



Belmont Citizens Forum

Belmont Needs More Affordable Housing

By Tomi Olson and Rachel Heller

Belmont has great schools, restaurants, and local businesses and is located near job centers in Boston, Cambridge, and the MetroWest area. The Boston area's burgeoning life sciences industry alone is projected to create up to 40,000 new jobs by 2024, but our region's economic engine is hampered by a lack of housing near jobs—and Belmont's limited housing supply is part of that problem.

Population growth, together with housing production that hasn't kept pace, has made housing shortages in appealing parts of the country like ours front-page news. Our region builds much less housing every year than it did

in the 1980s, and the supply of new housing is not keeping up with demand.

When housing costs are high, our coworkers, friends, and neighbors can be priced out. This hurts our community and limits our town's and region's economic growth. High housing costs limit who can live in our community, whether they are seniors who have lived here for decades or households with lower incomes. Restaurant and grocery store workers, town employees, school bus drivers, home health aides, teachers, nurses—people we count on every day—can no longer afford to live near where they work. More housing near mass transit lowers housing and transportation costs and helps people live closer to where they work. The result: less traffic,



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Multifamily housing near Cushing Square.

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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.

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

belmontcitizensforum.org

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fewer carbon emissions, cleaner air, and a more socially and economically diverse community.

To preserve what we love about this great community, we need to allow for more homes in our Town of Homes. Local zoning can accelerate housing production, stabilizing home prices and rents and creating new homes at a range of price points. Zoning is our opportunity to decide what can be built where. Good zoning is important for the health and vitality of Belmont and to ensure that people across income levels can afford to live here.

The good news is that we are making progress! Belmont residents can be proud we adopted a Housing Production Plan in 2018 that set us on a course to expand affordable housing opportunities and to meet a wide range of housing needs. Since 2018, Belmont has:

- Strengthened our inclusionary zoning policy so that more affordable homes are built in new developments.
- Approved funding from the Community Preservation Act to provide emergency rental assistance to people financially burdened by the pandemic and to support creating new affordable housing.
- Approved development on the former McLean land for a mix of rentals and home ownership opportunities, including options specifically for seniors and rental homes that are open to a broad range of residents. Overall, 150 new homes will be built, comprising 40 townhomes for ownership and 110 rental apartments. One apartment building will be for seniors; a second building will be open to all households. Twenty percent of the apartments will be affordable to households with moderate incomes, and 5% will be affordable to households with low incomes; 15% of the townhomes will be set aside for seniors with moderate incomes.
- Made progress on reaching the state's 10% benchmark for affordable housing in each community. Belmont is currently at 6.5%, up from 3.6% in 2017. With the 110 new homes at McLean, the town will potentially achieve a temporary "safe harbor" of one to two years.

Belmont's Housing Production Plan

Belmont's 2018 Housing Production Plan told us a lot about our housing needs. We learned that nearly 25% of our residents are eligible for affordable housing, and yet few affordable options exist. Many Belmont residents are considered housing-cost burdened, which means that they pay more than 30% of their incomes for housing; some are severely housing-cost burdened, paying more than 50% of their incomes for housing.

We learned that we don't have enough homes that are affordable to seniors, families, or for people with extremely low incomes. We also found that we have a great need for more accessible housing.

While we have a lot of needs, we also have a lot of opportunities to meet those needs. Belmont is just beginning to work on our next Housing Production Plan. Each plan spans five years; our current plan expires in May 2023.

The Housing Production Plan process includes analyzing our demographics, housing costs, and needs. This work is vital for understanding if our needs have changed over the last five years and how the pandemic may have changed peoples' circumstances. The Housing Production Plan process also includes robust community engagement so that we can share information, get ideas for meeting our housing needs, and



Multifamily housing in Cushing Square.

identify together, as a community, where we have opportunities to expand affordable housing.

It is important to note that the Housing Production Plan does not happen in a vacuum. Housing is part of the overall health of our community. Good housing planning is key to advancing many of our community goals including preserving open space; supporting our local businesses; fostering a welcoming and inclusive environment for all residents, employees, and visitors; increasing sustainability; and diversifying our tax base.

More homes near the proposed Belmont Community Path could provide people with a way to get around without driving. More homes, particularly multifamily housing, will create housing at different price points. More housing near transit and commercial corridors will help to preserve precious open space, increase foot traffic for businesses, and reduce the need to drive. This approach also allows for more mixed-use development, which brings in more commercial space that is supported by the homes above it. All of these efforts contribute to vibrant and healthy businesses, which means more commercial revenue for Belmont.

Designing a Healthy, Vibrant Future

The Commonwealth needs 200,000 new homes by 2030 to support our residents and stabilize home prices and rents, according to a 2021 report released by the Baker admin-

Safe Harbors

Chapter 40B is a state law which allows developers to bypass local zoning if they build affordable housing in communities where less than 10% of housing is legally defined as affordable.

State regulations create "safe harbor" options that allow a Zoning Board of Appeals to deny a Chapter 40B proposal without risk of being overturned by the state's Housing Appeals Committee even if less than 10% of that community's housing is affordable. A community can gain safe harbor status if it follows state-approved Housing Production Plans and increases its stock of affordable homes.

istration—yet the state is producing half the number of homes per year as 30 years ago. A new state law requires the 175 communities served by the MBTA to zone areas for multifamily housing. The legislature also made it clear that these areas must allow homes that are suitable for all household types, including families with children. The law also states that communities must allow at least 15 units per acre, and that this housing must be within a half mile of transit.

Every community in the Commonwealth needs to put policies in place that allow for the homes we need in order for our communities to stay healthy and for our state to grow. As we all look around amazed at the high housing prices and rents, we must step forward and do something about it.

Governor Baker recently issued draft guidance so that affected cities and towns understand how to comply with this new law. The guidance assigns the number of homes based on their transit options. Given our bus and commuter rail lines, Belmont needs to zone for 2,176 new homes. The guidance requires that Belmont’s zones constitute at least 50 acres of land with half of the area falling within a half mile of transit.

It may be hard to imagine what 15 units an acre would look like. To get a sense, we can look at our current neighborhoods. While Belmont Center has 2.9 homes per acre, Waverley Square has an average of 6.2 units per acre.

Increasing the number of homes per acre does not have to dramatically change what our neighborhoods look like. Homes above businesses in Belmont Center and more mixed-use development, like what we see in Waverley Square, can allow for more diversity in our housing stock and create new opportunities for people to stay in town if they want to downsize or to move from renting to homeownership. Our kids could live here when they are ready to live on their own, and people who work here could have affordable places to live.

In addition to requiring growth, state law already rewards it through Chapter 40R districts. The state’s smart growth law, Chapter 40R, requires that 20% of the homes built within these districts be affordable. It rewards commu-

Belmont’s Inclusionary Zoning Bylaw

Inclusionary zoning requires affordable homes be included as a portion of new housing development. In Belmont, for residential developments of 6 to 12 homes, 10% must be affordable; for developments of 13 to 20 homes, 12% must be affordable; and for developments with more than 20 homes, 15% must be affordable.

nities that zone for multifamily housing near transit and town centers by paying them a bonus when building permits are approved, and offers insurance so that they are reimbursed if development in 40R districts results in increased school enrollment.

40R districts could help Belmont surpass the 10% benchmark set in the state’s Chapter 40B law, and meet multiple town goals. Belmont already has one 40R district in place across from the Oakley Country Club. We can use 40R to create mixed use, mixed income developments near our commuter rail stations and along our commercial corridors. Belmont would be able to produce a wide range of housing options for people at different price points, meet more of our affordable housing needs, and hit the state’s 10% benchmark.

Zoning for more housing is one of the best ways that Belmont can contribute positively to our local and regional economic, social, and climate goals. Later this spring, the Belmont Housing Trust will sponsor community discussions about regional housing needs for Belmont’s 2023 Housing Production Plan. How do you think we can best strike that ideal balance where we foster greater housing options to meet local and regional needs while also preserving Belmont’s assets? Information on discussions will be posted by the Housing Trust, www.belmont-ma.gov/housing-trust.

Rachel Heller is co-chair of the Belmont Housing Trust and chief executive officer of Citizens’ Housing and Planning Association. Tomi Olson is a member of the Belmont Housing Trust and served as an elected commissioner of the Belmont Housing Authority.

Lone Tree Hill Volunteers Clean, Weed, Plant

By Radha Iyengar

On Saturday, April 30, a sunny but cool day, BCF, in conjunction with the Judy Record Conservation Fund, held its eighth annual Lone Tree Hill Volunteer Day.

