-we-offer/key-initiatives/pace/

Upon state review and approval of a local overlay district, communities become eligible for Chapter 40R payments, as well as other financial incentives. These incentives can include Chapter 40S state reimbursement of costs associated with additional school children.

Chapter 40R seeks to substantially increase the supply of housing and decrease its cost, by increasing the amount of land zoned for dense housing. It targets the shortfall in housing for low- and moderate-income households, by requiring the inclusion of affordable units in most private projects.

More information is available here and here.

NZB 16. Support training opportunities for Town departments, boards and committees, as well as developers and contractors, on LEED, Net Zero, Passive House and other high-performance energy standards.

Since the development of a Net Zero building utilizes different building standards, calculations, and codes than are typically used in construction, building inspectors and plan reviewers may not always have a familiarity with best practices. The goals of these trainings would be to familiarize ~~inspectional services and other~~ Town staff and members of boards and committees with high-performance building practices, to empower them to conduct relevant energy and performance calculations during plan review, and to enable inspectors to identify common construction mistakes and code violations in order to conduct efficient and effective inspections. A thorough curriculum would cover topics such as: LEED, Net Zero, Passive House and other high-performance energy standards, HERS ratings, life safety benefits of Net Zero buildings, and energy modeling. Additionally, Arlington should seek ways to provide guidance to developers and contractors on permitting for Net Zero buildings.

~~It is important to acknowledge that the Town lacks sufficient resources at this time to offer adequate training as envisioned in this measure. The Town should seek assistance in the form of grants or pro bono training offered by nonprofits and others.~~

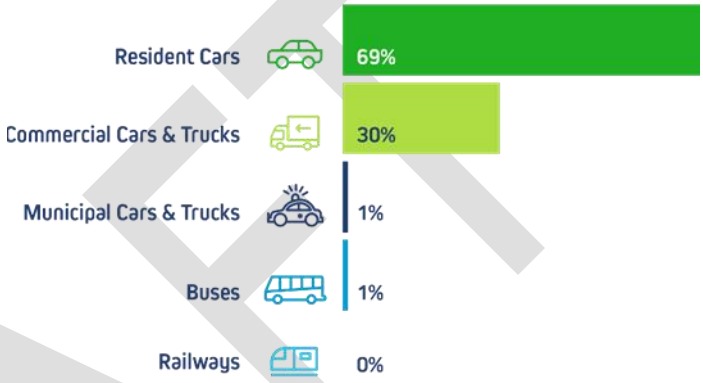
NZB 17. Continue and Expand Participation in Green Communities and Similar Programs.

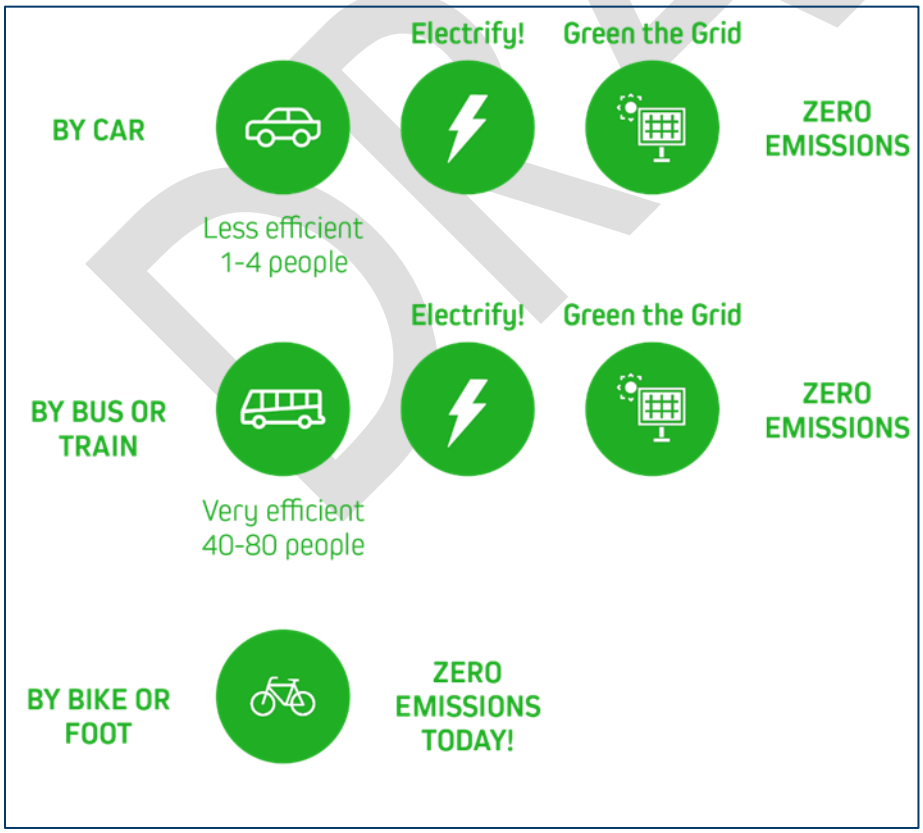
The Town of Arlington became a Green Community in 2010 under the Mass. Department of Energy Resources's Green Communities Program, pledging to reduce energy use by 20 percent within five years, as well as to meet four other Criteria (as-of-right siting of renewable energy facilities, expedited permitting for renewable energy projects, purchase of only efficient vehicles for the municipal fleet, and adoption of the Stretch Energy Code).[29] The Town met those Criteria, and from 2010 through 2020 the Town secured over $1.7 million in Green Communities competitive grants for energy efficiency projects. The Town should continue active participation in the Green Communities program, ensuring continued adherence to the five required Criteria, submission of Green Communities Annual Reports, and annual proposals for competitive grants. The Town should also advocate for, and participate in, new state programs such as an expansion of the Green Communities program outside of municipal operations to include grants for energy efficiency and renewable energy projects that benefit residents and businesses.

