

Impacts of Increased Population and Population Density in the Piedmont of North Carolina

Much of the Piedmont region, including the Haw River watershed, will experience significant rises in population for the foreseeable future. A sizable amount will be in urban areas and new development of previously rural areas. With increases in population density, other impacts also become significant, according to the [North Carolina Climate Science Report from May, 2020](#). In historically rural areas, natural landscapes find themselves at the mercy of increased needs for development and infrastructure such as drinking water, wastewater treatment and roads to support more inhabitants. This puts pressure on natural areas, threatening the health of our lakes, creeks, rivers, and the many plants and animals which inhabit them. With development also comes increased deforestation, which will [limit the land's ability to draw in carbon](#), inhibiting the earth's ability to redistribute carbon effectively, resulting in warmer temperatures. Urbanization and development also lead to more impermeable surface; which, in turn, leads to increased flooding in these newly developed areas.

Projected Population Increase By County in the Haw River watershed from 2020 - 2030

County	July 2020 Projection	July 2030 Projection	Population Change	Population Change %
Caswell	23,666	23,665	-1	0.0
Rockingham	91,830	91,865	35	0.0
Guilford	545,348	615,227	69,879	12.8
Alamance	174,055	192,656	18,601	10.7
Orange	148,610	163,699	15,089	10.2
Durham	320,322	366,111	45,789	14.3
Chatham	77,713	94,920	17,207	22.1

Wake	1,109,883	1,328,336	218,453	19.7
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In the Haw River watershed we see that Caswell and Rockingham counties are not expected to have increases in population in the next 30 years, while the other counties range from 10 to 22% increases. In Chatham County this is primarily due to the projected number of new residents in the mega-development, Chatham Park.

As communities become more densely populated, a phenomenon known as the Urban Heat Island (UHI) effect comes into play, where temperatures tend to be higher in areas that are more highly developed. This can be attributed to the absorption and emission of heat by buildings and other impervious surfaces. As we experience higher temperatures attributed to climate change, the UHI effect is likely to be more significant due to population increases and development spread of urban areas.

Impacts such as UHI, as well as others related to climate change, often disproportionately affect more vulnerable communities (e.g., lower income, communities of color, elderly populations), who are often living and working in urban centers and may not have access to sufficient cooling. Additionally, like so many other factors associated with climate change, the UHI effect is a climate stress multiplier in that it increases the effects of other climate related impacts. These impacts could include elevated emissions of air pollutants and greenhouse gases, compromised human health, and even water quality impairment.