Chapter 3

Vision

GOALS AND POLICIES

The Santa Cruz County Regional Transportation Plan (2050 RTP), through its goals and policies, sets forth a foundation for expanding options for residents and visitors to access their daily needs in a way that is safe, equitable, protects the environment and promotes investment in the local economy. This is advanced by designing and implementing a transportation system that serves our diverse travel needs and embraces the principle that transportation is intertwined with environmental, economic and social concerns.

As discussed in Chapter 1, driven by financial limitations, environmental concern, and demographic trends, the RTC voluntarily has adopted a sustainability framework for the RTP that is based on the triple bottom line definition of sustainability. The triple bottom line concept of sustainability can be seen in every aspect of the 2050 Regional Transportation Plan starting with the goals (Figure 3.1) and policies (Figure 3.2). Systematically integrating sustainable principles into the 2050 RTP allows the RTC and the public to evaluate how well the long-term plan upholds and maintains progress towards generating safe, equitable, and cost-effective access to daily needs, while at the same time generating economic benefits and protecting the environment.

WHY DO POLICIES MATTER?

Success in advancing goals relies upon policies that provide direction to the public and decision makers about what course of action will be required to realize the greatest benefit by 2050. The policies established for the 2050 RTP support outcomes, rather than specific projects or modes. The policies (Figure 3.2) are designed to focus future investments on the best-performing strategies which generate the desired results and work within financial constraints. They are broad enough to adapt to changing conditions and take advantage of new opportunities and are not too specific to confine investments to one project or project type.

The following goals and policies have been developed with extensive input from the public and transportation advisory committees and were approved by the Regional Transportation Commission in 2024. These goals and polices are consistent with state and federal transportation planning policies, guidelines, and requirements including the SB 375-required Sustainable Communities Strategy, California Transportation Plan 2050 (CTP 2050), Climate Action Plan for Transportation Infrastructure (CAPTI), Complete Streets, and Smart Mobility Framework developed by Caltrans.

A summary of how the planned project spending in the 2050 RTP aligns with the goals is provided in Chapter 6.

Goal 1	**Reduce vehicle miles traveled (VMT) in order to establish livable communities that improve people's access to their regular needs.**
Goal 2	**Eliminate transportation related fatalities and serious injuries for all transportation modes.**
Goal 3	**Deliver transportation improvements and maintenance cost effectively and responsive to the needs of all users of the transportation system.**
Goal 4	**Establish a climate-resilient transportation system that anticipates, adapts to, and mitigates the impacts of climate change.**
Goal 5	**Ensure that plans, investments, policies, and transportation decisions will reduce disparities for historically and systemically marginalized, underserved, and excluded populations.**

Figure 3.1 – Goals of the 2050 Regional Transportation Plan
Source: Santa Cruz County Regional Transportation Commission

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Transportation Infrastructure:					
Prioritize funding to improve multimodal access to and within key destinations for all ages and abilities.	✓	✓	✓	✓	✓
Ensure network connectivity by closing gaps in the bicycle, pedestrian, and transit networks.	✓	✓	✓	✓	✓
Develop dedicated transit facilities that will improve transit access and travel time and will promote smart growth and transit-oriented development.	✓	✓	✓	✓	✓
Plan and fund projects that create a human-centered transportation system.	✓	✓		✓	✓

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Land Use: Support land use decisions that locate new development close to existing services, particularly those that serve transportation disadvantaged/ equity priority populations.	✓		✓	✓	✓
Goods Movement: Enhance local economic activity through improving freight mobility, reliability, efficiency, and competitiveness.			✓		
Safety:					
Prioritize funding for safety projects and programs that will result in the county experiencing zero traffic-related deaths and serious injuries, or Vision Zero.		✓			✓
Encourage projects that improve safety for youth, vulnerable users, and other transportation disadvantaged populations.		✓			✓

