How Belmont Can Switch to Electric Vehicles

By Roger Wrubel and Brian Kopperl

If Belmont is to reach its goal of reducing greenhouse gas emissions to 80% of 2007 levels by 2050, all sectors of the community must do their part. The Belmont Energy Committee has proposed an “EV First” policy requiring the town to consider electric vehicles (EVs) for all lightweight vehicle purchases. The policy allows for exemption requests by departments if EVs do not meet their needs or are too expensive.

We collected data on the concerns of town staff in transitioning to EVs. We analyzed each of these concerns: lack of EV charging infrastructure, limited range, unsuitability of EVs for emergency use, and cost. We found that none prevent the town from initiating an EV First policy now.

Belmont is serious about climate policies

For several years Belmont Town Meeting has been getting serious about our climate policies. In 2009, Town Meeting adopted Belmont’s Climate Action Plan, which calls for an 80% reduction in the town’s carbon emissions by 2050 (compared to 2007). In 2019, the Belmont Roadmap was adopted at Town Meeting and laid out a plan to reach that goal. For example, the roadmap asks for 50% of all new car purchases made in Belmont by 2030 to be EVs. The town can now set a great example by adopting a transition policy to advance the conversion of Belmont’s vehicle fleet conversion to EVs.

Attempts to carry out these policies started in 2017 when the town used a grant to purchase two Nissan Leaf EVs for the facilities department and the health department. Both EVs are still in service. Belmont Light acquired a Chevy Bolt EV the same year, which was sold back to the manufacturer in 2022 after five years of service. The town has now started to purchase EVs again with the addition of a Ford Mach-E for the water department, a Ford Transit EV van on order for the facilities department, and two Ford Mach-Es for Belmont Light.

In July 2022, the Energy Committee submitted a proposed EV Transition Policy.
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 Committee
Meg Muckenhoupt, Executive Editor
Jeffrey North, Managing Editor
Sue Bass, Fred Bouchard, Evanthia Malliris, Vincent Stanton, Jr.

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

© 2022 Belmont Citizens Forum. All rights reserved.

to the Select Board. The policy calls for each town department that plans to buy a lightweight vehicle (under 8,500 lbs.) to prioritize buying battery EVs first, followed by plug-in hybrids, then standard non-plug-in hybrids, and finally gas engines (that is, internal combustion engines). The proposed policy would exempt heavy vehicles (over 8,500 pounds), such as ambulances, garbage trucks, bucket trucks, utility trucks, and heavy-duty pickup trucks because EV versions are not readily available. Critically, if a department decides that an EV or plug-in hybrid will not serve its needs or is too expensive, the policy allows for an exemption to be granted by the town administrator.

At the Select Board’s urging, Energy Committee members met with the Department of Public Works (DPW), Long Term Capital Budget Committee, facilities department, and police department to hear their concerns about transitioning future town vehicles to electric. The town administrator also met with various departments that have vehicles and reported their concerns to the Energy Committee.

While the town staff is generally supportive of the EV transition, they have reservations about how quickly it can be implemented in a way that would not hamper town services. The main concerns expressed by town staff are summarized below, together with our analysis.

Charging infrastructure

Town staff feel there is insufficient charging infrastructure in Belmont to support the broad adoption of EVs. Today, several Level 2 chargers around town are open to the public as well as town vehicles (i.e., the Claflin lot with four chargers and the water department lot with two chargers). The light department also has a Level 2 charger limited to their vehicles.

We recommend that the town choose several additional charging locations, such as the DPW lot, Town Hall, fire stations, and the police department, and install Level 2 chargers as soon as possible to alleviate this concern. Level 2 chargers and associated electrical wiring upgrades are relatively inexpensive; roughly $1,000 to $3,000 per installation depending on the choice of equipment and the extent of electrical work required. The state’s MassEVIP
Workplace & Fleet Charging Incentives program provides 60% rebates for towns that install Level 2 chargers.

Further, charging stations can be locked if the town prefers to limit their use to town vehicles. Vehicles plugged in overnight would be fully charged by morning. Since the transition to EVs will be gradual and coincide with internal combustion engine vehicles being replaced over time as they age out, the demand for charging infrastructure will likewise increase gradually, and the town staff will learn about additional charging needs and best locations through experience.

Range

Town staff expressed concern that EVs do not have sufficient range to handle all municipal functions, especially in winter, and that recharging will interrupt their work. We found that EVs have more than sufficient range to accomplish town functions.

How many miles does a typical town vehicle travel in a day? Craig Spinale, Belmont Light’s general manager, found that light department vehicles driven by staff all day (7.5 hours/shift) average 61 miles per day, well below the 200-plus mile range of EVs. This is not surprising considering that Belmont only spans 4.7 square miles.

Electric school bus, Beverly, MA.
Even in winter, the range of modern EVs when fully charged is at least 160 to 180 miles.

**Emergency use**

Staff worry that EVs are not suitable for robust emergency use. For example, pickup trucks need to plow continuously for hours during snowstorms. For these classes of vehicles, it is relatively quick to add fuel to a gas tank, while charging EVs takes more time.

EV pickup trucks that are now available on the market (e.g., the Ford F150 Lightning, Rivian, and the soon available Chevy Silverado) are all half-ton trucks. Trucks used by the town for snow plowing are usually larger, one-ton pickups. While EV pickups may not be appropriate for snow plowing today, larger EV pickups will become available in the not-so-distant future. At that point, the town could purchase one, see how it performs throughout winter, and go from there.

The second concern around emergency use is an EV having a depleted battery when an emergency arises, such as a police cruiser responding to a call. Again, the issue is the slow rate of charging compared to internal combustion or hybrid vehicles. As is the case now, all town vehicles must be kept fueled to be available when needed, regardless of whether they are an ICE, hybrid, or EV.

This challenge can be solved by the town investing in one or more fast, so-called Level 3 chargers capable of charging EVs to 80% of capacity in 15 to 40 minutes, depending on the charge level when the vehicle is returned to the station. A Level 3 charger, available for public and town vehicles, is on order by Belmont Light for the Claflin Street parking lot.

