



Belmont Citizens Forum

From Here to There: Belmont’s Roadmap to Decarbonization

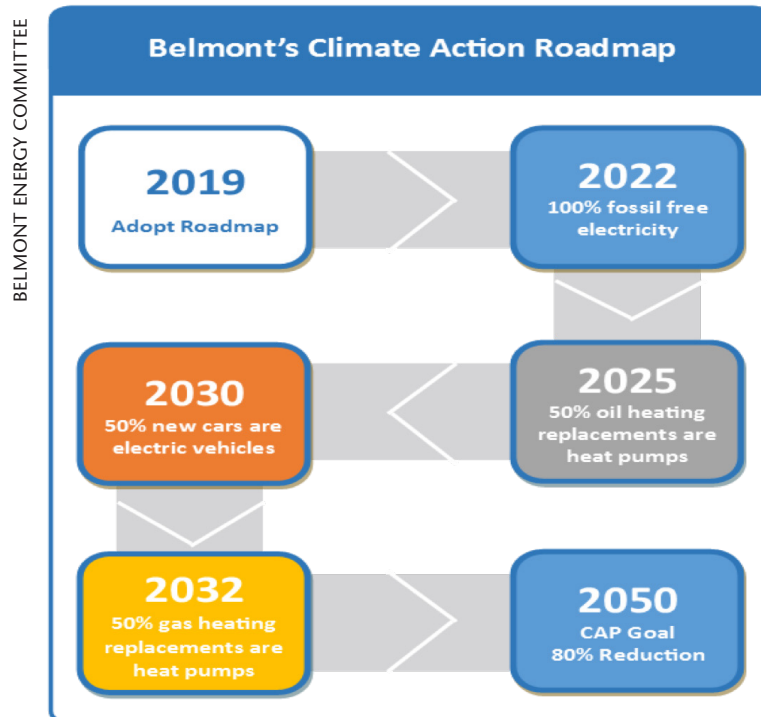
By Roger Colton

The adage is timeless: think globally, act locally. On climate change issues, Belmont has taken that advice to heart. In 2009, a Belmont Special Town Meeting approved the goal of 80 percent emissions reduction by the year 2050. The following year, the Belmont Energy Committee was organized and appointed to pursue that goal.

In 2016, the committee examined the change in CO₂ emissions between Belmont’s first greenhouse-gas inventory of 2007, and the most currently available data, 2014. They estimated that total emissions from electricity, transportation, and heating fuels declined by 5 percent in those seven years. Energy Committee member Dr. James Booth, a science teacher and author of the inventory, said the reduction was “promising, though not as large a decrease as needed to be on track for achieving Belmont’s long-term goals.”

Energy-efficiency projects featured heavily in Belmont’s climate action efforts for more than a decade. For instance, in 2006, the town contracted with an energy service company (ESCO) to implement energy improvements in 12 town buildings. (As with other such ESCO

projects, the Belmont project was self-funded, with the firm hired to identify and install the energy reduction measures paying itself back through the resulting energy savings.) In 2011, Belmont joined many other Massachusetts communities in adopting the “stretch code,” which required new buildings to meet more stringent energy efficiencies than those in the standard state building codes. From 2015 to 2016, the Belmont Light Department operated a weatherization program to help residents better insulate their homes and avoid wasting energy; the program provided grants of up to \$1,200 for 107 Belmont homes. Belmont also specified energy efficiency in the new Wellington elementary school, including



The Energy Committee’s preliminary Roadmap aims to help the town meet its goal of reducing greenhouse gas emissions by 80 percent by 2050 (based on 2007 levels) by establishing measurable interim targets and identifying actions likely to have the most impact.

Belmont Citizens Forum

Officers

Grant Monahon, President
John Dieckmann, Vice President
Evanthia Malliris, Secretary
Radha Iyengar, Treasurer

Directors

Sumner Brown
David Chase
Vincent Stanton, Jr.

Newsletter

Mary Bradley, Co-Editor
Sara McCabe, Co-Editor
Sue Bass, Newsletter Committee,
Director Emerita
Meg Muckenhoupt, Columnist

Belmont Citizens Forum Inc. is a not-for-profit organization that strives to maintain the small-town atmosphere of Belmont, Massachusetts, by preserving its natural and historical resources, limiting traffic growth, and enhancing pedestrian safety. We do this by keeping residents informed about planning and zoning issues, by participating actively in public hearings, and by organizing forums.

The *BCF Newsletter* is published six times a year, in January, March, May, July, September, and November. Published material represents the views of the authors and not necessarily those of the Belmont Citizens Forum.

Letters to the editor may be sent to
P. O. Box 609, Belmont MA 02478 or to
bcfprogramdirector@gmail.com

belmontcitizensforum.org

© 2019 Belmont Citizens Forum. All rights reserved.

an energy life-cycle cost analysis and modeling services to meet the state's Collaborative for High Performance Schools efficiency standards; the analysis anticipated energy savings 48 percent above code.

More recently, Belmont initiated several energy-efficiency community campaigns. The Better Homes Belmont program signed up a larger percentage of homes to receive no-cost energy assessments than any other city or town in Massachusetts. Belmont Goes Solar, a volunteer-run effort to promote residential solar energy, added about 270 solar installations in two years. Belmont Drives Electric made Belmont a leader in electric vehicle (EV) adoption in Massachusetts, according to the state's EV rebate site.

Despite these successes, former Energy Committee member Jenny Marusiak commented, "Belmont's approach thus far has been piecemeal. Town volunteers, officials, and staff take on projects when they can, and without any overarching strategy to guide them. And although emissions are going down, this approach is not taking emissions down fast enough."

Accordingly, the committee developed a comprehensive long-term plan titled, "Achieving Our Climate Action Plan: A Belmont Roadmap for Strategic Decarbonization," or the Roadmap. Co-author Marusiak describes the Roadmap as "an aggressive strategy based on data and measurable targets." The 2018 Roadmap has three specific, measurable goals for Belmont:

1. To move Belmont Light to a 100 percent emission-free electricity supply by 2022.
2. To electrify transportation, with 50 percent of new vehicle purchases to be EVs by 2030.
3. To electrify home heating and cooling, with 50 percent of oil-fired furnace replacements changed to electric heat pumps by 2025, and 50 percent of gas-fired furnace replacements likewise changed by 2032.