[29] For more information about the five Green Communities designation criteria, visit https://www.mass.gov/guides/becoming-a-designated-green-community

Zero Emissions Mobility

In 2017 gasoline- and diesel-powered cars, trucks, buses, and other forms of transportation accounted for more than a third of our community's greenhouse gas pollution – an estimated 36 percent of all Town-wide greenhouse gas emissions, or the equivalent of approximately 100,000 tons of carbon dioxide ~~equivalent~~. In addition, commercial vehicles such as trucks that deliver goods to Arlington also emit GHGs in the Town. Because of the importance of the transportation sector to overall GHG emissions, The Town of Arlington is committed to implementing actions that advance multiple zero emission mobility strategies. These measures aim to speed a transition from fossil fuel-powered cars, trucks, and buses to zero emission vehicles and also to make it easier and safer for people to get around by foot, bicycle, bus and other means. Alternative modes to car travel not only greatly reduce emissions, but also have substantial health, safety, and economic benefits. Improving conditions for alternative modes of transportation will take time, as will replacing each of the 27,441 vehicles registered in Arlington with zero emissions vehicles. To speed this transformation, The Clean Energy Future Committee proposes the following specific measures to reduce greenhouse gas pollution from how we get around.





ZERO EMISSIONS MOBILITY – HIGH PRIORITY MEASURES

The Town of Arlington commits to implementing actions that advance the following high priority zero emissions mobility strategies:

ZEM 1. Support implementation of the recommendations and strategies being developed as part of Connect Arlington, the Town's sustainable transportation plan.

~~The Town is currently developing a~~The Town's long-range sustainable transportation plan, known as Connect Arlington, ~~that will~~ incorporates recommendations for improving the mobility of people using environmentally-sustainable modes of transportation (particularly walking, bicycling, and using public transportation). These multi-modal strategies can play a major role in reducing transportation-related greenhouse gas emissions. The plan ~~will~~ includes strategies and metrics for tracking progress over the course of the plan's 20-year timeframe. Connect Arlington ~~will analyze mode share patterns, evaluate bicycle and pedestrian infrastructure needs, and make~~includes recommendations on ~~best practices to~~ improving mobility options, ~~improve~~ bicycle and pedestrian safety, and connectivity on major regional corridors and local routes with high access to important destinations (workplaces, retail, recreation, public services, etc.) in order to lower vehicle miles traveled. ~~Metrics will be developed for tracking progress towards goals of improving the transportation system for all users and for moving towards more sustainable transportation modes~~.

The Minuteman Bikeway

ZEM 2. Create and implement a plan to expand public vehicle charging options at libraries, business districts, public parking facilities, and other facilities, both on- and off-street.

A shift to electric vehicle technology is slated to play a significant role in reducing GHG emissions in the transportation sector. The Town will create and implement a plan to help ensure investment in electric vehicle charging stations to help provide the infrastructure needed to support continued EV adoption for residents, workers, and visitors. As a part of increased publicly accessible charging infrastructure, the Town will assess options and put in place sustainable pricing and parking policies at Town-owned charging stations to support management of the charging stations as utilization increases over time. As part of this plan, the Town will specify or adopt design guidelines for EV charging stations, signage, and wayfinding for both on- and off-street parking, and adopt regulations and enforcement policies for EV parking spaces. The Town will periodically publicize that these EV charging stations are available to the general public, including notifying local car dealerships, to help address potential buyers' concerns regarding availability of charging stations. The Town will also explore potential partnerships to encourage shared medium- and heavy-duty vehicle charging infrastructure.

There are...

4 electric vehicle charging stations in **Arlington**, and...

891 electric vehicle charging stations in **Massachusetts**

ZEM 3. Provide a suite of education and awareness-building services to promote electric vehicle adoption.