**Expense**

Right now, the cost to purchase an EV is likely less compared to buying an equivalent gas-powered or non-plug-in hybrid vehicle. The town also receives a $7,500 rebate for each EV purchased and $5,000 for each plug-in hybrid through the state MassEVIP incentive program. With the state’s MassEVIP rebate available to Belmont, the cost differences between

### List of selected BEV and PHEV available under state purchasing contract (VEH110), April 2022

<table>
<thead>
<tr>
<th>Make/Model</th>
<th>Type</th>
<th>MPGe</th>
<th>Base Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ford Escape</td>
<td>PHEV</td>
<td>40</td>
<td>$29,785</td>
</tr>
<tr>
<td>Ford Mustang Mach-E</td>
<td>BEV</td>
<td>93</td>
<td>$40,932</td>
</tr>
<tr>
<td>Ford F-150 Lightning</td>
<td>BEV</td>
<td>N/A</td>
<td>$37,795</td>
</tr>
<tr>
<td>Ford E-Transit</td>
<td>BEV</td>
<td>NA</td>
<td>$45,459</td>
</tr>
<tr>
<td>Toyota Prius Prime</td>
<td>PHEV</td>
<td>54</td>
<td>$25,422</td>
</tr>
<tr>
<td>Toyota Rav4 Prime</td>
<td>PHEV</td>
<td>38</td>
<td>$41,652</td>
</tr>
<tr>
<td>Honda Clarity</td>
<td>PHEV</td>
<td>67</td>
<td>$33,043</td>
</tr>
<tr>
<td>Honda Insight</td>
<td>PHEV</td>
<td>52</td>
<td>$26,584</td>
</tr>
<tr>
<td>Honda CR-V Hybrid</td>
<td>PHEV</td>
<td>38</td>
<td>$31,560</td>
</tr>
<tr>
<td>Nissan Leaf</td>
<td>BEV</td>
<td>111</td>
<td>$22,756</td>
</tr>
<tr>
<td>Chevrolet Bolt EV</td>
<td>BEV</td>
<td>120</td>
<td>$30,122</td>
</tr>
<tr>
<td>Chevrolet Bolt EUV</td>
<td>BEV</td>
<td>115</td>
<td>$34,722</td>
</tr>
<tr>
<td>Hyundai Ioniq</td>
<td>PHEV</td>
<td>119</td>
<td>$30,802</td>
</tr>
<tr>
<td>Hyundai Ioniq</td>
<td>BEV</td>
<td>133</td>
<td>$34,202</td>
</tr>
<tr>
<td>Hyundai Kona</td>
<td>BEV</td>
<td>120</td>
<td>$43,612</td>
</tr>
<tr>
<td>Hyundai Santa Fe</td>
<td>PHEV</td>
<td>33</td>
<td>$46,442</td>
</tr>
<tr>
<td>Hyundai Tucson</td>
<td>PHEV</td>
<td>35</td>
<td>$43,622</td>
</tr>
<tr>
<td>Pacifica</td>
<td>PHEV</td>
<td>30</td>
<td>$42,052</td>
</tr>
</tbody>
</table>

MPGe is “Miles Per Gallon of Gasoline-equivalent,” or how many miles the vehicle can go using “a quantity of fuel with the same energy content as a gallon of gasoline.” See [www.epa.gov/fueleconomy/text-version-electric-vehicle-label](http://www.epa.gov/fueleconomy/text-version-electric-vehicle-label) for more information.
purchasing an EV or plug-in hybrid should be immaterial.

The cost of fueling and maintaining EVs over the life of the vehicles is significantly less than gas-powered vehicles, resulting in additional savings. For example, an EV requires about 75 kilowatt hours (kWh) to travel 300 miles. At the Belmont Light municipal rate of $0.14 per kWh, the cost to charge an EV would be $10.50.

A traditional gas car getting 26 miles per gallon would need 11.5 gallons of gasoline to travel the same distance. At $3.25 per gallon, the comparative fuel cost to drive 300 miles would be $37, more than three times as much as the EV. Likewise, maintenance costs have proven surprisingly low, as we know firsthand.

For the EVs we, the authors, have each owned over the last five years, we have had to rotate the tires, change the cabin air filter, fill up the window washer fluid, replace the tires when needed, and not much else. There are only about 20 moving parts in an EV motor compared to about 2,000 in an internal combustion engine, which means the town can expect its EVs will last longer and will need to be replaced less frequently than gas engines.

A detailed 2021 study by the Argonne National Laboratory found that fully electric vehicles are 40% less expensive to maintain compared to gas-powered vehicles. By comparison, there was no difference in maintenance costs between internal combustion engines and electric hybrids since the hybrids have gasoline engines.

The cost of fueling and maintaining EVs over the life of the vehicles is significantly less than gas-powered vehicles.

The lithium-ion batteries that today power EVs are warrantied for at least eight years or 100,000 miles. Most manufacturers will replace batteries.
under warranty if they drop below 70% of EPA-rated range.

By following best practices, such as not fully charging or discharging and using direct current fast chargers sparingly, EV batteries are expected to last the lifetime of the vehicle with only modest range reduction.

Town vehicles taken home each night

Finally, seven vehicles are authorized to be driven home by town employees at the end of each workday. One staff member we interviewed believed that, because they lived 25 miles from Belmont, they could not rely on an EV to get back to work during an emergency. This concern is addressed by the fact that EVs have a typical range of 200 miles. However, we recommend the town install a 240 volt outlet in the garage or beside the driveway of these employees’ houses so they can charge their EVs quickly right when they get home, eliminating range concerns. The cost would be about $600 per electrical installation and $329 for a Level 2 charging cable. In addition, these seven town employees could request reimbursement for electricity consumed at home to charge a town-owned EV.

Where we stand

In our judgment, none of the concerns expressed by town staff should prevent a steady transition of town vehicles to EVs. In all cases, department heads can request exemptions from the proposed EV First policy if no EV or plug-in hybrid meets their needs or budget.