At the Pine Allee, volunteers planted 46 white pine saplings of which 40 saplings were store bought and 6 were transplants from Lone Tree Hill. The new plants replaced some of the Allee’s missing trees as well as some of the dead saplings from the 2017-2019 volunteer day plantings. At the other end of the property, the volunteers collected 11 bags of trash, one box of recyclables and six bags of garlic mustard.

The BCF is grateful to David Ropes and Stephen Richards of Tree Specialists, Inc. for supervising the planting, and the Judy Record Conservation Fund for funding their ongoing work and purchasing the trees. A big shout-out goes to Leonard Katz for supervising garlic mustard removal, to Anne-Marie Lambert for directing the volunteers at the bottom of Coal Road, to Sandy Vorce (Habitat) for sending six Boston College volunteers to help with planting, and to Michael Santoro, DPW Highway Division manager, and his staff, for picking up the trash.

Radha Iyengar is treasurer of Belmont Citizens Forum and organizer of BCF Volunteer Day.



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Belmont's Watersheds Cross Many Boundaries

By Anne-Marie Lambert

Here in Belmont, we live on the edge of two large watersheds—the Mystic River watershed and the Charles River watershed. Understanding our role in these watersheds is more important than ever as storms in the Northeast grow more intense and more frequent, and as the rise in Atlantic Ocean sea levels starts to affect the underground water table.

The lack of alignment between our political maps and the topography of our watersheds can make it tricky to understand Belmont's role. In the flat low-lying areas of town where there isn't much gradient, waters flow in directions that may surprise you. Even up on Belmont Hill, unexpected flooding can occur due to a variety of factors, including the location of underground bedrock, clay, soil, sand, and water, the location of roads, buildings, and drain systems that channel stormwater, and the way soil erosion

from increasingly large storms affects those channels. The town has several efforts underway to understand and address both water pollution and flooding challenges. Several of them involve engagement with our downstream neighbors.

The Clean Water Act at Work in Belmont

Belmont is in its fifth and final year of an Environmental Protection Agency (EPA) consent order to clean up the sewage our aging sewer and drainage systems are putting into our waterways. The January 2022 biannual report showed that while the town has made a lot of progress, certain hot spots are likely to remain after EPA's May 15, 2022, deadline to clean up all our pollution.

Many of the reporting requirements of this consent order will become required for all municipalities in June 2022 under the state's new



The Beaver Brook cascade.

ANNE-MARIE LAMBERT



Detail of Belmont's January 2022 compliance report map showing the repairs addressing illicit storm drain connections (red).

Municipal Separate Storm Sewer Systems regulations (MS4). Glenn Clancy, Belmont's director of Community Development, is hopeful the EPA will be amenable to Belmont transitioning from the 2017 consent order to the new MS4 permit without needing to extend the consent order to a sixth year. At press time, he was working with the town's contractor Stantec to prepare a summary of all the sewer and stormwater repair work the town has done over the last five years.

The town continues to try to clear sources of pollution from the edges of the storm drain system before tackling sources closer to our ponds and brooks. Wellington Brook outlet 8-6 (on the edge of the drain system by the Department of Public Works [DPW] yard) is an example of one of Clancy's biggest frustrations. After significant upstream repair work in 2020, this outlet ran clear. Then, pollution spiked up again in December 2021. This spike could be due to the intermittent nature of pollution measurements (i.e., the timing of last year's measurements missed a problem), or it could be due to a brand new failure in our 100-year-old sewer system. This outlet flows into subcatchment 8-4, which flows into subcatchment 8-3 and 8-1 in sequence. Measurements downstream can also be affected by whether there is dilution from cleaner tributaries in the drain system.



Detail of Belmont's January 2022 compliance report map showing the repairs done to address illicit connections to the storm drain system (red properties).

Sub-catchment Outfall (OF)	Status	Pollution Measurement (<i>E. coli</i> MPN/100ml)		
		2017	2020	2021
OF-15 Lake & Pleasant	Cleared	10,200	700	100
OF-15A Frontage nr Clifton	Cleared, will monitor	14,900	<100	<100
OF-12 Oliver Road nr Gilmore	Cleared	16,000	200	100
OF-11A Oliver nr Staunton	Cleared	>20,000	2,600	<100
OF-8-2 Concord & Goden	Cleared, will monitor	1,100	19,700	100
OF-1 Oxford Cir.	Cleared, will monitor	1,600	<100	NT
OF-8-6 nr DPW yard, Gordon Terr.	Improved, but still over threshold	14,400	10,600	5,000
OF-8-4 Wellington Brk @ Common St	Improved, but still over threshold	No data	22,000	9,000
OF-8-5 Bradley nr Pearson	Improved, but still over threshold	220	4,800	1,500
OF-8-3 Wellington Brk @ library	Improved, but still over threshold	No data	500	1,400
OF-10-1 Winn's Brk @ Claflin	Repairs in progress	No data	900	NT
OF-11 Oliver nr Staunton	Repairs in progress	13,800	900	NT
OF-2 Grove @ Huron	Getting worse; investigation needed	6,800	15,200	>30,000
OF-10-2 Winn's Brook @ Little Pond	Getting worse; investigation needed	200	<100	3,100
OF-8-1 Clay Pit Pond nr Concord	Getting worse; investigation needed	1,700	1,350	4,500

Mixed results in areas where Belmont has repaired or relined sewer lines (source: January 2022 compliance report from Stantec).
 ND: samples, none detected.
 NT: not tested.



Clogged catch basin on Clifton Street.

Moreover, weather can play a role in interpreting test results year to year. Dry weather in the week or two prior to a measurement can concentrate any pollution, and wet weather in the week or two prior can raise the groundwater table and explain unexpected moisture in the system.

Sewer lining and laterals

The town has done a lot of work to line sewer laterals and mains. This work is funded by an MWRA I/I loan for a contract that will end soon. Clancy is working with Stantec to conduct a sewer system evaluation survey (SSES) to include wet weather flow monitoring under the Massachusetts Water Resources Authority (MWRA) infiltration and inflow program.
 The town has spent \$120,612 of the \$1,348,208 approved in a Private Sector Sump Pump Removal & Sewer System Rehabilitation Construction contract. The cost to line a sewer line is \$100 per

linear foot for sewer lines and \$150 per linear foot for drains. Typically, a lateral line from a sewer to a home is five to six feet, and a section of a main line under the street is about 20 feet. In addition to construction associated with lining sewers and storm drains, this contract also redirects any private sump pump discharges from the sewer to the storm drain system, where they belong.
 The data on page 8 show where the town has found illegal connections of household wastewater to the storm drain system. These connections have all been addressed over the last five years, but there may be more. In order to find these connections, town contractors first isolate the problem to a single neighborhood block by measuring unexpected pollution in the drain system. They then need to enter each home on a block to perform dye testing to find the culprit. Progress during the pandemic has been slowed as homeowners have been more hesitant to allow town contractors to enter.

Clancy has taken advantage of the home entry required for a water meter replacement program in order to observe whether a basement bathroom or sump pump was visible. He found 17 locations where the existence of a basement bathroom might explain downstream pollution in the drain system. These findings allow town contractors to prioritize where dye testing might be most valuable.

Municipal Vulnerability Program Grants

Belmont has started work on the Stormwater Flood Reduction and Climate Resilience Capital Improvement Plan reported in the January/February 2022 Belmont Citizens Forum *Newsletter* (“[Belmont Awarded Climate Grant](#)”). This project included field visits to 11 sites already prone to flooding to examine “topographical patterns, visible indications of current or past flooding, and catch basin and culvert conditions and characteristics.” The December field report concluded that “flooding in most of these areas is likely due to clogged

catch basins, lack of catch basins in the road, and general topography of the area.”

All catch basins are cleaned annually in the spring, but some need more structural repairs than an annual cleaning can address. Some of the catch basins are clogged with invasive plants like knotweed which may require a system-wide solution. The town is developing a proposal to install additional catch basins, repair drains, and repair masonry associated with certain open drainage channels (e.g., for above-ground portions of Winn’s Brook).

These field visits, future field visits, and additional flow monitoring will provide flow data to an enhanced computer model of Belmont’s storm drain system which will predict areas most vulnerable to flooding with extreme storms.