These goals will allow periodic measurement of progress toward the objective of reducing emissions by 80 percent by 2050. Co-author Booth describes the Roadmap timelines as a "plausibly optimistic" way forward for Belmont.

Marusiak said, "The justifications for choosing an aggressive strategy are many. Fiscal responsibility is high on that list. Waiting to close the gap is expensive. The costs to Belmont residents and the town only increase with every year that investment opportunities are missed. Economic studies have shown that a steady and planned approach to reducing emissions is the most cost-effective." This view is supported by a Harvard University study ("The Cost of Delaying Action to Stem Climate Change," July 2014) cited in the Roadmap: "Because CO₂ accumulates in the atmosphere, delaying action increases its concentrations ... [and] the policy, when implemented, must be more stringent and thus more costly in subsequent years."

The Roadmap began with the 2016 inventory of the sources of Belmont's emissions. According to that inventory, "a key takeaway . . . is that emissions from transportation and fossil fuels used for home and water heating are an enormous part of our carbon footprint. We cannot reach our goals without addressing these energy uses."

In establishing a comprehensive plan to guide Belmont's climate change response efforts for decades to come, the Roadmap concludes: "To reach Belmont's climate goal, transportation and heating must become fossil fuel-free . . . Specifically, there is an emerging consensus that electrification of both transportation and home heating is the most likely path to reach

Buying Local: Electricity from Belmont Light

By Marty Bitner

In Belmont, there are clear benefits to buying local when it comes to energy usage, and that means powering our lives with electricity whenever possible. In contrast to the investor-owned corporate utilities serving many of our neighboring communities, where financial benefits primarily flow to shareholders who live far away, Belmont Light is a municipal electric utility, operated in the public interest. In Belmont, we are both the customers and the shareholders, and doing what is best for ratepayers is always the objective.

Our electric rates are determined not only by the amount of money needed to purchase electricity from power plants but also by the cost of maintaining the grid infrastructure that delivers electricity to our homes. The expense of maintaining the grid is mostly fixed—independent of the amount of electricity used by Belmont Light customers. So, in the same way that a local restaurant can maximize profit by having all of its tables occupied by paying customers, the citizens of Belmont can realize the greatest financial benefit that

comes from being served by a municipal utility when residents power as much of their lives as possible with electricity, particularly during non-peak hours.

For example, Belmont Light has quantified the financial impact of heat pumps and electric vehicles and found that a central, ducted heat pump system can bring additional annual revenue above costs of up to \$1,200 per installation. An electric vehicle can bring in an additional \$200 to \$300 above costs per year. If just 500 of the roughly 17,000 cars in Belmont were replaced with electric vehicles, it could bring in upwards of \$100,000 above costs per year. Belmont Light could use this additional revenue to help stabilize electric rates for all residents. It could also use those dollars to fund initiatives to increase the share of clean electricity purchased. Striving to electrify more of our lives yields benefits to Belmont for both environmental and financial reasons.

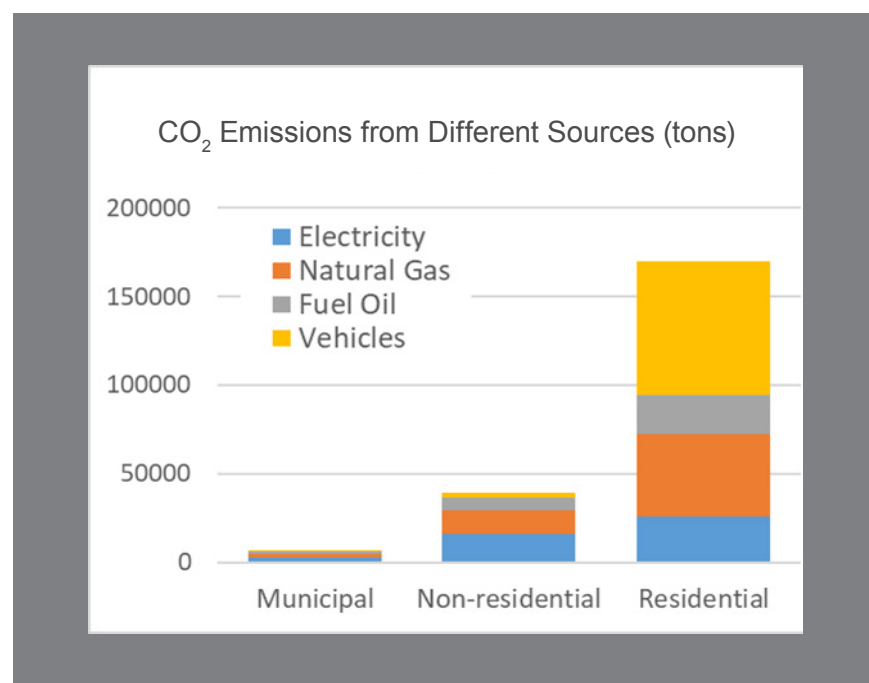
Marty Bitner is chair of Belmont Drives Electric, co-chair of the Belmont Energy Committee and a Town Meeting member.

our long-term climate goals. Why? Simply put, there exists a path to zero-carbon electricity through multiple existing technologies such as wind, solar, and others. While the appropriate mix of technologies remains an open question, there exist technically and economically feasible options. In contrast, fossil fuel-driven technologies like gasoline-powered cars can never get to zero emissions. Incremental gains in efficiency using fossil fuel-based technologies will simply not be enough to get us where we need to go.”

In May 2019, Town Meeting endorsed, by a vote of 196 to 14, both (1) the strategic direction (emission-free electricity from Belmont Light—electrification of heating and transportation) and (2) the timeline established by the Roadmap. The Town Meeting resolution acknowledged that “climate change is real, caused by humans, and affirmed by overwhelming scientific evidence.” The specific components of Belmont’s climate action Roadmap are explained throughout this newsletter.

Roger Colton is co-chair of the Belmont Energy Committee. He writes the biweekly “Community Conversations” column for the Belmont Citizen Herald, produces a biweekly podcast of the same name for the Belmont Media Center, and is co-host of the BMC news program Belmont Journal.

