



**American Planning Association**

*Creating Great Communities for All*

# Climate Change Policy Guide

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The American Planning Association advocates for public policies that create just, healthy, and prosperous communities that expand opportunity for all through good planning. APA's advocacy is based on adopted positions and principles contained in policy guides. These guides address the critical policy issues confronting planners and communities by identifying solutions for local, state, and federal policy makers. Policy guides are led by the APA Legislative and Policy Committee, ratified by the APA Board of Directors, and developed through the careful and extensive involvement of planners across the country. APA policy guides articulate and advance the principles of good planning in law and regulation.

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### Principal Authors

Neil J. Angus, AICP CEP  
Matthew T. Bucchin, AICP  
Brian Campbell, FAICP, chair/editor  
Karla Ebenbach, AICP  
Peter C. Lowitt, FAICP  
Anne Miller  
David C. Rouse, FAICP  
Scott D. Turner, AICP

### Advisers:

Kim Ellis, AICP  
Daniel J. Reuter, FAICP  
James C. Schwab, FAICP  
Teresa Townsend, AICP

### APA Board of Directors

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Leo R. Asuncion, Jr., AICP, President Elect  
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AICP President  
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Director Region III  
Susan A. Wood, AICP, Director Region V  
Kristen Asp, AICP, Director Region VI  
Linda Amato, Director at Large  
Lauren Driscoll, AICP, Director at Large  
Marjorie Press, Director at Large, Focused  
Angela D. Brooks, AICP,  
Director at Large, Focused  
Sara Copeland, Chapter Presidents  
Council Chair  
David Fields, AICP, Divisions Council Chair  
Veronica Escalera-Ibarra  
Student Representatives Council Chair

# Introduction

Climate change is the most consequential worldwide environmental event that human civilization has had to confront. The scientific consensus that climate change is being largely driven by humans has long been clear, and it has also now been well established that the long-range impacts of that change will have major implications for human civilization and all life on earth. As documented in the recent work of the Intergovernmental Panel on Climate Change and the U.S. Global Climate Research Program, those impacts (coastal and low-lying inundation, severe health impacts from extreme heat and air quality deterioration, endangerment of life and property through extreme weather events, etc.) will have very negative consequences for many people, especially minority and lower-income communities. The planning community has the obligation and the opportunity to use its planning processes, skills, and knowledge to help reduce the severity of those impacts, and to help humanity adapt swiftly, intelligently, and equitably to their negative consequences.

## Roles and Responsibilities of Planners

Planners need to take the lead in helping to mitigate the impacts of climate change and ensure our communities adapt to a changing climate. This is particularly important as climate change has historically been exacerbated by transportation projects and land development patterns. Since planners have leading roles in the development of transportation, environmental, and land development plans and policies at the local, state, and federal levels, they have the ability and responsibility to help shape them in ways that will have positive climatological effects and help prepare communities for the impacts of a changing climate.

APA recognizes that climate change is an issue that crosses multiple disciplines and to properly address it we need to collaborate with other organizations and take an integrative approach. Implementation of the policies in this document will require coordination with builders, engineers, architects, environmentalists, policy makers, scientists, and the general public, and may also aid in advancing the climate goals of other organizations, private and public. Ultimately, the most important outcome is to work in concert with others to achieve net-zero Greenhouse Gas (GHG) Emissions by 2050 and prepare for the negative effects of climate change going forward.

## Climate Change as an Overarching Issue

As with equity and health, climate change is an overarching issue that affects all aspects of the planning profession. Planners should consider climate-related issues in all policies and actions that guide the development and redevelopment of communities of all sizes, as well

as climate- and planning-related actions at the federal and state levels. Because of the cross-cutting nature of climate change, the issues in this Guide are addressed within multiple thematic sections. As a result, there are some inevitable overlaps in policies among the sections, but it also means that a user does not have to search through the entire Guide to address the type of situation they are working on.

## Overview of the Policy Guide

These policies should be used to help formulate position statements, legislative recommendations, and other policy-based actions, and to recommend program funding at the federal and state government levels. This includes interaction with legislators and their staff, with government departmental staff, and with other like-minded organizations when developing position papers and recommended federal or state actions. At the local and regional levels these policies should be used to help guide the creation of locally and regionally tailored policies, plans, programs, projects, standards, and regulations. They could be especially helpful in framing climate change policies in comprehensive plans, climate action plans, and other long-range planning documents. They should also be used to help guide annual budgets and capital improvements programming.

To provide planners with specific policy direction for each of these situations, the format of this Guide provides discreet sections for each type of policy language that may be needed. It provides policy recommendations specific to federal and state levels of government and organizes the local and regional policy outcomes under general policy headings that reflect broad, thematic goals for community sustainability and resilience rather than traditional planning categories. Each of these policy sections could be seen as distinct and complete policy guides and are meant to stand on their own in providing guidance within their particular policy area.

These general policy areas correspond to the six principles established by APA's Comprehensive Plan Standards for Sustaining Places, which organize the range of topics and issues planners address in their work into an integrated framework. They are:

- Livable Built Environment
- Harmony with Nature
- Resilient Economy
- Interwoven Equity
- Healthy Communities
- Responsible Regionalism

## POLICIES

The following sections articulate federal- and state-specific policies and policies in the six thematic areas delineated by [APA's Sustainability Comprehensive Plan Standards](#). Each of the policy areas includes an introductory paragraph of the climate-related topic, followed by a general policy statement, one or more supportive specific policy statements, and suggested strategies to achieve the policy outcome.

The [Hazard Mitigation Policy Guide](#) adopted in April 2020 should be considered as a complementary and companion document to this Climate Change Policy Guide. Climate change adaptation policies are a major element of each guide, and there are some inevitable overlaps between the two. Policies contained in the Hazard Mitigation Policy Guide are generally not repeated here unless the context is significantly different and there is a need to be both clear and consistent. The [Housing, Equity](#) and [Surface Transportation Policy Guides](#) also have related policies that may provide further guidance.

## A. Federal and State Policies

Because the climate crisis is an existential global issue, the federal government must make addressing it among the nation's highest priorities and lead the country's efforts to address it. 2020 is a critical year. The latest climate studies indicate that the world has about 10 years before we reach a "tipping point" beyond which, without the significant actions advocated in this guide and similar actions advocated by others, the severity of climate change will increase dramatically. Good planning at all levels of government plays a significant role in addressing the causes and consequences of a changing climate, but without significant actions at the federal level to make large scale economic, energy, and environmental policy changes, there will be limited progress in slowing the pace and severity of climate change, or in preparing for its impacts.

A significant proportion of the world's energy production and use involves burning fossil fuels, which produce the vast majority of GHG emissions. These in turn are driving most of the changes to the earth's climate and have serious negative consequences for life on earth, especially as the rate of change accelerates with continued increases in GHGs. The global nature of this problem requires a global solution but, given international geopolitical realities, this implies a high level of cooperation among the world's nations. The U.S. government is the only entity that can legitimately speak and act on the nation's behalf. That being the case, it is essential that the federal government create the goals, policies, and programs necessary to participate in international agreements that will reduce and eventually halt the pace of climate change and help cope with and reduce its negative impacts.

With or without action at the federal level, state governments have an important role to play in implementing plans to address, and ultimately reduce, GHG emissions and climate impacts. This has been done in California and in New York and more recently plans to reduce GHG emissions are beginning to appear in legislation in other states. Even with the federal government playing a lead role, states can, and should, also create their own programs and interstate compacts to supplement federal actions and implement those actions in ways that align with each state's particular circumstances.