In addition, the Municipal Vulnerability Program team has been interviewing community stakeholders in order to develop an action plan to address problem areas. The next step after this project will be to request construction funding for “green” mitigations such as rain gardens and other green infrastructure projects as well as “gray” stormwater infrastructure improvements (e.g., pipes, new catch basins, or wider culverts).

Meanwhile, the DPW FY23 budget includes a request for \$800,000 for the Belmont portion of a project to mitigate the risk of flooding at the Beaver Brook culvert under Trapelo Road. This culvert is currently undersized for handling the full volume of the Beaver Brook cascade by the Mill Pond and Duck Pond in Belmont. Working with Waltham to widen the culvert would mitigate the risk of flooding this major roadway during big storms.

Spy Pond, Little Pond, and Little River

Most of Belmont is at the outer edge of the Alewife Brook portion of the Mystic River watershed or the outer edge of the Charles River watershed. Water flows downhill and toward the ocean in an obvious way. The main exception to this is a significant flow which starts in the hills of Arlington and flows into Spy Pond, then under Route 2 into Belmont’s Little Pond in a conduit that was built in the 1960s.

This flow passes through a corner of Belmont and then out to Little River and Alewife Brook

in Cambridge. As far as I can tell from asking the Arlington and Belmont DPWs, the Spy Pond conduit is maintained by moving wooden planks on the Spy Pond side of the conduit and clearing debris seasonally. The conduit appears to be functioning well, but has not been inspected end to end for decades. Relatively few Belmont residents live near Little Pond and Little River—the Oliver Road neighborhood, Sandrick Road, and the Royal Belmont residences in Precinct 8, as well as the Hill Estates, now part of Precinct 1.

As described in the January/February 2022 BCF *Newsletter* (“[Fifty Million Gallons of Sewage Released](#)”), on rare occasions the Little River flows backwards a few days after an exceptionally large and long rainstorm starts. While diluted by rainwater, this backflow does carry pollution from the Cambridge and MWRA Combined Sewer Overflows (CSOs) to the Belmont neighborhoods around Little River and Little Pond.

The reverse flow is likely due to the combination of sedimentation reducing the capacity of Alewife Brook, high groundwater reducing the capacity of the soil to absorb water, and the “bounce back” of Mystic River flows to the low-lying areas of the Alewife Brook after they hit the Amelia Earhart Dam. Sedimentation is a long-standing process that results from soil erosion due to an increase in impervious surfaces in the watershed. As a result, Massachusetts rivers and brooks like the Alewife Brook are shallower than they used to be, reducing the volume of water they can carry during a storm.

Explore: Pleasant/Lake Street Path

Walk the path between Pleasant Street and Lake Street along the Route 2 edge of Spy Pond to see pretty views of both Spy Pond and the culvert to Little Pond.

A short path behind the Royal Belmont residences on Acorn Park Drive leads through a beautiful forest to a great view of Little Pond. It is a public path owned by the state Department of Conservation and Recreation (DCR).

Explore: 145 Brighton Street Path

This public access path has a pretty view of Little Pond and all its bird life. Owned by the DCR, this path leads to the downstream end of the large culvert containing Winn’s Brook. You can still see the posts of the old fishing pier.

Within the drain system in this area, major storms used to result in sewage and stormwater backups in the low-lying Winn’s Brook area. This has not been a problem since 2011, when the town installed a sewer storage and pumping station to retain a large portion of Belmont’s sewage underground and then pump it out when there was available capacity.

Department of Public Works director Jay Marcotte intends to explore ways to upgrade the “brains” of this system so that information about how frequently it is triggered can be made accessible remotely. Meanwhile, the system is exercised monthly and appears to have prevented the horrible sewage backups that used to reach into basements and bubble up through manholes.

Flooding from Below

During a severe rainstorm, areas prone to flooding can suffer flooding from both above and below. Rain soaks the soil from above, and a rising groundwater table soaks it from below as rain from the storm drains into the water table.

There is a second reason the groundwater table rises near a coast with rising sea levels like ours: groundwater is prevented from draining to the sea because salt water infiltrates further inland underground as the sea level rises.

As salt water rises and falls with the tides, it pushes the less dense freshwater inland at what engineers refer to as the “freshwater-saline water interface.” A similar “interface” underground is gradually moving further inland as the Atlantic sea level rises. Two hundred years ago, before all the dams were built, Alewife Brook used to rise and fall with the tides all the way from the Mystic River to Fresh Pond in Cambridge.

It would be difficult to model exactly where this interface is in the low-lying areas of Belmont during a particular storm. A recent study of

Portsmouth, New Hampshire, concluded that almost half of storm flooding was likely due to groundwater table rising rather than marine tidal flooding. MIT researchers have also concluded this risk may be vastly underestimated, especially when it comes to underground utilities vulnerable to rising groundwater (see MIT’s website, “How rising groundwater-caused climate change could devastate coastal communities” at bit.ly/BCF-groundwater for stories of underground flooding in Saugus). Once our regional stormwater system is more accurately modeled, collaborating with our neighbors to invest in a model of a rising groundwater table could also help guide preparations for large storms.

Persistence Pays Off

With climate change, we need to be more diligent than ever about reducing pollution and understanding flood risks for ourselves and for our downstream neighbors. The town is working with Waltham to address Beaver Brook flood risks through the Municipal Vulnerability Preparedness (MVP) program. The EPA’s enforcement of Clean Water Act regulations and additional MVP funding are both helping to reduce pollution and flood waters flowing downstream to Arlington, Cambridge, Somerville, and beyond via the Alewife Brook.

Improved computer models that reflect data from multiple municipalities in the watershed will help improve our understanding of what is likely to occur after future storms. Stormwater treatment features of the new library design will help mitigate downstream pollution and flood risks.

We’ve inherited fixed political boundaries that make it more challenging to study the flows and backflows above ground and underground and to understand who should do what next. I’m hopeful that we find more ways to cooperate with our watershed neighbors in order to make the Alewife Brook and Beaver Brook sub-watersheds clean and resilient as climate change progresses.

Anne-Marie Lambert cofounded the Belmont Stormwater Working Group, a collaboration between Belmont Citizens Forum and Sustainable Belmont. She is a Precinct 2 Town Meeting Member and former Belmont Citizens Forum director.

Belmont Moves on Decarbonization Roadmap

By Marty Bitner and James Booth

In 2009, Belmont’s Town Meeting committed to reducing Belmont’s emissions of the greenhouse gasses that drive dangerous climate change. In 2019, the Belmont Energy Committee put forward the Belmont Climate Action Roadmap for achieving our town’s greenhouse gas reduction goal. The general framework laid out a two-part strategy that was strongly endorsed by a vote of Town Meeting in May 2019:

