



# TOWN OF BROOKLINE

## Massachusetts

### SELECTMEN'S CLIMATE ACTION COMMITTEE

Selectwoman Nancy Heller  
Werner Lohe  
Co-Chairs

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October 23, 2017

Brookline Parks & Recreation Commission  
Brookline Town Hall  
333 Washington Street  
Brookline, MA 02445

Re: Cypress Street Playground Improvements/ Synthetic Turf

Dear Park & Recreation Commissioners:

The Selectmen's Climate Action Committee was formed to advise the Board of Selectmen on issues related to climate change, including the reduction of greenhouse gas emissions and adaptation to the effects of a warming planet. We present here our thoughts on the improvements to Cypress Street Playground under consideration in coordination with the High School addition and renovation, specifically the proposal to replace the natural grass field with synthetic turf. We urge you to consider the following issues as you make your decision:

#### **Heat Island Effect**

Synthetic turf fields can be significantly hotter than natural grass. Some studies indicate that on bright sunny days the surface temperature of synthetic turf fields can be 40° to 60° F hotter than fields of natural grass. This can lead to heat stress for those playing on these surfaces. The increased temperature of synthetic turf fields contributes to urban heat island effect for the immediate neighborhood that will become more intense as the planet warms.

A draft report on the vulnerability of Brookline to the impacts of climate change, prepared by the Metropolitan Area Planning Council, lists four playing fields (Parsons Field, Beaver Country Day School, Downes Field and Skyline Park) among the hottest spots in town along with certain heavily paved areas. These four fields all have synthetic turf. Increased surface and air temperatures are not only an issue for those playing on the field, but can also cause occupants of surrounding buildings to use more air conditioning thus further contributing to greenhouse gas emissions. For those neighbors without access to air conditioning, increased summer heat can be life threatening.

The thermal effects of synthetic turf fields on the immediate neighborhood can be modeled. Modeling should be considered prior to making the considerable capital investment in synthetic turf. See Neda Yaghoobian, Jan Kleissl, and E. Scott Krayenhoff *Modeling the Thermal Effects of Artificial Turf on the Urban Environment* published in the Journal of Applied Meteorology and Climatology, Vol. 49, March 2010.

[http://www.academia.edu/12123877/Modeling\\_the\\_thermal\\_effects\\_of\\_artificial\\_turf\\_on\\_the\\_urban\\_environment](http://www.academia.edu/12123877/Modeling_the_thermal_effects_of_artificial_turf_on_the_urban_environment)

#### **Carbon Footprint of Synthetic Turf**

According to a news article in the Santa Cruz Sentinel (14 April 2010), a report from the University of California at Berkeley concluded that significant greenhouse gases are released in... the creation [of artificial turf fields]." The report concluded that "artificial turf releases more greenhouse gases in its production, transportation and processing than the maintenance of natural turf ever would." The report also stated "natural grass requires fertilizer, which could contaminate water supplies, and regular mowing, the emissions of which contribute to greenhouse gases. It also requires watering, which could tax a limited supply." The report however made no mention of the existence of

natural grass technologies that address each of the grass-is-bad arguments: organic and natural occurring fertilizers as opposed to chemicals; integrated pest management systems, grass that requires less water and shorter growing season, with deeper root systems and shorter blades. The .pdf version of this study is available via <http://www.synturf.org/carbonfootprint.html>.

With the average life cycle of the synthetic turf covering being 8 – 12 years, the carbon cost is repeated when it needs to be replaced. By contrast, a natural grass field, properly maintained can last up to 20 years before having to be replaced.

#### **Carbon Sequestration Potential of Natural Grass**

A natural grass field, unlike synthetic turf, acts to reduce carbon dioxide. A 2008 research study found that “managed lawns sequester, or store, significant amounts of carbon, capturing four times more carbon from the air than is produced by the engine of today’s typical lawnmower.” The study also found that “well-managed turf grasses that are cut regularly and at the appropriate height, fed with nutrients left by grass clippings, watered in a responsible way, and not disturbed at the root zone actively pull pollutants from the air, creating a greater carbon benefit.” (See Ranajit Sahu, Technical Assessment of the Carbon Sequestration Potential of Managed Turfgrass in the United States (2008). The full report can be accessed at <http://www.synturf.org/images/FullCarbonReport.pdf>.

In summary, natural grass has the following positive environmental benefits:

- It helps mitigate rather than contribute to urban heat islands.
- It avoids the negative impacts of manufacture, transport and replacement of synthetic turf.
- It removes CO<sub>2</sub> from the air.

We urge the Park and Recreation Commission to further study the environmental and climate-related impacts of synthetic turf prior to making a decision to install it at this important place in the town adjacent to Brookline High School.

Sincerely,

Brookline Selectmen’s Climate Action Committee



Nancy Heller, Co-chair



Werner Lohe, Co-chair

cc: Erin Chute Gallentine, Director of Parks and Open Space Division