LA County Climate Vulnerability Assessment

Physical Vulnerability, By Infrastructure Type

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LA County CVA Physical Vulnerability, By Infrastructure Type

Infrastructure refers to a broad array of capital assets and institutions that provide essential services, support economic activity, and facilitate a productive society. These assets are deeply interrelated and work together as a cohesive system. This connectivity can amplify or mitigate the consequences of a climate emergency. Many of these critical infrastructure systems have their own plans and protocols for managing hazards. However, multiple climate hazards occurring in succession can overwhelm systems in an emergency, further compounding the consequences. Identifying the vulnerabilities unique to each physical infrastructure type helps to prioritize assets for future adaptive capacity planning.

Communications

Communications infrastructure is especially vulnerable to wildfire and has moderate vulnerability to all other climate hazards. Wildfire can directly damage cell towers, many of which are located in areas with increasing exposure to wildfire. Stakeholders often cite communications as a critical means to connecting to resources, not only for daily communications but also for spreading the word about climate change hazards and emergencies.

Natural resources

Natural resources in LA County, including beaches, streams and rivers, and parks and open space, provide many benefits, from habitat for wildlife to space for recreation or respite. Parks and open space are critical resources that help people find relief from heat. They are also are highly vulnerable to heat, wildfire, and drought. All of these hazards have the potential to damage or destroy plants and impact biodiversity. Similarly, streams and rivers are also highly vulnerable to heat and wildfire, which can affect water quality, biodiversity, and plant life. Beaches, on the other hand, are most vulnerable to coastal flooding. Further, the impact to water and air quality from many climate hazards can hinder the usability of these valuable resources.

Community and other facilities

Community and other facilities include a diverse set of facilities in LA County: childcare/child and family services, cooling centers, cultural/historical resources, prisons and jails, and schools. Community facilities provide valuable services to communities and help build social cohesion. Prisons and jails are the most vulnerable facilities in this category, particularly to heat and wildfire. Prisons and jails are often sited on affordable, unpreferred land, and so these populations suffer the consequences without sufficient protection from heat, wildfire, and smoke.

Job dense areas

LA County is an economic center for many businesses and industries that provide hundreds of thousands of jobs in sectors, including high technology and manufacturing.[1] There are job-dense areas throughout the region, with large pockets in downtown Los Angeles, Burbank, Long Beach, and Santa Monica. Across all hazards, these job-dense areas have moderate vulnerability. The moderate vulnerability is due to low exposure for wildfire and flooding and moderate or low sensitivity to heat and drought.

Energy

Energy infrastructure, such as electricity transmission, power plants, and substations, is connected to everything and is critical to daily life. These assets are widespread across LA County and therefore vulnerable to many hazards. Power outages can have far-reaching impacts, affecting residents, businesses, and other infrastructure operations. Transmission lines are highly vulnerable, particularly to heat and wildfire. Heat can strain the electrical grid when cooling demand goes up and infrastructure capacity and efficiency go down. Flooding can impact oil refineries, petroleum terminals, and power plants, which can have health implication for neighboring communities.

Housing for sensitive populations

As noted in the SVA, access to affordable and safe housing is critical, especially for populations particularly sensitive to climate hazards. The PVA assessed continuing care, residential and nursing facilities; publicly-subsidized low-income housing; and temporary and supportive housing for people experiencing homelessness. This subset of housing faces low vulnerability to sea level rise but moderate vulnerability to all other hazards. One exception is for continuing care, residential and nursing facilities, which are particularly vulnerable to heat, as well as potential power outages. Almost a third of these facilities may face a high change in exposure to heat, while providing essential care to older adults who are more sensitive to extreme heat.

Emergency response and medical facilities

This group of facilities, which includes fire and police stations, emergency and disaster offices, and hospitals for example, are critical for responding to climate hazards and emergencies. Across hazards, these facilities are mostly low or moderate vulnerability. While across LA County, these facilities face low exposure to wildfire and inland flooding, many are highly sensitive to these two hazards. In turn, those few facilities that are more highly exposed will face higher vulnerability. Medical facilities, particularly hospitals, will be moderately vulnerable to heat, flooding and wildfire, and can also see heightened demand for services during major events.

Transportation

Transportation infrastructure is important not only for daily travel but also to help people access resources or evacuate during a climate emergency. Rail infrastructure and airports are vulnerable to heat, while bridges, rail, and tunnels are vulnerable to flooding. LA County is a critical component of the global goods movement and is home to the Ports of Los Angeles and Long Beach. Combined, the ports are the largest container complex (by volume) in the U.S. and ninth busiest in the world.[2] The ports are most vulnerable to coastal flooding. Transit agencies and the ports are proactively planning for climate change, including conducting climate vulnerability assessments of their assets and developing adaptation plans.

Waste

Hazardous sites and solid waste facilities have low or moderate vulnerability across all hazards in the PVA. The assessed waste facilities include hazardous waste disposal sites, superfund sites, and solid waste infrastructure. Damage from wildfire can close waste facilities and release hazardous air pollutants to the region. When flooded, these facilities can contaminate neighboring communities and waterways with toxic chemicals and materials.

Water

Water infrastructure in LA County is especially critical given the heavy reliance (over 50%) on imported water resources. Local water resources like lakes and reservoirs are valuable assets to LA County. These infrastructure types are vulnerable to multiple hazards including extreme heat, wildfire, and drought. Drought impacts water systems due to the reduced availability of water and the strain on groundwater. Climate hazards can lead to lower water quality, which in turn can impact natural water bodies and water treatment operations and costs.

Endnotes

[1]https://www.laedc.org/industries/overview/

[2] https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_goods-movement.pdf