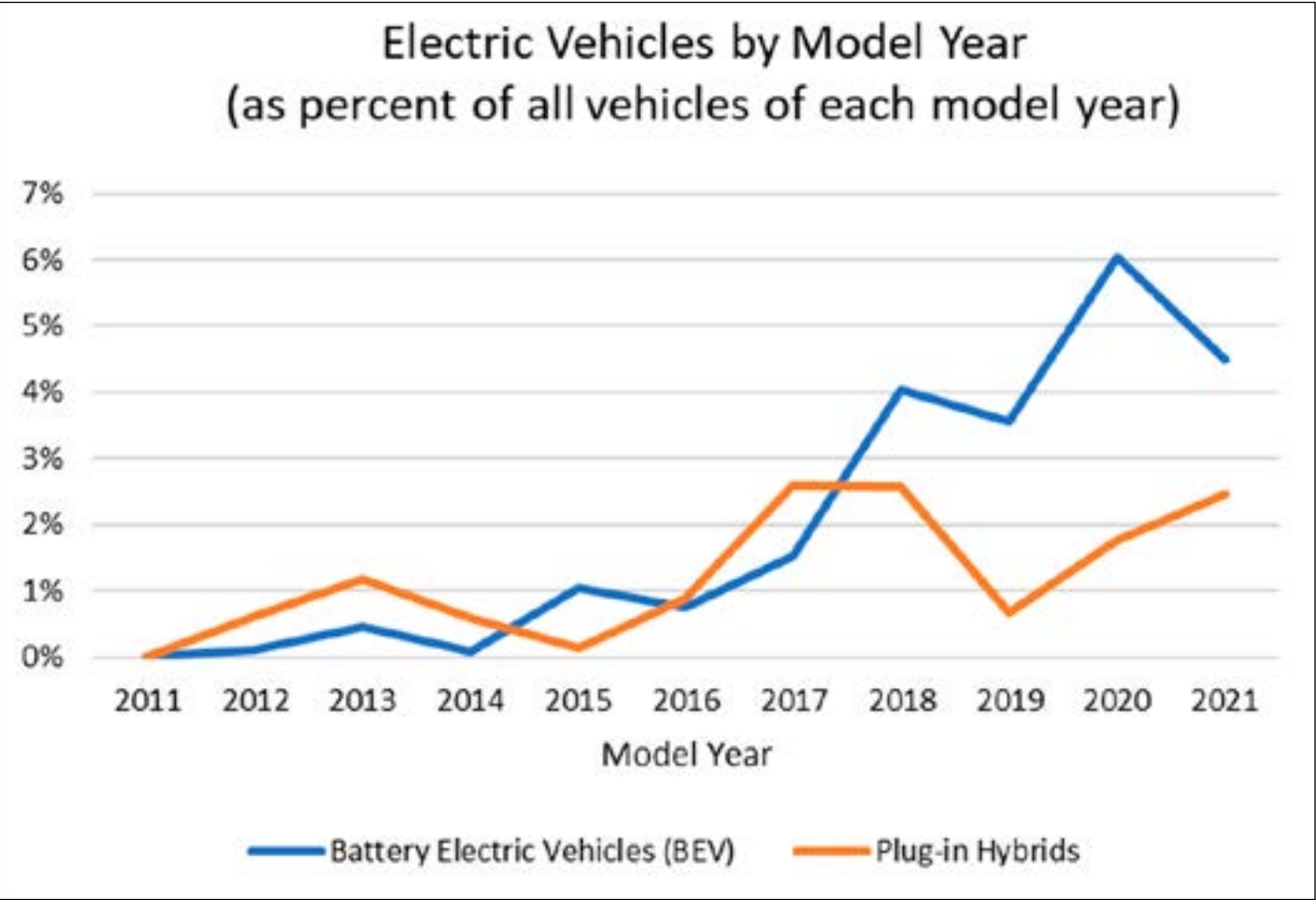
- Electrify everything! (adopt electric vehicles and transition to heating with electric heat pumps)
- Move Belmont’s electricity supply to renewable sources

How are we doing with moving forward on this strategy?

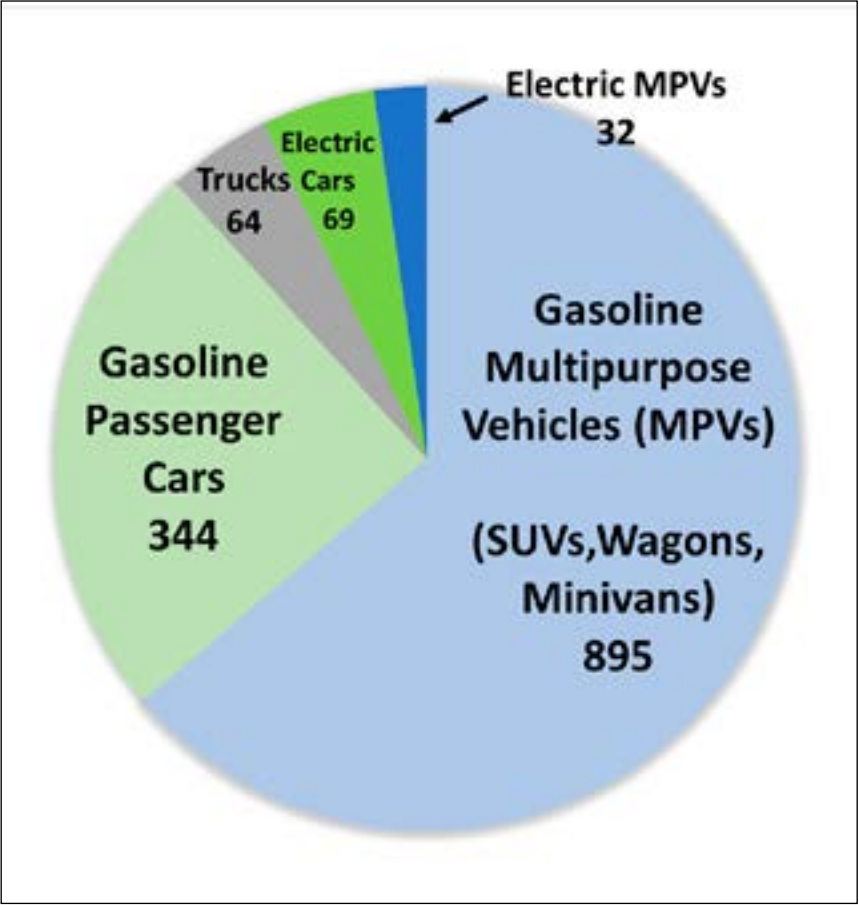
Vehicles

We analyzed a list of all the vehicles that were registered in Belmont as of the beginning of 2021. Of the vehicles with 2020 and 2021 model years, 7.7% were electric (5.8% fully electric “battery electric vehicles” and 1.9% plug-in hybrids).

Is this good news? On the one hand, purchases of electric vehicles (EVs) have grown from a starting point of almost zero just a few years ago. The roadmap envisions a rapidly accelerating ramp-up of this EV adoption over the next few years, so this is a promising start. Still, it is sobering to note that over 90% of new vehicles acquired in 2020 are still powered by gasoline. Moreover, most of these are classified as “multipurpose vehicles,” a category that includes SUVs, wagons, and minivans, i.e., larger vehicles with lower gas mileage and thus higher



Electric vehicles in Belmont by model year, 2011–2021.



Belmont’s 2020 and 2021 model year vehicles, January 2021

emissions even than gasoline-powered passenger cars.

It’s important to keep in mind that it’s not so much that each electric vehicle gets us closer to achieving our emissions reduction goals; rather, each new gasoline-burning vehicle puts us farther behind. Many of these vehicles will be on the road for a decade or more, adding to our cumulative emissions throughout their whole lifetime.

In light of this fact, we hope that every Belmont resident who is considering acquiring a new vehicle will either go electric or consider waiting on their purchase until they are ready to do so. Electric vehicle options are already available today, but electric vehicle offerings continue to increase in both variety and affordability, and used electric vehicles are becoming increasingly available as well.

Heating

It is more challenging to gain insight into what is happening in terms of electrification of home heating with heat pumps. Belmont

Light offers rebates for heat pumps, and in 2021 there were around 70 rebate applications. Given that there are likely several hundred replacements of heating systems in Belmont in a given year, this is promising but still a relatively small fraction. Even more so than for vehicles, installing new fossil-fuel based heating equipment risks locking in decades of emissions, so a rapid acceleration in heat pump adoption will be crucial. To support this, Belmont Light has put a new program in place to help Belmont residents navigate the potentially unfamiliar (but efficient and effective!) technology of heat pumps. General information for finding out more about heat pumps is also available at HeatSmartAlliance.org.

Belmont’s electricity supply

Belmont Light’s Power Supply Policy set out a goal of 100% renewable energy by 2022, consistent with the roadmap, and our locally owned municipal light plant is on track to achieve that important goal, with a

renewable content for 2020 of 66.3% (the most recent year with complete data). Belmont Light incorporates renewable electricity into its energy portfolio by acquiring the necessary Renewable Energy Certificates (RECs), either in combination with the electricity itself, purchased directly from renewable producers (wind, hydro, and solar), or through separate purchases of RECs.

New construction projects

While the majority of Belmont’s emissions are determined by the collective decisions of many individual households, larger projects are important both for their emissions impact and the opportunity they provide to lead by example. An important milestone in town was the design of the new Middle and High School building to be fossil-fuel free. The heat for the largest public building in town is being provided by an electrically driven ground-source heat pump (or geothermal) system. In private devel-

opment, the Residences at Bel Mont, a mixed-use residential community development that has been proposed for the McLean district, will be heated entirely using air-source heat pumps.

These two large developments underscore the point that all new construction should be fossil-free. We hope that all new public buildings in Belmont, e.g., a new library or ice rink, will be both fossil fuel-free and zero-net energy (ZNE) as we move forward, and that this will become the expectation for all new construction.

The Massachusetts Department of Energy Resources is receiving public comment about its proposed revisions to state building codes. We hope that a significantly more ambitious option than the current stretch code—namely, a ZNE standard for new buildings—will be offered as an option for towns. Belmont Town Meeting passed a nonbinding resolution in June 2021 calling for just such a net-zero stretch code; this resolution reflected the members’ recognition that addressing emissions from buildings is central to achieving Belmont’s climate goals.