### GENERAL POLICY A—FEDERAL AND STATE

The American Planning Association and its Chapters and Divisions advocate for strong federal and state actions to address the causes and consequences of anthropogenic climate change and align the United States with other countries in meeting United Nations Sustainable Development Goal #13: Take urgent action to combat climate change and its impacts.

## SPECIFIC POLICIES

### Federal Policy A.1. Advocate for strong national climate leadership

The federal government must provide national and international leadership to establish and support an effective international framework for climate action; create policies, programs, and standards; and provide consistent and adequate funding to reduce and eventually eliminate all forms of GHG emissions and adapt to climate change impacts. The following strategies should be employed to achieve this policy outcome:

- A.1.1 Advocate for development of clear and usefully scaled climate information.** The federal government needs to provide information that makes clear the extent of the climate crisis and the responsibilities and roles of the U.S. government in addressing it at all levels—globally, regionally, and locally. This information should be directed in particular at creating a scientifically sound case for the significant mitigation and adaptation actions that will be essential to addressing the scope of the problem, including a data platform that can be used by all levels of government, businesses, and other organizations to make the decisions necessary to effectively implement those actions. This information should also be used to promote climate literacy by educating all citizens about the realities of climate change and the importance of taking action to address it.
- A.1.2 Advocate for strong U.S. international leadership on climate change.** Support the development and adoption of international agreements for achieving global GHG emission reductions, with a goal of reaching net-zero emissions by 2050.
- A.1.3 Advocate for federal funding for climate change planning.** Planning is an essential factor in addressing the impacts of climate change. Federal community development, transportation, environmental, and energy programs should fund the integration of GHG reduction and climate adaptation programs into local and regional planning and subsequent actions, and hold those local efforts accountable for meeting GHG reduction benchmarks.
- A.1.4 Support close cooperation among federal, state, and local governments.** The federal government must set up a coordination framework to ensure robust coordination among all levels of government in addressing climate change. Many local and state governments also have had valuable experience in addressing climate issues, and their information should be available through a national data platform and used as a basis for creating federal mandates and funding to address climate-related issues at every level of government.
- A.1.5 Support federal funding for climate resilience measures.** This includes development of resilient building techniques, codes, coastal protection measures, wildfire avoidance and protection measures, adaptive agricultural practices, etc.

**A.1.6 Support climate analysis as part of regulatory decision making.** Require federal and state regulatory agencies to consider the full price of carbon in their decision-making processes.

**A.1.7 Support a common, focused goal of reduction of GHG emissions through implementation of a programmatic, uniform federal approach to address climate change.** For example, align incentives, such as funding opportunities, with requirements for receipt of federal funding. Completion of National Environmental Policy Act (NEPA) evaluations (i.e., Environmental Impact Statements) that require demonstration of long-term effects on GHG emissions is one prominent example.

## Federal Policy A.2. Advocate for a national transition to a clean energy economy

The future environmental health and economic security of the United States is inextricably dependent on an affordable, renewable, and reliable energy supply. This will require adoption of and funding for a nationwide transition to renewable energy that would be fully in place by 2050, with a strategy to ensure adequate progress is being made to meet interim goals in the intervening years. Assertive action to stop investments in fossil fuel infrastructure may also be necessary. This also must include provisions to ensure an equitable distribution of implementation resources to all communities. The following strategies should be employed to achieve this policy outcome:

**A.2.1 Advocate for carbon pricing strategies.** Economists have long argued that pricing is the most effective way to discourage use of a product, and in this case placing an increasingly higher price on carbon fuels is an essential policy element for reducing GHG emissions. Implementation of these measures needs to be highly sensitive to the potential costs to historically vulnerable communities, including a commitment to provide funding to offset additional costs to those communities as part of any carbon pricing strategy (federal, state, or regional). In addition, carbon pricing must not create pollution hot spots or perpetuate any other form of environmental injustice.

**A.2.2 Support stringent regulation of carbon fuel products.** In the absence of, or in addition to, a viable taxing strategy, create a regulatory regime to mandate a reduction in the use of fossil fuels over time.

**A.2.3 Support adoption of a national building energy performance rating system.** Make the use of such systems mandatory across the nation. It is critical for the building industry to be held to the same standards nationwide to ensure a level playing field for constructing new and redeveloped buildings, with the goal that all would have net-zero emissions by 2050. Provide incentives to state and local governments to enforce standards. Support similar changes to the International Building Code to hasten the pace of the international response to the climate crisis.

**A.2.4 Support domestic energy independence built around renewable sources and technologies that are ecologically, socially, and economically sustainable.** Provide federal funding for renewable energy sources, carbon capture and sequestration, net-zero buildings, and other practices and technologies that reduce and eventually eliminate the need for fossil fuels. A federal ban on new fossil fuel infrastructure connections should also be considered, since these projects lock new infrastructure in place and block investments in renewable energy resources.

**A.2.5 Support development of a federal program to encourage use of low-/no-carbon products and incentivize their reuse.**

For example, GHGs could be regulated as a hazardous by-product of industrial processes (both domestically and internationally), and new product developers could be required to take them back after their useful life and repurpose and reuse their components through “product takeback” or “extended product responsibility” legislation, as Germany does.

**A.2.6 Support use of carbon offset programs that have been documented to reduce GHG.** The federal government should validate the effectiveness of these programs to ensure their value in reducing GHG emissions.

**A.2.7 Support expansion and improvement of the federal brownfield program.** Urban brownfields are valuable redevelopment sites and their availability reduces the pressure to expand into “greenfield” areas. Program improvements include continuing to address liability issues, increasing funding, and improving coordination with local comprehensive planning.

**A.2.8 Support changes to agricultural policy and practices.** Agriculture plays a major role in GHG emissions, and significant changes in federal policy can greatly enhance future productivity and food security as well as helping to address climate impacts.

### Federal Policy A.3. Advocate for the development of a sustainable federal transportation agenda

Following the findings of the *Fourth National Climate Assessment* report, it is imperative to advance important climate-related actions as a core focus of federal transportation policy. (See also the [APA Surface Transportation Policy Guide](#), especially Section F, Energy and Transportation in the United States.) The following strategies should be employed to achieve this policy outcome:

**A.3.1 Advocate for the prioritization of mass transit funding.**

Low-/no-carbon mass transit (rail, bus, etc.) directly addresses the main cause of GHG emissions (the carbon fuel internal combustion engine) and it needs to be the highest federal transportation funding priority. Also, retrofitting and designing new mass transit to withstand climate risks, such as sea level rise or extreme heat, ensures these transport options are safe and reliable in the long term and provide more robust options to disproportionately affected low-income populations.

**A.3.2 Support low-cost, sustainable mobility solutions.** Pursue a policy of sustained federal transportation funds to support low-cost, local, green mobility solutions. Clean fuel vehicles and alternative forms of transportation (e.g., active transportation), especially for “last-mile” solutions, must become a major element of the future U.S. transportation system and a high priority for all communities.

**A.3.3 Advocate for a transition to clean transportation energy.** This includes federal action to make clean energy vehicles (for personal and freight movement) the future standard for transportation technology in the United States, and opposition to reductions of the Corporate Average Fuel Economy (CAFE) standards and the development and implementation of progressively higher standards. Federal rules should require states to provide for the transition to full vehicle electrification, including supporting infrastructure. There also need to be mandates and/or funding for a national rail electrification program, and research and development funding for clean aviation and ship fuels.

