Net Zero Action Roadmap

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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. 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.

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 the emissions reductions:

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

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

This plan primarily focuses on making as many homes as possible net zero *emissions* homes 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 home owners 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.[1] 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.

Net Zero Buildings – High Priority Measures

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

1. **Electrifying 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.

2. **Deep energy retrofits of existing buildings** to create net zero energy capable buildings.

3. **Replace buildings** with new net zero emissions, net zero energy or "plus energy" buildings.

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 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.

[1] https://en.wikipedia.org/wiki/Passive_house. 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.

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 and business owners transition from fossil fuels to lower emissions 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 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[2], Arlington will seek to create

[2] https://www.cityofmelrose.org/home/news/melrose-greener-ever

a program that incentivizes energy retrofit projects that achieve a much larger increase 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. 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[3] but approximately 30%-40% of Arlington lots 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 change its zoning bylaw to allow new net zero emissions homes to be built, within the existing footprint, on new foundations on existing non-conforming lots, and to allow for up to 10 inches of additional exterior insulation to existing homes with a set-back or other non-conformity. The Town is also encouraged to change its zoning bylaw to incentivize the construction of net zero commercial buildings.

In addition, the Town is encouraged to implement bonus provisions into its zoning bylaw to provide incentives for home owners and builders, including builders of commercial buildings, to implement deep energy retrofit measures or to build net zero energy buildings on conforming lots.[4]

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. 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.

[3] 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.

[4] 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.

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 all-electric.

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.[5] New buildings and major renovations of existing buildings should be all-electric (fossil-fuel-free). We will start by conducting energy audits and retro-commissioning schools and other large facilities. We will use the audits to identify buildings with high energy consumption and plan for deep energy efficiency retrofits. We will also evaluate buildings for on-site renewable energy suitability and build renewable energy projects at municipal properties with sufficient resource potential. We will adopt a policy requiring the design of all new municipal buildings and major renovations of existing buildings to be all-electric. 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 all-electric buildings are constructed, we will promote these buildings as models for other buildings in the community.

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).

[5] 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 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. 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 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, prohibited fossil fuel heating systems in new construction and major renovations. A similar bylaw passed by Brookline's Town Meeting in 2019 was subsequently blocked by the Massachusetts Attorney General due to conflict with state law. The CEFC continues to support a prohibition on fossil fuel heating systems in new construction and major renovations. Arlington should investigate other methods of achieving that goal, including 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 to height, setback and density requirements by Special Permit for energy efficiency and renewable energy installations at existing buildings.

Allowable installations 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 not be significantly detrimental to abutters. The additional space needed for these technologies is often small. 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, 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 Apartment Buildings with 10 or more 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 buildings and will help reduce emissions from new buildings in Arlington. The requirement would allow for variances if solar is 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.[6] 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.[7]

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 should be reviewed to determine whether enhancements could increase participation.

[6] https://betterbuildingssolutioncenter.energy.gov/financing-navigator/option/cpace
[7] https://www.massdevelopment.com/what-we-offer/key-initiatives/pace/

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 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 that promote buildings that meet Zero Energy, Passive House or other measures consistent with this Net Zero Plan.

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, on LEED, Net Zero, Passive House and other high-performance 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 have a familiarity with best practices. The goals of these trainings would be to familiarize inspectional services and other 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 standards, HERS ratings, life safety benefits of Net Zero buildings, and energy

modeling. Additionally, Arlington should seek ways to provide guidance to developers 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. 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.

Zero Emissions Mobility

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 sustainable transportation plan known as Connect Arlington that will incorporate 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 include 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 recommendations on best practices to 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.). 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.

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.

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.

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 electric 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 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 electric 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 emissions 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 changes to parking policies that would maximize efficient use of spaces, reduce use of single occupancy vehicles, and give dedicated parking to electric 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.[8] Under this policy, the Town 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,[9] additional incentives for developers to provide less than maximum allowable parking, and requirements for dedicated parking for electric vehicles within these reduced parking areas. There are a wide range of data-driven strategies that cities and towns can employ to encourage more efficient allocation of parking resources.

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 electric 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. 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 electric 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

[8] https://news.engr.uconn.edu/uconn-professors-show-link-between-more-parking-lots-and-increased-driving.php#

[9] 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.

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 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

Clean Energy Supply – High Priority Measures

The Town of Arlington commits 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 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 involve active monitoring of prices and the potential impact on low-income customers. In parallel the Town will conduct 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 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 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 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 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 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 commits 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 will partner with utilities and others to promote shared ground source heat pump projects that serve multiple buildings or entire neighborhoods. 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 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 will conduct outreach to gauge resident interest in participation in a low/zero carbon district heating and cooling system. The Town 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 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 will advocate for additional efforts for detection and mitigation of gas leaks and work to expedite the repair of local leaks.

Arlington 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 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 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.