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Emergency Services: Support projects that provide access to emergency services.		✓			✓
System Design: Support project design that reduces the potential for serious injury or death by mitigating human mistakes, encouraging safer behaviors, and facilitating safe travel by the most vulnerable users.		✓			✓
Cost Effectiveness & System Maintenance:					
Prioritize transportation projects that cost-effectively improve access for all and provide sustainable transportation trips.	✓		✓	✓	✓
Maintain and operate the existing transportation system cost-effectively and in a manner that adapts the current transportation system to maximize existing investments.			✓		

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Implement Transportation System Management programs and projects on major roadways across Santa Cruz County that increases the efficiency of the existing transportation system.			✓	✓	
Coordination: Improve coordination between agencies in a manner that improves efficiencies and reduces duplication (e.g., paratransit and transit, road repairs, signal synchronization, Transportation Demand Management programs).	✓	✓	✓	✓	✓
System Financing: Support new or increased taxes and fees that reflect the cost to operate and maintain the transportation system.			✓	✓	
Enhance local economic activity through improving freight mobility, reliability, efficiency, and competitiveness.			✓		

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Climate Resiliency:					
Deliver transportation investments in a way that reduces climate change impacts, increases tree canopy, where appropriate, improves habitat and water quality, and enhances sensitive areas.	✓			✓	✓
Adapt the transportation system to withstand climate change impacts such as sea level rise, extreme weather events, changes in temperature, and precipitation patterns.				✓	✓
Reduce greenhouse gas emissions to mitigate climate change impacts by planning and funding projects that reduce vehicle miles traveled (VMT).	✓			✓	
Transportation Demand Management: Expand transportation demand management programs that decrease the number of vehicle miles traveled and result in mode shift.	✓	✓		✓	✓

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Incorporate climate change projections into transportation planning and decision-making to proactively address potential risks and vulnerabilities.				✓	
Equity:					
Demonstrate that planned investments will reduce disparities in safety and access for transportation equity priority communities.		✓			✓
Maximize input and decision-making for transportation plans and projects within equity priority communities.					✓
Prioritize funding for climate resilient transportation projects in areas with high concentrations of equity priority communities.				✓	✓

2050 RTP Policies	Primary Outcomes Advanced				
	Reduce VMT	Safety	Economic Benefit	Climate Resiliency & Sustainability	Equity
Mitigate the displacement impacts of transportation improvements on low-income residents and local small businesses.			✓		✓
Prioritize transportation investments serving low-income neighborhoods and new affordable housing projects.	✓		✓	✓	✓
Public Engagement: Solicit broad public input on all aspects of regional and local transportation plans, projects, and funding actions.					✓

Figure 3.2 – Policies of the 2050 Regional Transportation Plan and Outcomes they Advance
Source: Santa Cruz County Regional Transportation Commission

KEY CONSIDERATIONS

The Santa Cruz County RTP is required to address certain state and federal requirements, as well as local and regional goals. Some of the laws and regulations and other key considerations evaluated during development of the goals, policies, and performance metrics for the 20250 RTP are described below.

Senate Bill 375

One of the key considerations in developing the 2050 RTP goals, policies and targets was to address greenhouse gas emissions. The California Sustainable Communities and Climate Protection Act of 2008 (SB 375) requires each of the state's 18 metropolitan areas to reduce greenhouse gas emissions from cars and light trucks. AMBAG is responsible for developing a Sustainable Communities Strategy (SCS) as part of the Metropolitan Transportation Plan (MTP) that coordinates land use and transportation planning to reduce vehicle miles traveled in order to reach the greenhouse gas (GHG) reduction target established for the tri-county region. The goals, policies and targets that were developed for the 2050 Santa Cruz County Regional Transportation Plan strive to reduce GHG emissions from transportation and are consistent with the 2050 MTP-SCS and goals of Senate Bill 375.

California State Capitol Building
Photo: Hoover Institution

Senate Bill 32

The California Global Warming Solutions Act of 2016, or Senate Bill 32, expands upon Assembly Bill 32 (2006) to reduce greenhouse gas emissions. SB 32 requires California to reduce greenhouse gas emissions statewide to 40% below the 1990 levels by 2030. The achievement of these targets requires emissions reductions across all sectors of the economy at the state and local levels. The percent reduction from the transportation sector can come from a reduction in vehicle miles traveled as well as improvements in vehicle technology including electric and hybrid vehicles and improvements in fuel standards that reduce carbon levels in fuel.