**A.3.4 Advocate for a transition away from fuel taxes.** Gas taxes are a declining resource and totally inadequate to pay for needed transportation improvements. Support a switch to some form of vehicle-miles-traveled/weight mile tax to adequately fund the surface transportation projects needed to ensure a quick transition to a sustainable transportation system.

**A.3.5 Revamp performance measures for federally funded road projects.** Prioritize access to jobs and services rather than capacity enhancement. Require strict project selection criteria favoring the lowest GHG emissions alternative and movement toward elimination of highway capacity improvement funding.

## State Policy A.4. Advocate for state climate change plans, policies, programs and projects

State governments should develop and implement plans to address climate change and its impacts, and put measures in place to adequately fund the transition to net-zero use of carbon-based energy by 2050, including a carbon fee and/or regulations. States should also use climate as a lens through which to view all other state actions to ensure they are doing everything possible to reduce the impacts of climate change. The following strategies should be employed to achieve this policy outcome:

### **A.4.1 Advocate for close coordination between state and local governments.**

States should develop statewide climate goals and programs to address GHG emissions and climate-related impacts, help local jurisdictions set GHG emission goals, develop and implement GHG reduction plans, and prepare and implement adaptation plans. Accountability mechanisms should be set up to ensure local compliance as well as a framework for sharing best practices.

### **A.4.2 States should enact strong planning enabling legislation.**

An effective local planning program is a major tool to address climate impacts at the local level.

### **A.4.3 Support and participate in state, regional, and local infrastructure planning.**

In order to build and sustain healthy, prosperous, and resilient communities it is critical to have a unified approach to planning for transportation, water, and other infrastructure as well as land use and community development. States should promote regional collaborative processes to improve the efficiency of infrastructure investments, address regional equity and resource efficiency issues, and help ensure those investments effectively address climate-related goals. This includes incorporating a climate “screen” into state regulatory certification for new energy facilities.

### **A.4.4 Advocate for mandatory building energy codes.**

Support, seek adoption, and ensure enforcement of mandatory building energy codes for commercial and residential buildings at the state level with the goal of achieving net-zero-carbon-based energy use for all new and redeveloped buildings by 2050. As an alternative, advocate for federal standards for net-zero energy usage in new and redeveloped buildings and support state adoption and enforcement of these mandatory building energy codes to achieve that goal.



## B. Livable Built Environment Policies

Climate change can be directly linked to human alteration of the natural environment. For centuries, while our built environment developed along with social, cultural, technological, and economic changes in our society, we have also altered the natural environment—too often in ways that have had negative consequences. How we developed the built environment in the last century in particular has been a major driver of climate change. The development of carbon-based energy and transportation systems has increased GHG emissions that contribute to the heating of the atmosphere, leading to higher-intensity storms, sea level rise, and greater heat-related and other significant impacts. How we choose to create and alter the built environment in the future can have a significant effect, either positive or negative, on both the extent of climate change and our resilience to its impacts.

Planners need to lead when it comes to advocating for development patterns, programs, projects, and strategies that mitigate climate change impacts and enable human civilization to adapt to them. This includes redeveloping existing urbanized areas as well as new development. Planners have endorsed sustainable design principles such as smart growth and nature-based systems for years. The concepts and policies that are advocated here pertaining to the livable built environment are not new. But due to climate change, their implementation is more important than ever, as is the role of planners in helping to lead in implementing them.

### GENERAL POLICY B—LIVABLE BUILT ENVIRONMENT

The American Planning Association and its Chapters and Divisions support planning policies and strategies that develop (or redevelop) the built environment in a manner that reduces its impact on the natural environment, mitigates the drivers of climate change, and helps all citizens adapt to a changing climate. We strive to ensure that communities adopt policies and design standards that either directly or indirectly contribute to reduced or no carbon emissions from the various facets of their built environment and enable communities to more fully anticipate and adapt to the impacts of climate change.

## SPECIFIC POLICIES

### Livable Built Environment Policy B.1. Plan for multimodal transportation

Advocate, promote, and incentivize the development of safe, efficient, reliable, and interconnected multimodal transportation systems. Automobile dependence has shaped and dominated land development patterns for over a century, resulting in land-use patterns that require and perpetuate the need for automobiles. GHG emissions from vehicles that rely on fossil fuels are a significant percentage of the overall emissions that have contributed to warming the earth's atmosphere. Transportation system design must support the goal of reducing vehicle miles traveled (VMT), and therefore GHG emissions, by using public rights-of-way to appropriately accommodate all forms of mobility, according to each street's function within the regional system, the adjacent land-use context, and the different needs and abilities of the people who are using it. The following strategies should be employed to achieve this policy outcome:

- B.1.1 Advocate for non-auto-centric development patterns.** Advocate for alternatives to auto-centric development patterns which encourage and perpetuate the need for vehicles that rely on fossil fuels. That shift to "people-centric" development patterns is a key to reducing GHG emissions.
- B.1.2 Require multimodal transportation.** Develop regulations and design standards that require accommodation of multimodal transportation. Designing transportation projects to improve multiple forms of mobility, including pedestrian (meeting Americans with Disabilities Act standards), bicycle, and scooter, etc., will lower carbon emissions.
- B.1.3 Require alternative energy facilities.** Require the installation of electric charging stations and/or alternative fueling stations and its infrastructure in both publicly accessible locations and new development projects that require additional off-site parking or additional on-street parking on public streets.
- B.1.4 Plan for first/last mile connectivity.** Promote first/last mile travel options that do not require automobiles, such as walking, bikes, scooters, and other micromobility options.
- B.1.5 Include emerging technologies as part of transit system design.** Develop transit stations that include facilities that incorporate the use of emerging transportation technologies such as autonomous vehicles, electrified rail, and micromobility options.
- B.1.6 Promote transportation demand management.** Promote and encourage commuter programs and individualized marketing that provides employers, employees, and residents with information and incentives to use travel options that reduce single-occupancy vehicle trips and maximize efficient use of transportation networks.
- B.1.7 Promote climate positive travel options.** Expand the availability of travel options that are not reliant on fossil fuels.

**B.1.8 Advocate for significantly enhanced transit availability and experience.** Improve transit reliability and frequency to strengthen its ease of use to relieve society's dependence on automobiles.

**B.1.9 Reduce transit emissions.** Transition public transit systems to electricity rather than fossil fuels to reduce carbon emissions.

**B.1.10 Repurpose public rights-of-way to support climate-positive options.** Repurpose existing public rights-of-way where it is possible to accommodate low- and zero-emission travel options, open spaces, and green infrastructure.

**B.1.11 Revise parking requirements.** Eliminate parking minimum requirements and consider options for parking maximums and parking pricing options to reduce reliance on single-occupancy vehicles and help facilitate a switch to climate-friendly travel options.

**B.1.12 Promote congestion pricing.** Reducing vehicular traffic through congestion pricing strategies during peak commuting periods will reduce carbon emissions. Congestion pricing will also encourage the use of public transit, reducing auto traffic generally.

## Livable Built Environment Policy B.2. Plan for Transit-Oriented Development

Prioritize and incentivize transit-oriented development (TOD). TOD results in dense, mixed-use urban areas in close proximity to high-frequency public transit in both new and existing urban centers. Developing a mix of uses in close proximity to transit stations eliminates—or greatly reduces—the need for residents to use automobiles. Residents who live in TODs may walk, bike, or use scooters to go to transit stations for their daily commutes, eliminating or reducing the need for vehicles powered by fossil fuels, which results in reduced carbon emissions. Compact, mixed-use developments located near transit stations reduce sprawl, thereby preserving greenfield sites. This has two benefits: decreased carbon emissions from vehicles and preserving vegetation, especially trees, which convert carbon to oxygen, further reducing greenhouse gases. The following strategies should be employed to achieve this policy outcome:

**B.2.1 Create planned opportunities for compact mixed-use development.** Promote and incentivize the development of a mix of land uses and densities in close proximity to transit stations.