As part of the Electrify Arlington campaign, the Town will promote zero emission vehicles to its residents and businesses. In addition to providing information on the new Electrify Arlington website, the Town will work with community organizations, electric vehicle dealerships and community members to make residents and businesses aware of electric and other zero emission vehicle discounts, low operating costs and environmental benefits. The Town will also provide information about availability of publicly accessible EV charging station locations. Part of the campaign could be similar to the HeatSmart and Solarize campaigns the Town has sponsored. The town will also evaluate rules and regulations that impact freight delivery such as parking, unloading zones, restrictions on time-of-day delivery, and other ordinances to determine if incentives for zero emission delivery trucks could be established.

ZEM 4. Adopt a zero-emission municipal fleet and charging infrastructure plan and policy that commits to complete transition to zero emission vehicle purchases by no later than 2030.

Arlington will develop and adopt a zero-emission municipal fleet plan and policy with zero emissions standards for new acquisitions and leased vehicles. This policy should also address how the vehicle purchase approval process will be centralized within the municipality to ensure that all departments are adhering to the new emissions standards. The policy will commit the Town to revising and regularly updating the zero-emission municipal fleet policy to require zero-emissions vehicles whenever available and operationally feasible. Concurrently, the Town will evaluate and prioritize facilities for charging infrastructure installation. Where zero-emission makes and models are not affordable or practical for the required municipal function, the Town should require the purchase of the lowest emitting version that is affordable and practical. The Town should also evaluate opportunities to require or incentivize private contractors that perform work for the Town to use zero-emissions vehicles.

ZERO EMISSIONS MOBILITY – PRIORITY MEASURES

The Town of Arlington commits to implementing actions that advance the following *additional* net zero emissions mobility strategies:

ZEM 5. Create an action plan, as a follow up to the Town's Connect Arlington plan, to advocate for community transit service needs, bus stop upgrades, bus rapid transit, and electrification of the regional transit system.

In supporting implementation of Connect Arlington, the Town should create an action plan to advocate for community transit service needs, bus stop upgrades, bus rapid transit, and electrification of the regional transit system. The action plan should include recommendations to study and develop further bus improvements along other major transit corridors in Arlington, such as Mass Ave in Arlington Center and the Heights, Broadway, Medford Street, Park Ave, Mystic Street, and Pleasant Street. It should also identify priority areas to increase access and community transit ridership and advocate during upcoming planning processes with the MBTA and MassDOT. By working in partnership with regional transit authorities, Arlington can reallocate roadway space to prioritize bus traffic, which is particularly important on high-ridership routes. The bus priority pilot on Mass Ave in East Arlington successfully showed that bus priority improvements can significantly reduce travel times for bus riders and improve bus reliability.

ZEM 6. ~~Evaluate~~ Require changes to parking policies that would maximize efficient use of spaces, reduce use of single occupancy vehicles, and give dedicated parking to zero emission vehicles.

Parking plays an integral role in influencing vehicle congestion, determining travel behavior, and shaping land use patterns. Not only is parking very expensive to construct, but also in many circumstances, more parking actually contributes to increased vehicular congestion.[30] Under this policy, the Town should~~will~~ consider the elimination of minimum parking requirements for all new residential units, establishment of parking maximums within half a mile of high-quality transit stops, creation and expansion of parking benefit districts,[31] additional incentives for developers to provide less than maximum allowable parking, and requirements for dedicated parking for zero emission vehicles within these reduced parking areas. In establishing these changes to parking policy, the Town should also use parking management strategies that ensure vehicle turnover and maximize efficient use of the parking supply (particularly public parking), such as metered parking. There are a wide range of data-driven strategies that cities and towns can employ to encourage more efficient allocation of parking resources.

[30] University of Connecticut, School of Engineering News. *UConn professors Show Link Between More Parking Lots and Increased Driving.* https://news.engr.uconn.edu/uconn-professors-show-link-between-more-parking-lots-and-increased-driving.php#

[31] The 2017 Annual Town Meeting approved the creation of a Parking Benefits District in the metered area of Arlington Center. A Parking Benefits District allows the Town to take the net income after expenses from parking meters for improvements to the area, such as parking lot upgrades, improved pedestrian lighting, sidewalk snow removal, and more benches and bike racks.

ZEM 7. Develop policies and guidelines to promote safe use of electric bicycles, scooters, and other micromobility technology, as well as supportive infrastructure improvements.

Electric bicycles, tricycles, scooters, skateboards, and other zero emission personal mobility technologies are becoming more popular and are already being used on Arlington's streets and bike paths. These technologies can help bridge the gap for residents trying to transition from automobiles to other modes but who may have physical or health challenges that make it difficult to bike or walk, especially in hilly areas of town. However, e-bikes and e-scooters also allow users to travel faster than non-motorized users and can create conflicts in shared spaces, particularly bike paths. Policies and guidelines can help the Town understand how these new technologies fit into the existing transportation system and if any regulations should be considered. New infrastructure, such as micromobility lanes shared with faster users like bicycles, may need to be developed to accommodate and encourage these technologies while promoting safety for all users. New facilities that allow for parking, locking, and perhaps even charging micromobility technologies should also be considered. Arlington can look to early adopter communities like Cambridge for examples and lessons learned.

