

Urban Sprawl's Effect on Emissions

Trinity Gomez, Environmental Studies Program, California State University
Monterey Bay



Introduction

The desire for a more secluded home life, away from the hustle and bustle of big centralized cities, quickly turned into a sprawl of urbanization and an accumulation of emissions in what we consider modern day suburbs (cite source). Urban sprawl dates back to the late 19th century and expanded during the post World War II era. A variety of factors contributed to the rapid sprawl of urbanization that occurred between the 19th and 20th centuries. Implementation of the GI bill, highway policy, the post war baby boom, and expansion of the automobile all had a hand in urban sprawl's spread throughout the United States. Emissions from these suburbs have negatively impacted the environment in a number of ways, including air quality (cite source). The connection between emissions and urban sprawl is apparent and the issue

needs to be addressed. City developers should plan to develop more sustainable communities through new green developments and redeveloping current suburbanized areas to reduce their emissions.

History: How Urban Sprawl Came to be.

Urban sprawl is defined as the rapid expansion of urban development around a centralized city, typically low density, made up of many single-family households, and small commercial establishments (Parrillo, 2008). Urban sprawl started in the late 19th century but had the greatest growth after World War II (Donnelly, 2008). These sprawling urban areas are commonly known as suburbs.

At the beginning of the 20th Century, less than 12% of the United States population lived in suburbs . By the year 2000, 52% of the population lived in suburban areas

(Donnelly, 2008). A culmination of events occurred simultaneously during the post-World War II era that influenced urban sprawl. Veterans received low interest mortgages to buy homes through the GI Bill in 1944; this along with the baby boom, shot up the desire for larger living spaces and housing demands in general (Kushner, 2008). The Federal-Aid Highway Act of 1944 which mandated 25% of state federal aid for the development of urban highways be allocated to create easy access routes for people with automobiles (Schwartz, n.d.). Use of the automobile increased as cheap gasoline prices became readily available and cars started being mass produced (Parrillo, 2008).

Many people wanted to escape the commotion of living in a centralized city to have larger homes with more indoor and outside space on their property (Resnik, 2010). Up until this point, most of the population in the United States lived in either rural or industrialized cities. Employment/commercial facilities and homes were all in one centralized region so that people could have easy walking accesses to their places of work and necessity (Parrillo, 2008). But, since the emergence of more highways, increased demand for housing and cheap automobile accesses, suburbs had all the necessary tools to spread rapidly and without any sense of organizational development. The rate at which land was being urbanized was growing faster than the population and people in suburban cities were getting farther away from places of necessity (e.g. grocery

stores and work); cars were now the main mode of transportation (Resnik, 2010). Negative effects on the environment from urban sprawl occurred throughout the entire developmental processes, but became more apparent by the late 20th Century (Carson & Bonk, 2000).

Scientific History Effects of Sprawl

Urban sprawl has many negative environmental effects: motor vehicle travel and clearing natural carbon sinks for urban development have contributed to an increase of emissions in the atmosphere, consequentially affecting air quality and climate change. Suburban cities relied on cars as the dominate form of transportation in the late 20th Century (Hancock, 2002). Biking, walking, and public transportation infrastructure were not introduced in suburbs, making vehicles a necessity for those living in these areas (cite source). Today, residents in suburbs use twice as much energy and produce twice as much pollution as compared to city dwellers because of the amount of time those living in suburbs spend in their cars, an average of 5 percent of time (Hancock, 2002). The way a city is structured has a big impact on how its people will consume energy. Suburbs where people have to take longer drives, are point sources for poor air quality (McCarty & Kaza, 2015). Kort and colleagues estimate that urban areas produce over 70% of global energy related carbon emissions (Kort, Angevine, Duren, & Miller, 2013). Along with this, cars are also a contributor to nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that produce ground

level ozone (Hancock, 2002). Not only does urban sprawl affect peoples time spent in cars which increases emissions, the actual creation of the roads during sprawl have an effect as well. The energy used in road construction can equal up to one or two full years of emissions from road travel (Kramer, 2013).

Conclusion

Urban sprawl is a topic that should not be taken lightly and needs serious consideration for improved development. City developers and managers should take areas of high concentrated emissions in urbanized regions and implement sustainable practices like green architecture, public transportation and electric vehicles into consideration for future city plans

Literature Cited

McCarty, J., & Kaza, N. (2015). Urban form and air quality in the United States. *Landscape and Urban Planning*, 139, 168–179.

<https://doi.org/10.1016/j.landurbplan.2015.03.008>

Resnik, D. B. (2010). Urban sprawl, smart growth, and deliberative democracy. *American Journal of Public Health; Washington*, 100(10), 1852–1856.

Kort, E. A., Angevine, W. M., Duren, R., & Miller, C. E. (2013). Surface observations for monitoring urban fossil fuel CO₂ emissions: Minimum

site location requirements for the Los Angeles megacity. *Journal of Geophysical Research: Atmospheres*, 118(3), 1577–1584.

<https://doi.org/10.1002/jgrd.50135>

Schwartz, G. T. (n.d.). *Urban Freeways and the Interstate System*. 8, 98.

Parrillo, V. 2008. *Encyclopedia of social problems*. Thousand Oaks, CA: SAGE Press.

Kramer, M. 2013. *Our Built and Natural Environments: A Technical Review of the Interactions Among Land Use, Transportation, and Environmental Quality*. EPA

Kushner, J. (2008). Urban Neighborhood Regeneration and the Phases of Community Evolution After World War II in the United States. *Indiana Law Review*, 41(3), 576-603

Hancock, T. 2002. *Encyclopedia of public health*. Vol.4 Gale