**B.2.2 Create zoning that allows TODs outright.** Develop innovative zoning codes—such as form-based codes—and density bonuses that promote mixed-use development within walking distance of public transit.

**B.2.3 Develop subarea plans that incentivize TODs.** Develop specific area and economic development plans that encourage and provide incentives for business, commercial, and residential uses to locate near transit stations, while prohibiting displacement of existing residents to the maximum extent practicable.

**B.2.4 Create TOD design guidelines.** Develop urban design guidelines to ensure TODs meet community expectations and planning climate goals. APA should provide a template for what to include in these guidelines including landscaping/tree planting standards and other green infrastructure elements. Work with affiliated professions, such as architects and landscape architects, to develop these guidelines.

### Livable Built Environment Policy B.3. Coordinate regional transit investments with job clusters

Advocate for and coordinate new regional transit investments located to efficiently serve existing employment clusters. Providing public transit close to existing employment clusters encourages existing employees to take public transit rather than drive to work. This will result in an earlier reduction in vehicle trips and carbon emissions, slowing the impacts of climate change. The following strategies should be employed to achieve this policy outcome:

#### **B.3.1 Ensure that planned regional transit serves job-rich areas.**

Plan for and construct new public transit options near existing job clusters and within existing urban centers.

#### **B.3.2 Ensure new regional transit serves areas of new and existing high-density development.** Coordinate the development of new transit to serve projected transportation hubs and/or areas zoned for significant new mixed-use development.

#### **B.3.3 Ensure benefits to all community members.** Transit investments and coordinated land uses must benefit all community members, especially those who most need access to public transit to meet mobility needs.

### Livable Built Environment Policy B.4. Provide green and complete streets serving multiple functions

Require that new street projects include green and complete streets where appropriate within community transportation plans. Green and complete streets address climate change in numerous ways. Complete streets encourage the use of alternative modes of transportation, reducing the need for automobiles. Green streets incorporate nature-based solutions and green infrastructure elements such as trees and vegetation that help connect and integrate the natural and built environments while reducing urban heat island and other climate-related impacts. The following strategies should be employed to achieve this policy outcome:

#### **B.4.1 Develop a green and complete streets toolbox.** Develop a checklist and design guidelines for new and existing streets that require bicycle, pedestrian, and green infrastructure facilities, and other tools for incorporating nature-based solutions.

#### **B.4.2 Integrate alternative modes into existing rights-of-way.** Retrofit existing streets to include enhanced bicycle and pedestrian facilities, bus lanes, and other transit improvements where appropriate.

#### **B.4.3 Utilize green infrastructure best practices.** Retrofit existing streets to incorporate green infrastructure elements that address stormwater management, wildlife passage, and urban heat island impacts, and improve air quality and incorporate other natural system best practices.



**Livable Built Environment Policy B.5.****Plan for mixed land-use patterns to create walkable communities**

Promote and incentivize the development of projects that create vibrant urban places that people want to experience and live in. Develop innovative zoning changes that require and incentivize a mix of densities and uses served by high-frequency transit. Mixed land uses typically include a combination of residential and nonresidential uses located in close proximity to one another. Residential uses may include moderate density multifamily apartments and townhomes as well as other single- and multifamily housing units. Nonresidential uses typically include retail shops, restaurants, office spaces, grocery stores, schools, recreational facilities, open spaces, etc. Locating nonresidential uses in close proximity to residential uses allows residents to walk or bike from home to work, shop, or play areas, resulting in fewer vehicular trips. These development patterns reduce the number of vehicle trips and vehicle miles traveled, reducing carbon emissions from automobiles or transit systems that rely heavily on fossil fuels. Developing a mix of uses in relatively compact areas also reduces the transportation cost burden on residents and preserves undeveloped land and trees that remove carbon dioxide from the atmosphere. The following strategies should be employed to achieve this policy outcome:

- B.5.1 Provide for a mix of uses in urban areas.** Develop comprehensive plans and innovative zoning codes, such as Form-Based Codes, that enable more creativity in providing for a mix of housing types and provide for mixed-use development patterns served by transit and good pedestrian and bike facilities.
- B.5.2 Encourage mixed-use area development.** Provide incentives for developing mixed-use neighborhoods, such as zoning code density bonuses for developments that include good pedestrian and bicycle facilities and access to transit service. Develop zoning codes that allow mixed-use development by-right rather than requiring zoning relief.
- B.5.3 Adopt equity-based urban design guidelines.** Develop community-wide urban design standards that embrace and enhance a mix of uses that are desirable and accessible for all people and that work to eliminate the displacement of existing residents. Well-conceived neighborhood design elements, such as appropriate building scale and massing with nearby open spaces, sidewalks with direct building access, crosswalks designed for universal accessibility, street furniture, street lighting, significant landscaping, etc., make the urban environment more attractive, create a sense of community and safety, and encourage walking and biking.
- B.5.4 Plan for significant open space areas.** Provide green spaces within and around mixed-use areas to allow all residents access to the natural environment.
- B.5.5 Support more diverse and affordable housing options.** Encourage development that provides a mix of market-rate and income-deed-restricted units in a wider range of housing types such as apartments, townhomes, and duplexes (“missing middle housing”).

**Livable Built Environment Policy B.6.****Promote and plan for infill development**

Advocate for new development projects to be located on previously developed sites or on sites that are adjacent to existing development to help maximize the use of existing infrastructure and preserve greenfields. Development preferences should always include redeveloping previously developed sites rather than developing on greenfield sites to reduce the amount of land disturbance and preserve existing vegetation and natural habitat. The following strategies should be employed to achieve this policy outcome:

- B.6.1 Incentivize mixed-use development.** Provide incentives and techniques for development to encourage their location on previously developed or infill sites. Zoning codes that include density bonuses, fee reductions, transfer of development rights, and other incentives to avoid greenfield development are particularly important.
- B.6.2 Preserve high-value natural areas.** Plan for high value natural areas to be preserved to help address local GHG emissions.
- B.6.3 Prioritize infill and redevelopment in long-range planning.** Identify and prioritize infill and redevelopment sites during the comprehensive planning process.
- B.6.4 Support equity provisions.** Implement best practices that support equitable growth and development without displacement, including strategies that provide for the retention and creation of locally owned businesses and affordable housing, especially near transit.
- B.6.5 Promote higher density in activity centers.** Pursue opportunities to locate higher-density residential development on infill or redevelopment sites near activity centers, such as commercial areas, employment centers, transit centers, and parks and recreational facilities. Support opportunities to increase density in existing developments where appropriate through alternative zoning strategies to encourage more affordable and diverse housing options in existing single-use zones.

## Livable Built Environment Policy B.7. Implement green building design and energy conservation

Advocate for new developments to incorporate green and sustainable building designs. The International Living Future Institute and the U.S. Green Building Council (USGBC), among others, administer a number of green building certification programs, including Leadership in Energy and Environmental Design (LEED) for a number of different project types including Building Design and Construction (LEED BD+C), Neighborhood Development (LEED ND) and LEED for Cities and Communities. Planners should support the use of sustainability rating systems as tools and resources to achieve more sustainable projects and buildings in their communities and as a metric for sustainable communities. The following strategies should be employed to achieve this policy outcome:

**B.7.1 Advocate for green building and design.** Require or provide strong incentives for all new commercial, mixed-use, municipal, and multifamily buildings to obtain LEED or comparable green rating certification along with provisions that require equitable distribution of housing and business opportunities.