ZEM 8. Advocate for improved utility rate designs to facilitate smart electric vehicle charging and accelerate EV adoption.

As noted elsewhere in this Plan, the transition to zero emission vehicles will be a vital part of efforts to achieve net zero GHG emissions. In order to fully realize the benefits of vehicle electrification, electric utilities need to have electric rate designs for both residential and commercial customers that incentivize smart charging; that is, charging that takes place at times of day that do not drive up peak electricity demand. These so-called time varying rates can also be coupled with programs to use EV charging as a demand response resource. There is also the need to develop rate options in the near term that support cost-effective charging with DC fast charging stations when the utilization rates of these stations is relatively low. The Town, along with other aligned stakeholders, should advocate at the state Department of Public Utilities for these types of utility rate designs.

ZEM 9. Promote EV car sharing.

The Town will promote car sharing through education (website, press releases, social media) and by partnering with local volunteers to explore the creation of a local car sharing app or website to match drivers and riders. The Town already has limited car sharing options in the form of a few Zipcar spaces in municipal lots, but should consider how to expand partnerships with car sharing companies.

Clean Energy Supply

At the core of our community's net zero strategy, we need to maximize building energy efficiency, electrify buildings and transportation, and green the electrical grid by ensuring more and more of our electricity comes from renewable sources. The two prior chapters of this Roadmap – Net Zero Buildings and Zero Emissions Mobility – called for electrification of building space heating, water heating and cooking, and a switch to electric vehicles. Complete electrification of buildings and transportation will essentially eliminate the combustion of fossil fuels within Arlington, which is crucial. However, to reach net zero greenhouse gas pollution, we must ensure the source of Arlington's electricity is carbon-free, from sources like wind, solar and hydro power. Most of the measures in this chapter are designed to support that goal. The other measures will hasten the replacement of natural gas for home heating with electric heat pump systems.

Even though today most electricity is generated by burning natural gas, a significant and increasing amount of electricity generation is from renewable sources like solar and wind. Also, state law (the Renewable Portfolio Standard – RPS) requires that the percentage of electricity generated from renewable sources must increase every year.

Another important reason our electricity is rapidly getting cleaner in Arlington is that we have a local green electricity program called Arlington Community Electricity (ACE). Under the ACE program, Arlington residents and small businesses automatically receive more clean electricity than required by state law.

Thanks to the state RPS and Arlington's ACE program, electricity consumed in Arlington is increasingly from renewable sources. The clean energy supply measures in this chapter will accelerate that trend, putting Arlington on a path to 100% clean electricity well before 2050.

Solar array, Ottoson Middle School

Clean Energy Supply – High Priority Measures

The Town of Arlington should commit~~s~~ to implementing actions that advance the following high priority clean energy supply strategies:

CES 1. Increase renewable energy in the Arlington Community Electricity (ACE) program so the default level is 100% renewable by 2030.

The Arlington Community Electricity (ACE) program (formerly called Arlington Community Choice Aggregation) was launched in 2017. The 2019-2022 rates set the baseline for electricity supply at 11% more local (New England) renewable energy than the state's Renewable Portfolio Standard (RPS) and includes "opt-up" tiers of 50% and 100% renewable energy. The Town should~~will~~ continue to implement this program, increasing the renewable energy content of the default option so that is reaches 100% renewable energy by 2030. The next opportunity to increase the percentage of renewable supply will be when the

Town negotiates its next contract in 2022 (the current contract expires in November of that year) and the Town should set an initial goal to increase renewable energy supply above the current extra 11 percent for the 2023-2025 contract. This effort ~~will~~ should involve active monitoring of prices and the potential impact on low-income customers. In parallel the Town ~~will~~is conducting an ongoing outreach campaign to encourage residents and business to opt-up to the 100% renewable electricity level in the ACE (almost 600 residents have opted up to 100% renewable electricity as of August 2020).

CES 2. Transition municipal electricity supply to 100% renewable by 2030.

Arlington should progressively increase the amount of renewable electricity in its municipal supply contracts until reaching 100% for municipal operations by 2030. Arlington is on a fixed price energy supply contract that ends in December 2023. In the years leading up to this contract end date, the Town should~~will~~ investigate the best rates for a substantial increase in renewable electricity supply. Similar to Arlington's ACE program, the Town will likely prioritize purchases of MA Class I RECs to support local (New England) renewable energy development. However, the Town should~~will~~ also investigate the feasibility of creating new on-site renewable electricity generation (e.g., behind-the-meter solar at Town facilities) as well as Power Purchase Agreements to help meet this 2030 goal. At all points of implementing this action, the Town should~~will~~ consider cost impacts to taxpayers in Arlington.