Municipal Vehicle Fleet

Another area in which the town can lead by example is electrifying the municipal fleet. The Energy Committee is working on an Electric Fleet Policy to increase the use of battery electric and plug-in hybrid vehicles in the town fleet. This policy would reduce greenhouse gas emissions from the town’s vehicles and also reduce the total cost of ownership over each vehicle’s lifetime.

In the long run, Belmont is going to do better financially by purchasing electricity from



Part of Belmont’s municipal fleet which could be electrified.

JEFFREY NORTH

Belmont Light, its municipally-owned utility, to power its vehicles than buying gasoline. When procuring a new vehicle, Belmont should follow an electric-first procedure. If there is an electric vehicle available that fulfills the requirements of the town department, then it should be given priority over a gas-powered option. To get ready for the transition to electric vehicles, the town should pursue grant funding and incentives to install electric vehicle charging stations in strategic locations for town vehicle charging.

Belmont has taken many positive steps in the last couple of years. We are moving in the right direction; we just need to keep the momentum going and accelerate the pace. Residents interested in doing their part should consider electric options for themselves—heat pumps and heat-pump water heaters, electric vehicles, and induction cooktops—as well as pushing for any new buildings to be all-electric and ZNE.

Marty Bitner is chair of Belmont Drives Electric, co-chair of the Belmont Energy Committee, and a Town Meeting member. James Booth is co-chair of the Belmont Energy Committee and a co-author of its Climate Action Roadmap.

New Director Discusses Habitat’s Future

By Jeffrey North
This interview has been edited for length and clarity.

BCF
Congratulations on your December appointment to the role of regional director for Metro West. We understand you will have oversight of the Habitat Education Center and Wildlife Sanctuary in Belmont, as well as the wildlife sanctuaries Broadmoor in Natick, Drumlin Farm in Lincoln, and Waseeka in Hopkinton.

You’ve been in nonprofit management and some notable education roles. Your background includes teaching, starting a 6–12 grade school, leading a graduate school, strategy and organization design consulting with nonprofit organizations, and studying

communities’ shared sense of direction. Can you describe some of the ways these elements of your background will connect to what you will be doing in your new role?

McCue
There are a couple of pieces. Most of my experience is in education leadership and nonprofit organization design. The two components that inform my role at Mass Audubon include the following:
How do we make learning especially sticky and powerful for kids and adults? For example, just like sorting out how to make math or literature or science classes more impactful [in schools]. That question is different at Habitat, but the challenge is comparable. How do we make someone’s experience at Habitat impactful? How do we change hearts and minds? We want to make Habitat welcoming and get the benefits of Habitat programming out into the world. We



JEFFREY NORTH

Scott McCue at Habitat.

already have a team of educators thoughtfully tackling these questions.

The other piece is building and refining organizations. With that lens, I am really looking at how we build community around a common mission, strengthening the functions of the organization around a common mission. Coherence is a real asset, incoherence is a real disadvantage. How do we organize people and resources around shared objectives and avoid the tendencies to get into silos? How do we craft a coherent narrative?

BCF

What plans do you have for Habitat? How does Habitat fit into your and Mass Audubon's visions?

McCue

There are some near-term plans and some longer-term questions.

We have received generous funding to do some modest reconfigurations with our entry sequence. We may be separating automobile and pedestrian traffic a bit. We would like to make the arrival experience at Habitat a bit more straightforward and less confusing for someone visiting for the first time. Cleaning up that entry.

We also plan to expand our preschool program from 10 to 20 kids and add a full-day, fully licensed program.

We are also engaged in more substantial realignment at Habitat. For example, we are gradually discontinuing the wedding business at Habitat and pivoting to using our space and our staff in ways that are better aligned with our mission and the Mass Audubon Action Agenda (bit.ly/BCF-Action-Agenda). I am now conducting the first round of conversations among staff and external stakeholders, as well as neighbors and other partner organizations.

In my job as the Metro West regional director, I am humbled by the legacy of engagement of Belmontians over several generations. I am compelled to preserve what is magical about Habitat, and I'm now engaging with the community about how we respond to this moment in history and the Action Agenda.



COURTESY OF ROGER WRUBEL

Great Horned Owl fledgelings at Habitat, 2016.

BCF

Can you share some elements of your vision for advancing conservation and nature-based environmental education within our Metro West communities, especially any implication for Habitat in Belmont?

McCue

There are three components of the Action Agenda regarding the Metro West sanctuaries. In my role as new regional director, this action agenda for me serves as a crucial set of guiding principles.

[First is] conserving land and stewarding resilient landscapes. In Metro West, Mass Audubon is not acquiring land at the same rate as in other areas of Massachusetts. Yet we will steward the lands we have more responsibly. Big pieces include enlisting our staff and volunteers in the management of invasive species. Ruth Hornblower Churchill [the former owner of the home that now houses the Visitors Center and 22 of the surrounding acres] cultivated the grounds of her estate comprising multiple habitats. Different areas within the sanctuary now offer different experiences and require different imperatives. In our era this means more to do with native plants and supporting pollinators. We need to carefully steward this land. And we can show what stewardship looks like.

We want to be a proof point for how communities can responsibly steward the lands for which they're responsible.

The second piece involves expanding access to nature to more diverse populations of people. Even through Covid-19, we have been busy managing offerings to people in, for example, Lowell or Framingham. For adults, teens, preschoolers, we are eager to do more. Habitat will increasingly influence programming in settings like our new facility at Magazine Beach in Cambridge.

The third piece is our imperative to mobilize around climate change. For generations, our Mass Audubon sanctuaries, Habitat principal among them, have done a very good job of helping people to fall in love with nature. We have opportunities now to help people speak up for nature, which is a little different. My goal as regional director is to help people who love Habitat to find their voice, to be more involved at local, state—at all levels—to stand up for nature-based solutions to problems of a changing climate.

We have an agenda, and we are developing our plan around that agenda. I am now deep in listening mode. The Audubon team and I are still figuring out much of what the agenda will mean on the ground. We know that we must do it all in partnership with the community, with our neighbors. A big piece of my job for the next 6 to 12 months is to work with many different sets of voices as we plan for the next three to five years and beyond.

In the near term, we will enhance the entry and arrival at Habitat, and as the world gets back to normal, we will scale up certain activities, like our preschool program. This objective is based on an overwhelming need from some family situations, and we can do it without adversely affecting traffic or parking.

BCF

Habitat is a relatively small sanctuary surrounded by a residential area. How do you plan to involve the community around Habitat in developing your plans for this sanctuary? Do you have any concerns about encroachment or development on abutting property?

McCue

Listening is really important, especially for Habitat in Belmont. People have such strong investment in this space that goes back generations. I am speaking one-on-one with neighbors, as well as speaking with neighbors in groups, and we plan to continue doing this moving forward.

The sanctuaries I oversee—Broadmoor, Drumlin, and Habitat—are all very different. Habitat is a beautiful collection of environments in the middle of a town. It's important to remember that at Habitat we are modeling what a healthy relationship to nature looks like in one of the more developed parts of the state. How do my team and I effectively operate in this kind of context? We are pioneers orienting to a changing world.

Loving nature doesn't mean nobody should ever build a new house. But there is a responsible way to develop land, and we'd like to be part of that conversation.

BCF

What will success look like? How will you know your efforts have been successful?

McCue

This planning process is part of a more concrete set of measures of success. I really want to feel that Habitat is a good neighbor. It's hard to measure that, yet it's at the top of my priority list. There is a measure of success that is about responsible stewardship, an indicator of how well we have managed Habitat for biodiversity, species richness. If I do it well, then Habitat will be a healthier place ecologically in a year, and three and five years from now—in a way that is effectively anticipating what we know is a changing climate.

It's like throwing a football to where the receiver is going to be. What is the climate that we are working toward in 20 years? That's the lens we need as we manage this property. And I am very interested in coming up with ways to measure how we are changing hearts and minds, finding ourselves in nature, and speaking up on behalf of nature.

Belmont Community Path Costs Explained



Map of the proposed Phase 1 Belmont Community Path design.

By Vincent Stanton, Jr.

The Belmont Community Path is approaching an important milestone—a potential construction funding decision by the Boston region Metropolitan Planning Organization (MPO). Although municipalities, including Belmont, are responsible for funding path design and for securing the path right of way, state and federal governments fully fund path construction via the Transportation Improvement Program (TIP). Construction costs are generally about 85% of total project costs. TIP funds are allocated to cities and towns in the greater Boston area via a competitive process administered by the Boston MPO, which receives about 80% of its budget from the federal highway and transit administrations and about 20% from the Massachusetts Department of Transportation (MassDOT).