Senate Bill 391

Senate Bill 391 (2009) required the California Department of Transportation to develop a California Transportation Plan (CTP) to demonstrate how California can reduce transportation sector greenhouse gas emissions to 80 percent below 1990 levels by 2050. The CTP is updated every 5 years and the current plan, CTP 2050, identifies the statewide integrated transportation system needed to achieve GHG reductions and demonstrates how major metropolitan areas, rural areas, and state agencies can coordinate planning efforts to achieve critical statewide goals. The 2050 Regional Transportation Plan is consistent with the California Transportation Plan 2050.

In addition to SB 391, notable California climate legislation includes Executive Order (EO) B-55-18 requiring carbon-neutrality by 2045, SB 100 requiring 100 percent clean energy by 2045, EO N-19-19 requiring California to redouble efforts to reduce GHG emissions, and EO N-79-20 requiring new auto sales to be 100% zero-emission vehicles (ZEV) by 2035.[1] The state's Climate Action Plan for Transportation Infrastructure (CAPTI), builds on the 2019 and 2020 executive orders signed by Governor Gavin Newsom, and details how the state recommends investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety and equity.

National Transportation Performance Measures

In 2021, the Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law (BIL), was signed into law. IIJA continues the national performance management framework established under the Moving Ahead for Progress in the 21st Century (MAP-21) reauthorization bill by requiring the Federal Highway Administration (FHWA) to establish transportation performance measures that make progress toward the following national goals:

- **Safety**—to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure condition**—to maintain the highway infrastructure asset system in a state of good repair.
- **Congestion reduction**—to achieve a significant reduction in congestion on the National Highway System (NHS).
- **System reliability**—to improve the efficiency of the surface transportation system.
- **Freight movement and economic vitality**—to improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental sustainability**—to enhance the

performance of the transportation system while protecting and enhancing the natural environment.

- **Reduced project delivery delays**—to reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.

MAP-21 also requires each State and Metropolitan Planning Organizations (MPO) to set performance targets for these measures. IIJA continues MAP-21's performance management approach, within which states invest resources in projects that collectively will make progress toward national goals. The goals, policies, targets, and project list established for the 2050 RTP are consistent with national performance measures.

Safety was the first national goal to go into effect under MAP-21 and includes five performance measures: number of fatalities, number of serious injuries, rate of fatalities per 100 million vehicle miles traveled, rate of serious injuries per 100 million vehicle miles traveled, and number of non-motorized fatalities and serious injuries. Caltrans coordinates with the Office of Traffic Safety to establish annual statewide performance management targets (SPMT).[2] MPOs can decide to use the same safety targets as the state or establish their own. In 2023, IIJA added Greenhouse Gas Emissions as an additional performance measure target.

Complete Streets

Complete streets planning is a key policy consideration in the 2050 Regional Transportation Plan. The California Complete Streets Act of 2008, and renewed in 2014, requires cities and counties to identify how the needs of all users of the transportation system will be accommodated in the circulation element of their general plan. This includes pedestrians, transit riders, bicyclists, and motorists, regardless of age and abilities. Complete streets are equitable, healthy, cost-effective, good for environment, and improve access to goods and services. Complete Streets principles are incorporated into the 2050 RTP.

The RTC, in collaboration with AMBAG, TAMC, and SBCOG, published the Monterey Bay Area Complete Streets Guidebook in 2013.[3] The guidebook provides resources to local jurisdictions for developing streets in the Monterey Bay Area that meet the needs of all users, including non-drivers of all ages and abilities, and help reduce

greenhouse gas emissions by encouraging bicycle, pedestrian and transit usage. Items from the checklist which is included in the guidebook are integrated into RTC grant applications as a means to assist local agencies in integrating complete streets components into projects.