The town budget process for FY24 is already beginning. Soon, departments will be submitting their capital requests to the Comprehensive Capital Budget Committee. As of this writing, there is no EV transition policy in place for Belmont. A policy requiring EVs to be considered first for all lightweight vehicle purchases will provide a clear process for department heads to make decisions while supporting Belmont’s climate goals.

We encourage the Select Board and the town administration to join in adopting an “EV First” transition policy now and help set the example to get Belmont on the road to cleaner transportation. As town staff become more familiar with the advantages of EVs, we believe they will become enthusiastic advocates of making the switch.

For more information, see the Belmont’s Energy Committee’s website, belmontclimate-action.org/resources.

Roger Wrubel is a Town Meeting member and Energy Committee member, and Brian Kopperl is an Energy Committee member.

Your Words Could Be In Print

The Belmont Citizens Forum is seeking volunteer writers, editors, photographers and artists to contribute to our bimonthly Newsletter.

We welcome volunteers of all levels of experience from high school students to retirees.

For more information, please contact bcfprogramdirector@gmail.com
Electric Buses Are Coming to Belmont

What Our Town Needs to Get Ready

By Brian Kopperl and Roger Wrubel

With the right conditions, electric school buses (EV) can replace the familiar diesel school bus at a cost that is both financially and environmentally attractive. EV buses are quieter than diesel and healthier, too, and all the major bus manufacturers, from Thomas and Bluebird to Lion, now make them. Other Massachusetts towns like Beverly, Dracut, and Acton already have their electric fleets in operation or on order; Belmont should too.

The Energy Committee has encouraged Belmont schools to start a phased transition by including three EV buses (out of 10 expected total buses) in its year-end 2022 bus service procurement. To convince the schools to take that step, however, the daily contract price charged by EV buses has to be directly comparable to diesel buses. So the short answer is that EV buses can compete, not just on student health and climate protection, but also on price.

EV buses have a higher purchase price than diesel buses, plus upfront battery chargers and grid connection costs. However, lower long-term maintenance and operating costs offset higher purchase prices. The bottom line is that electric buses’ all-in daily contracted cost is directly competitive with diesel buses if those upfront EV costs are spread out over a 10-year service term. The other key ingredient for EV bus adoption is having dedicated, in-town parking where the vendor can install a charging station. In-town parking could be a challenge, but the Energy Committee believes the town can find a solution that allows for in-town parking for the proposed three EV buses. An additional benefit is that EV buses can serve as a battery resource sending electricity back to the Belmont Light grid during the summer peak hours.

The first item of business, however, is to authorize the schools to enter into 10-year EV bus contracts to amortize those upfront costs. Under current state procurement law (MGL 30B, section 12), all municipal contracts are limited to a maximum three-year term unless Town Meeting approves an extension. This fall’s Town Meeting is expected to vote on a warrant article that would authorize a term extension for future EV bus contracts. We encourage Town Meeting members to approve longer EV bus contract terms as part of Belmont’s commitment to meeting our climate action goals that already have been approved. Not approving and supporting the change will keep us stuck on fossil fuels and will be detrimental to our health and the environment (see August/September 2021 BCF Newsletter story, “Help Belmont Students Breathe Easier.” Electric buses are part of the future for Belmont and surrounding towns, and we will all be better off for it.

Roger Wrubel is a Town Meeting and Energy Committee member. Brian Kopperl is an Energy Committee member.
Belmont Goes Electric! Will You?

By Claire Hlotyak

I had the chance to attend the Belmont Goes Electric Home & Garden Event in September. Presented by Belmont Light, the Belmont Energy Committee, and Sustainable Belmont, this event showcased options including electric vehicles, heat pump systems, and native plant gardens, and the Stihl company presented battery-operated yard equipment.

I spoke with a few members of Healthy Lawns Belmont about the importance of biodiversity in our lawns and gardens. One of the main issues with lawns is that they are a monoculture, meaning there is only one type of plant in a particular area. Healthy Lawns Belmont seeks to create beautiful biodiverse alternatives for our gardens and lawns. If you are interested in learning more about this or getting involved, visit SustainableBelmont.net.

Ben Thivierge, an energy specialist and representative from Belmont Light, told me that the utility’s current goals and initiatives include staying at the forefront of electrification and maintaining quality rebates and incentives in the state.

I talked with a Quirk Chevrolet employee about their Bolt EV vehicles. They can go up to 260 miles on a full charge, which costs 6 to 10 dollars. With these cars, the newer the model, the higher the mileage.

I was very excited to see how much emphasis Belmont places on clean energy and climate. I hope that as a community, we can keep up this momentum and continue to strive for a greener and more eco-friendly Belmont!

Claire Hlotyak is a senior at Belmont High School.
MBTA Zoning May Change Belmont

By David Chase

Belmont is an MBTA community. A new state law (Section 3A of MGL c. 40A) requires MBTA communities to have at least one zoning district of “reasonable size” and a minimum gross density of at least 15 units per acre within half a mile of commuter rail, subway, ferry, or bus station. The law specifies various formulas based on population and area that attempt to quantify “reasonable.” The zoning district must not have any restrictions that would make it unsuitable for families with children.

Belmont must have an Action Plan complete by January 31, 2023, and submit a District Compliance Application by December 31, 2024. An MBTA community action plan must provide information about current zoning, past planning for multifamily housing, and potential locations for a multifamily zoning district. The action plan also will require Belmont to establish a timeline for creating a compliant multifamily zoning district. Some parts of Belmont are already built this densely, but almost all preceded our current, less-dense zoning code.

This law was passed because Massachusetts, especially eastern Massachusetts, is in a housing crisis. Demand has grown far faster than supply, resulting in high and still-increasing rents and housing prices. High rents burden low- and middle-income families, and high prices cause would-be homeowners to pursue drive-till-you-qualify solutions to ever more distant exurbs, which are bad for the families, bad for traffic, and bad for Massachusetts. This law is supposed to encourage the creation of more housing units concentrated near transit access to reduce the traffic impact of the added housing.

Belmont’s case

MBTA communities comprise four categories: Rapid Transit, Commuter Rail, Adjacent Community, and Adjacent Small Town. With two commuter rail stops, Belmont falls into the Commuter Rail category.

