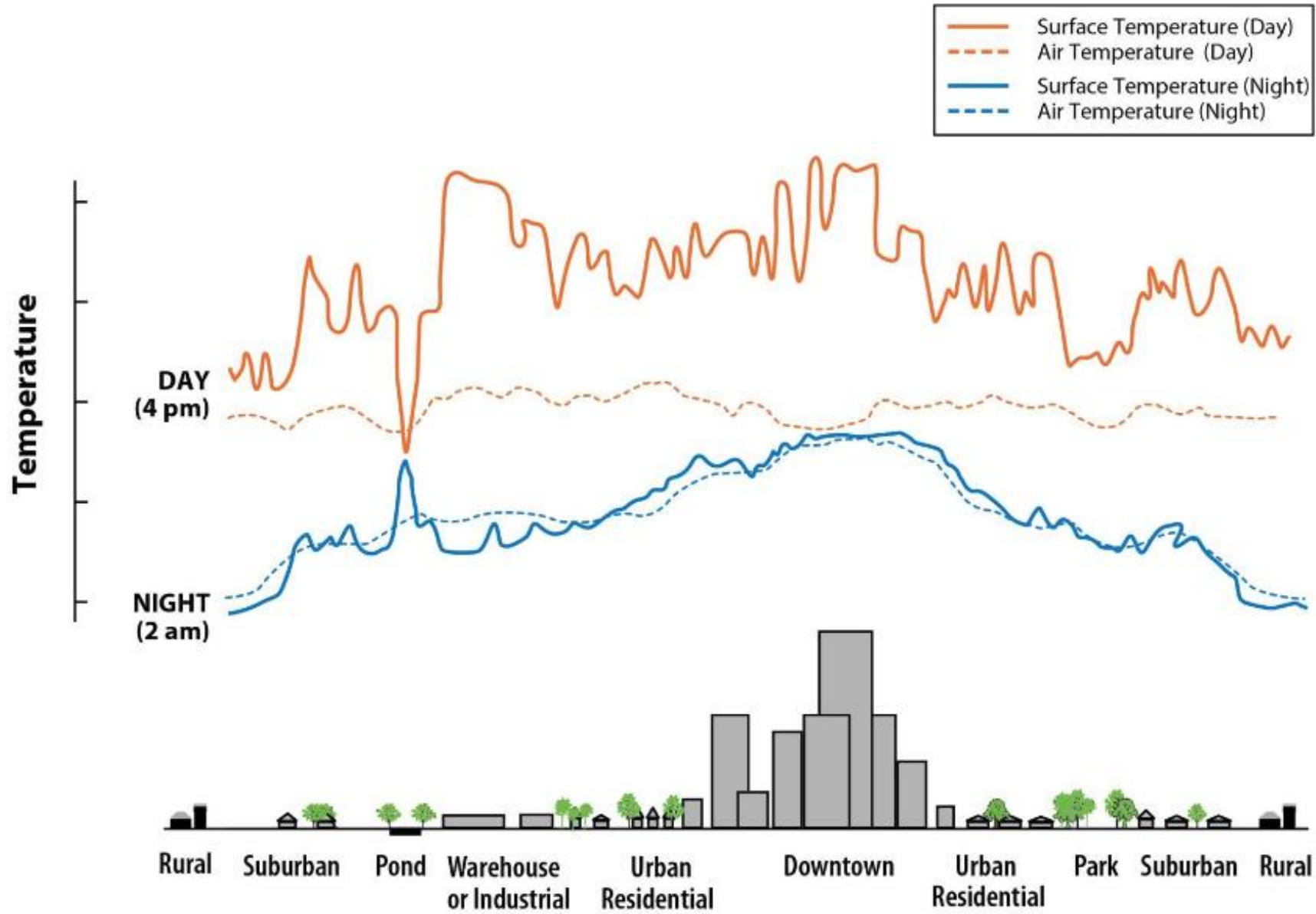


Urban Heat Stress

Typical Heat Island Temperature Differences Between Urban and Rural Areas



Source: EPA.gov

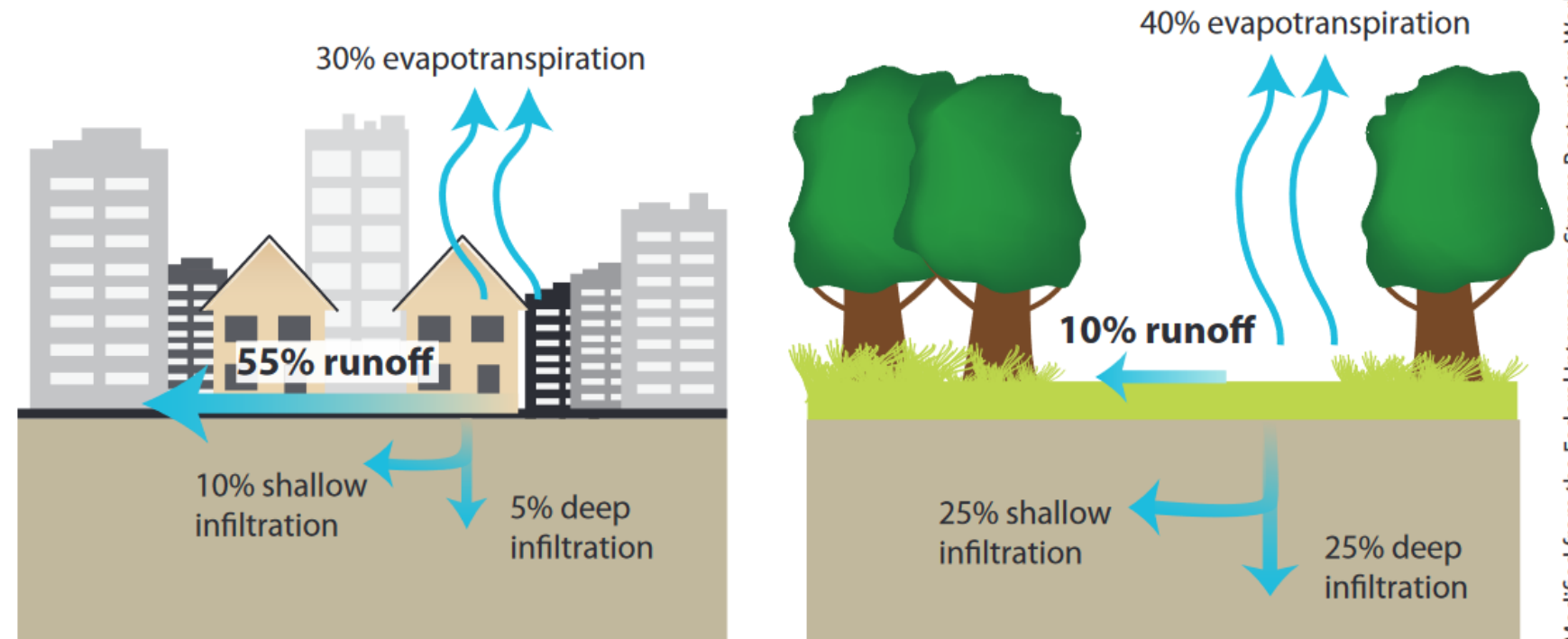
Heat Island Mitigation Efforts

- Vegetation
- Cool pavements
- Blue/Green roofs
- Cool roofs

Vegetation

Reduces heat island effect by evapotranspiration

Figure 5: Impervious Surfaces and Reduced Evapotranspiration



Highly developed urban areas (right), which are characterized by 75%-100% impervious surfaces, have less surface moisture available for evapotranspiration than natural ground cover, which has less than 10% impervious cover (left). This characteristic contributes to higher surface and air temperatures in urban areas.

Source: EPA.gov

Cool pavements

- Lightly colored (reflective, high albedo)
- Permeable for water runoff
- Permeable for noise reduction on streets

- Heat capacity plays a role

Cool roofs & blue/green roofs

- Blue roofs can absorb rainwater, increase biodiversity
- Cool roofs can be metallic, include active or passive cooling (color, insulation, etc.)

How do you balance between energy production (solar panels) and temperature reduction?

Further Reading

U.S. Environmental Protection Agency. 2008.
"Urban Heat Island Basics." In: Reducing Urban Heat Islands:
Compendium of Strategies. Draft. <https://www.epa.gov/heat-islands/heat-island-compendium> .