The Boston MPO operates on a five-year budget cycle. The TIP budget for fiscal years 2023–2027 is currently being debated. At a March 31, 2022, meeting the MPO agreed on a draft TIP budget for fiscal years 2023–2027 that

includes \$21,034,382 in FY 2026 for construction of phase 1 of the Belmont Community Path (Brighton Street to the Clark Street bridge, plus a tunnel beneath the Fitchburg Line at Alexander Avenue and a path spur across the new middle-high school campus to Concord Avenue). Assuming the final TIP project lineup retains the Belmont path, which seems likely (the MPO will make its final decision in May), this is a big deal for Belmont!

An obvious question: why, at \$21 million for about 1.31 miles, is the Belmont path so expensive to build? This article will attempt to address that question, in part by comparing the Belmont project to Waltham’s segment of the Massachusetts Central Rail Trail (MCRT).

Belmont vs. Waltham costs

However, first note that the \$21 million number is the projected 2026 cost; it reflects an inflation adjustment of roughly 6% per year. The cost in October 2021 dollars, as estimated by Belmont’s design consultant Nitsch Engineering, is \$16,698,309.

For comparison, the budget for the Waltham segment of the MCRT, which covers 2.74 miles, also in 2021 dollars, is \$9.3 million. In March 2022 the Waltham City Council approved Mayor Jeanette McCarthy’s request for \$9.3 million in borrowing authority to construct the Waltham path. The appropriation was based on five construction bids received in January, ranging from \$8,965,851 to \$11,597,336.

The Belmont segment will cost \$12.7 million per mile, while the Waltham segment will cost \$3.4 million per mile.

The tunnel

The Belmont path includes a new tunnel under the tracks, estimated to cost \$6 million. There is nothing comparable in Waltham. Though two timber bridges will be removed and replaced with steel and concrete, the use of existing abutments makes that a relatively low cost endeavor—only \$130,000 in the low bid. The MBTA insisted that the Belmont tunnel be constructed by jacking rather than the more economical cut-and-cover method, due to concerns about soil compaction. Subtracting \$6 from \$16.7 lowers the cost of the Belmont path to \$10.7M, or \$8.2 million/mile.

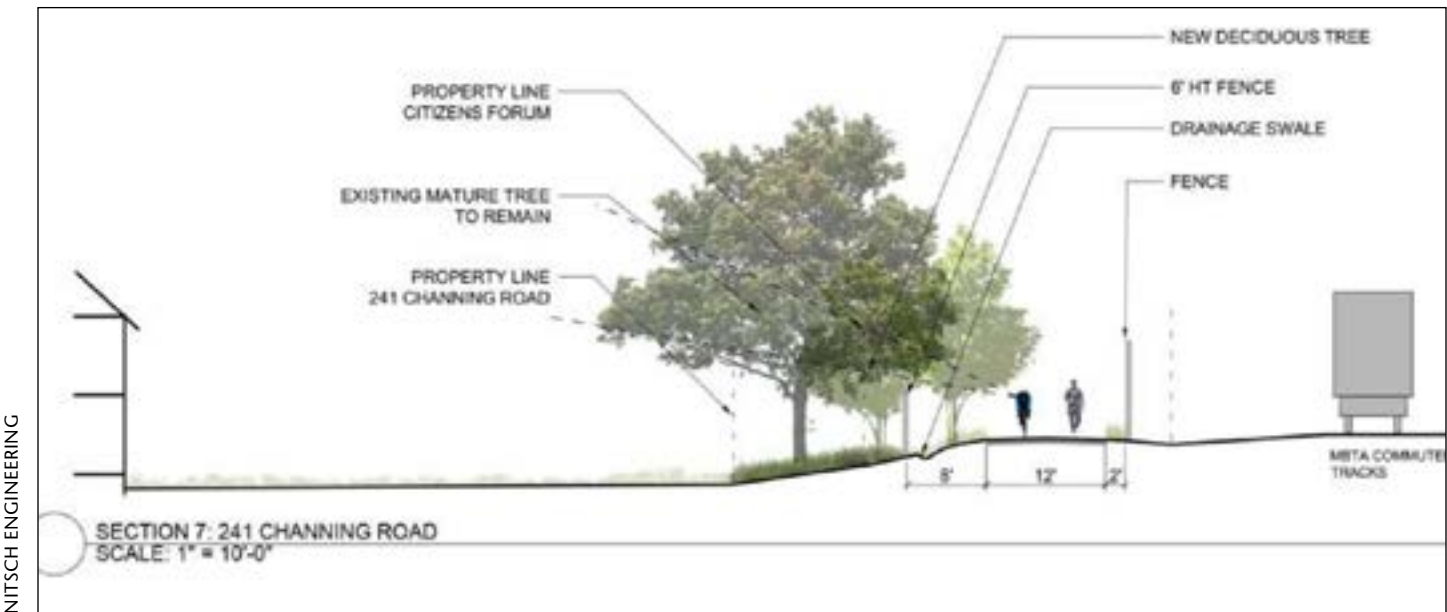
MBTA issues

Most of the Belmont path is located on MBTA property, in some cases within 13 feet of the

Fitchburg Line tracks. Thus every aspect of the project will require close collaboration with the MBTA, which has a reputation for bureaucracy and inefficiency, notwithstanding support for the path from top management.

As an example, securing permits to drill for soil samples on MBTA land at Alexander Avenue (necessary for design of the tunnel) took more than a year, apparently because of miscommunication between Keolis, the company that operates the commuter rail system under contract to the MBTA, and the MBTA property office, and perhaps partly due to the pandemic. In consideration of the expected complexity of working hand in glove with the MBTA, the Belmont path budget includes not only a customary 10% contingency for unanticipated events, but an additional 10% contingency added by MassDOT, plus an additional 5% to reflect the cost of close cooperation with the MBTA. These contingency funds amount to \$1,309,671 + \$1,309,671 + \$654,836, for a total of \$3,274,178. Thus the pre-contingency cost of the Belmont path is estimated to be \$13,096,713.

If the cost of the tunnel is subtracted, then the path cost drops to \$7,096,713, or \$5.4 million per mile. In contrast, the Waltham path budget, which does not explicitly break out contingency costs, appears to include a contingency of only 3.7%, based on the difference between



Nitsch Engineering illustration of Channing Road landscaping from the Community Path Project Committee’s November 2021 presentation on the Community Path’s 25% design phase.



Proposed path landscaping as seen from a Channing Road back yard.

the lowest base bid and the \$9.3 million appropriated.

Street crossings

The Waltham path can be easily reached at street crossings (the path intersects 10 streets), so little construction is needed for path access, while the Belmont path, which doesn't cross any streets between its Brighton Street and Clark Street termini, requires construction of extensive ramps to facilitate access from adjacent roads. In particular, a rotary will be constructed at the Alexander Avenue side of the tunnel, connecting the east-west main path to the north-south tunnel with spurs to Channing Road and Concord Avenue, and to a service road parallel to the tracks for MBTA vehicles.

There will also be connections from the path to both sides of Belmont Center. Specifically, there will be a ramp along the east side of the Chase Bank lot at 7 Channing to facilitate direct access to businesses on the east side of Leonard Street (where most of the shops and restaurants are located), as well as a new ramp next to the existing stairs at Belmont Center Station. All three of those locations, as well as the path segment leading up to the Clark Street Bridge, will require construction of substantial retaining walls due to steep terrain, another costly item mostly absent from the Waltham path budget.

Drainage

The Belmont path east of Belmont Center includes a drainage system comprising a swale (a gravel ditch to collect water) drained by an eight-inch pipe that will carry the water to Clay Pit Pond or Little Pond. More than 5,000 feet of subterranean pipe will be laid to complete this system, costing \$416,000 in pipe alone. The Waltham path, which does not traverse as many low-lying, flood-prone areas, includes much less extensive drainage infrastructure—just three small trailside drainage ponds, budgeted at a total cost of \$150,000.

Staging area limits

The Waltham path will be built along an abandoned railroad right of way, much of it surrounded by woods, with comparatively few residential abutters. Consequently, access for construction equipment and staging areas to lay out materials are generally unconstrained in Waltham. In contrast the Belmont path will be built mostly on MBTA property, with abutter backyards on the opposite side. The very limited access to the work site (as noted above, there are no crossing streets) will increase the cost of ferrying workers, materials and equipment to the work site.