CES 3. Support state legislation and policies that decarbonize the region's electricity supply. Where possible, promote decarbonization incentives specifically for low to moderate income residents.

Arlington should~~will~~ advocate for state policies that increase the Renewable Portfolio Standard (RPS) and promote incentives specifically for low to moderate income residents such as low- and moderate-income (LMI) solar incentives, and programs and procurements that further decarbonize the region's energy supply, such as offshore wind development. The current RPS puts the state on track to reach 35% renewable energy by 2030. In light of a study from the Acadia Center on energy needs for New England, the Town should~~will~~ advocate for the state to achieve a goal of 45% renewable generation by 2030 (equivalent to a 3% increase per year) and 100% by no later than 2050.

Clean Energy Supply – Priority Measures

The Town of Arlington should commit~~s~~ to implementing actions that advance the following *additional* clean energy supply strategies:

CES 4. Partner with utilities and others to promote pilot neighborhood-scale shared ground source heat pump projects to help transition Arlington away from natural gas and toward all-electric buildings.

The Town of Arlington should~~will~~ partner with utilities and others to promote shared ground source heat pump projects that serve multiple buildings or entire neighborhoods. This concept is also commonly referred to as "geo micro district" and "networked geothermal." The neighborhood scale would allow for one large central system and efficient distribution, rather than just implementing clean heating and cooling for individual buildings or units. Where possible, the Town should~~will~~ prioritize implementation of conversion to all-electric heating and cooling systems in neighborhoods in which there is a high prevalence of leak-prone natural gas infrastructure. In those cases, the gas utilities can replace natural gas pipes that would otherwise need repair with clean heating and cooling infrastructure (plastic pipes that convey water to and from wells). The Town should~~will~~ conduct outreach to gauge resident interest in participation in a low/zero carbon district heating and cooling system. The Town should~~will~~ seek to partner with other towns and organizations that are currently studying this topic, such as HEET.

CES 5. Engage in advocacy to encourage regulators and utilities to greatly accelerate the repair of gas leaks, and to phase-out the natural gas distribution supply network.

Arlington should~~will~~ advocate for the repair of gas leaks and coordinate information and data sharing with National Grid. Repairing gas leaks improves residents' health, makes the gas distribution network more efficient and helps to reduce GHG emissions. The Town should~~will~~ advocate for additional efforts for detection and mitigation of gas leaks and work to expedite the repair of local leaks.

Arlington should~~will~~ also advocate for regulatory changes that help accelerate the phasing-out of the gas distribution network such as accelerating depreciation, securitization of assets, and the piloting of shared ground source heat pump loops as called for in CES 3 above.

Since the repair of gas leaks and replacement of pipes involves digging up and repairing streets, they can be costly and require multiple permits. The Town should~~will~~ continue to work with National Grid to see where priorities for gas leak repair and street repair overlap and explore opportunities to develop a shared schedule to complete multiple repairs in the same street opening and re-pavement. This action could also include consideration of ways to expedite permitting for these repairs. Arlington should~~will~~ continue its leadership in the Multi-Town Gas Leaks Initiative, working with communities throughout the region to accelerate leak repair by improving data sharing, communication, and coordination between municipalities and National Grid.

Appendix A: Roadmap Action Summary Tables

NAVIGATING THE SUMMARY TABLES

The Net Zero Action Roadmap includes 31 measures developed and vetted by the CEFC which are designed to get Arlington well on its way to net zero GHG pollution. These measures were evaluated based on their potential to reduce GHG pollution and other factors including:

- **Feasibility** – Are there examples of the measure being implemented elsewhere, preferably in a similar community?

- **Implementation timeframe** – How long will it take to implement?
  - Short-term (Less than one year)
  - intermediate (1 to 5 years)
  - Long-term (5 years or more)
  - Ongoing

- **Type of expense** – Will this measure require capital expenditures, staff time, or operational costs?
- **Lead implementer and key partners** – Who will be primarily responsible for implementing the measure and which key partners and stakeholders should be involved?
- **Measures of success** – How will progress be measured? What metrics will be used to determine success of the measure?
- **Equity considerations** – How will this measure impact vulnerable populations and will it advance social equity in our community?