BELMONT ENERGY COMMITTEE



Belmont measures its progress on the Climate Action Plan by comparing carbon emissions against a baseline emissions data from 2014, as shown in this chart, broken down by sector. While our electricity is getting cleaner due to the mix of resources used to power the New England grid, the Energy Committee has concluded that our overall efforts are not nearly enough.

REFERENCE LIST

Belmont Composts!
belmontcomposts.org
jwusauk@aol.com

Belmont Drives Electric
belmontdriveselectric.org
belmontdriveselectric@gmail.com

Belmont Energy Committee
belmontclimateaction.org
contact via web form

Belmont Energy Roadmap
belmontclimateaction.org/initiatives
contact via web form

Belmont Light
belmontlight.com
customerservice@belmontlight.com

Belmont Light Green Choice
belmontlight.com/energy-solutions/
residential-programs/

HeatSmart
heatsmartbelmont.org
heatsmartbelmont@gmail.com

Belmont Light’s Role in Energy Efficiency

Belmont’s commitment to a long-term goal of strategic electrification will not scale back Belmont Light’s energy-efficiency programs. In Belmont, strategic electrification involves increasing electricity use primarily by electrifying transportation and home heating/cooling. Belmont Light says there’s no conflict between this effort to increase electricity use and its offer of energy-efficiency programs.

According to Ben Thivierge, energy specialist for Belmont Light, the phrase “energy efficiency” has “changed its meaning. Energy efficiency used to mean simply not using electricity.” Today, he said, “there’s a larger scope. ‘Energy efficiency’ today is associated with decarbonization. It is through energy efficiency that municipal light departments figure out how strategic electrification and decarbonization work together.”

One way Belmont Light seeks to reduce the carbon emissions from residential customers is by encouraging less electricity use at peak hours. Customers who use electricity on the days, or even the hours, of highest use are using dirty electricity. Power plants designed primarily to serve peak demand are often the oldest, least efficient, and therefore dirtiest power plants in operation. While such plants are being replaced with cleaner natural gas power plants, Thivierge explained, the way to eliminate such dirty plants completely is to help customers cut their power use during peak demand. Peak electricity is also the most expensive, so reduced usage will help Belmont Light control costs and keep rates lower. Hot summer afternoons and early evenings (when people return home from work) are generally the times of greatest consumption.

This summer, Belmont Light is rolling out a load control program to alert consumers to peak consumption hours and let them cut their usage at that time through a smart-phone app. They can link appliances such as air conditioners to a wireless network in the home, which will “in effect, turn all the air conditioners into a single wifi-enabled device,” said Thivierge. They need not be at home, he added, nor will they need to adjust each appliance individually. Electric water heaters can be controlled as well.

Belmont Light operates with a specific energy-efficiency budget each year. Thivierge characterized the budget as “healthy for a system our size,” though he noted that Belmont Light is seeking to expand its programming (and thus its budget). The budget is generated by a charge on each customer’s monthly bill. According to Thivierge, the charge is imposed on each unit of electricity consumed. For a typical Belmont Light residential customer, who uses an average of 550-kilowatt hours a month, the charge is about \$1.25 per customer per month. Belmont Light spends its energy-efficiency budget every year.

Belmont Light will continue to provide efficiency rebates for consumers who exchange their old refrigerators for Energy-Star-certified refrigerators. In contrast, electric light bulbs are becoming less important. Given that most consumers have now changed primarily to the use of efficient CFL and LED light bulbs, when someone leaves a light bulb on, “they are sipping electricity, not guzzling electricity,” said Thivierge, emphasizing that he is not encouraging consumers to leave lights on, simply noting the differences that exist today in contrast to even just a few years ago.

The way to eliminate the dirtiest power plants is to help customers cut their power use during peak demand.

In short, Thivierge said, from Belmont Light’s perspective, “just because we’re greening our energy doesn’t mean that we can start using electricity irresponsibly.” Indeed, he says, the cleanest, least-expensive electricity available is still the electricity that isn’t used. As Belmont moves to electrify uses such as transportation and home heating/cooling, Belmont Light will continue its efforts to help consumers not only reduce their electricity use, but also “use electricity wisely,” to reduce both costs and carbon emissions.

— Roger Colton

HeatSmart Belmont: Electrifying Home Heating and Cooling

By James Booth

Heating buildings by burning fossil fuels such as oil and natural gas accounts for almost half of Belmont's climate-warming CO₂ emissions. A key strategy in Belmont's Climate Action Roadmap is switching to carbon-free electricity as a pathway to zero emissions. So how can one efficiently heat a building using electricity? The answer is heat pumps.

Heat pumps work by moving heat from one place to another, much like a refrigerator or air conditioner that can also operate in reverse, able to heat in winter and cool in summer. Traditional electrical baseboard heaters or other "resistance" systems convert electrical energy directly into heat, acting much like the hot

filament in a toaster. In contrast, heat pumps don't create new heat. Instead, electricity pumps a refrigerant through a cycle that transfers heat from outside into the house in winter, or vice versa, from inside to out, to cool the house in summer. (Yes, it's cold outside in winter; that's why it takes electricity to extract the heat.) Since simply moving heat uses less energy than creating heat, heat pumps use as little as one-third of the amount of electricity to deliver the same amount of heating.

The two types of heat pumps are ground-source, sometimes called geothermal systems, and air-source. The first type, using the ground as the source, or "sink," for heat, is planned for the new Belmont Middle and High School, and requires more land and construction investment. Alternately, air-source heat pumps (ASHP), which move heat into or out of the outside air, are more practical for most residences.

HeatSmart Belmont is a new community-driven outreach and education campaign to promote the adoption of ASHPs. It is a collaboration between a group of local volunteers, the Belmont Energy Committee, and Belmont Light, with support from Massachusetts Clean Energy Center, a quasi-public state economic development agency, and the Massachusetts Department of Energy Resources, who selected Belmont as one of six communities in their 2019 HeatSmart Mass program. The six-month education campaign is intended to move the town toward an electrified future; it launched in April 2019 and runs through October.

The efficiency of ASHPs results in less CO₂ emissions than burning oil or natural gas in your house. As

CADMUS GROUP



Belmont was selected as one of six communities for the 2019 HeatSmart Mass program, a six-month campaign to move each town toward a more electrified future. One of the solutions being promoted is air-source heat pumps, like the outside unit shown here and the indoor unit on the opposite page.