Live railroad lines

The MBTA requires railroad flaggers for any work along live railroad lines. There are currently 34 Fitchburg Line trains per day, plus occasional freight trains. The Belmont budget includes \$327,418 for police details vs. \$65,000 in the Waltham budget.

Backyard fences

Because the Belmont path passes by 51 Channing Road backyards and three Pleasant Street backyards, virtually the entire corridor will be landscaped, and because the path runs along a train line an insurmountable eight-foot-tall, tight-mesh chain link fence will separate the tracks from the path, at a cost of \$346,000 for fencing materials. In contrast, much of the Waltham path passes through wooded areas that do not require elaborate landscaping, and no barrier against a live train line is needed.

Waltham and Belmont have similar costs

The available budgets for the Belmont and Waltham projects do not break out costs into exactly the same categories, and the line items in the budgets are challenging to translate into the categories described in the latter five categories above. However, it seems likely that these five factors account for at least another \$2 million in higher costs for the Belmont path, mostly attributable to retaining walls, as suggested by the \$765,000 budget for concrete and the \$272,000 budget for structural steel in the Belmont budget.

Those costs are not matched by corresponding line items in the Waltham budget.

If that calculation is approximately correct, then adjusting the cost of the Belmont path for an additional \$2 million of special items would bring its apples-to-apples cost vis-a-vis the Waltham path to about \$3.8 million per mile vs. \$3.4 million, which is a lot easier to understand.

Vincent Stanton, Jr., is a director of the Belmont Citizens Forum. He also serves on the Belmont Community Path Project Committee. The views expressed in this article are entirely his own.

Virginia "Ginny" Jordan

Virginia "Ginny" Sara Jordan died on March 28, 2022. Ginny was a woman of many accomplishments. She was a Phi Beta Kappa Radcliffe graduate with a master's in applied math, and a programmer and tech expert who held instrumental roles at EG&G, NEC, and Polaroid. She was a long-time Belmont Town Meeting member, and she rallied her neighbors to found the nonprofit Friends of the Benton Library, which now operates the facility and is supported entirely by donations. But here at the Belmont Citizens Forum, we remember Ginny because she served on the BCF Newsletter Committee.

Ginny was a painstaking, exacting editor. She spotted inconsistencies, added information from her vast knowledge of environmental topics, and sometimes suggested that entire articles be rewritten. She made more work for me, and she was always right.

We all miss Ginny tremendously.

Tax-deductible donations in Ginny's memory can be made to the Friends of the Benton Library. Checks with "Virginia S. Jordan Fund" on the memo line may be sent to The Friends of the Benton Library, P. O. Box 425, Belmont, MA 02478.

- Meg Muckenhoupt



Miyawaki Forest Boosts Biodiversity, Resilience



The author assisting in planting the Danehy Park Miyawaki forest.

By Maya Dutta

The first Miyawaki forest in the northeast United States was planted in Cambridge's Danehy Park last September. Miyawaki forests are dense, biodiverse pocket forests that aim to recreate the symbiotic relationships between diverse life forms that make a natural forest so resilient. By densely planting a diverse array of native species, Miyawaki forests encourage nutrient exchange between the plants and with fungal and microbial life in the soil, resulting in fast-growing forests with high survival rates.

Benefits of Miyawaki forests

The Miyawaki method offers a vision of not just planting trees to raise their sheer number, but to create full ecosystems in which different species work together to create more than the sum of their parts. The density, biodiversity, and focus on native species gives these pocket forests great impact.

Where one tree standing alone might be vulnerable to drought, storms, disease, or other extreme events, ecosystems prove resilient. Trees in forests take part in vast networks of roots and mycorrhizal fungi. They actually communicate with one another, sharing nutrients and water and even giving off signals of distress when threatened. Like most living creatures, these organisms are better and stronger together.

Miyawaki forests create ecosystems that are self-sustaining just a few years after planting. Benefits include increased biodiversity, support for pollinators and other insects and animals, carbon sequestration, air pollution filtering, greater soil water absorption, buffers against flooding and erosion, and cooling of the surrounding areas.

By creating pockets of biodiversity in our cities through Miyawaki forests and pollinator gardens, we can reap benefits from working with the living things around us. Because of their ability to alleviate excess heat and pollution, Miyawaki forests can help us build resilience

where we are most vulnerable in our cities, combating environmental injustice. They can be deployed along with structures like rain gardens, helping absorb excess water to lessen flooding and erosion. They can become part of our natural infrastructure, an important method in our toolbox as we look for creative solutions for our climate challenges.

Miyawaki forests can also work as tools of education and connection, helping people learn about and participate consciously in their local ecology. Studies have shown the numerous benefits of green spaces in urban settings, including improving physical and mental health, recovery rates for hospital patients, behavior and learning in young children, and community members' sense of well-being.

Many of us took refuge in nature as the Covid-19 pandemic forced us into lockdown, finding ourselves seeking solace in daily walks outside or involvement in gardening, hiking, or

bird-watching. Ecologist E. O. Wilson coined the term "biophilia" for the innate human instinct to connect with nature and other living beings, and it is this principle that suggests how pocket forests and other havens of biodiversity can benefit us not just ecologically, but also spiritually and socially.

Building a forest

For this forest, Bio4Climate worked in partnership with SUGi, a Swiss-based organization, and a forest maker in their network, Ethan Bryson (of Natural Urban Forests), who directed our implementation of the Miyawaki method. We worked extensively with Andrew Putnam, the superintendent of urban forestry with the city of Cambridge and his colleagues in the city's Department of Public Works. Our journey began with Ethan's

guidance on the Miyawaki method and its steps—site selection, soil survey, species selection, soil preparation, dense planting, and forest maintenance, which result in a forest that is self-sustaining after the first three years.

Andrew and his team helped narrow our site list and select a location, source plants from local nurseries, and acquire compost and biochar to prepare the soil before planting. More than 100 volunteers came out to plant the forest, and more will help steward the forest in its initial few years, periodically removing weeds that try to encroach the area, while watering is done via an automated irrigation system in the park.

Our wonderful teams of volunteers planted a multitude of species, creating what will develop into four vertical layers of forest: shrub, tree, mid-canopy and canopy levels. From the first central plantings of the sisters chokecherry and elderberry, we added maple, dogwood, sumac, white pine, hazelnut, witch hazel, rose, and others. They will flower and bloom at different times, change color and drop leaves, huddle underground under a blanket of winter snow.

Collaboration and deep connection are two elements that make Miyawaki forests so strong, essential to the way we can go on to both survive and even thrive in a world that is still being degraded. The forest is a testament to the vision and practice of restoration, making tangible so much of what I have learned in lectures, classes, conferences and my work with Bio4Climate. Ecological restoration is practical, and it is a joyful and fulfilling process that can bring communities closer together.

In planting these trees and shrubs, we created a community of life that will last much longer than any of us individually. We reinstated natural ecology on top of a city landfill, and witnessed firsthand the way eco-restoration can heal, not just biologically and chemically, but spiritually and communally.

From its inception to its ongoing growth and emerging place within its park and community, the Danehy Park Miyawaki forest project has been the product of many people's efforts. By taking part, all of us have assumed a new role in this ecosystem, to act as stewards and enlarge



Overhead view of the Danehy Park Miyawaki forest.

ETHAN BRYSON

DINO KUZNIK



The completed Miyawaki forest planting at Dennehy park.

the space for biodiversity. Our cities are a part of nature, and they can be places where nature is integrated rather than disrupted. In Cambridge, engaged citizens and a forward-looking city government are intent on building climate resilience through urban forestry.

Miyawaki forests suit urban Boston

Miyawaki forests can be created in areas as small as 1,000 square feet, about the size of six parking spaces. That size makes them particularly well suited to urban areas like Boston, where space is limited and while we have plenty of heat, pollution, storms, and flooding to worry about. Imagine how many yards, parks, school campuses, town squares, or even corners of parking lots have that much space to spare. Embracing the Miyawaki method could help us grow our resilience pocket by pocket across the greater Boston area, from Cambridge to Quincy, Somerville to Dorchester, Belmont to Eastie.

It has been moving to see the enthusiasm for this project from individuals and organizations

in the Boston area and beyond. In addition to stewarding the Danehy Park Miyawaki forest in the coming years, we are imagining what comes next for the city of Cambridge, surrounding communities in metro-Boston, and cities and towns across the country and world. This forest, the first in the entire northeast United States, will certainly not be the last.

