

Built Environment, Urban Systems, and Cities

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Key Message 12.1

Urban Areas Are Major Drivers of Climate Change

Consumption of food, energy, water, and materials is a major driver of global climate change, and these consumption activities are disproportionately concentrated in urban and suburban areas (*virtually certain, very high confidence*).

Key Message 12.2

Attributes of the Built Environment Exacerbate Climate Impacts, Risks, and Vulnerabilities

Urban development patterns can exacerbate climate change impacts such as increases in heat and flooding (*virtually certain, very high confidence*). Climate change is amplifying existing loads and stressors on the built environment, and this is expected to continue (*virtually certain, very high confidence*). Urban areas face elevated risk as both people and the built environment are exposed to climate hazards, and these risks are distributed unevenly across the population (*virtually certain, very high confidence*).

Key Message 12.3

Urban Environments Create Opportunities for Climate Mitigation and Adaptation

Cities across the country are working to reduce greenhouse gas emissions and adapting to adverse climate impacts (*likely, high confidence*). Some states and cities are integrating climate considerations into relevant codes, standards, and policies. However, the pace, scale, and scope of action are not yet sufficient to avoid the worst impacts, given the magnitude of observed and projected climate changes (*virtually certain, very high confidence*).

Key Message 12.4

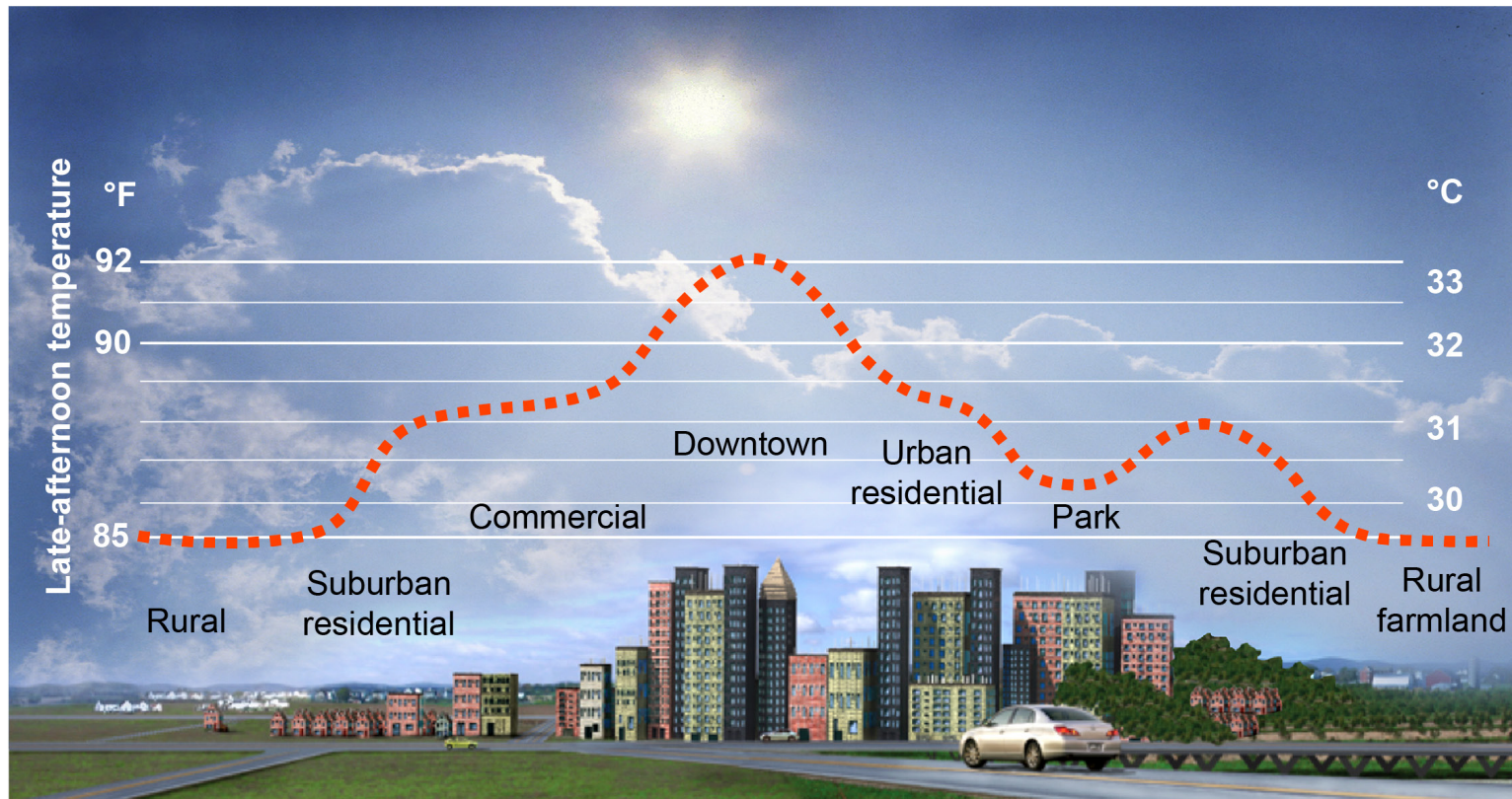
Community-Led Actions Signal a Shift Toward Equitable Climate Governance

There is varying progress in considering who benefits from, or bears the burden of, local climate actions (*very likely, high confidence*). The emergence of local and community-led approaches—coupled with increasing collaboration among city, Tribal, state, and federal governments—indicates a movement toward more inclusive planning and implementation of climate actions (*likely, high confidence*).

The Urban Heat Island Effect

Urban heat islands are most prominent in dense downtown areas with little access to open space.

Figure 12.5. The figure illustrates temperature fluctuations across natural and built environments in a typical late afternoon in the summertime. Downtown areas with dense high-rise buildings experience the heat island effect because concrete and asphalt absorb and retain heat. Waste heat from cars, air-conditioning, and other human activities also contribute to the heat island effect. Cooler temperatures are found around urban parks, green spaces, open land, and in suburbs and rural areas. The temperature lines are shown for illustrative purposes and do not represent the climate in a particular city. Figure credit: ©Heat Island Group, Lawrence Berkeley National Laboratory. Adapted with permission.



Recommended Citation

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