Threading complete streets throughout the goals and policies creates a shift in planning primarily for cars to increasing focus on the movement of people using all modes. One way of looking at it is: if people are the lifeblood of a community, then streets are its veins and arteries. From the complete streets perspective, streets not only serve the traditional role of connecting people to important destinations quickly, but they can serve as destinations themselves, as places to exercise, view public art, enjoy social interactions, or shop locally.

Health and Assembly Bill 441

Health and health equity concerns have also been incorporated into the goals, policies and targets of the 2050 RTP. Assembly Bill 441 (AB 441), championed by local Assemblyman Bill Monning and signed by Governor Brown in September 2012, acknowledges that California and the nation are facing unprecedented levels of chronic disease, which now accounts for approximately 73 percent of all deaths in California[4] and 75 percent of all United States health care expenditures.[5]

The health of California's population is largely determined by the environments in which people live. These environments, including the transportation infrastructure, shape the choices that people make every day. AB 441 requires the California Transportation Commission (CTC) to promote health and health equity as part of the Regional Transportation Plan guidelines. In the 2017 revision of the RTP guidelines, the CTC provided a summary of the policies, practices, or projects that have been employed by metropolitan planning organizations that promote health and health equity.

SOCIAL EQUITY AND ENVIRONMENTAL JUSTICE

Social equity refers to the fair and equitable distribution of transportation benefits, costs, and potential disadvantages—regardless of income, race, ethnicity, or other demographic factors. Expanding transportation and mobility options—such as improved transit services,

and enhanced bicycle and pedestrian infrastructure—benefits all community members across all income levels. Ensuring that a comprehensive range of community interests is represented is essential to the Regional Transportation Plan (RTP) development process and is required by both federal and state law.

Title VI of the Civil Rights Act of 1964, Section 11135 of the California Government Code, and Executive Order 12898 on Environmental Justice require planning agencies to consider how transportation and land use decisions may affect all residents, particularly low-income communities, communities of color, people with disabilities, and others who have historically experienced discrimination or exclusion.

Similarly, **Caltrans' California Transportation Plan (CTP) 2050** includes a social equity goal to "eliminate transportation burdens for low-income communities, communities of color, people with disabilities, and other disadvantaged groups." Consistent with this objective, social equity factors considered in the development of the RTP include transportation affordability, accessibility, and equitable distribution of investments and benefits.

The RTC continues its efforts to ensure that planned regional transportation improvements do not create disproportionate adverse impacts on low-income, minority, or other underrepresented populations, and that we address historic inequities and underinvestment when planning our transportation system. The 2050 RTP is designed to address the transportation needs in Santa Cruz County, ensuring that no single group bears an unfair share of the burdens or benefits of transportation investments.

RTP sustainability policies and performance targets include specific measures focused on the needs of populations that are **transportation disadvantaged or Equity Priority Communities**—including those with low income, older adults, people with disabilities, individuals with limited English proficiency, youth, and communities of color. As part of the **RTC's Transportation Equity Action Plan (2025)**—focused on addressing historic and ongoing inequities—the RTC collaborated with its Transportation Equity Workgroup to identify metrics and thresholds for updating the regional definition of Equity Priority Communities. Equity priority population maps are included in Chapter 4.

In accordance with state and federal laws and local goals and policies, including Title 23 CFR Part 450.316(a)(1)(vii), the RTC been working to expand its outreach and engagement efforts to maximize participation in transportation planning and project development efforts. This has included working with the Association of Monterey Bay Area Governments (AMBAG) to develop a Public Participation Plan, updating the RTC's Nondiscrimination, Title VI and ADA Plan and Language Access Program, and **Equity Outreach Toolkit** to outline clear procedures, strategies, and desired outcomes for engaging traditionally underserved populations—particularly low-income and minority households who may face more significant challenges accessing employment, education, and essential services.

Together, these efforts highlight how the transportation system in Santa Cruz County can continue to evolve to provide reliable, safe, healthy, and multimodal transportation choices that are both equitable and affordable for all users.