Indoor wall-mount heat pump unit

Belmont Light is expected to move its supply toward carbon-free sources, heat pumps effectively get cleaner and cleaner; indeed, even fully emissions-free if electricity became 100 percent carbon-free. Residents can already opt to purchase 100 percent carbon-free electricity today by enrolling in Belmont Light's Green Choice Program.

Aside from the climate benefit, ASHPs offer homeowners comfort and flexibility, as well as a reduction of combustion sources in your house. Ductless versions, or mini-splits, allow setting up heating zones in the home, without installation of expensive ductwork. ASHPs also operate more quietly than some "window-rattler" air conditioners.

A common misconception is that heat pumps don't work well in the cold climate of the Northeast. However, the technology has improved in the last decade. Today's cold-climate air-source heat pumps work at full capacity down to 5°F and function to below minus 13°F. Over 40,000 cold-climate heat pumps have been installed in Vermont and Maine since 2013—states with colder winters than our own.

Much of Belmont's housing stock is old and in need of weatherization. Changing one's heating

and cooling systems is a time to think about improving the building envelope, since a well-insulated house can be heated with a smaller heating system. The HeatSmart Belmont website lists a variety of incentives for heat pumps as well as improvements like insulation and air sealing.

Heat pumps offer operating cost savings over electric-resistance or oil systems. Of course, generating electricity from rooftop solar also offers substantial savings. However, natural gas, at its currently relatively low price, is comparable to heat pumps, so cost is not a driver to switch from natural gas until prices rise again.

HeatSmart Belmont has selected Muirfield Mechanical Services as its installer. They are currently scheduling visits with Belmont residents to assess if heat pumps can address their heating and cooling needs, and also help them access current Belmont Light and state incentives.

James Booth is a member of the Belmont Energy Committee, a co-author of its Climate Action Roadmap, and a HeatSmart Belmont coach.

Learn more about Belmont businesses and residents who are using geothermal heat pump heating and cooling in the next issue of the *Belmont Citizens Forum Newsletter*.

New Belmont School Leads Way with Zero Net Energy

By Jacob Knowles

The latest climate science indicates that we must reverse the historic trend of emissions escalation and begin actively extracting CO₂ from the atmosphere. Energy consumption by buildings represents 28 percent of annual global greenhouse gas (GHG) emissions, which means that zero net energy (ZNE) buildings are a core component of achieving a livable climate.

On the bright side, there has been exponential growth in ZNE buildings, with a 700 percent increase between 2012 and 2019 in completed and emerging ZNE buildings in the US and Canada, as documented by the New Buildings Institute. This growth is happening not only in response to climate change, but because ZNE buildings have become financially attractive.

Locally, Belmont High School generates more than 40 percent of the total GHG emissions for all municipal buildings in Belmont. The new Belmont Middle and High School (BMHS) will be nearly twice as large, the single greatest financial investment in the history of Belmont, and is also anticipated to serve our town until at least the year 2100.

It is critical, therefore, that the new BMHS align with Belmont's Climate Action Plan. To that end, through great effort over the past two years by Belmont residents, by the Belmont High School Building Committee, and by the design consultant team, the school will be the flagship in reducing Belmont's carbon emissions in the municipal sector.

What does that mean? The BMHS has been designed to achieve ZNE by relying entirely on renewable energy on a net annual basis, making

its operation carbon neutral. This starts with an efficient envelope, lighting, and mechanical systems. Rather than fossil-fuel boilers, a geothermal heat pump system will be used to provide heating and cooling. A solar array covering the roof will produce one third of the energy. The remaining energy will be purchased from third-party suppliers, resulting in an increase in state incentives that more than offsets the cost of the third-party renewable energy, making it a cash-flow positive transaction for Belmont.

Because BMHS construction is being financed by a bond, Belmont taxpayers do not pay anything upfront. They do, on the other hand, pay for the construction over time as Belmont pays down the bond. Because the reduction in building operating costs is greater than the bond payments associated with the ZNE-enhancements, the net cash flow is positive from year one. Therefore, the payback is immediate.

In total, achieving ZNE for the BMHS is estimated to result in more than \$5 million in net present savings to Belmont taxpayers. This includes the cost to build, maintain, and replace system components over the initial 30-year period. It also accounts for energy savings and financial incentives. Additional operating savings and financial incentives will accrue beyond the 30-year timeframe.

The environmental and educational benefits, and in particular the compelling financial case, spurred the Belmont Select Board and Belmont School Committee to unanimously adopt resolutions to achieve ZNE for the BMHS. The ZNE BMHS will not only save taxpayer dollars and help lead the way on Belmont's Climate Action Plan, it will also act as a catalyst in the region, offering an example for other communities to follow.

Jacob Knowles is the Energy Committee liaison to the Belmont Middle and High School Building Committee and director of sustainable design at BR+A Consulting Engineers.

Roadmap Review: What's In, What's Out, and Why

By James Booth

Belmont's Climate Action Roadmap focuses on promoting electrification of vehicles and heat-pump heating, coupled with carbon-free electricity. For an individual Belmont resident, is it enough to convert to clean electricity to help fight climate change? No. Here's why:

First, in addition to shifting our energy use to clean electricity, it will remain as important as ever to take every opportunity to use less energy through conservation and efficiency, as discussed elsewhere in this newsletter. This includes walking, biking, carpooling, and taking public transit when possible to move ourselves around. Weatherizing our houses to stay comfortable with less energy use and buying efficient appliances remain relevant as well.

The choices Belmont residents make every day have effects on carbon emissions outside of Belmont.