The actual requirements are adjusted based on the amount of developable land in Belmont and the number of housing units in 2020. The main result is that Belmont’s transit-zoned areas must include at least 1,648 units (equal to 15% of Belmont’s current housing units, as the law specifies), have at least 15 units per acre, and contain at least 28 acres. Smaller areas require more units per acre, such that the total number of zoned units is at least 1,648.

Belmont may split the new zoning into two districts, where one must include at least 50% of the housing capacity and be located within a half mile of a commuter rail station. If Belmont seeks to minimize the increased density, the combination of required units and required

Belmont’s existing dense housing along Beech Street between Trapelo Road and Harris Street, totaling 14.4 units per acre. Outlined area as shown on MassMapper, maps.massgis.digital.mass.gov/MassMapper/MassMapper.html
Density results in a size of 110 acres (110 acres x 15 units per acre = 1,650 units).

“Gross density” is computed by counting the permitted units on the existing lots within the district, and dividing that by the area of the entire zoning district including everything within it (for example, streets, parks, and churches). As an example, if the “district” is the lots along Beech Street between the businesses on Trapelo Road and Harris Street, then its area includes all the lots, all of the included sections of Beech Street, Wilson Avenue, Irving Street, Creeley Road, and half of Harris Street, or 5.3 acres, and by my count, 82 units, or a gross density of 15.5 units per acre.

However, almost none of these units could be built new on these lots with Belmont’s current General Residence (GR) zoning. The minimum GR lot size for a single-family home is 5,000 square feet, for a two-family, 7,000, and for a 3-family, 10,500. Most of these lots are under 5,000 square feet; most of these lots have two units, some three; and not a single lot is 7,000 square feet.

Belmont is filled with structures on lots that do not conform to their current zoning. Using Google Maps “Measure distance” combined with tax parcel data from MassMapper, shows that we already have blocks of some streets that are that dense—that is, all these structures existed before the current zoning rules and are now grandfathered, and they are densely developed. The east side of Davis Road from Trapelo to Irving (excluding the businesses on the end, as the current zoning already does), is dense.

Beech Street, from Trapelo Road to Harris Street, includes 39 lots but has 2 more units than is needed to reach 15 units per acre.

These cases are cherry-picked and are some of the densest streets in Belmont. Still, they provide an example of the required density and suggest that if the new transit district is located around Waverley Station, it will minimize the number of new housing units added to Belmont. There are other considerations, but this is one plausible choice. If a transit district is located near Belmont Center, more units will be added, but again, the actual lots are much denser than the current zoning requires; instead of the required 9,000 square-foot lot, many are 6,000 square feet or smaller (though, unlike the Waverley area, few are two family).

This process of computing area and counting actual units is how a candidate district and set of zoning rules will be evaluated; given the lots in that district, list all the dimensions along which the town wishes to regulate development (for example, lot size and lot frontage), apply the rules to each lot to determine how many units the proposed regulations will allow on that lot, and consider the total across all lots; it should be 1,648, or larger. The actual mix of multifamily units can vary; if two-family structures are allowed on very small lots, then the threshold for three-family structures can be higher, and vice versa.
One side effect of this process is that under the new transit district zoning, many more (most?) of the existing housing will now comply with new frontage and area zoning requirements and may become easier to replace, renovate, or expand without seeking a special permit. A possible goal for the new zoning rules is to bring the largest possible number of existing structures into compliance while also achieving the required gross density.

To comply with the law, a transit zoning district must allow new construction of at least two-family homes on lots about like these, and on larger lots, three and perhaps four-family homes. State compliance staff will take GIS data for the chosen district(s) including lot-by-lot dimensional information, and count, for each lot, the number of units the new zoning will permit, then calculate the totals for the district.

The law’s effect

What this means in practice is that some areas of town will be chosen for denser zoning. The number of units that could be added, if it were all (re)built to the zoned capacity, is equal to 1,648 minus what is already built in that area. It doesn’t mean the town will build 1,648 new units, and of course, the units are not added until lots in the rezoned area are built up to their zoned capacity. If all 110 acres are like the Beech Street district, then there would be no units added. The main effect would be to make it more likely that existing construction conforms to Belmont’s zoning bylaws; this is true wherever we locate the district.

One big problem for Belmont in choosing this zoning district is that the town has sound reasons to prefer nonresidential development to residential development (see “Belmont is Sitting on a Fiscal Cliff,” BCF Newsletter, September/October 2022). Unfortunately, this law clearly requires zoning that should allow more residential development. Belmont has an incentive to choose the densest qualifying neighborhoods for the transit district so as to permit the smallest number of new units.

There are other concerns, of course. Our housing shortage makes rents and home purchases unaffordable for many. Increasing the number of T users would help the T’s fiscal situation and help justify continued service and perhaps justify improved service. If newcomers to the Boston area are instead forced to drive until they find affordable housing, there’s a good chance that they’ll end up adding to local traffic, either cutting through Belmont, or backing up nearby traffic in ways that will affect us.

Choosing districts will be politically tricky. Increasing density tends to be unpopular in Belmont, and housing development tends to be unpleasant for neighbors. The law intends to add housing, but the state’s lack of funding for education discourages it.

David Chase is a director of the Belmont Citizens Forum.
Have You Read the Collins Center Report?

By Jeffrey North

Belmont is a relatively affluent community. Massachusetts Department of Revenue figures in FY2022 show that Belmont’s income per capita was $98,942. This figure is very close to the average income for residents of six comparable towns and significantly higher than the Massachusetts per capita income of $46,062. Yet Belmont is the 10th most expensive place in Massachusetts to own a home, while per-capita incomes ranked only 22nd in the state.

The average Belmont homeowner can expect to pay $15,568 annually in property taxes, or approximately 15.73% of Belmont’s per-capita income. Among 12 comparable towns, Belmont has the second-highest real estate tax bills after Brookline and more than double the tax rate (as a percentage of income) of Weston, Wellesley, Sherborn, and Dover.

