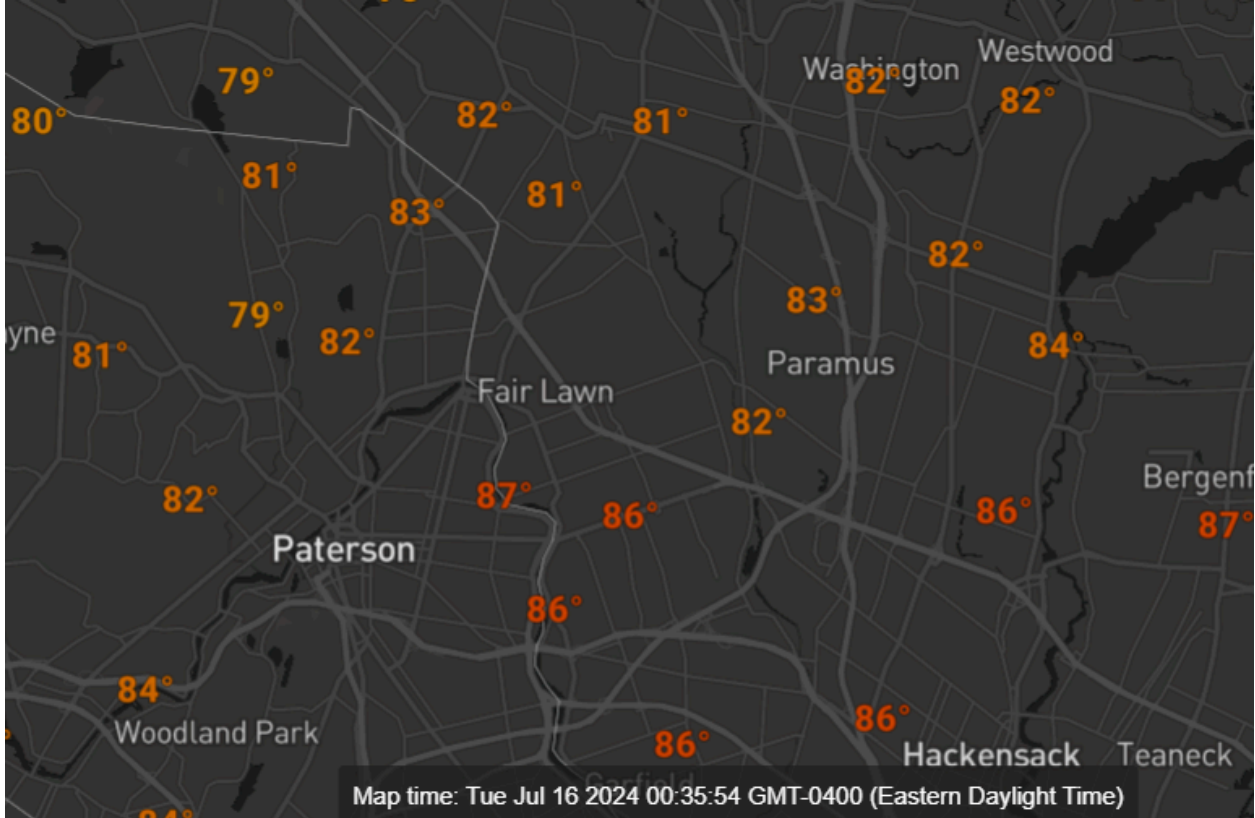


HOT, HOT, HOT!:Urban Heat Island Effect

Author: Michael Ciolino

Drive Route 208 to feel how different night time summer heat can be within a few miles. From top to bottom there is nearly a 10°F degree temperature spread on the 10 mile highway on hot summer nights. The map below shows temperatures on July 16, 2024 around midnight. In Franklin Lakes, the northern part of Route 208 the temperature was 79°F, while Fair Lawn at the southern terminus was 86°F degrees.



(Overnight temperatures July 16, 2024, photo credit Weather Underground)

The record breaking heat we are having this summer is an indicator of the effects of climate change. More extreme weather conditions are occurring, including extreme heat. A significant climatic phenomenon known as the Urban Heat Island (UHI) effect can be evident in Fair Lawn and surrounding areas. The overnight summer nights are much warmer in densely populated areas than less densely populated areas. This phenomenon describes the tendency for urban (Paterson) and dense suburban areas (Fair Lawn, Elmwood Park, Hackensack and Bergenfield) to be significantly warmer than their less-dense suburban areas (Paramus, Ridgewood, Wayne, North Haledon, Wyckoff and Franklin Lakes), especially during the night.

What Causes the Urban Heat Island Effect?

Several factors contribute to the development and intensification of the UHI effect:

1. **Modified Land Surfaces:** Urban areas replace natural landscapes with buildings, roads, and pavements that absorb and retain heat more efficiently than natural vegetation. This alteration reduces the cooling effect of vegetation and water bodies found in rural areas.
2. **Heat from Buildings and Vehicles:** Human activities within cities generate heat through energy consumption, transportation, and industrial processes. This anthropogenic heat contributes to higher temperatures within urban areas.
3. **Reduced Green Spaces:** Urbanization often leads to the removal of vegetation and trees, which are essential for cooling through shade and evapotranspiration. Less green space means less natural cooling and more heat absorption.
4. **Albedo Effect:** Urban surfaces like asphalt and concrete have lower albedo (reflectivity) compared to natural landscapes. This means they absorb more solar radiation, contributing to higher temperatures.

Impacts of the Urban Heat Island Effect

The UHI effect has several notable consequences for urban environments and their inhabitants:

1. **Health Risks:** Higher temperatures in cities can exacerbate heat-related illnesses and mortality rates, particularly among vulnerable populations such as the elderly and those with pre-existing health conditions.
2. **Energy Consumption:** Increased temperatures lead to higher demand for air conditioning and cooling systems, resulting in elevated energy consumption and associated costs.
3. **Environmental Stress:** Urban ecosystems are strained as higher temperatures and reduced green spaces disrupt local biodiversity and ecosystem functions.
4. **Air Quality:** Heat can worsen air quality by enhancing the formation of ground-level ozone and other pollutants, which are harmful to human health and the environment.

Mitigating the Urban Heat Island Effect

Efforts to mitigate the UHI effect focus on incorporating green infrastructure and sustainable urban planning practices:

1. **Urban Greening:** Planting trees and vegetation, creating green roofs and walls, and establishing parks and green spaces help cool urban areas through shading and evapotranspiration.
2. **Cool Roof and Pavement Technologies:** Using reflective and lighter-colored materials for roofs and pavements can reduce heat absorption and mitigate temperature rise.
3. **Smart Urban Design:** Implementing compact urban development, promoting mixed land use, and improving public transportation can reduce energy consumption and minimize heat generation.
4. **Community Engagement:** Raising awareness and involving communities in urban heat mitigation strategies can foster support and encourage sustainable behaviors.

Fair Lawn residents can help reduce the heat by requesting *A Free Street Tree*.
[Click the link to request a tree!](#)