**B.7.2 Advocate for sustainable community rating systems.** Adopt community design standards such as those described by LEED ND or other similar climate-supportive certification systems. Require or strongly incentivize all new urban development areas to be designed to attain certification. Advocate for development and adoption of sustainable funding sources to fairly and equitably distribute the cost of implementing resilient actions. Create a designated line item for integrating resilience elements into traditional planning and capital improvement plans.

**B.7.3 Adopt sustainability regulations.** Support energy and water efficient design and construction standards at local, state, and federal levels. Develop regulatory mechanisms to incentivize or require sustainable design, construction, and operations of new development and redevelopment.

**B.7.4 Promote green building and design in long-range planning.** Identify areas requiring climate-supportive certified development and green buildings during the comprehensive planning process. Use APA's Comprehensive Plan Standards for Sustaining Places as a framework for long-range planning work.

## Livable Built Environment Policy B.8. Conserve and reuse historic resources

Encourage the preservation and adaptive reuse of historic resources including buildings, sites, or neighborhoods. Preserving and adapting existing and historic buildings, rather than simply razing old buildings and building new ones, preserves the history and character of a region or neighborhood while reducing the consumption of raw materials. The environmental impact of constructing a new building is significant because of its use of new materials and energy and the waste produced. By reusing and adapting historic buildings, the energy saved results in reduced carbon emissions, which has positive climate impacts. The following strategies should be employed to achieve this policy outcome:

**B.8.1 Advocate for historic preservation.** Incentivize the conservation and reuse of historic buildings and develop and implement tools (i.e., design guidelines, adaptive reuse incentives, listings of historic buildings, etc.) to encourage conserving and reusing historic buildings. Advocate for greater flexibility in the use of historic tax credit programs to facilitate the adaptive reuse of old and historic structures. Encourage states to match federal tax credits.

**B.8.2 Preserve and reuse existing non-historic buildings.** Reusing existing buildings, rather than building new ones, results in significant energy and natural resource savings while contributing to the cultural diversity and character of the surrounding neighborhood.

**B.8.3 Reuse and recycle existing building materials.** Reuse and recycle existing building materials for which there is a market when buildings cannot be entirely reused.

## Livable Built Environment Policy B.9. Prohibit development in hazard zones

Advocate against new development in existing designated hazard zones, and work to prohibit new development in hazard areas designated in the future. Hazard zones include land areas subject to wildfires, volcanoes, tornadoes, snowfall, landslides, hurricanes, heatwaves, flooding, tsunami inundation, and sea level rise, long-term drought, earthquakes, and avalanches. Climate change is exacerbating all of these hazards and development in these areas can have devastating economic, social, and environmental impacts.

Existing flood hazard zones, including both inland and coastal areas, are based on historical flooding patterns and designate areas that have flooded in the past. They do not contemplate or include areas that will flood in the future. As the climate continues to change, the limits of existing flood hazard areas will become more apparent. New studies, especially updated Federal Emergency Management Agency maps, will be needed to determine the extent of future flood hazard areas due to climate change and new development pressures. These areas will need strong protection and preservation measures that will prohibit any new development. Development standards should be based on future climate conditions based on the best available climate science.

Wildfire mitigation concepts need to be applied to development in the wildland-urban interface. Increased wildfire activity is a manifestation of climate change impacts, and communities must develop a clear recognition of areas where development should be strictly limited or prevented, such as steep slopes, forest management areas, and other high-hazard fire zones. Development limits are both a recognition that the public costs of rebuilding are significant and that the lives of community members and first responders are increasingly at risk. Planning studies should reflect any available projections from scientists of areas that are most likely to experience additional risk as a result of a warming, drier climate.

The following strategies should be employed to achieve this policy outcome:

- B.9.1 Effectively regulate hazard areas.** Develop and enforce regulations that prohibit and/or mitigate the development of new projects in identified hazard zones. In instances where development is allowed in hazard zones, require compensation or mitigation from the developer.
- B.9.2 Utilize design guidance.** Adopt or reference existing design guidance documents that help mitigate impacts to developments located in identified hazard zones (i.e., sea level rise standards based on climate projections). Adopt higher design standards and thresholds in areas prone to climate change impacts including sea level rise, extreme heat, wildfires, extreme rainfall, etc.
- B.9.3 Ensure plans are current.** Update local hazard mitigation plans regularly based on the best available scientific studies, and ensure that future predicted conditions are incorporated, not just historical data.
- B.9.4 Reduce long-term risks.** Proactively identify and expand hazard protection areas to ensure areas at future risk of climate-related impacts are off-limits to development. Promote a layered approach applying redundant systems of mitigation strategies to provide greater resilience.
- B.9.5 Plan for retreat from increasingly hazardous areas.** At some point it will be imperative to transition people away from areas that have increased risks. This will be especially critical for those without the means to move themselves.



## Livable Built Environment Policy B.10. Require resilient development and infrastructure

Require projects to include resilience and climate change adaptation features. Although climate change science is continually evolving, planners need to encourage new development and redevelopment project designers to consider the impacts that climate change will have on their projects in the short, medium, and long term. Planners need to lead in this area when strict design guidelines have not yet been developed. Planners need to be proactively looking to the future in assessing how their municipalities will be impacted by climate change. New private and public development and infrastructure projects need to incorporate climate change considerations and solutions. Planners should also look forward and develop community plans and other tools that can help to inform development projects regarding climate change issues. The following strategies should be employed to achieve this policy outcome:

- B.10.1 Plan for resilience.** Advocate for and lead the development of resilience, hazard mitigation, and Climate Adaptation Plans and incorporate into all state, local, and community comprehensive planning processes.
- B.10.2 Create technical assistance for development.** Provide tools that promote resilient development including checklists, studies, and applications, etc., that can be used by states and municipalities as well as developers.
- B.10.3 Develop resilience-based design standards and building codes.** Collaborate with supporting professional organizations and disciplines to update and/or develop national resilient development design standards and codes for adoption into local regulations.
- B.10.4 Require mitigation and resilience-based measures in development review.** Evaluate resiliency measures as part of the development review process, similar to other more traditional impacts (i.e., stormwater management, traffic, etc.).
- B.10.5 Provide economic incentives for resilient developments.** Create incentive-based programs that promote the creation of development that meets resilience standards.

## Livable Built Environment Policy B.11. Invest in smart infrastructure

Be knowledgeable about emerging smart technologies and infrastructure (facilitation of vehicular movement, energy efficiency systems, etc.) that can optimize systems to reduce climate change impacts. As technology evolves, utility-related demands within the street right-of-way will change. The need for information transmission and sensors will increase, and much of this equipment will be located on utility poles, on or within buildings, and under the surface of the streetscape. Planners should encourage not only private developers but also municipalities to explore and invest in smart technologies and infrastructure. The following strategies should be employed to achieve this policy outcome:

- B.11.1 Incorporate smart technologies into future projects.** Encourage or require smart city technologies to be incorporated into new public infrastructure improvement projects, buildings, and site designs. Require transportation adaptation plans that include consideration of adapting existing transportation infrastructure to support advancement in smart technologies.
- B.11.2 Require new development/redevelopment projects to include smart cities technologies that have proven climate benefits.**
- B.11.3 Incorporate smart technology into long-range planning.** Identify smart city opportunities through the comprehensive planning process.
- B.11.4 Encourage the development of decentralized and renewable/clean energy systems.** Study, and when appropriate install, microgrid energy systems to encourage system redundancy.
- B.11.5 Utilize ITS.** Expand deployment of intelligent transportation systems (ITS), including active traffic management, incident management, and traveler information programs, and connected vehicle systems.