Moreover, the scope of the emissions considered in the Roadmap is important to note. The inventory of Belmont's CO₂ emissions encompasses only direct emissions of carbon pollution, that is, the combustion of fossil fuels in vehicles registered here in Belmont or buildings located in Belmont, or for generating the electricity used in Belmont. However, the choices that residents make every day also have many effects, some more direct than others, on carbon emissions that happen outside Belmont. For one thing, everything we purchase—food, clothing, household items—has an associated carbon footprint incurred during its long path to market. Decisions about cars and home heating are typically the most important in the overall picture of emissions (in part because they affect emissions over the many-year



COURTESY OF PERKINS AND WILL

Although the new Belmont Middle and High School is slated to be nearly twice the size of the existing high school, it will be carbon neutral because of its zero net energy design.

lifespan of the vehicle or heating system), but Belmont residents can make other decisions to reduce their impact on the climate. Here are a few:

Air travel

In terms of emissions over which individuals have a large degree of personal control, the most significant emissions that lie outside of the scope of the town's carbon inventory are probably those associated with air travel. Flying has considerable climate impacts. Air travel accounts for a small percentage of global CO₂ emissions, but since very few people do most of the flying, flights can still account for a significant fraction of an individual's carbon footprint. Indeed, for frequent flyers, the emissions resulting from their flights likely exceed the emissions that result from fossil fuel use in their homes and cars. An example: an individual round-trip flight to California results in climate impacts equivalent to emissions of around a ton of CO₂. The emissions from a few such flights would be in the same ballpark as the emissions from heating a house with natural gas or driving a gasoline-powered car for an entire year. Choosing to fly less is a key decision that individuals can make to reduce their overall climate impact.

Waste

Belmont currently sends its waste out of town for incineration. The heat produced is used for electricity generation, which provides some

Buying imported foods, such as asparagus flown in across continents, is among the many daily choices we each make regarding our individual carbon footprint.



CREATIVE COMMONS

economic benefit, but CO₂ emissions also result. Reducing waste by choosing products with less packaging will decrease these emissions, as will recycling and composting.

Food choices

Our food choices can increase emissions from the agricultural sector. Demand for produce that is transported over vast distances by air freight (e.g., asparagus flown from Peru in the winter) has a large associated carbon footprint; production of beef and lamb also has a large climate impact. Being conscious of the origins of your food can help reduce emissions.

Political involvement

Finally, thinking about one's own carbon footprint is only part of the picture. Climate-friendly policies are needed on the local, state, and federal levels. For such policies, such as carbon pricing, to be enacted we will all need to engage in the political process to demand them. Citizens need to be informing themselves, voting for legislators who support strong action on climate, and letting their representatives know that decarbonization is a priority. Reducing one's personal carbon footprint should be a complement, not an alternative, to the political involvement that is necessary to achieve broad structural changes.

James Booth is a member of the Belmont Energy Committee, a co-author of its Climate Action Roadmap, and a HeatSmart Belmont coach.

Electric Vehicles: One Owner's Perspective

By Marty Bitner

New cars today offer an array of features and options. The most important option, however, is how your car is fueled, and lately options for electric vehicles (EV) are getting better. Today, enough fully electric and plug-in hybrid models are available to meet the needs of most people. You owe it to yourself to consider making the switch from a gas-powered car to an EV. My family did over a year ago; we'll never go back.

EVs are fun to drive. When you step on the accelerator, the car responds instantly: it just goes. This is true across the board for EVs, not just those tuned for performance. It is the nature of electric motors. You get all the torque available right from the start with no lag. Electric motors can also run in reverse to slow the car down. This is called regenerative braking. When you lift your foot off the accelerator the motor charges the battery by capturing the energy of forward motion. This makes the car more efficient by storing energy that would otherwise have been wasted and allows you to enjoy one-pedal driving. You simply press down or lift off of the accelerator to speed up or slow down rather than having to switch between the accelerator and the brake pedal (though the brake pedal is always available for sudden stops).

EVs handle well. Typically, the battery of an EV is located beneath the floor of the car. This makes for a low center of gravity so the car doesn't roll when making turns. Your music will sound better since it doesn't compete with engine noise.

EVs are easy to own and economical to maintain. Aside from tire rotation, no routine maintenance is needed. Because they have



LISSA BOLLETTINO

The author and his son Bruno at the EV charging stations in Belmont Center.

significantly fewer parts than gas-powered cars, EVs don't need the oil changes, exhaust system replacements, or many other maintenance tasks to which we've grown accustomed.

Partly due to the design of an EV, they tend to be safe cars. They can have larger crumple zones in the front and rear because they have no internal combustion engine or gas tank, making them safer in a front or rear collision. The large battery in the floor tends to keep the car upright in an accident. They often have additional rigidity to absorb side impacts.

Do you want to preheat your car on a cold February morning while it's in your garage? No problem with an EV; there are no harmful emissions to worry about. You can heat up the car from your smartphone and you can do it while the car is still plugged in, drawing energy from the grid rather than the battery. Charging an EV is easy: you just plug it in at home.

EVs can have larger crumple zones because they have no internal combustion engine or gas tank, making them safer in a front or rear collision.

Suppose you can't charge where you live, or you're on a road trip? Public charging stations are growing common. There are four in Belmont Center. For road trips, networks of fast charging stations make almost any trip possible. My family recently drove our 325-mile-range Tesla Model 3 to Ohio, a 10-hour trip over 600 miles, and only had to stop twice to charge along the way. Our total charging time was an hour and a half. We had a meal while we waited.

More public charging stations are being built every day. Funded by \$2 billion from Volkswagen's diesel emissions settlement, Electrify America has a goal of installing nearly 2,000 charging stations this year and plans to have charging stations no more than 70 miles apart along all major roadways in most states.

EVs improve air quality because they eliminate car emissions. To limit children's exposure to air pollution, Massachusetts law forbids idling a gas-powered car within 100 feet of school grounds. No problem with EVs. EVs also direct our energy dollars to Belmont Light, our locally owned utility, rather than to a multi-national oil company.

But the most important reason to switch to electric vehicles is the benefit to our climate by reducing carbon emissions. Only 20 to 30 percent of the energy from the fuel you put in a gas-powered car goes towards moving the car forward. EVs are much more efficient, converting about 60 percent of the electrical energy from the grid to power at the wheels. They need much less energy to cover the same distance. The Union of Concerned Scientists estimates that generating electricity from the grid for an EV in New England emits the same amount of carbon as a gas-powered car getting more than 100 miles per gallon! Of course, no such gas car exists. And EVs will get cleaner over their lifetimes as an increasing share of the production of electricity comes from clean, renewable sources.

Switching to EVs plays a critical role in achieving our climate action goals. For help with switching to an electric vehicle or plug-in hybrid, please contact Belmont Drives Electric.

Marty Bitner is chair of Belmont Drives Electric, co-chair of the Belmont Energy Committee and a Town Meeting member.