Net Zero Buildings Action Summary Table

Action	Example	Implementation Timeframe	Type of Expense	Lead	Key Partners	Measures of Success
High Priority Actions						
NZB 1. Convert existing fossil fuel equipment and appliances to electric. Create an ongoing "Electrify Arlington" program and campaign modeled after the past highly-successful Solarize and HeatSmart campaigns.	HeatSmart Arlington		Staff time	Energy Mgr., CEFC	Local environmental groups, MAPC, Utilities/Mass Save program administrators, energy efficiency contractors, MassCEC	# of homes, electrified
Equity considerations: Target outreach to renters, landlords, residents who speak languages other than English, and low- and moderate-income residents. Connect low-income residents with discounted utility rates and programs that lower energy burden (bills as % of income) as they electrify.						
NZB 2. Implement a community-wide energy efficiency outreach program. Significantly increase uptake of deep energy retrofits and other significant efficiency measures.	Melrose Energy Challenge Solarize Plus Mass		Staff time	Energy Mgr., CEFC	Mass Save, MA Dept. of Energy Resources, MassCEC, home performance contractors, MAPC	# of homes and businesses receiving energy efficiency retrofits; # of homes converted from oil, propane, and/or electric resistance heating systems to clean heating & cooling systems; energy savings
Equity considerations: Target outreach to renters, landlords, residents who speak languages other than English, and low- and moderate-income residents.						
NZB 3. Change zoning or other bylaws that hinder the renovation or construction of net zero energy capable homes. Create incentives to encourage renovation and new construction			Staff time	Department of Planning and Community Development, ARB	Zoning Bylaw Working Group	

projects to result in net zero energy capable buildings.						
Equity considerations: Be careful not to create affordability impacts. Also consider affordable housing						
NZB 4. Create a permanent Town "Electrify Arlington" website.	Melrose Energy Commission		Staff time, consultants	Energy Mgr., Public Information Officer	DPCD, MAPC	Creation of website; page views and other analytics
Equity considerations: Consider providing information in multiple languages and ensuring that informational resources are written to be accessible to the public and especially residents with disabilities.						
Priority Actions						
NZB 5. Retrofit and maintain all buildings owned by the Town to reduce energy use as much as feasible	Orlando, FL Green Works Municipal Operations Plan		Capital expense, staff time, operation cost	Facilities Director, Energy Mgr.	Facilities Dept., Building Managers	Number deep energy retrofits @ municipal facilities; GHG reductions in municipal facilities; carbon/energy use intensity of municipal facilities
Equity considerations: N/A						
NZB 6. Advocate with the Department of Energy Resources, Board of Building Regulation and Standards and state legislature for a state net zero energy stretch code.	Washington, DC California Building Code		Staff time	Energy Mgr.	Town Mgr., Select Board, Legislative delegation	Adoption of net zero stretch code
Equity considerations: N/A						
NZB 7. Evaluate policies that include low- or zero-emissions standards when soliciting and awarding Town contracts for goods and services, and when selling property.			Staff time	Planning Dept.	Select Board	

Equity considerations: Explore development of guidelines that ensure that affordable housing is built to minimize energy use and ensure occupant health and access to transit and clean energy opportunities (solar PV, EV charging, etc.)						
NZB 8. Review whether there are unnecessary barriers to energy efficiency and renewable energy technologies in Historic Districts, and if so, whether changes could be made to Design Guidelines that would reduce those barriers.			Staff time	CEFC	Historic Districts Commission	Completion of review; report to Select Board and/or Historic Districts Commission
Equity considerations: N/A						
NZB 9. Prohibit fossil fuel heating systems in new construction and major renovations.	Oakland CA fossil fuel ordinance Links to many CA fossil fuel bans		Staff time	Energy Mgr., CEFC	DPCD, Inspectional Services, enviro. advocates, housing advocates, development community	Implementation of fossil fuel bylaw and other measures that prohibit fossil fuels in buildings
Equity considerations: Ensure that policy is developed with input from housing advocates and developers to avoid unintended consequences such as restricting development of affordable housing.						
NZB 10. Allow adjustments to height, setback and density requirements by Special Permit for energy efficiency and renewable energy installations at existing buildings.	Natick Solar Zoning		Staff time	DPCD, ARB	Zoning Bylaw Working Group	
Equity considerations: N/A						
NZB 11. Require all new commercial buildings and Apartment Buildings above a certain number of units to include solar PV and/or solar thermal (or be "solar ready") on a minimum of 50 percent of roof area.	Watertown Commercial Solar Requirement		Staff time	DPCD, ARB	Zoning Bylaw Working Group	Passage of solar requirement; # of new buildings with solar and/or built solar-ready
Equity considerations: Explore opportunities to reduce utility costs for tenants through community shared solar.						