As we plant in our own communities, we also connect to a global movement of rewilding, and we can exchange lessons with many others who have worked on Miyawaki forest projects from Japan, India, South Africa, the UK, the Netherlands, and beyond.

To find out more about the Danehy Park Miyawaki forest, see photos and related resources, and get involved, check out Biodiversity for a Livable Climate's Miyawaki Forest page.

Maya Dutta is the assistant director of regenerative projects at Biodiversity for a Livable Climate. She served as project manager for this Miyawaki Forest.

How Can We Control Urban Rats?

By Fred Bouchard

Plague-ridden Saxony hired the legendary Pied Piper to toot rats out of Hamelin. Other age-old tactics—trapping, shooting, pan-banging—raise fresh collateral issues in densely populated areas, in addition to mess and noise. Chicago in recent years resorted to sniper stealth by siccing 1,000 neutered feral cats on its record rat population.

Passive approaches to rat control yield slow results, as city-centric man confronts *Rattus norvegicus*, the world's most populous and prolific urban mammal. Rat fertility is gaining ground as shorter, warmer winters encourage them to squeeze out an extra litter or three a year. Exterminators concur that the East Coast has seen a recent surge in rat numbers.

Humane solutions to excluding vermin from urban human habitations include three basic steps: seal off porous entry points, store food securely, and dispose of trash effectively. But people are generally averse to investing in expensive fortifications and policing their estates, and they are cavalier about jettisoning leftovers. Even pilfer-proof trash bins, an obvious if expensive deterrent, require maintenance and vigilance.

Let's review practical solutions that might work best for suburban Belmont.

Extermination Option #1: Poison

Once widespread, "pest management techniques" of poisoning have come under fire, as today rodenticides are widely condemned by humanitarians and environmentalists. These include anticoagulant (blood-thinning) rodenticide, and second-generation anticoagulant rodenticides (SGARs). (See "," BCF *Newsletter*, November 2021.)

Unwanted, indeed alarming, lethal side effects are the collateral killing off of small mammals ingesting SGARs, including skunks, raccoons, squirrels, and rabbits.

Moreover, second-hand kills extend up the food chain when slow-poisoned rats are eaten by foxes, coyotes, and even free-range house cats. Killing off mammal and avian rodent hunters can only result in more rodents.

Extermination Option #2: Electrocution

This winter, Somerville followed Portland, Maine, as the second city in the nation to adopt electrocution devices for rat control, as reported in the Boston Globe. Fifty "Smart Boxes" were deployed in high-incidence areas like Davis Square, each with a capacity to zap and store up to five rats, then report to command central.

This method has the advantage that the boxes collect data (pinpointing locations, numbers, effectiveness) and they cause little environmental harm. However, single-rat battery-operated electrocution boxes, available online for \$60 to \$70, may prove no more effective than old-fashioned \$2 wooden snap-traps or glue traps. Pros and cons are weighed at www.attic-rat.com/electrocutiontraps.

Extermination Option #3: Asphyxiation

Gross chemical deterrents like mothballs and ammonia are highly polluting and toxic to all biota. However, dry ice, inserted in pellet form into rat burrows, releases carbon dioxide (CO₂) and asphyxiates them as it sublimates. Commonly used in laboratories to euthanize rodents, CO₂ is considered less inhumane than poisoning.

Boston has used this inexpensive alternative since 2016, according to the Boston Globe, with much success in confined spaces like burrows, but not elsewhere, where traps and poison are mainstay controls. This alternative might work in garden and yard areas near foundations.

Mitigation Option: Contraception

Humans now can turn to biochemistry for rodent birth control. Nontoxic botanical solutions, like ContraPest and Contraceptol, render rats (and presumably other mammals) infertile.

ContraPest works with the nontoxic chemical 4-vinylcyclohexene diepoxide (VCD) to destroy female rats' ovarian follicles in their immature single-egg form, accelerating what is essentially a natural process in all female mammals. VCD also temporarily impairs sperm production in male rats. The chemicals are dispensed from rodent-only plastic feeding stations that are also

nonpolluting. Vendors claim a success rate of 95% effectiveness versus 10% with “barbaric” snap and glue traps.

Homeowners may purchase such appetizingly formulated anti-fertility chemicals to mix with pet foods to bait their own traps. Since rats produce several litters a year, with six or more pups per litter, the reduction of a potentially exponential population growth should soon, or at least eventually, become apparent.

Caveats and constructive instructions

Belmont’s town website discourages homeowners from using pesticides casually: “Spreading rat poison is harmful for wildlife like hawks, raccoons, foxes, etc. Please be cautious if you choose to use this method of rodent deterrent independently of pest control professionals. Use judiciously, and only if absolutely necessary.”

Belmont Health Department’s Director Wesley Chin elaborated on that statement, then responded briefly to newer proposed methods.

Poison: We discourage indiscriminate spreading of poison throughout properties. Please, don’t just toss pellets around. Better to contract with a professional control operator; they know how to keep other animals and kids from harm’s way. Best to coordinate operations

with neighbors in adjacent properties, rather than undertake patchwork efforts.

Dry ice: This method is more labor intensive and costly; you have to identify entry and exit holes of burrows, block them off with dirt, pack them with dry ice, and monitor them constantly.

Zap boxes: Electrocution boxes have potential, but we don’t have much experience with them. Somerville’s trial period ends in July. You have to check the box and dispose of the carcass as with primitive snap and glue traps.

Contraception: Birth control as a preventive measure is hit or miss, also labor intensive. Burrows may or may not be active. You may not see immediate results. Somerville tried it and abandoned it as ineffective.

Chin admits: “We’re not trained pest control guys; we learn this info on the fly from the pros.” But he closes by echoing our opening ounce-of-prevention gambit. “Your best option, really? Get rid of all waste and garbage responsibly. Keep your property clean, police it for vulnerable spots. Rats feast on compost from cracked leaky bins and garden clippings. Bird feeder overflow is like candy to them. Better use preventive measures!”

Fred Bouchard is a 30-year Belmont resident and lifelong amateur naturalist.



HAL SHUBIN

Thank you to our contributors

WRITERS
Marty Bitner • James Booth • Fred Bouchard • Maya Dutta • Rachel Heller • Radha Iyengar • Anne-Marie Lambert • Jeffrey North • Tomi Olson • Vincent Stanton, Jr.

PHOTOS/GRAPHICS
Ethan Bryson • John Goodman • Dino Kuznik • Anne-Marie Lambert • Jeanne Mooney • Jeffrey North • Hal Shubin •

COPY EDITORS
Sue Bass • Fred Bouchard • Evanthia Malliris • Vincent Stanton, Jr

NEWSLETTER COMMITTEE
Sue Bass • Fred Bouchard • Virginia Jordan • Evanthia Malliris • Vincent Stanton, Jr.

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Belmont Farmers’ Market Opens June 2



The Belmont Farmers’ Market 17th season opens on Thursday, June 2, and will be operating on Thursdays from 2 to 6:30 PM in the Belmont Center municipal parking lot. Opening day will feature information about food assistance programs available statewide and through programs offered in Belmont and at the market. Find out about SNAP (formerly food stamps), HIP (free produce for SNAP recipients), and the Farmers Market Nutrition Program (free produce for seniors and WIC families). The market doubles SNAP funds; note that the number

of SNAP households in Belmont increased by almost 50% between 2019 and 2021. You can donate to support this program at BelmontFarmersMarket.org/food-assistance.

Seeking to connect with the community? The market has two-hour volunteer shifts from noon to 7 PM on market day and welcomes high school students. Get involved by helping with market set-up, talking to shoppers and answering questions, taking photos, and posting on social media. There are also opportunities to volunteer behind the scenes, or at the community garden plot in the Victory Gardens at Rock Meadow, run by the Belmont Food Cooperative. You’ll learn about how to create a garden, about food from different cultures, and how to share that knowledge with the community. Get details at BelmontFarmersMarket.org/volunteer.

Belmont Citizens Forum
P.O. Box 609
Belmont MA 02478

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A photograph showing three people in a forest setting. In the foreground, a person wearing a blue jacket and a dark beanie is planting a small evergreen tree into a hole in the ground. To their left, another person in a dark blue sweatshirt and dark pants is watching. To the right, a third person in a dark blue jacket and light-colored pants is holding a shovel. The ground is covered with brown pine needles and some green grass. The background shows more trees and a path.

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