

The Integrated Effect of Trees and How They Will Mitigate the Urban Heat Island of South Framingham

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Five years from now, we imagine South Framingham to be a cooler and more aesthetically-pleasing neighborhood. Children freely play in the lush greenery, adults walk under the shade of the trees after a long day of work, and older adults sit outside to enjoy the cooler summer weather. People save money on air conditioning and gas because the temperature outside is more comfortable. Residents do not feel that they need to use their car to go to a local store to avoid the extreme heat. Instead, they walk. They feel confident that their local government cares about them and their health. With the area being cooler, and residents not being met with such blistering heat the moment they step outside, the inclination to go outside and take a breath of fresh air is greater than ever. Five years from now, we envision this greener, better South Framingham.



In urbanized areas such as Framingham, asphalt and concrete are commonly used for sidewalks, roads, and buildings. These materials absorb heat, creating a significant difference in temperature between the city and surrounding areas. This is known as an “urban heat island.”¹ These areas were not prioritized by the City of Framingham and have developed into concrete jungles that are devoid of plants and greenery, despite their efficiency in mitigating heat. As a result of heat islands, buildings in South Framingham can experience temperature increases of 26 to 50%, as compared to regional air temperatures.²

These higher-than-average temperatures cause South Framingham residents to be disproportionately at risk for a multitude of heat-related illnesses. The CDC reports that heat exhaustion, heat stroke, dizziness, and fainting are the causes of about 67,512 emergency department visits per year on average in the United States.³ As temperatures rise due to the active removal of vegetation and the construction of buildings and roads, the number of heat-related emergencies will only increase. Heat is being retained in the city and in buildings where people live, instead of being dissipated into the atmosphere by trees. This makes South Framingham significantly hotter than its more rural counterparts, putting South Framingham residents at an increased risk compared to people in more rural places. This is especially problematic because South Framingham is mostly comprised of environmental justice populations, which include minorities, low-income households, and linguistically-isolated individuals.²

We want South Framingham to have at least 40% tree canopy coverage, as that is what is necessary to counteract the urban heat island effect.⁵ Trees effectively cool because they perform evapotranspiration, which is when they “sweat.” Because water is able to hold large amounts of thermal energy, it takes surrounding heat with it as it evaporates. This process can reduce peak summer temperatures by 2–9°F (1–5°C).⁷

We envision a South Framingham that actively mitigates the effects of urban heat islands and enjoys cooler temperatures. This will benefit the physical and mental well-being of the people. A study done by a professor at the University of Essex shows that spending time around trees reduces stress, lowers blood pressure, and improves mood.⁴ This means the residents will feel more comfortable living in their neighborhoods, without having to use air conditioning to keep themselves cool. They will be able to exist outside without experiencing extreme discomfort.

Our recommendation to the City of Framingham is to plant more trees to reach the goal of 40% tree canopy coverage. The trees should be planted in South Framingham because it was previously unprioritized by the City of Framingham.⁸ This is discrimination, and planting trees may help to rectify the injustice that has taken place. Volunteers will plant and maintain the trees. Therefore, volunteering opportunities should be set up for people, such as high schoolers, to give them leadership roles in their community. Reaching the goal of 40% tree canopy coverage will mitigate the heat in South Framingham and create a more comfortable living environment for all.

We want the City of Framingham to be a beautiful place where all residents can thrive. Some parts of the city have already accomplished this, including Nobscot, Saxonville, and other areas in North Framingham. Residents in these areas live in lush, green neighborhoods. This is something South Framingham has not accomplished, yet, due to the historical consequences of redlining when the majority marginalized populations were forced to live in urban areas.⁹ The consequences of these actions are still present today, as seen in South Framingham having much less greenery than the rest of the city. Populations affected by discriminatory policies continue to live in urban heat islands that place their health at risk. By adding trees, the City of Framingham will give the residents of South Framingham an increased quality of life, bringing Framingham closer to a healthier environment for all residents.

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