**Livable Built Environment Policy B.12.****Provide accessible public facilities and spaces**

Provide equitable distribution of and access to public facilities and spaces as a feature of climate change adaptation strategies. For instance, the preservation, expansion, or improvements of open spaces in coastal and riparian zones can be used as flood storage during storm events and function as recreational spaces during dry times. Any connections and improvements to these public open spaces should be designed to accommodate all people so that all spaces can be shared, accessed, and enjoyed equally. The following strategies should be employed to achieve this policy outcome:

**B.12.1 Provide for accessibility.** Require that universal design principles be incorporated into developments supported by public dollars, ensuring that everyone, regardless of their ability level, is able to access and use every site and building.

**B.12.2 Incorporate accessibility into all projects.** Provide accessible routes, including public transit, to public facility climate adaptation projects to ensure that all citizens, including those living in disadvantaged, low-income communities, can access these resources.

## C. Harmony with Nature

The natural environment encompasses all living and nonliving things occurring naturally on earth. Ecosystems are natural communities formed by the interaction of plants, animals, and microbes (living), with air, water, and soil (nonliving). These interactions create many benefits to the natural environment such as nutrient cycling, carbon sequestration and storage, erosion protection, and pollination, to name a few. These benefits are referred to as ecosystem services.

Climate change is having significant impacts on these natural ecosystems and ecosystem services. Rising sea levels alter the salinity of low-lying coastal marshes, increased droughts and wildfires are altering the habitat of many plant and animal species, and rising temperatures are altering climate zones and expanding the range of certain species and reducing the range of others. These changes lead to the displacement of humans, plants, and animals and increase the prevalence of invasive species and pests that can have devastating impacts on natural ecosystems. Changes to the natural environment are also increasing the transmission of vector-borne diseases and impacting the health and wellness of both human and wildlife populations as they struggle to adapt.

Protection and management of natural resources, ecosystems, and ecosystem services has become a critical tool in combating climate change and protecting and developing healthy and sustainable environments for all species. The earth's natural ecosystems not only sequester carbon, they support the hydrological cycle and reduce flooding, regulate temperature, and support every living thing, including plants, bacteria, animals, and humans—collectively referred to as “biodiversity.” Adapting natural systems to help respond to future climate change impacts will require renewed focus on agricultural, natural resources, and ecosystem management techniques. Understanding and incorporating biodiversity and ecosystem services into all aspects of planning is essential to ensure that plans, policies, and guidelines that support conservation and development practices are in harmony with the natural environment. An interdisciplinary approach is necessary due to the scale and complexity of the issues. Planners will need to consult with experts and practitioners in ecosystem management, agriculture, forestry, and public health in order to develop effective plans to guide development that is in harmony with nature and that will help combat climate change.

### GENERAL POLICY C—HARMONY WITH NATURE

The American Planning Association and its Chapters and Divisions support planning policies and strategies that integrate natural systems thinking into all planning decisions. We strive to ensure that the contributions of natural resources to human well-being are explicitly recognized and valued and that maintaining their health is a primary means to help mitigate and adapt to a changing climate.

## SPECIFIC POLICIES

### Harmony with Nature Policy C.1. Enact policies to reduce GHG emissions

GHGs from human activities have a significant impact on the natural environment. From resource extraction and processing to energy generation, transmission, and consumption, the way we plan, develop, and operate the built environment has a direct impact on the amount of greenhouse gas we emit. The current rate of CO<sub>2</sub> emissions in the atmosphere is greater than the rate of absorption by the natural environment, creating an imbalance in the carbon cycle which is contributing to anthropogenic climate change and negative impacts to land, air, water, and all inhabitants. This rapid environmental degradation is the result of unsustainable consumption and production patterns which are compounding the impacts of climate change. The following strategies should be employed to achieve this policy outcome:

- C.1.1 Develop GHG inventories, analysis methods, and action plans.** All levels of government should adopt goals and targets for reducing GHG emissions and seek to identify and quantify those emissions. Where emissions cannot be precisely quantified, plans should discuss the impacts of recommended measures for reducing GHG emissions on a qualitative basis. Climate planning elements should be incorporated into comprehensive plans, public investments, regulations and incentives, and environmental and development review processes.
- C.1.2 Support energy and water conservation.** Support energy and water conservation in all planning and development processes to reduce indirect habitat loss from resource extraction and pollution to land, water, and air resources. Promote district and decentralized energy systems to improve energy efficiency and resiliency and reduce energy loss during transmission. These efforts will protect existing natural resources to help rebalance the carbon cycle, preserve water resources, and reduce GHG emissions.
- C.1.3 Promote a circular economy.** Incorporate life-cycle cost analyses into planning processes and look beyond first costs. Design all developments and infrastructure for disassembly and reuse or recycling (cradle to cradle).
- C.1.4 Eliminate waste.** Create regulations that require developers to mimic natural systems in the built environment, to the extent practical, by designing for reuse through regenerative design processes, using waste as a resource and achieving a climate positive/carbon negative result.



**C.1.5 Support sustainable agricultural practices.** Support the preservation of prime farmland soils and local food production to protect farmland and reduce food transportation and associated GHG emissions. Encourage agricultural practices that reduce potable water consumption, harmful air emissions, and polluted runoff while increasing the carbon sequestration capacity of soils. These practices include planting cover crops, using no-till farming techniques, adding organic material to soil (crop residues, biosolids, compost), planting more deep-rooted perennial crops, and limiting the use of chemical fertilizers, herbicides, and pesticides which disrupt natural soil processes.

**C.1.6 Support sustainable forestry practices.** Forestry operations provide significant opportunities for carbon sequestration through such practices as tree planting in new areas (afforestation), reforestation, preservation of existing forests, and forest management to enhance sequestration, including lengthening the harvest/regeneration cycle and adopting low-impact logging methods. The healthier the forest, the greater its productivity and natural sequestration capabilities.

**C.1.7 Understanding and maintaining ecosystem energy exchanges.** Ecosystems are linked together by energy and matter flows. The sun's energy drives these flows but human activity alters these flows of energy and matter both locally and globally. Planners must support efforts to maintain natural energy flows through the environment to help reduce energy imbalances and limit climate change impacts. Nature-based solutions such as green infrastructure are tools planners can use to help balance energy and matter flows in and through developments and limit the impacts of climate change (design with nature).