NZB 12. Explore opting-into the state's commercial Property Assessed Clean Energy (PACE) law to support local financing of clean energy projects.	As of Nov. 30, 2020, 35 MA municipalities had opted in to PACE		Staff time	Energy Mgr.	Select Board, Mass Development	Majority vote of Select Board to opt in to PACE; # of projects financed w/ PACE
Equity considerations: Conduct outreach to small businesses, nonprofits, and multi-family building owners (5+ units) to build awareness of PACE.						
NZB 13. Promote the planting of trees on private property through Town programs that provide trees at no charge.			Capital expense (possibly), staff time	Tree Warden	Tree Committee	# of trees planted, estimated carbon sequestered
Equity considerations: Prioritize planting in urban heat islands, Environmental Justice Communities, and neighborhoods with less tree cover. Engage community groups and residents to help identify where trees should be planted.						
NZB 14. Partner with local vocational / technical schools to encourage more HVAC and clean tech workers in Arlington and the region.	Roxbury Community College Smart Building Technology Program YouthBuild Boston		Staff time	Energy Mgr.	School Dept., MassCEC, Mass Save, Minuteman Tech	# of Arlington residents participating in, completing training programs
Equity considerations: Focus partnerships on ensuring equity of representation of demographics including women and minorities in the clean energy workforce. See MassCEC Clean Energy Industry Report for more data about underrepresented groups.						
NZB 15. Consider establishing a Chapter 40R Smart Growth Zoning Overlay District to allow for dense residential or mixed-use development.			Staff time	DPCD, ARB	Zoning Bylaw Working Group	Establishment of 40R Smart Growth Zoning Overlay District
Equity considerations: Design overlay district to promote Equitable Transit Oriented Development (eTOD).						

NZB 16. Support training opportunities for Town departments, boards and committees, as well as developers and contractors, on LEED, Net Zero, Passive House and other high-performance standards.			Staff time		Mass Save, MassCEC, Passive House MA, Built Environment Plus	# of trainings hosted
Equity considerations: N/A						
NZB 17. Continue and Expand Participation in Green Communities and Similar Programs.			Staff time, capital expense, operation cost	Energy Mgr.	Facilities Dept., School Dept.	
Equity considerations: N/A						

Zero Emission Mobility Action Summary Table

Action	Example	Implementation Timeframe	Type of Expense	Lead	Key Partners	Measures of Success
HIGH PRIORITY ACTIONS						
ZEM 1. Support implementation of the recommendations and strategies being developed as part of Connect Arlington, the Town's sustainable transportation plan.			Staff time, capital expense	DPCD	Transportation Advisory Committee, Bicycle Advisory Committee	# of measures from Connect Arlington that are implemented
Equity considerations: Support recommendations that increase access to affordable transit and mobility options and expand infrastructure in Environmental Justice Communities.						
ZEM 2. Create and implement a plan to expand public charging at libraries, business districts, public parking facilities, and other facilities, both on- and off-street.	Brookline & Newton Charging Stations MAPC's EV Charging Roadmap		Staff time, capital expense, operation cost	Energy Mgr., DPCD	Utilities, Public Works Dept., Facilities Dept.	# of installed public EV charging stations and rate of utilization at each station; # of EVs registered in community
Equity considerations: There are two primary considerations that should guide municipal investments in public charging stations: strategic geographic placement of charging stations and programs to reduce economic barriers to EV adoption. The deployment of charging stations needs to be paired with promotion of available incentives, creation of additional funding support, and potentially, car sharing models. Engage renters in siting decision-making and ensure that chargers are sited to reduce barriers to EV ownership for renters and low- and moderate-income residents.						
ZEM 3. Provide a suite of education and awareness-building services to promote electric vehicle adoption.	Mass Drive Clean Outreach Campaign Concord Drives Electric		Staff time	Energy Mgr., CEFC	Mass Drive Clean, MA EEA, EV dealers	Number of registered electric vehicles in the community
Equity considerations: Provide resources in multiple languages and/or provide interpretation at events.						

ZEM 4. Adopt a zero-emission municipal fleet and charging infrastructure plan and policy that commits to complete transition to zero emission vehicle purchases by no later than 2030.	Brookline Fleet Electrification Policy Cambridge Green Fleet Policy		Staff time, capital expense	Energy Mgr.	Select Board	Adoption of policy; % of the total municipal fleet made up of zero emission vehicles; Pounds of greenhouse gas emissions reduced within the municipal fleet
 **Equity considerations:** N/A						
PRIORITY ACTIONS						
ZEM 5. Create an action plan, as a follow up to the Town's Connect Arlington plan, to advocate for community transit service needs, bus stop upgrades, bus rapid transit, and electrification of the regional transit system.			Staff time	Sr. Transportation Planner	Transportation Advisory Committee	Creation of action plan
 **Equity considerations:** Support recommendations that increase access to affordable transit and mobility options and improve infrastructure in Environmental Justice Communities.						
ZEM 6. Evaluate changes to parking policies that would maximize efficient use of spaces, reduce use of single occupancy vehicles, and give dedicated parking to zero emission vehicles.	Boston Climate Action Plan 2019 Update MAPC's Perfect Fit Parking Study		Staff time	Sr. Transportation Planner	DPCD., Transportation Advisory Committee, Zoning Bylaw Working Group	Successful adoption of reduced parking requirements
 **Equity considerations:** When considering residential parking requirements, remember that the more resources dedicated to building out unnecessary parking will, in turn, mean fewer resources likely available for other amenities. This can be particularly problematic when it comes to affordable housing where scarce financial resources are going toward parking rather than the build out of much-needed housing units.						
ZEM 7. Develop policies and guidelines to promote safe use of electric bicycles, scooters, and other micromobility technology, as well as supportive infrastructure improvements.			Staff time	Sr. Transportation Planner	Transportation Advisory Committee, Bicycle Advisory Committee	
 **Equity considerations:** Ensure infrastructure improvements are distributed evenly including within Environmental Justice communities.						