Michael Smith Honored by Belmont Historical Society

By Evanthia Malliris

The Belmont Historical Society presented the 2019 David R. Johnson Preservation Award to Michael A. Smith, AIA, at its annual meeting this spring. Smith was nominated for his work on the rehabilitation and restoration of the Belmont Police Station Building as well as more than two decades on the Belmont Historic District Commission.

"Mike brings a deep architecture knowledge, commitment to historic preservation, and a collaborative spirit to the Belmont Historic District Commission that has contributed significantly to many of the commission's successes, including the adoption of two new historic districts, completion of a town-wide historic resource inventory, and the Demolition Delay bylaw," stated nominators Michael Chesson and Lauren Meier. Meier is co-chair and Chesson is a member of the Belmont Historic District Commission.

The Belmont Police Station is a Georgian Revival building designed by H. Thaxter

Underwood, part of the town's civic core that includes the historic Town Hall, School Administration Building, Homer Building, and Electric Light Building. In early July, a groundbreaking ceremony kicked off the restoration of the building. Smith's architectural and historic preservation expertise was key in working with the Belmont Police Station Building Committee and Department of Public Works toward a careful and thoughtful design that adds much-needed square footage to the building without compromising its historic character. He was also recognized for his collaborative approach, skill, and commitment.

The David R. Johnson Preservation Award is named after a longtime member and officer of the Belmont Historical Society and is given to individuals or organizations that have made a notable contribution to preserving structures or land in Belmont. Visit belmonthistoricalsociety.org for more information.

Evanthia Malliris is a director of the Belmont Citizens Forum.

Switch to digital delivery

Consider receiving the *Belmont Citizens Forum Newsletter* via email. You'll be able to read the newsletter in full color, help us reduce our printing and mailing costs (among our biggest expenses), and also help save a few more trees.

Remember, you can always find printed copies at the Belmont Public Library and at the Beech Street Center. And if you are looking for previously published issues, you'll find them on our website, going back to 2000, at belmontcitizensforum.org.

To request electronic delivery only, email us at bcfprogramdirector@gmail.com. Please use "Electronic" in the subject line. And thanks to everyone who has gone digital so far!



The Massachusetts Historical Commission has recently determined that the police station building is eligible for listing on the National Registry of Historic Places.

Letter to the Editor

More on disposing in the kitchen sink

As a resident of Newton for 20-plus years and an activist in Waltham as well (Waltham Land Trust), I salute Belmont on your newsletter. It stands out, in my experience, as the best suburban NGO volunteer-run information medium. I've used its articles in my teaching at Brandeis. So, bravo and well done.

I have a question for Mary Bradley, the compost fanatic (I am one, too, and refer to the May/June 2019 article, "Composting in Belmont: Breaking it Down," typical of BCF articles in its detail and usefulness), and it's this: has she checked in with Massachusetts Water Resources Authority (MWRA) about their views on using the disposal in kitchen sinks to send food waste organics to Deer Island?

I remember one somewhat knowledgeable friend of mine, who is on the board of the Charles River Watershed Association and frequently in touch with state lawmakers about energy issues, urging us all not to do that, because the organic load at Deer Island was plenty enough to handle already, processing all the human waste. It is good to know some municipality waste treatment facilities around the US do encourage it, and I know that Deer Island processed "biosolids" are made into pelleted fertilizer.

I just wondered, though, what MWRA would say about disposals as indirect composters. Ms. Bradley, if you have not checked in, I know some folks in MWRA management who could direct this question to Deer Island operators. What do you think?

—Eric Olson, PhD, is a senior lecturer in ecology in the Sustainable International Development Graduate Program, Heller School of Social Policy and Management, Brandeis University.

Response from Mary Bradley:

I want to thank Eric for his kind words and great question and the subsequent emails we exchanged. Eric consulted the experts at MWRA, who confirmed that they have no objections to the use of kitchen sinks as indirect composters.

To sum up for our readers, there is more to the story of compost than I was able to share. The thrust of the "Composting in Belmont" article was to empower readers to choose a method to begin composting today. However, it is a subject rife with the politics of commerce and technology. Changes are happening very quickly. There's growing recognition that composting is an effective strategy to decrease methane from landfills and sequester carbon from the atmosphere. Some municipalities that complained in the past of damaged pipes due to inappropriate use of kitchen sinks are now advocates due, in part, to reduced trash costs and other factors. That discussion was out of the scope of this article.

I touched on what I consider the most germane concerns about each composting method. The untested fertilizer pellets—possibly containing pharmaceuticals and toxins from a wastewater treatment facility—and the unstudied environmental impacts of the pellets give me pause, but I am still thankful for the kitchen sink when disposing of cat food.

I hope we all find methods that work for us and that we demand our lawmakers and businesses enact aggressive public policies, strong public-private sector partnerships, an efficient waste management system, economic incentives, and public education.

Composting in Belmont: Breaking it Down

By Mary Bradley

A Virtuous Cycle

Composting is no longer just a backyard hobby for the ardent gardener. It has Facebook groups and a following from environmentalists, politicians, and scientists. Most praise compost as a means to keep food waste out of landfills and reduce release of methane. While consensus exists there, composting has evolved from a tale of worms, microbes, and bacteria to the realm of politics, emerging technologies, and scientific disputes.

For me, however, composting is about magic: Wave one hand over an orange peel clutched in your other hand, and reveal a fistful of dirt. If that's too mundane a trick, the one-time application of as little as ¼ inch of compost to soil will sequester carbon in the soil for 30 to 100 years. Per acre, the net sequestration is upwards of 65 metric tons of CO₂ per year.¹ "a-dai"

Policy without Passion and Passion without Policy

It is no secret that composting is a sustainable way to recycle organic material. In Massachusetts, a 2014 regulation bans commercial disposal of food waste in landfills by institutions and businesses that produce more than a ton of organic waste each week. Unfortunately, this regulation of the Massachusetts Department of Environmental Protection (MassDEP) is not adequately enforced, with just four regulators charged with overseeing about 1,700 entities. Many schools and businesses have initiated recovery programs, but as much as 80 percent of potential compost is still not diverted from landfills, or about 1,120,000 tons each year.

