

DECADES

◀ WHAT THE TRENDS TELL US ▶

Sustainability: The Urban Heat Island

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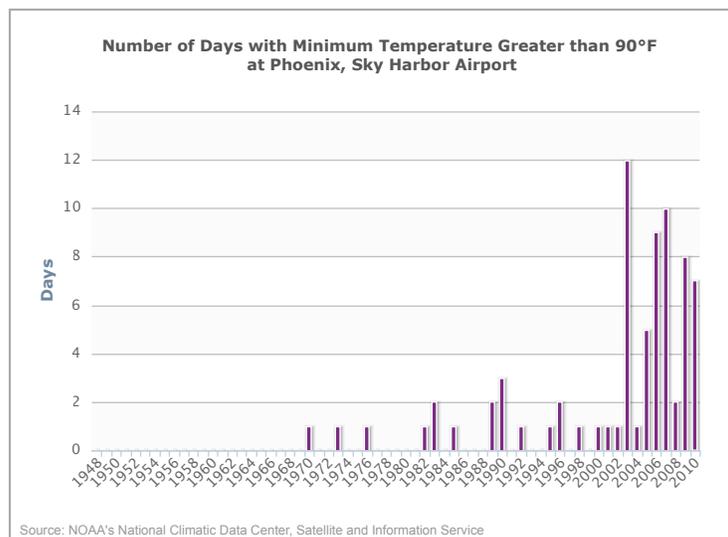
Q: What were the most interesting and important trends in Arizona sustainability that occurred in the previous decade? What is the significance of these trends and what insights can we apply to the new decade?

A: In the first eight years of the past decade the population of the Phoenix metropolitan area increased from more than 3.25 million people in 2000 to more than 4.28 million people in 2008. During the mid-part of the decade, when the population growth rate was at its highest, the area was characterized by rapid development and urban sprawl. In addition, many high-density residential developments were being added to the urban core. The result has been an intensification of the Urban Heat Island effect.

The Urban Heat Island (UHI) is a phenomenon of higher nighttime temperatures in the urban core compared to the surrounding rural countryside. The UHI results from urbanization and replacing natural land surfaces with materials that retain heat and has resulted in a marked increase in the nighttime temperatures recorded at Phoenix Sky Harbor International Airport during the past decade.

Throughout the entire decade of the 1990s, there were a total of eight days when the nighttime low temperature at the airport remained above 90 degrees; from 2000–2009 there were 50 such occurrences, with 12 such nights in 2003 and 10 in 2007. In addition, the average June low temperature at Sky Harbor Airport during the decade just ended was 2.85 degrees warmer than for the previous decade of the 1990s.

As the Phoenix metropolitan area continues to sprawl, the urban heat island will expand from the urban core further into suburban regions. Vegetation can help to maintain cooler night temperatures but requires large amounts of water, as does the production of energy that is required for air conditioning needs. In order for us to continue living in this desert city, development must be done in such a way that ensures the comfort of the city's residents and considers the sustainability of our water and energy resources.



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