
KeyBank

NO. 1

INTRODUCTION

Urban forests are vital contributors to thriving cities. When properly planned, planted, and protected, urban forests promote both public and environmental health and can mitigate some effects of climate change. Our urban forest is an asset that Salt Lake City residents treasure. In the City's 25-year general plan, Plan Salt Lake (2015), residents named the urban forest as one of our greatest assets and called for its continued preservation and expansion.

Urban forests are composed of all trees, including those in riparian and wetland areas, within a city. Unlike their natural area counterparts, urban forests regularly interact with all aspects of city life, including pavement, pollutants, auto emissions, salt and sand, urban heat island, construction impacts, and above and underground utilities, among others. A growing, thriving urban forest is only possible with a careful combination of planning, policy, and design. That combination must balance the imperative of water conservation with a comprehensive, equity-based approach to the role of trees in the watershed and air quality. At the same time, City policies should account for the full range of benefits and costs of urban forests.

Salt Lake City's history as an urban place is closely tied to the history of its urban forest. When emigrants arrived in the Salt Lake Valley in 1847, their first concern was water. The second was shade. Settlers quickly planted vines to grow shade over their first, simple earthen homes. Then they planted and cultivated trees to transform the first streets and canals of the Plat of Zion into a livable city. By caring for our urban forest, we continue a positive legacy of those city-makers and embrace our urban heritage.

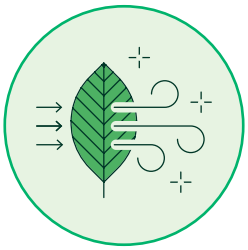
URBAN FOREST CONTRIBUTIONS

An increase in canopy coverage, appropriate tree selection, and emphasis on the importance of tree care can support a wide range of Salt Lake City's economic, environmental, public health, planning, community cohesion, and urban design goals, including improvements to:

- **Air Quality**
- **Water Quality**
- **Energy Conservation**
- **Carbon Sequestration**
- **Urban Heat Island Effect Mitigation**
- **Retail Sales**
- **Employee Satisfaction**
- **Public Health**
- **Mental Health**
- **School Performance**
- **Environmental Equity**
- **Transportation**
- **Urban Design**
- **Community Cohesion**

These improvements are briefly summarized below. Except where noted, this information was gathered from the Vibrant Cities Lab, a joint project of the US Forest Service, American Forests, and the National Association of Regional Councils. The Vibrant Cities Lab website has detailed information, research, and supporting data.

ENVIRONMENTAL BENEFITS



AIR QUALITY

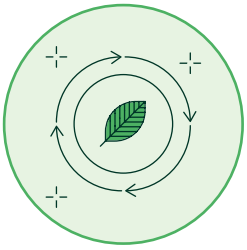
Trees reduce air pollution through the uptake of ozone, carbon dioxide, nitrogen dioxide, sulfur dioxide, and particulate matter less than 2.5 microns wide (PM2.5). Strategically locating tree plantings can reduce the impacts of air pollution. For example, vegetation barriers along roadways encourage the mixing of air strata and can reduce ground-level pollution.

URBAN HEAT ISLAND EFFECT MITIGATION

Shade trees mitigate urban heat island effects created by impervious, paved surfaces. The shade and transpiration (the process by which tree leaves give off water) properties of trees can reduce peak summer temperatures between 2 – 9 degrees Fahrenheit.

WATER QUALITY

Urban forests slow stormwater flows and reduce peak discharge during storms by holding water in the canopy and root system, allowing stormwater to slowly infiltrate into the ground. Slowed stormwater contributes to a healthier hydrologic system and aquatic ecology, because stormwater in pipes flows quickly which raises the water temperature and can negatively impact life downstream. Trees also filter pollutants from water, including nitrogen and phosphorus (typically found in fertilizer and pet waste).



CARBON SEQUESTRATION

According to the U.S. Geologic Survey, carbon sequestration is the “process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change.” (USGS, 2021) Trees sequester and store carbon dioxide (CO_2); adding trees in cities (in combination with other strategies) can reduce the amount of atmospheric CO_2.

ENERGY CONSERVATION

Trees reduce the energy consumption of commercial and residential buildings. According to the Lawrence Berkeley Lab Heat Island Group, “each one-degree F increase in peak summertime temperature leads to an increase in peak demand of 225 megawatts,” resulting in $100 million in annual costs to customers. (Center for Neighborhood Technology, 2010).

ECONOMIC BENEFITS

Tree-lined streets are correlated with increased retail sales, customers remaining in business districts longer, and patron visitation from further away (Wolf, 2009). Studies have also demonstrated that trees and plants boost employee productivity and job satisfaction. Trees and plants also have a well-known positive impact on property values.