The town of Belmont had commissioned the Edwards J. Collins, Jr. Center for Public Management (the Collins Center) to examine its financial organizational structure, and in June, received the results of that study, a compelling report titled Financial Organization Structure Review, Town of Belmont, Massachusetts.

It is a must-read for Town Meeting members, elected and appointed officials, and anyone from the “roster of well-qualified officials, employees, and interested citizens who are dedicated to the financial well-being of the town,” as the Collins Report says.

The Collins Center project team examined the roles and responsibilities of elected and appointed finance staff, boards, and committees, and their relationships established by Belmont bylaws, job descriptions, and past practices. The project team worked with town staff to collect all relevant data and documents, and the team conducted interviews with the staff and elected and appointed officials and developed a set of comparable peer municipalities using the criteria described in this report. Finally, the project team compared the town’s practices with generally accepted best practices published by professional organizations such as the Massachusetts Municipal Association and the Government Finance Officers Association.

The report discusses the significant financial challenges that Belmont is facing. These challenges include a structural deficit and an organizational structure that impedes the ability of the town to address these challenges.

These challenges include a structural deficit and an organizational structure that impedes the ability of the town to address these challenges.

The project team wrote, “The Town cannot continue to manage its finances in such a way if it hopes to avoid, in the near future, a ‘fiscal cliff,’ the point when revenues can no longer cover operating expenses. Nevertheless, the town has a chance to reduce the negative impacts by implementing the report’s recommendations.

What Do You Think?

Do you have thoughts about Belmont’s fiscal status, environmental challenges, or other topics that affect our quality of life?

The Belmont Citizens Forum welcomes letters to the editor on topics covered in the Newsletter and on other issues relevant to Belmont’s future.

Please send your submissions to editor@BelmontCitizensForum.org. The deadline for the next issue (January 2023) is December 15.
The Collins Center project team arrived at a host of findings and recommendations for financial structure and financial operations. They include:

- Align annual budget process with the established best practices outlined by the Massachusetts Department of Revenue Division of Local Services.
- Build a financial management team with an appointed finance director and more clearly define and strengthen the powers and duties of the Select Board and town administrator in connection with financial management and the annual budget process.
- Examine and develop all sources of revenue to reduce and eliminate the structural deficit, including payment in lieu of taxes (PILOT) agreements, municipal fees, and local receipts.
- Develop a comprehensive strategy for reducing overall expenses, and prioritize adequate cash reserves from a diversified tax base.
- Review the capital planning process and seek to conform with best practices.
- Repair or replace the computer-assisted mass appraisal system, which has been deficient since at least 2011.

The Collins Center report states, “Belmont has a roster of well-qualified officials, employees, and interested citizens dedicated to the town’s financial well-being. Belmont benefits from their involvement in the town’s governance and management.” According to the report, a new focus on planning and economic development could attract vibrant activity, expanded levy capacity, and some relief from the tax burden on residential taxpayers.

The Select Board’s rankings of the Collins Center’s recommendations and the actions for addressing each recommendation are available on the Belmont town website.

“The Collins Center report has been a long time coming and is the result of a lot of work. The recommendations are clear and some will require changing how we think about the town’s operations,” noted Select Board member Adam Dash. “I believe that we need to move quickly on implementing the bulk of the recommended changes so Belmont can fix its structural deficit. This will take courage, as some of the recommendations ask for large changes, but we need to adapt to the present and responsibly move forward.”

The Edward J. Collins, Jr. Center for Public Management is attached to the McCormack Graduate School of Policy and Global Studies at the University of Massachusetts Boston. Established by the state legislature in 2008, this think tank is dedicated to improving efficiency, effectiveness, governance, and accountability at all levels of government, with a particular focus on state and local government. A staff of practitioners brings a comprehensive set of services to scores of the Commonwealth’s cities, towns, school districts, state agencies, and many municipalities in other states.

Jeffrey North is the managing editor of the Belmont Citizens Forum Newsletter.
Why Care About Removing Invasive Plants?

By Joseph Hibbard and Jeffrey North

The Belmont Citizens Forum Newsletter has been printing articles about the perils and poisons of non-native invasive plant species on these pages for years. Readers have learned that garlic mustard changes the chemistry of the soil to gain an advantage over other plant species in forest and edge areas. Our article on black swallowwort described that plant’s deadly toxicity to Monarch butterfly larvae that mistakenly consume it instead of nourishing native milkweed. We have described how Asiatic bittersweet rapidly climbs native trees, blocks the sunlight, and eventually topples the tree while changing our viewsheds.

Non-native plant species are here to stay, and they will continue to upset the equilibrium of local native plant communities unless they can be controlled. We see centuries-old food webs and interdependencies among our native plants and animals being disrupted and replaced with new plant communities composed of invasive plants. Driving along our roadways, anyone who can identify bittersweet or knotweed from a distance will see that these plants are well-established in forested and edge areas. Our river systems in Massachusetts host knotweed in multi-acre monoculture parcels, and the plant will continue to spread to many areas it has not yet taken over. As native plant populations are reduced, so will the populations of insects and birds that depend on them in ways non-native plants can’t replicate.

A debate over native versus novel ecosystems (new combinations of species arising from land-use changes, species introductions, and climate change) continues. The proponents of pure native ecosystems espouse the restoration of native plant communities that might approximate what our forests, fields, and streams contained before the arrival of settlers in the 17th century. Another camp argues for a realistic acceptance of non-native plants, many of which were introduced accidentally or intentionally, as soon as Europeans began cultivating crops, establishing communities and roads, and logging the forests.

Valid questions raised about Belmont town efforts to remove invasive species include “Why?” and “What is the goal of a multiyear effort to remove these plants?” and “What do we get for the effort and expense?”

One could ask the same question about work started two years ago on Lone Tree Hill; efforts underway at Rock Meadow, municipal, and public spaces such as the high school area along the railroad; or the Royal Woods by the train station: Why bother?

In addition to seeking to avoid the harms caused by invasives, here are three areas for finding positive, optimistic responses to the question.

Aesthetics

Two years ago, restoration ecologists commissioned by the Land Management Committee for Lone Tree Hill (LMC) began a series of activities to both control invasive species on Lone Tree Hill and to improve the scenery.