If conscience or consequence are not enough motivation to divert food waste, eventually economics will be. Tipping fees are rising as space diminishes at landfills, despite the state's nine anaerobic digesters (an industrial form of composting), operating at less than 75 percent capacity, with one more about to come online.²



Belmont residents currently have a choice of four curbside composting services and can compare offerings at belmontcomposts.org.

Though some municipalities in the Commonwealth have adopted composting policies and programs, smaller institutions and businesses do not have the infrastructure or incentives to compost. In Belmont, attempts to introduce composting have been noble but have lacked the traction and the roadway to meet their goals.

In Belmont, restaurants such as the Black Bear Cafe provide their customers with compostable ware and are working to have their landlords supply composting receptacles. Without the receptacles, customers need to dispose of anything compostable in the restaurant's trash or take it home to put in curbside composting bins. Home composting systems do not generate enough heat to decompose compostable ware, and they will damage recycling systems.

May/June 2019 5

Belmont Porchfest Returns on Saturday, Sept. 7

Get ready to make some noise in your neighborhood!

By Mary Bradley

On Saturday, September 7, 2019, Belmont Porchfest, the community-wide music and arts festival, is returning for its second year. (Rain date Sunday, September 8.) Live music, interactive arts, and other events will begin at 10:30 AM and run until 6:30 PM at locations all over town, including additional flourishes at the grand finale specifically for vegans and cyclists. For Belmontians who might enjoy a moment of fame, seek out cameras positioned on street corners to capture your thoughts about the day for *Makin' Noise*, a documentary film in progress about Belmont Porchfest.

Registration at belmontporchfest.org is open until August 1. A map and schedule of



MARY BRADLEY

Desperate Measures Street Band plays to a crowd on School Street at last year's Porchfest.

performances will be posted a few weeks later. Volunteers and sponsors are welcome to reach out directly any time to Belmont Porchfest at belmontporchfest@gmail.com More information is available on [facebook/belmontporchfest](https://facebook.com/belmontporchfest).

Mary Bradley is co-editor of the Belmont Citizens Forum Newsletter and the founder and president of Belmont Porchfest, Inc.

Thank you for your continued support.

Your contribution makes a difference!

Each **BCF Newsletter** issue costs about \$4,000 to publish. **Thank you for your support!**

\$50 \$100 \$150 \$250

Name _____

Address _____

Phone _____

Email _____

- Check here if your employer has a matching gift program.
- Check here if you would like to learn more about volunteering.

Make checks payable to Belmont Citizens Forum and mail to:
PO Box 609, Belmont, MA 02478

Or give securely online:
belmontcitizensforum.org

Contact us:
info@belmontcitizensforum.org

The Belmont Citizens Forum is a nonprofit 501(c)(3) organization. Your donation is deductible from federal taxes to the full extent provided by law.

Community Meets at the Market

By *Evanthia Malliris*

Summertime means it's time to gather at the Belmont Farmers' Market. For 14 years, the market has been a welcoming spot that offers fresh, local food along with music, storytelling, and activities for kids. Visitors can see neighbors, try new offerings from guest vendors, and meet representatives from the town and local organizations at the Community Table.

This year's new vendors include:

- Beverly Bees
- C & M Farm
- Common Acre Farm
- Just Hummus
- Lilac Hedge Farm
- Mariposa Bakery, Tick Tock Chocolates
- When Life Gives You Lemons

The Market matches SNAP benefits up to \$20 per shopper each week, WIC (for moms and infants), and senior FMNP coupons. Most farm vendors accept HIP (Healthy Incentives Program), which offers free produce to SNAP users. And remember, there's a plastic bag ban in Belmont now. But conveniently, reusable bags are available for purchase at the market. See you next Thursday!

Belmont Farmers' Market
Thursday afternoons, 2–6:30 PM, through October

belmontfarmersmarket.org
In Belmont Center municipal parking lot, at the intersection of Cross Street and Channing Road, behind the shops on Leonard Street.

Evanthia Malliris is a director of the Belmont Citizens Forum.



Dick's Market Gardens & Greenhouses is just one of the many independent and family-owned farms and artisans offering fresh, local produce and products every Thursday afternoon through October.

Belmont Roots

Environmental News, Notes, and Events

By *Meg Muckenhoupt*



Reducing emissions can begin in your own backyard—but how? Well, if you're tired of mowing your lawn, you have a good excuse to stop. Although grasses, like all plants, remove carbon

from the air when they grow their leaves and roots, the greenhouse gas emissions from fertilizer and pesticide production, mowing, and leaf blowing make grass a poor proposition for our climate. You still have to do something with that land, but there are many other good choices that will look good and keep more carbon in the ground and out of our air.

As long as you're rethinking your lawn, you can make your yard function better as an environment—not just as outdoor, wall-to-wall shag carpet. Start with your soil. Healthy soil will make all your plants more resilient to drought, heat, and heavy rain as our climate changes. A few plants that support local pollinators will make your yard more amenable to butterflies (not just to honeybees, which were brought over from Europe, and tend to get enough to eat anyway), and the butterflies help your new flowers set seed for future years.

Climate Resilience in Your Own Backyard

Wednesday, July 24, 7:30 PM

Wright-Locke Farm, 78 Ridge Street, Winchester

Soil is alive with more microbes in a teaspoon of healthy soil than there are people on this planet. This talk is a call for gardeners to learn to become stewards of the immense thriving world beneath our feet. These skills bring benefits not only for our gardens and the food we grow, but also for our local ecosystems, watersheds, communities, and the planet.

Allison Houghton is a soil, plant, and natural world enthusiast. She recently wrote *The Carbon Sequestering Garden: Gardening for the Planet While Growing Some of the Best Food Possible*. She currently works at the Northeast Organic Farming Association with their soil technical assistance program. Free. For information on dinner before the program, contact www.wlfarm.org, info@wlfarm.org.



Swallowtail butterflies are just one of many backyard pollinators.

For Us and Them: Pollinators and Edibles

Wednesday, August 21, 9:30 AM–12:30 PM
Garden in the Woods, Framingham

While aesthetics have long ruled supreme in gardening, people increasingly select plants with ecosystem-based values in mind. The popularity of edible and pollinator gardens has skyrocketed, but the details are critical for success. Which plants attract which pollinators? Which edibles are resistant to diseases and pests? Join Dan Jaffe, photographer and author of *Native Plants for New England Gardens*, to learn how low-maintenance native plants can feed us and the pollinators together. \$40 Native Plant Trust members, \$48 nonmembers. To register, go to nativeplanttrust.org or contact information@nativeplanttrust.org, 508-877-7630.