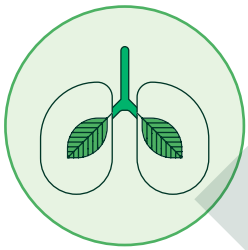
URBAN HEAT ISLAND HEALTH IMPACTS

Cities generally have a significant amount of paved or built surfaces with a low solar reflectance (albedo), such as asphalt, leading to higher temperatures. Urban spatial organization, urban form, lack of vegetation, and waste heat also contribute significantly to the heat island effect. A 2015 University of Georgia study found that the **Salt Lake City metro area ranked among the top 4 of 50 U.S. metropolitan areas for intensity of urban heat island (UHI) effect.**

Salt Lake City's UHI creates several public health impacts. Heat, especially days over 90° F, is the primary driver of weather-related deaths in the United States (Climate Central, 3). Higher summer temperatures increase concentrations of ground-level ozone, contributing to air pollution. Higher temperatures and air pollution increase the incidence of respiratory diseases, heat exhaustion, heat stroke, and heat-related mortality.

Ozone pollution causes a range of respiratory problems. Sensitive groups, such as children, older adults, and people with health conditions are at higher risk during heat waves, which are exacerbated by UHI effects. The Center for Disease Control and Prevention estimates that during the 24-year period from 1979-2003, "excessive heat exposure contributed to more than 8,000 premature deaths in the United States. This figure exceeds the number of mortalities resulting from [all natural disasters] combined." (https://www.epa.gov/heat-islands/heat-island-impacts, accessed July 2019)

COMMUNITY BENEFITS



PUBLIC HEALTH

Numerous studies demonstrate the connection between the ability to experience nature and improved mental and physical health. Urban forests reduce the incidence of respiratory disease, cardiovascular disease, heat-related illness, and skin cancer.

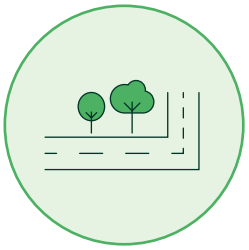
Walking through areas with trees and other vegetation and even viewing vegetated areas through windows has been demonstrated to reduce anxiety, stress, depression, and aggression. Studies of trees and vegetated spaces in cities also showed improved school performance and reduced ADHD symptoms.

URBAN DESIGN

Street trees and urban forests also make vital contributions to the urban design identity of neighborhoods and districts. In Salt Lake City, we can implement urban forest design to increase the number and quality of human-scale spaces in our oversized streetscapes. By creating inviting, pedestrian-scaled places in the city using street trees to mediate between the width of our streets and the height of our buildings, we can make places that encourage positive interactions between residents.

ENVIRONMENTAL EQUITY

Numerous studies have shown that lower-income, historically marginalized groups, and renters tend to live in urban areas with the fewest street trees in public rights of way. Careful planning of the urban forest is needed to ensure an equitable distribution of its benefits.



TRANSPORTATION

The appropriate use of trees in streetscape design results in traffic calming, reduced collision risk, and an inviting environment for walking and biking, promoting active transportation and recreation activities.

COMMUNITY COHESION

Trees enhance neighborhoods by creating inviting gathering places and providing more opportunities for neighbors to socialize and build community. Studies demonstrate an association between the number of trees and community cohesion in urban neighborhoods.

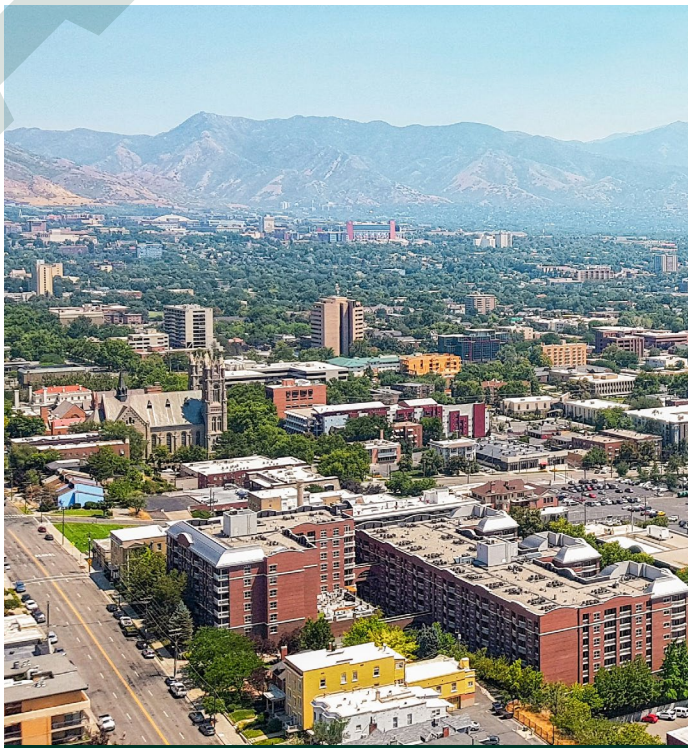
SALT LAKE CITY'S URBAN FOREST

As Salt Lake City undergoes record growth and development during the era of climate change, our urban forest faces new threats. When we add more paving to our city, without planning for adequate environmental and social mitigation, livability decreases. As the city heats up and air and water quality decline, our sidewalks and public spaces become unpleasant places that we avoid. Avoiding these places will deprive us of the city's most critical purpose: the ability to interact with our fellow residents and visitors.