We proceed in our efforts to control non-native invasive plants in our open spaces and conservation land. Yet are these efforts sustainable if we believe we have already lost the wars of the invasives?

Asiatic bittersweet
Before the first restoration project, views from the Pitch Pine Trail had been entirely obscured by dense, rampant thickets of glossy buckthorn and Asiatic bittersweet, which formed a monotonous tangle of invasive vegetation enclosing the trail. Clearing these invasive plants has made a dramatic change.

To the north of the path, views into maturing oak woods opened, revealing the bold trunks of new and ancient oaks. To the south of the path, views of the Great Meadow were opened below and between the canopies of mature hickories and oaks, creating a beautiful alternation of shadowed areas complemented with bright sun openings of the meadow beyond. Historic stone walls were revealed. The interpenetration of woodland and meadow along this trail offers highly desirable scenic variety.

The area is now defined by the combination of near and far views and alternating open fields and closed forest edge. Some spaces open to the sky and provide long views and a sense of expanded freedom, while others are intimate and canopied by graceful branches. Not only is the restoration area healthier, but it is also more visually engaging and beautiful.

**Practice, learning, and understanding**

Most people visit Lone Tree Hill to enjoy walking, running, biking, or just being outdoors. A smaller number come to observe, learn, and identify the plants and animals that inhabit it. Fewer still come to observe the site ecology, the relationships of topography, hydrology, exposure, and soils that shape and interact with the unique living web of plants and animals. The removal of invasive species enhances the experience of the active visitors and also has the potential to magnify the experience of the observers and learners.

With efforts to control native species, we have an opportunity to learn about the role that they are playing on our conservation land, as...
well as in other public spaces and private yards. Volunteers and experienced plant persons can learn where invasive plants have become detrimental to parcels in Belmont and neighboring communities (See “What is a CISMA, and Why Do We Need One?,” BCF Newsletter, July/August 2022).

The renewed Lone Tree Hill Conservation Land will provide a living example of a healthy plant community within reach of all of Lone Tree Hill’s visitors, and an opportunity to observe the resilience and recovery capabilities of our native flora to rebound and flourish as the invasives are rolled back.

**Refuges**

Where do the bugs, birds, and beasts go when their sustenance and shelter disappear? We believe they will seek out the refuges where they will find their preferred food and habitat. As invasive non-native species take over more areas in eastern Massachusetts, restored properties like Lone Tree Hill, Rock Meadow, and Habitat will draw native fauna.

Already bird species not seen for years appear to be returning to Lone Tree Hill. Nesting woodcock was seen this spring in the restoration area adjacent to the Great Meadow at Lone Tree Hill. Barred owls are breeding and thriving on the property. In its 2022 Annual Monitoring Visit Report to the LMC, The Trustees of Reservations listed a surprising roster of birdlife, including red-bellied and downy woodpeckers, 20 other bird species, and eight butterfly species.

The recently formed Invasives Working Group (IWG), under the aegis of the LMC, has been planning and overseeing the efforts of volunteers and professionals since the start of the year. The IWG will steward land restoration efforts and direct town resources and the generous support of the Judy Record Conservation Fund for the greatest effect.

Joseph Hibbard and Jeffrey North serve on the Invasives Working Group of the Land Management Committee for Lone Tree Hill.
PFAS (perfluoroalkyl substances) seem to be all around us. In August, the city of Cambridge switched its water supply, which flows from the Stony Brook Watershed into a reservoir at Fresh Pond, to the Massachusetts Water Resources Authority (MWRA) due to high levels of PFAS in the water. This switch is costing the city $2 million per month.

In July, local news reported on PFAS contamination near the Wachusett Reservoir, likely from compost made from sewage sludge. Firefighting foam used on military bases on Cape Cod has exposed residents to PFAS toxicity. Boston Mayor Michelle Wu recently ordered no new artificial turf be installed in the city due to PFAS found on those fields.

In early September, the US Environmental Protection Agency (EPA) issued an advisory that PFAS from plastic pesticide containers leach into the pesticide causing land contamination when sprayed. This was just after a June EPA update that redefined safe water levels for these chemicals. The science around PFAS is rapidly evolving as we learn more about the health risks.

What are PFAS?

PFAS are manufactured chemicals that have been used in industry and consumer products worldwide since the 1940s. They are known as the “forever chemicals” because they do not break down in the environment and remain in soil and water for very long periods.

Where are PFAS found?

PFAS are found in many things that repel water, grease, and stains.

- Fast food wrappers, microwave popcorn packaging, pizza boxes
- Nonstick cookware like Teflon
• Personal care products (shampoo, dental floss)
• Water-resistance gear: jackets, winter gear, camping equipment
• Furniture and carpets treated for stain resistance
• Firefighting foam
• Pesticides
• Artificial turf

How do PFAS cause contamination?
PFAS can migrate into soil, water, and air during production, use, and improper storage.

What are the effects on humans and animals?
PFAS are found in the blood of people and animals all over the world and are present at low levels in a variety of food products, for example, in fish and shellfish. PFAS enter the body through ingestion or inhalation, and some PFAS can build up in people and animals with repeated exposure over time.

The Agency for Toxic Substances and Disease Registry and the EPA have linked PFAS exposure to multiple cancers (especially kidney cancer), thyroid dysfunction, and high cholesterol. In addition, PFAS may impact the immune system and reduce the antibody response to vaccines. Some human studies suggest that exposure to high levels of certain PFAS may lead to an increased risk of high blood pressure or preeclampsia in pregnant women and decreases in infant birth weight. In a study of United States women that measured serum concentrations of PFAS, the highest quartile started menopause about two years earlier than women in the lowest exposure group.

In 2022, the National Academies of Medicine issued guidelines to help monitor patients who have had high exposures to PFAS and help communities reduce the risk of exposure. In addition, last September, the Massachusetts Medical Society passed a resolution to help educate physicians about PFAS and resolved to lobby the legislature to pass PFAS-reducing regulations.