Sometimes the challenges facing our yards, towns, nation, and planet can feel overwhelming. From flooding and pollution to invasive plants impoverishing our landscape, these problems often seem far too big for any one person to affect. At these times, take a moment to reflect and recharge. Remember that you are part of a distinguished tradition of effective activism. Our Bostonian predecessors started the first state Audubon Society, spurred the Land Trust movement, preserved Belmont's Waverley Oaks, and much more. Or if you'd prefer to focus on the future of environmentalism, head down to the free Boston GreenFest on the Rose Kennedy Greenway.

Boston GreenFest & TechExpo
Friday–Sunday, August 16–18, Noon–6 PM
 Rose Kennedy Greenway, Boston

Check out global eco-vendors, learn to plant a vertical garden, experience eco-fashion, or test drive an electric vehicle. Free. rosekennedygreenway.org/events/

Thank You to Our Contributors

WRITERS

Marty Bitner • James Booth • Mary Bradley
 • Roger Colton • Jacob Knowles • Evanthia Malliris • Meg Muckenhoupt

PHOTOS/GRAPHICS

Belmont Energy Committee • Lissa Bollettino
 • Mary Bradley • Cadmus Group • Creative Commons • Galante Architecture Studio, Inc.
 • Labbradolci • Massachusetts Audubon Society • Sara McCabe • Perkins and Will

COPY EDITORS

Sue Bass • Virginia Jordan • Evanthia Malliris

NEWSLETTER COMMITTEE

Sue Bass • Virginia Jordan • Evanthia Malliris
 • Vincent Stanton, Jr.

MAILING MAESTRO

Ken Stalberg

Afterwards, hop on over to the Charles River Esplanade to eat ice cream and mess around in boats. You'll see dozens of families enjoying clean water in the river thanks to the efforts of thousands of conservation-minded people like you.

Water Chestnut Removal Community Days
Saturday, August 10, 10 AM–1 PM

Location given on registration

Help remove invasive plants from the Mystic River. Volunteers will head out in canoes to hand-pull water chestnut from the river or stay on land to help put the chestnuts in the dumpster to be composted. All supplies are provided. Bring sunblock and shoes you don't mind getting wet. Free. Register at mysticriver.org or call 781-316-3438.

Invasive Plant Removal
Saturday, August 24, 8:30–10 AM

Mass Audubon's Habitat Education Center and Wildlife Sanctuary, 10 Juniper Road, Belmont

Come help Habitat remove invasive plants, including buckthorn and bittersweet, that make it difficult for native plants to thrive. Children under 9th grade must be accompanied by an adult. Tools and gloves provided. Registration required. Community service hours provided. Register at massaudubon.org or call 617-489-5050.

"Plogging" Cleanup along the Charles
Saturday, August 24, 10 AM–Noon

Cafe on the Common, 677 Main Street, Waltham

Join the Waltham Land Trust for a trash pickup along the Charles River, in coordination with the Waltham Trail Runners, where we will take a crack at "plogging," the Swedish fitness craze combining jogging and picking up litter. You can go at your own pace and cover up to 2 miles. Gloves and bags provided. Please dress to be outside and bring water if you need it. The event will last 1-2 hours depending on how much trash we encounter. Register at walthamlandtrust.org or call 781-893-3355.

After you've cleaned up the river, take some time to witness the local lives that depend on clean water and cool breezes: wood frogs lurking in vernal pools and the moths, insects, and arthropods that make up their food chain. Midsummer in Rock Meadow is always a cause for celebration, when New England's dawdling, reticent flowers are finally persuaded that it's warm enough to bloom.

Moth Night at Habitat
Tuesday, July 23, 8–10 PM

Mass Audubon's Habitat Education Center and Wildlife Sanctuary, 10 Juniper Road, Belmont

Celebrate National Moth Week by working with Earthwise Aware's project entomologist to gather data on insects and other arthropods (spiders, mites, etc.). The data will provide information about the diversity of urban wildlife, including our important pollinators, and will be entered into global databases. Register at earthwiseaware.org or contact citizenscience@earthwiseaware.org.

Fell's Biobliss: Phenology & Botany at Long Pond

Sunday, July 28, 9:30–11:30 AM

Long Pond Parking Lot, Winchester

This Earthwise Aware program collects data about the impact of climate change on the synchronicity of fauna and flora phenophases, i.e., observable stages in the annual life cycle of plants and animals. This is a great opportunity to learn how to be in tune with our urban woodlands biodiversity and cycles. Register at earthwiseaware.org or contact citizenscience@earthwiseaware.org.

Wildflowers of Rock Meadow
Tuesday, July 30, 10 AM–2 PM

Rock Meadow Conservation Area, Belmont

Discover plants that can be used to cure poison ivy, plants that attract monarch butterflies, and plants that, according to ancient lore, were used to calm unruly oxen. Bring a bag lunch and a hand lens if you have one. \$38 Native Plant Trust members, \$46 nonmembers. Register at nativeplanttrust.org or call 508-877-7630.



COURTESY OF THE MASSACHUSETTS AUDUBON SOCIETY

For conservation inspiration, look no further than Harriet Lawrence Hemenway, who founded the Massachusetts Audubon Society—the first in the country—in her Back Bay parlor in 1896. Hemenway and her cousin organized more than 900 fashionable New England women to reject the ornamental feathered hats in style at the time that were leading to the slaughter of thousands of birds each year.

Belmont Citizens Forum
P.O. Box 609
Belmont MA 02478
Address Service Requested

Nonprofit Org.
US Postage PAID
Boston MA
Permit No. 56393

July/August 2019



Roadmap to Decarbonization.....	1
Buying Local: Belmont Light	3
Belmont Light and Energy Efficiency	5
HeatSmart Belmont	6
Zero Net Energy School	8
Roadmap Review	9
Electric Vehicles	11
Michael Smith Honored	13
Letter to the Editor.....	14
Porchfest Returns	15
Community Meets at the Market	16
Belmont Roots	17

Please visit our website for updates and to read this issue in color: belmontcitizensforum.org.