TARGETS

The Santa Cruz County Regional Transportation Plan identified measurable outcomes, called targets, for the first time in the 2014 RTP. Establishing targets linked to a sustainability goal utilizes performance-based planning to inform investment priorities to create the desired future.

The targets have been updated for the 2050 RTP and are shown in Figure 3.3 below. The adopted targets are intended to be aggressive, but reasonably obtainable. Unlike more broadly scoped community plans, the adopted targets focus on areas that transportation policies can affect. The targets reflect community input received (Appendix A). They were carefully crafted to be consistent with state and federal goals, and to work with available data and travel demand model outputs.

The adopted goals, policies, and targets were used to prioritize projects for funding in the transportation investment program portion of the 2050 RTP. Incorporating targets into the goals and policies enables the Regional Transportation Commission to assess how well the long-range plan will perform over time. Details on monitoring performance of the transportation system in advancing the targets are discussed in Chapter 4. The complete list of goals, policies, and targets for the 2050 RTP can be found in Appendix C.

Targets are used to prioritize projects and monitor the performance of the existing and planned transportation system. Performance-based planning, including setting quantitative and qualitative targets, is a strategic approach that uses key information to help inform investment decisions. In updating the 2050 RTP, new targets were added to better align with federal and state policies and guidelines, as well as the adopted 2050 RTP goals and policies. Additions include new targets to improve bicycle and pedestrian network quality, reduce the number of high-injury intersections, and prioritize funding for climate-resilient and nature-based transportation infrastructure. Equity-related additions set targets to commit at least 40% of discretionary revenues to projects in equity-priority communities, reduce traffic volumes in these areas, lower household transportation and housing cost burdens, and expand public participation and staff diversity.

Goal #1

Reduce vehicle miles traveled (VMT) in order to establish livable communities that improve people's access to their regular needs.

Targets

1.A Improve people's ability to meet most of their daily needs without having to drive. Improve multimodal access and proximity to key destinations.

- 1.A.1 Increase the length of urbanized area bikeway miles relative to total urbanized area arterial and collector roadway miles to 85 percent by 2035 and to 100 percent by 2050.
- 1.A.2 Increase the transit vehicle revenue miles by 30 percent by 2035 and 50 percent by 2050 (compared to 2022).
- 1.A.3 Reduce per capita vehicle miles traveled by 20 percent by 2035 and by 25 percent by 2050 (compared to 2005).

1.B Improve the convenience and quality of trips, especially for walk, bicycle, transit, freight and carpool/vanpool trips.

- 1.B.1 Improve percentage of reliable[6] person miles traveled by 5 percent by 2035 and by 10 percent by 2050 (compared to 2020).
- 1.B.2 Improve network quality for bicycle trips to and within key destinations by increasing the percentage of all bikeways that are separated or off-street (Class I or IV) to 20 percent of bikeway miles by 2035 and to 30 percent by 2050.

1.B.3 Improve the network quality for walk trips by increasing the percentage of urbanized area arterials and collectors that have sidewalks with lighting on both sides to 85 percent by 2035 and 100 percent by 2050.

1.C Improve health by increasing the percentage of trips made using active transportation and transit.

1.C.1 Decrease single occupancy commute trip mode share by 6.5 percent by 2035 and by 10 percent by 2050 (compared to 2020).

1.C.2 Increase the number of active commute trips to 16 percent of total commute trips by 2035 and to 24 percent of total commute trips by 2050.

Goal #2

Eliminate transportation related fatalities and serious injuries for all transportation modes.

Targets

2.A. Improve transportation safety, especially for the most vulnerable travelers.

2.A.1 Vision Zero: Eliminate traffic fatalities and serious injuries by 2050 for all modes. By 2035, reduce fatal and serious injuries by 50 percent (compared to 2020).

2.A.2 Reduce the number of high-injury intersections by 20 percent by 2035 and 50 percent by 2050.

Goal #3

Deliver transportation improvements and maintenance cost effectively and responsive to the needs of all users of the transportation system.

Targets

3.A Maintain the existing system and improve the condition of transportation facilities.