ZEM 8. Advocate for improved utility rate designs to facilitate smart electric vehicle charging and accelerate EV adoption.	Best practices in EV Rate Design Study (NY & PA)		Staff time	Energy Mgr.	CEFC, Town Manager, enviro advocates	# of written and oral testimonies submitted; Positive regulatory changes for EV charging stations
 **Equity considerations:** Changes to utility rate structures have the potential to adversely impact low-income customers. In Massachusetts, low-income households (at or below 60% Area Median Income) experience an average energy cost burden three times higher than the statewide average energy cost burden. Advocate for changes to utility rates that do not negatively impact or exclude low-income customers and that expand and improve the incentives for low-income customers provided through utility EV programs.						
ZEM 9. Promote car sharing.	Good to Go Car Sharing		Staff time	Sr. Transportation Planner	Energy Manager, CEFC, Transportation Advisory Committee, car share companies	# of participants in the EV carshare program or users of the shuttle service; Miles driven electric through the EV carshare service
 **Equity considerations:** Carry out community engagement to identify resident transportation needs to inform the program direction and design. This process may uncover mobility options that are better suited to meet resident needs within a particular neighborhood that take a different approach while achieving the same goal of increasing access to zero emission mobility options. Subsequent engagement should take place to get community feedback on a straw proposal for program design as well as engagement during and after program implementation.						

Clean Energy Supply Action Summary Table

ACTION	EXAMPLE	IMPLEMENTATION TIMEFRAME	TYPE OF EXPENSE	LEAD	KEY PARTNERS	MEASURES OF SUCCESS
HIGH PRIORITY ACTIONS						
CES 1. Increase renewable energy in the Arlington Community Electricity (ACE) program so the default level is 100% renewable by 2030.	Newton Power Choice – 80% renewable default in Jan. 2021		Staff time	Energy Mgr.	ACE aggregation consultant, Town Manager, Select Board	# of customers participating in ACE; # of customers that opt-up to 100% renewable energy; Additional renewable energy purchased
Equity considerations: Pay particular attention to the costs of participating compared to utility electricity costs and provide a default rate that is competitive with current prices. Consider revising electricity aggregation plan to provide discounts to low-income customers. Partner with trusted community-based organizations (CBOs) on messaging and outreach. Since marketing language from predatory electricity supply vendors can look similar to materials about green municipal aggregation programs, pay particular attention to consumer protection and education. To ensure accessibility, use translation and interpretation services.						
CES 2. Transition municipal electricity supply to 100% renewable by 2030.	Amherst Cambridge Lowell		Staff time, operation cost	Energy Mgr.	Town Manager, School Department, Facilities Department	% of electricity supply provided by renewable energy
Equity considerations: N/A						
ES 3. Support state legislation and policies that decarbonize the region's electricity supply. Where possible, promote decarbonization incentives specifically for low to moderate income residents.	Acadia Center EnergyVision 2030		Staff time	Energy Mgr.	Town Manager, CEFC, enviro advocates, MAPC	# of written and oral testimonies submitted; Increase in RPS; Inclusion of policies for LMI residents
Equity considerations: Advance equity by advocating for programming and incentives for LMI residents, renters, and residents of color. Survey these communities or take proposed policy language recommendations to focus groups of residents to ensure that a municipality is raising the voices of those who would be most impacted. Advocate for specific language and definitions that will hold the implementation of the RPS to equity targets. This can be commenting, for instance, on an improved definition for an Environmental Justice Community, so that its reference in many state programs can be best positioned to reach the communities that need it most.						

PRIORITY ACTIONS						
CES 4. Partner with utilities and others to promote pilot neighborhood-scale shared ground source heat pump projects to help transition Arlington away from natural gas and toward all-electric buildings.	HEET Geo Micro District Feasibility Study		Staff time	Energy Mgr.	CEFC, Town Manager, utilities, HEET, CEFC	# of buildings served by pilot
 **Equity considerations:** Include a carveout and/or discounted rates for low-income residents.						
CES 5. Engage in advocacy to encourage regulators and utilities to greatly accelerate the repair of gas leaks, and to phase-out the natural gas distribution supply network.	Multi-Town Gas Leaks Initiative MAPC's Fix Our Pipes Study		Staff time	Energy Mgr., Town Mgr.	Mothers Out Front, MAPC	# of leaks repaired per year; # of leaks remaining;
 **Equity considerations:** Advocate for acceleration of leak repair, especially in Environmental Justice Communities.						