Salt Lake City's Urban Forest Action Plan aims to:

- **Assess existing policies, plans, and practices,**
- **Gather best practices and solutions,**
- **Provide strategic, prioritized recommendations to preserve and grow our urban forest equitably.**

The Urban Forest Action Plan will contribute to Salt Lake City's resilience ecologically, economically, and socially by increasing the number, health, growing conditions, and longevity of trees in the urban landscape.



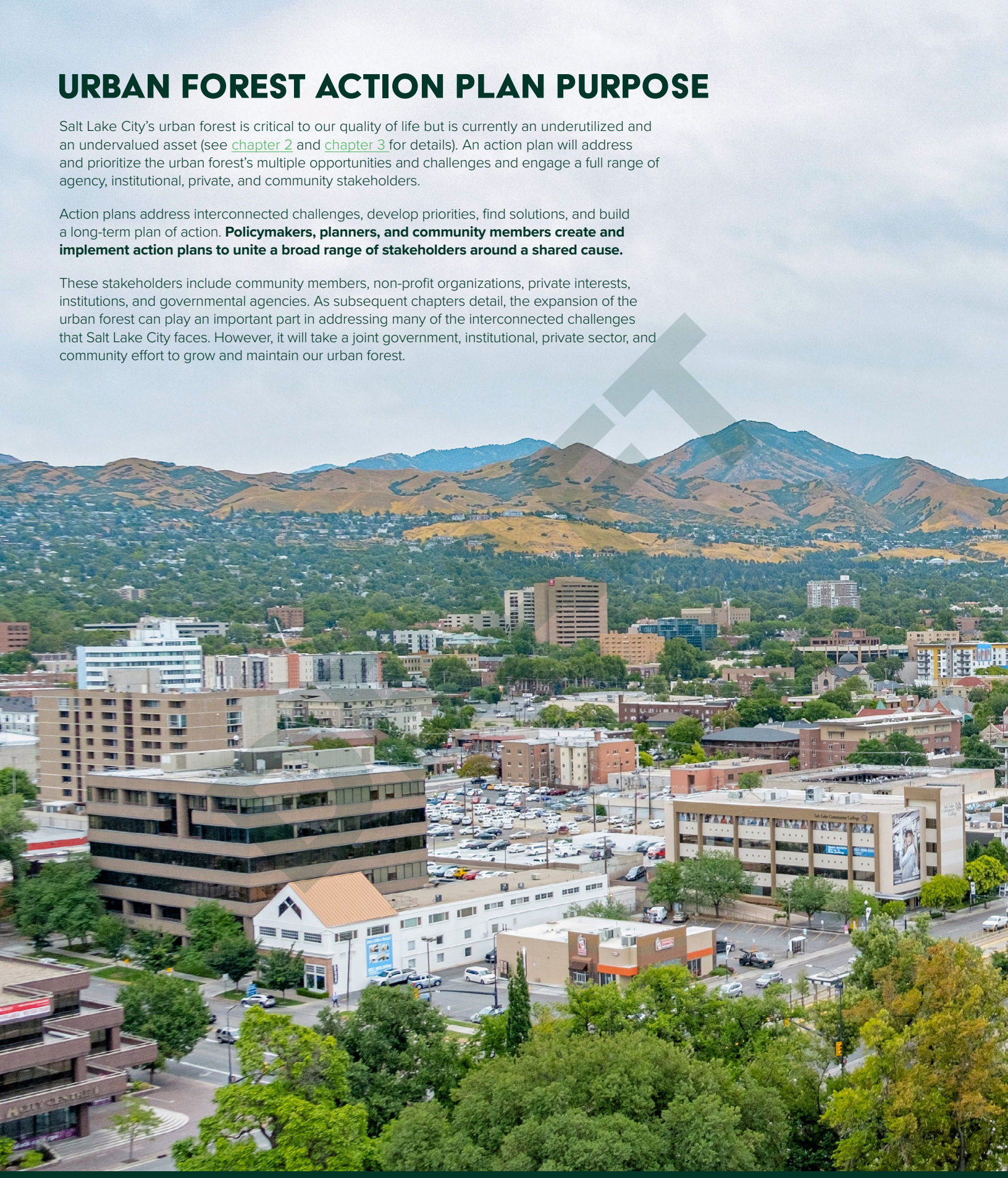
Most of the trees in Salt Lake City were planted by hand.

URBAN FOREST ACTION PLAN PURPOSE

Salt Lake City's urban forest is critical to our quality of life but is currently an underutilized and an undervalued asset (see chapter 2 and chapter 3 for details). An action plan will address and prioritize the urban forest's multiple opportunities and challenges and engage a full range of agency, institutional, private, and community stakeholders.

Action plans address interconnected challenges, develop priorities, find solutions, and build a long-term plan of action. **Policymakers, planners, and community members create and implement action plans to unite a broad range of stakeholders around a shared cause.**

These stakeholders include community members, non-profit organizations, private interests, institutions, and governmental agencies. As subsequent chapters detail, the expansion of the urban forest can play an important part in addressing many of the interconnected challenges that Salt Lake City faces. However, it will take a joint government, institutional, private sector, and community effort to grow and maintain our urban forest.



Challenging growing conditions in cities (from compacted soils to numerous utilities) call for careful planning and design of the urban forest.