- 3.A.1 Increase the percentage of pavement in good condition to 50 percent by 2035 and 80 percent by 2050.
- 3.A.2 Reduce the number of transit vehicles in "distressed" condition to 20 percent by 2035 and to 10 percent by 2050.

3.B Re-invest in the local economy $20 million/year by 2035 and $35 million/year by 2050 (compared to 2005) from savings resulting from lower fuel consumption due to a reduction in vehicle miles traveled.[7]

3.C Increase the amount of transportation funding by 35 percent by 2035 (compared to 2020) from a combination of local, state, and federal funds.

Goal #4

Establish a climate-resilient transportation system that anticipates, adapts to, and mitigates the impacts of climate change.

Targets

4.A Reduce smog-forming pollutants and greenhouse gas emissions.

4.A.1. Reduce per capita greenhouse gas emissions by 50 percent by 2035 and by 78 percent by 2050 and total greenhouse gas emissions from transportation by 40 percent by 2035 and 70 percent by 2050 (compared to 2005).

4.A.2 Prioritize RTC discretionary funding to improve climate resiliency of critical transportation infrastructure (roads, bridges, transit stations) per the RTC Climate Vulnerability Assessment.

4.A.3 Increase the percentage of transportation infrastructure projects with nature-based solutions[8] funded or led by the RTC to 10% by 2035 and 30% by 2050.

Goal #5

Ensure that plans, investments, policies, and transportation decisions will reduce disparities for historically and systemically marginalized, underserved, and excluded populations.

Targets

5.A Enhance healthy, safe access to key destinations for transportation-disadvantaged populations.

- 5.A.1 Improve travel options for people who are transportation disadvantaged due to income, age, race, disability or limited English proficiency by increasing transit vehicle revenue miles in equity priority communities by 50 percent (see Target 1.A.2.) and reducing transit travel times by 15 percent by 2035 and by 30 percent by 2050 (compared to 2020).
- 5.A.2. Prioritize at least 40% of discretionary revenues to projects and programs in equity priority communities.
- 5.A.3. In order to reduce negative impacts, reduce the average daily vehicle traffic volumes on arterials and highways in equity priority communities by 2 percent by 2035 and 5 percent by 2050.
- 5.A.4. Decrease the share of lower-income residents' household income consumed by transportation and housing by 10% by 2050.

5.B. Solicit broad public input.

5.B.1. Increase input from diverse members of the public in RTC planning and project implementation activities by 85% in 2035 and 100% by 2050, by targeting at least half of all public and stakeholder outreach to equity priority communities.

5.B.1 Target recruitment for RTC staff and committees to proportionally reflect the diversity of Santa Cruz County.

Figure 3.3 – Targets of the 2050 Regional Transportation Plan
Source: Santa Cruz County Regional Transportation Commission

Notes for Chapter 3

1 "California Transportation Plan 2050," Caltrans. (February 2021). https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf

2 "Safety Performance Management Targets for 2021," Caltrans. (2021). https://dot.ca.gov/-/media/dot-media/programs/federal-liaison/documents/2021-spmt-a11y.pdf

3 "Monterey Bay Area Complete Streets Guidebook," SCCRTC. (August 2013). http://sccrtc.org/projects/multi-modal/santa-cruz-county-complete-streets/monterey-bay-area-complete-streets-guidebook/

4 "The Burden of Chronic Disease and Injury – California, 2013," California Department of Public Health (2013), http://www.cdph.ca.gov/programs/Documents/BurdenReportOnline%2004-04-13.pdf

5 "Chronic Disease Prevention and Health Promotion," Centers for Disease Control and Prevention, accessed December 2013, http://www.cdc.gov/chronicdisease

6 Travel time reliability measures consistency in travel times, comparing longer measured times at a certain percentile to normal times, day to day.

7 $10 million per year equates to $100 per household per year. Assumes $4 per gallon.

8 Nature-based solutions (NBS) leverage natural processes and features to address transportation challenges, such as mitigating greenhouse gas emissions, improving air quality, managing stormwater runoff, reducing erosion, and alleviating urban heat island effects.