## Harmony with Nature Policy C.2. Restore and protect environmentally sensitive areas

Encourage and incentivize the restoration and protection of environmentally sensitive areas such as wetlands, coastal estuaries, vernal pools, and associated forest habitat, which are critical components of the earth's ecosystem. Restoring and protecting these areas not only helps maintain biodiversity; it also preserves habitat types that sequester carbon and serve as a natural buffer for development. Restoring and protecting vegetation and soils within environmentally sensitive areas reduces soil erosion and loss of vegetation, maximizing GHG sequestration. The following strategies should be employed to achieve this policy outcome:

- C.2.1 Design with nature.** Conduct natural resource inventories to comprehensively identify aquatic and terrestrial resources. Plan accordingly to preserve and protect important natural resources and their corresponding ecosystem services.
- C.2.2 Protect and restore natural capital.** Understand the carrying capacity of natural ecosystems and implement strategies and incentives to ensure development does not exceed these capacities to avoid imbalances. Restore natural carrying capacities where feasible through strategies such as rewilding.
- C.2.3 Reduce consumption of natural resources.** Enact policies to reduce the use of natural resources, and support and incentivize the repurposing and recycling of natural resources and materials created from them, where possible.
- C.2.4 Restore and protect environmentally sensitive areas.** Restore previously disturbed environmentally sensitive habitats and/or prohibit or restrict development on environmentally sensitive areas to maintain and improve productivity and carbon sequestration.
- C.2.5 Protect important natural assets as "carbon sinks."** Protect certain designated forests and soils within communities and regions to maintain their roles as "carbon sinks" and to enhance their long-term resilience to climate change impacts. This includes preserving productive agricultural soils and supporting soil conservation practices and environmentally responsible farming and forestry to maintain soil productivity and reduce emissions and impacts to the natural environment.
- C.2.6 Restore and protect biodiversity.** Study, restore, and preserve the complex interrelationships between plant and animal species and their habitats to maintain healthy ecosystems and their carbon sequestration and climate control functions.

## Harmony with Nature Policy C.3. Provide and protect a green infrastructure network

Planners should encourage the expansion of the green infrastructure network. Green infrastructure is a strategically planned and managed network of green open spaces, including parks, greenways, and protected lands. Green infrastructure refers to natural, constructed, or restored landscape features that support aquatic and terrestrial wildlife habitat and provide natural ecosystem services such as water filtration and recharge, temperature moderation, erosion control, carbon capture, and pollutant control; nutrient management; and food production. Green infrastructure features may be natural such as forests, trail systems, floodplains, wetlands and buffer areas, or built/engineered features such as street trees, rain gardens, green roofs, bioretention stormwater management areas, and constructed wetlands that mimic or restore natural ecological processes. Green infrastructure helps to reduce wildlife habitat fragmentation and capture and filter and sequester carbon and other GHGs. This provides the ability for developments to better adapt to changing weather patterns through more direct and natural methods of stormwater management and infiltration that decrease flooding impacts and improve resiliency of natural ecosystems. The following strategies should be employed to achieve this policy outcome:

- C.3.1 Protect natural systems.** Identify and protect natural wildlife habitat and key movement corridors from development. This facilitates an interconnected network of green spaces to allow for the natural movement of wildlife in response to normal migration and changing weather patterns. Utilize available federal and state tools such as Biomap.
- C.3.2 Reconnect natural systems.** Restore, connect, and protect natural habitats and sensitive areas (including wetlands, streams, floodplains, etc.). Redesign and develop human infrastructure to respect natural systems (i.e., removing stream culverts under roads and restoring open stream channels for improving wildlife movement, while at the same time improving natural stream flows, reducing man-made flooding, and improving resiliency to changing weather patterns as a result of climate change). Promote urban forestry and utilize green infrastructure practices to facilitate ecosystem connections between the natural and built environment.
- C.3.3 Recognize ecosystem services.** Identify, preserve, and protect ecosystem services to support healthy and productive ecosystems that naturally sequester carbon and other GHGs.
- C.3.4 Advance biophilic design.** Incorporate natural systems thinking into the built environment to facilitate ecological connections between the natural and built environment and maximize carbon sequestration and reduce GHG emissions.
- C.3.5 Utilize native vegetation.** Select native vegetation for development and natural area restoration projects and consider species that will be able to adapt to and thrive in changing climate conditions.
- C.3.6 Eliminate invasives.** Identify and control invasive plant and animal species using natural and nonpolluting techniques in order to maximize the health and productivity of forests and ecosystems.
- C.3.7 Recognize that historical habitat area delineations may migrate due to a changing climate.** This means that conservation efforts should be less focused on preventing habitat changes and more focused on facilitating the adaptation necessary for long-term species survival.
- C.3.8 Utilize sustainable land management.** Manage natural assets, including agricultural and forestry lands and natural ecosystems, to maximize ecological productivity and subsequent carbon sequestration.
- C.3.9 Promote green infrastructure.** Fully fund programs that support the development, identification, and maintenance of green infrastructure. Support new research and training for design professionals on the development, incorporation, and preservation of green infrastructure.

## Harmony with Nature Policy C.4. Promote green stormwater management

Planners should encourage green stormwater management and the use of low-impact development stormwater management (LID). These approaches provide for decentralized stormwater management systems that mimic natural systems by using soils and vegetation and their natural processes to treat, capture, store, and infiltrate stormwater runoff. This includes features such as bioswales and bioretention facilities, rain gardens, and green roofs. LID helps reduce nutrient overloading and can aid in reducing greenhouse gas emissions, while at the same time improving the resiliency of stormwater management systems and their ability to adapt to changing climate and weather patterns. The following strategies should be employed to achieve this policy outcome:

- C.4.1 Utilize low-impact development techniques (LID).** Require all stormwater management to improve resiliency to climate change.
- C.4.2 Utilize life-cycle assessment.** Design LID strategies using life-cycle assessment (LCA) approaches to evaluate avoided energy and GHG emissions.
- C.4.3 Use accurate data.** Account for the potential impacts of climate change effects on stormwater runoff in designing management systems and infrastructure. Utilize the most recent climate and weather data (currently Atlas 14 rainfall data) in modeling for stormwater management designs.
- C.4.4 Promote nature-based solutions.** Promote nature-based solutions and ecological systems thinking when designing water conveyance systems in the built environment.
- C.4.5 Promote tree preservation.** Promote urban forestry and street tree planting as a tool for preserving topography, reducing erosion, improving stormwater management, carbon sequestration, and air quality.

## Harmony with Nature Policy C.5. Advocate for policies to improve and protect air quality

Air quality standards limit the quantity of pollutants in the air. Under the Clean Air Act, the U.S. Environmental Protection Agency has established air quality standards for ground-level ozone, lead, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide to protect public health and the environment; these are enforced by state and local governments. These pollutants are some of the main contributors to climate change and clearly have serious impacts on the health of people nearby, especially communities of color. Pollutants may come from mobile sources (e.g., cars and trucks), area sources (e.g., small businesses), or point sources (e.g., power plants). The following strategies should be employed to achieve this policy outcome:

- C.5.1 Preserve natural resources.** Support climate-positive development that improves air quality through natural resource conservation and protection.
- C.5.2 Advance compact development and biophilic design.** Reduce urban heat island impacts through planning strategies that support natural resource protection such as compact development, biophilic design, and pavement reduction strategies.
- C.5.3 Utilize sustainable landscaping.** Landscaping standards should promote functional landscaping that provides environmental benefits such as improved air quality and carbon sequestration with a preference for indigenous plants. Advocate for street trees and the integration of other green infrastructure elements into developments to take advantage of their ecosystem services, which include enhancing air quality and environmental health for humans as well as all flora and fauna.



