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May 14, 2018

Mr. Lovallo, Chair
Belmont High School Building Committee
Town Hall
Belmont, MA 02478

Transmitted via e-mail

Re: BHS heating and electrification

Dear Bill:

I write today in my capacity as Chair of Belmont's Energy Committee. The Energy Committee's charge is to assist the Town in its pursuit of the goal set by its Climate Action Plan (CAP). The CAP, adopted by Town Meeting, specifically set the goal of reducing Belmont's greenhouse gas emissions 80% by 2050. I want to thank the BHS Building Committee and the design team for the work they are doing and especially for the attention that they have been giving in their planning to considerations of energy use. Members of our committee have been truly impressed to see the thought being given to these issues as made clear at your meetings.

I also want to bring to your attention some information that is relevant to thinking about how the school design may impact the Town's pursuit of its overall CAP goal. The Energy Committee is currently developing a roadmap for the Town to achieve the deep emissions reductions required by the CAP Resolution; this plan will be rolled out for public consultation and input in the near future. The central component of the plan is ***strategic electrification***: transitioning all transportation and heating in Town away from fossil fuels and to electrically-driven technologies. Coupled with this electrification, the plan calls for Belmont to convert its electricity entirely to carbon-free sources.

In light of this plan, the Energy Committee has two issues we would like to raise. One relates to building heating; the other considers the implications of Belmont having a publicly-owned electric utility, Belmont Light.

"Committed to the power of concentrated expertise widely shared."

Heating: Members of the Energy Committee were very encouraged to hear that a geo-exchange system will be the baseline approach to heating the high school, against which alternatives will be assessed. *This is great news.*

The design team mentioned in a recent public presentation that analyses of heating system options will be presented in the next few weeks. While capital and operating costs will of course be factors to be considered when weighing alternatives, associated carbon emissions (and not just the total amount of energy used in BTU or kWh) are also important in light of the Town's CAP commitment to dramatic reduction of emissions over the next few decades. Reducing energy use is necessary, but not sufficient, to reduce emissions and meet the Town's goal of reducing emissions by 80%. **We thus request that carbon emissions be explicitly taken into account when considering different heating options.**

Moreover, when thinking about carbon emissions from an electrically-driven geo-exchange system, it is important to remember that Belmont Light recently adopted a new Power Supply Policy under which it will derive an ever-increasing fraction of its electricity from carbon-free sources in the years going forward. The Energy Committee's draft roadmap proposes to go beyond this with a more ambitious timeline for the greening of our electricity supply. Thus, while a geo-exchange system would represent a win from an emissions standpoint even with today's electricity supply, we expect that its climate benefits will only increase in future years as our electricity becomes cleaner. Indeed, heat pumps have the potential to provide completely emissions-free heating once powered by zero-carbon electricity, which is our goal.

In contrast, choosing to heat with natural gas would lock in decades of further emissions. We view this as a major point in favor of a geo-exchange system, and one that should be highlighted and given due weight in the deliberations. In this context, there should be a conversation about the value to the Town of avoided carbon emissions. The Energy Committee would be happy to provide any information that could be of assistance to inform this conversation.

Belmont Light: When thinking about the use and generation of electricity by the new school, it is important to bear in mind that Belmont has a municipally-owned electricity utility. Decisions around electricity usage and deployment of solar may well benefit the ratepayers of Belmont Light. Since Belmont Light ratepayers are the very same people that are Belmont taxpayers (who will be funding the school's construction and operation), it is important that possible financial benefits to the school of solar not be considered in isolation, but rather through a broader lens of the benefits to the Town as a whole. As such, we urge the committee and design team to be in consultation as soon as possible with Belmont Light about the opportunities presented by on-site solar. We've recently heard that Belmont Light had a meeting about the

high school. We encourage more in-depth meetings to occur before final decisions are made about solar and other energy solutions.

Solar on the high school makes financial sense. Belmont Light has done some preliminary calculations for solar installations around Town. Using those rough numbers as a guide, installing solar could increase revenue, clean up our energy, and reduce overall electricity costs. The payback period for one project was 6-7 years, meaning that solar would pay for itself quickly, and then generate positive cash flow for the Town for many more years to come. This cash could be used to help the Town in so many ways – maybe even to help fund other needs within the school district.

When considering solar at the high school, it is important to not consider it in isolation, but instead holistically as a Town. The size and scale of the solar installation should be what the Town needs, not simply what is cost-effective for the high school site. While those two perspectives are related to each other, the size of the installation (number of solar panels) could justifiably be much larger when considering Belmont's CAP objective and the Town's forthcoming strategic electrification roadmap.

We thank for your considering these two important aspects of the new high school design. We know that you have to look at a lot of moving parts. We're encouraged by the news of geo-thermal heating and solar PV on the site. If those options are fully implemented in the final design, the Energy Committee feels the new high school will be a great success and a win for the Town's students – this generation and the next.

Regards,



Roger D. Colton, Chair
Belmont Energy Committee

Copies:

BPS Superintendent John Phelan
Christopher Roy, General Manager, Belmont Light
Belmont Energy Committee

Dear Mr. Lovallo,

I write to you as a Belmont resident, long-time town meeting member and the Director of Mass Audubon's Habitat Education Center and Wildlife Sanctuary to urge you to place solar canopies on the parking lots of the new high school. Parking lots provide open, flat, sunny places perfect for solar arrays. In addition to providing abundant clean electricity they reduce the cost of snow removal, protect cars from the elements and keep the notoriously hot asphalt surface shaded and cooler in summer.

Local examples of solar canopies include the visitor center at Walden Pond, the REI store in Framingham and Iggy's Bakery in Cambridge and Roxbury Community College in Boston. The MBTA is in the middle of a project to cover 28 surface commuter rail parking lots with solar canopies.

I would also urge you to put electric vehicle charging stations in the high school parking lot. Many solar canopy projects include EV charging stations. I am now having one installed in the Habitat parking lot for public use.

Solar canopies make use of a significant amount of built space at the high school, which ironically is being provided for a technology that is a leading generator of greenhouse gases. This is an opportunity for the town to say yes to a clean energy future.

Thank you for your consideration and I would be happy to discuss further.

Thank you,
Roger Wrubel