How to reduce exposure:
• Eat at home more often, avoid non-stick pans, and choose steel or cast iron pans for cooking. Ask restaurants if their packaging is PFAS free.
• Skip the stain treatment and flame retardants on furniture—natural fabrics like wool have natural stain and flame resistance.
• Play sports on grass. If playing on a turf field, wash hands before eating and shower after play.
• Keep your soil safe. Decrease pesticide use, and check your compost. Black Earth compost picks up much of Belmont’s compost and regularly tests and reports out PFAS levels in its products.
• Choose companies that have reduced or eliminated PFAS use.
• Monitor your water. Fortunately, Belmont water comes from the MWRA, which has filtered out most PFAS of concern and regularly tests and reports on levels. If you have a well, consider testing.
• Dust and vacuum regularly to limit exposure from products in the home.

What else can you do?
Lobby legislators to phase out PFAS where possible. Eleven states, including California, Colorado, Connecticut, Hawaii, Maine, Maryland, Minnesota, New York, Rhode Island, Vermont, and Washington, have enacted phase-outs of PFAS in food packaging. Further, a few bills have been introduced in Massachusetts to help curb PFAS use in the state.

Finally, manufacturers are developing new kinds of PFAS. Some of these chemicals may have properties similar to the existing PFAS, and some may be less persistent in the environment. Unfortunately, there are very few scientific studies on new PFAS, so more research is necessary to discover whether they may be a health concern.

Adrienne S. Allen, MD, is senior medical director of quality, safety, and sustainability at the Mass General Brigham Salem/North Shore Physicians Group. She also serves as vice chair of the Belmont Board of Health.
We Need to Enforce Waste Bans

By Janet Domenitz and Morgan Molloy

Creating positive change for our climate in everyday life can be daunting, but there are ways we in the Commonwealth can make progress in the here and now. Reducing the waste we discard in landfills and incinerators reduces pollution and climate emissions. One key to reducing waste disposal is enforcing our decades-old waste ban regulations.

Of the 5.6 million tons of waste we dispose of in Massachusetts each year, approximately two million tons (~40%) are banned from landfills and incinerators by Massachusetts Department of Environmental Protection (DEP) regulations. Some examples of banned materials are paper, cardboard, glass, metal, and wood. These waste bans exist, according to the DEP, to “increase recycling and support the recycling economy, which provides thousands of jobs and millions of dollars in economic activity in Massachusetts.” Unfortunately, despite waste ban regulations that have been in place since the 1990s, banned items are commonly found in our landfills and incinerators. Zero Waste Massachusetts is launching an effort to reduce banned items from the disposal in coalition with several other organizations.

No silver bullet will solve this problem; we need to employ a mix of different tactics. In Zero Waste Massachusetts’ recent report, Enforce the Bans, we make several recommendations.

Enforce our regulations

Add MassDEP waste ban enforcement staff and hold waste haulers accountable by issuing non-compliance orders and fines to violators. We need people working to address this problem specifically. If violators big and small are held accountable, then we only stand to benefit.

Separate our waste from recycling and composting

Provide separate bins for residential and commercial buildings to separate our discarded materials. If towns and cities around the state provide separate trash, recycling, and compost bins, then it is a breeze for you at home or work to separate what you need to throw away.

Provide state and local education about waste

State and local governments should educate decision makers and the public, in multiple languages, about what can and should be reduced, reused, recycled, or composted versus what is acceptable as trash. In Belmont, this guide is available at www.belmont-ma.gov/dpw-highway-division/pages/recycling-trash-information (albeit only in English). Other towns, cities, and state agencies should provide easy-to-find and easy-to-read directions about reducing and what to do with your waste.

Use clear trash bags

To make a difference at home, use a clear trash bag so the contents can easily be seen and checked for banned items.
We know enforcing the waste bans will take effort, but this is not a complicated or a need-to-invent-new-technologies problem. Nantucket instituted their own waste bans more than 20 years ago, and only 12% of banned items end up in landfills and incinerators. (We discuss their strategies in the report, Enforce the Bans.) The state of Vermont, whose program is less than four years old, is at 35%.

Studies show that creating and disposing of stuff is one of the most significant contributors to climate change after energy and transportation. We could make a big dent in our disposal in Massachusetts by launching an all-out effort to reduce that two million tons of reusable and recyclable materials—long banned by the DEP—from ending up in landfills and incinerators.

Janet Domenitz is the executive director of MASSPIRG and a Belmont resident. Morgan Molloy is an associate with MASSPIRG.

Events

Reforming the Utility Business Model for Resilient Reliable Renewables
Thursday, November 10, 7–8:30 PM
Online

Mark Sandeen, Lexington Select Board member, and Audrey Shulman, cofounder and president of the Home Energy Efficiency Team, talk about utility reform and how we can move toward a greener, more resilient grid. Sponsored by the Lexington Climate Action Network. Register for link at lexcan.org/events/reforming-the-utility-business-model-for-resilient-reliable-renewables/

Bittersweet Removal at Riverbend Park
Saturday, November 12, 9–11 AM
Riverbend Park Freedom Way, Medford
Volunteers will tackle bittersweet, an invasive vine that can kill trees, impairs habitat value, and degrades park aesthetics. Meet next to the Medford Dog Park. Gloves and clippers will be provided. Registration required. Contact the Mystic River Watershed Association at mysticriver.org/calendar/2022/11/12/bittersweet-removal-volunteer-event

Friends of the Fells Open House
Sunday, November 13, 3–5 PM
Botume House Visitor Center, 4 Woodland Road, Stoneham
Join the Friends of the Middlesex Fells for family-friendly nature activities and arts and crafts, warm fall beverages and baked goods, and opportunities to learn more about the Fells. Staff, board members, and volunteer leaders will be on hand to share our plans for the future and how you can get involved and make a difference. Contact friends@fells.org for more information.
Hello Belmont Citizens Forum,

I really enjoyed the article by John Dieckmann, “Mass Central Rail Trail Continues Expansion” (BCF Newsletter July 2022). It’s a fantastic summary of the trail from Boston to Hudson!

If possible, I’d like to forward a small correction to John Dieckmann regarding the section “MCTR west from Route 20.” To the best of my understanding, the Eversource/DCR project in Sudbury and Hudson (and tiny segments in Marlborough and Stowe) goes from Hudson to the Eversource Sudbury substation only. Please see this map for reference:

www.eversource.com/content/wma/residential/about/transmission-distribution/projects/massachusetts-projects/sudbury-to-hudson-project.

I believe the DCR trail from the substation to Wayland Town Center/Russell’s Garden Center is a separate project, a short segment that has received $3 million in construction funding from the 2021 Massachusetts Transportation Bond Bill.

In terms of design, the most recent update I know of is from December 2021 from www.mass.gov/service-details/mass-central-rail-trail-wayside. “DCR is at 25% design of the connecting section between Wayland Town Center and the Eversource substation in Sudbury.”

Ben Bayes
Letter to the Editor

To the Editor:

New England in the fall is renowned for its beauty—the trees are blazes of color, birds, squirrels, and other animals are busily preparing for winter, and the occasional whiff of woodsmoke floats in the air. Driving up Prospect Street, one is met with the pleasant sight of the pristine lawns and stately brick buildings of the Belmont Hill School—a self-described educator of “men of good character,” where “boys are expected to collaborate and become part of something larger than themselves.” Which is why it’s such a shame that the Belmont Hill School is apparently ignoring its own fundamental tenets in its quest to expand—not its educational buildings, not the scope of its outreach to the community, not the quality of its programs . . . but its parking lot.

If you haven’t yet heard, everyone in Belmont should be aware of the Belmont Hill School’s recently submitted plan to replace decades-old woodlands with a 140+ space parking lot (larger than the lot at the Belmont Star Market) and a 7,000 square-foot maintenance building with accompanying parking and above-ground fuel tanks—both of which clearly demonstrate an utter indifference to both local and global issues facing us today, in direct opposition to their stated values. If the Belmont Hill School can’t or won’t recognize this, it is absolutely necessary that we, as residents of Belmont and members of the greater community, make it clear to both the school and the Belmont Planning Board that their plans are unacceptable.

With climate change at the forefront of our concerns for the future, institutions all over Massachusetts and Belmont in particular have taken steps to limit their environmental footprint, reduce their use of fossil fuels, and encourage community members to do the same. Over a decade ago the town of Belmont approved a goal of 80 percent greenhouse gas emission reduction by 2050. In 2019 the Belmont Town Meeting overwhelmingly endorsed a move towards electric power for transportation, as opposed to use of fossil fuels. But not Belmont Hill Schoo—unlike Belmont’s public high school, which recently eliminated 90 planned parking spaces in an effort to encourage carpooling and alternative methods of transportation, the Belmont Hill School has chosen to add a total of 150 parking spaces, a number which it admits is greater than that required for its students and faculty, but claims is needed for “overflow parking” for events. Adding insult to injury, the planned heavy maintenance facility, which will service buses, trucks, and boats, will be constructed at the edge of protected wetland areas, encroaching on animal habitats and increasing the risk that leaks in the facility’s new fuel tanks might affect not only neighbors, but also our vanishing wetlands.

Does that expansion come at the cost of the school’s own rolling green lawns or elegant buildings? No. Instead, Belmont Hill School has submitted plans to raze more than 7 acres of woodland in the middle of a residential neighborhood—cutting down all those beautiful trees, eliminating homes for wildlife, and replacing the smell of woodsmoke with the pollution caused by trucks, delivery vans, and over 140 individual vehicles, all of which will be funneled away from the Belmont Hill School’s campus and into an area directly abutting residences.

Neighborhood residents can look forward to the 6 am sound of heavy equipment being serviced, to the headlights and noise of vehicles mere feet from their backyards, and to the increased water runoff and pollution caused by the replacement of woodlands with asphalt. Residents of Belmont as a whole will be treated to increased traffic along Prospect Street and Park Avenue, where vehicles are already regularly at near-standstill conditions during the morning and evening commutes (emitting gasoline fumes the entire time), and the removal of several residential properties from Belmont tax rolls, straining the already-limited town budget.

In the words of its founding head of school, Dr. R. Heber Howe, the underlying purpose of the Belmont Hill School is “service through scholarship.” As he said in a 1924 speech quoted on the school’s website, “it is only by ‘finding ourselves,’ by discovering our capacities and aptitudes, that we can be of service to the community.” Belmont Hill School was founded in 1923—almost a century ago—but those words ring as true today as they did when they were first spoken. Sadly, rather than looking
towards the future to determine how it and its students and graduates can be of service to the community, it is increasingly apparent that Belmont Hill School is mired in the past. Please join other members of our community in expressing your opposition to the Belmont Hill School’s plan—perhaps a resounding “No” will be the wake-up call Belmont Hill School needs to start seeing its historical roots as a springboard, rather than an anchor.

Contact the Planning Board today to make your voice heard, and sign this petition at www.change.org/belmontwild.

Tanya Austin

Editor’s note: As of this publication, the Belmont Hill School’s application to the Planning Board has been withdrawn “without prejudice.” That wording means that it can be reintroduced, with or without revisions.
## November/December 2022

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How Belmont Can Switch to EVs</td>
</tr>
<tr>
<td>7</td>
<td>Electric Buses Are Coming to Belmont</td>
</tr>
<tr>
<td>8</td>
<td>Belmont Goes Electric! Will You?</td>
</tr>
<tr>
<td>9</td>
<td>MBTA Zoning May Change Belmont</td>
</tr>
<tr>
<td>12</td>
<td>Have You Read the Collins Center Report?</td>
</tr>
<tr>
<td>14</td>
<td>Why Remove Invasive Plants?</td>
</tr>
<tr>
<td>17</td>
<td>How to Reduce Your Risk from PFAS</td>
</tr>
<tr>
<td>19</td>
<td>We Need to Enforce Waste Bans</td>
</tr>
<tr>
<td>20</td>
<td>Events</td>
</tr>
<tr>
<td>21</td>
<td>Letters to the Editor</td>
</tr>
</tbody>
</table>

Please visit our website for updates and to read this issue in color: [belmontcitizensforum.org](http://belmontcitizensforum.org)