## Harmony with Nature Policy C.6. Advocate for climate change adaptation

Adapting to a changing climate involves adjusting our natural and human systems to projected impacts. We live in a time of a rapidly changing climate and extreme weather events which are predicted to worsen and make our populations and natural and built environments increasingly vulnerable. Climate adaptation aims to reduce vulnerability and risk and could include a variety of different responses to achieve the same reduction in risk. Priority should be placed on natural and nature-based solutions first, provided that those solutions can achieve the same reductions of risk. For instance, adapting to higher sea levels could include the “restoration of wetlands, mangroves, marshes, and oyster reefs, and the installation of living shorelines (i.e., plants and natural elements designed to stabilize and protect coastlines) help reduce wave impacts during storms” (EESI.org). The following strategies should be employed to achieve this policy outcome:

**C.6.1 Advance climate adaptation planning now.** The impacts of climate change are already occurring. Planning for and implementing climate adaptation measures is more important than ever and planners should advocate for climate adaptation considerations in all plans, projects, and programs. Climate adaptation responses need to be designed to be ambitious, flexible, and scalable. This will require innovation, experimentation, and some level of risk taking. A starting point for action could begin with a commitment to “no regret” strategies aimed at maximizing positive and minimizing negative outcomes. In other words, it means taking climate-related action that makes sense in development terms in any case. This is also sometimes called the “precautionary principle,” which is focused on the willingness to take precautionary action based on emerging, but certainly not complete, knowledge of expected climate impacts.

**C.6.2 Leverage the co-benefits of interdisciplinary projects.** Reducing risk and vulnerability to future climate impacts will cost money, and efforts to combine adaptation considerations into multiple projects will maximize limited resources. Interdisciplinary projects and cross-sector collaboration will be essential. This could include such things as incorporating nature-based solutions and climate adaptation considerations as part of the normal replacement of aging infrastructure.

**C.6.3 Promote natural and nature-based solutions.** The promotion of nature-based solutions in plans, programs, and projects involves actions that work with and enhance nature to respond to a changing climate. This could include such things as reclaiming floodplains (to reduce flood impacts), adding open space or planting street trees (to reduce the heat island effect), and using green infrastructure or LID design considerations, among other efforts, to restore degraded natural systems.

## Harmony with Nature Policy C.7. Promote solid waste reduction

Planners should encourage the reduction of solid waste through targeted reuse, reduce, and recycle programs to lessen the impacts of climate change attributed to the manufacture and transport of products and materials. The manufacturing, distribution, and use of products require burning fossil fuels, which increases GHG emissions. In addition, the waste produced (both pre- and postconsumer) requires energy for transport and, in some cases, can directly lead to landfill methane gas emissions. The following strategies should be employed to achieve this policy outcome:

**C.7.1 Support life-cycle materials management.** Support a focus on life-cycle materials management, which is an approach to serving human needs by using/reusing resources most productively and sustainably throughout their life cycle.

**C.7.2 Promote waste prevention.** The greatest reduction in GHG emissions comes from materials not needed or transported. Waste reduction examples could include reducing the amount of materials used to make products, extending product life spans, and maximizing recycling rates.

**C.7.3 Promote the reuse of materials.** Less energy is needed to extract, transport, and process raw materials and to manufacture products when people reuse already made products and materials. Examples that support reuse include removing regulatory barriers to facilities or programs that focus on reuse (e.g., donation stores, neighborhood and garage sales, etc.).

**C.7.4 Promote the expansion of recycling.** In most cases, recycling reduces GHG emissions because it takes less energy to manufacture a recycled product than it does from virgin materials. The expansion of recycling will require both support for more recycling programs and opportunities and significant support for identifying cost-effective uses for recycled products. This may include stricter requirements on solid waste and incentives for the use of recycled products. Regional composting and recycling solutions offer opportunities to make them more commercially viable.

**C.7.5 Promote the expansion of composting and waste-to-energy generation.** Composting, when reapplied as part of a soil or fertilizer replenishment program, results in fewer emissions of GHGs and small amounts of carbon storage. Waste-to-energy generation, when it displaces fossil-fuel derived generation, results in a reduction of GHG emissions.

**C.7.6 Support changes in the design, retrofitting, operation, and management of waste disposal sites.** Advances in the design, operation, and management of landfills (both existing and closed) and sewer treatment plants will be needed so that methane emissions are controlled and, where feasible, reused for energy production.

## Harmony with Nature Policy C.8. Encourage water conservation and plan for a lasting water supply

Planners should encourage water conservation and protect water supplies to offset potential long-lasting impacts from climate change and extreme weather events. Fresh water supports our communities, agriculture, and our ecosystems and is inextricably linked to our economy. Climate change manifests itself primarily through changes to the water cycle and its natural processes of droughts, floods, glacier formation and melt, and sea level rise and fall. Past GHG emissions have increased climate variability, which has resulted in more frequent, intense, and longer-lasting droughts and precipitation events. This has forced federal, state, and local governments and tribal and indigenous populations to further prepare for both a wetter and drier future. In general, it has been said that climate change will inevitably make dry regions drier and wet regions wetter. When combined with increasing population growth and less predictable climate patterns, additional focus on water conservation and water infrastructure has become a necessity. It is predicted that climate change impacts on our water cycle will result in direct consequences for water security and conflict over access to water. A life-cycle assessment (LCA) approach should be used for all water supply projects to ensure that the least carbon intensive options are achieved. The following strategies should be employed to achieve this policy outcome:

**C.8.1 Promote water conservation and efficiency.** Water use requires a lot of energy to extract, convey, treat, distribute, and clean. Decreases in water demand correlate to a direct reduction of GHG emissions. This could include such things as more efficient water fixtures; programs for the collection and reuse of rainwater; improved requirements for xeriscaping and the use of native, low-water landscaping; and restrictions on water usage during periods of drought.

**C.8.2 Advocate for climate-resilient water infrastructure.** Development or redevelopment of water infrastructure needs to seriously consider the risks associated with climate change. Currently, a majority of our water infrastructure (including dams, levees, aqueducts, sewers, and water and wastewater distribution and treatment systems) is not designed to handle today's changing climate and extreme weather events.

**C.8.3 Promote innovative ways to manage and reuse wastewater.** Encourage a life-cycle approach to water supply through the use of waste treatment-to-energy generation, water reuse (including potable reuse of purified municipal reclaimed water, the use of graywater in buildings and for irrigation, and municipal reuse of treated wastewater through a "purple pipe" distribution system), and post-treatment groundwater recharge.

**C.8.4 Promote the use of constructed wetlands for treating wastewater.** Use constructed wetlands as an alternative to traditional tertiary treatment, where feasible. Constructed wetlands have been shown to cost less to build, power, and operate than conventional treatment and provide a series of ancillary benefits, including providing wildlife habitat and recreational, educational, and research opportunities.

**C.8.5 Promote aquifer protection, storage, and recharge.** In the United States, groundwater provides more than 40 percent of the water for agriculture and domestic water supplies. In many parts of the United States, groundwater is being depleted due to increased pumping during droughts and for concentrated urban populations. Rising air temperatures, increases in the demand for irrigation, and insufficient precipitation due to climate change are factors that will further the need for proactive measures to protect and replenish our aquifers. This includes discouraging paving over or polluting both urban and rural groundwater recharge areas, and developing mechanisms to resolve competing conflicts between agricultural and urban uses.

**C.8.6 Promote the use of desalination as part of an overall water supply program.** Although desalination is relatively expensive due to the use of an energy-intensive reverse osmosis process, it can be considerably more cost effective and reduce GHG emissions (if renewable energy is used) when compared to importing water from remote sources through natural channels, canals, and pipelines.

## Harmony with Nature Policy C.9. Protect and manage streams, watersheds, and floodplains

Planners should encourage the protection and management of streams, watersheds, and floodplains in a manner that adapts to a changing climate and extreme weather events. Today, there is an increasing frequency and intensity of flood events directly related to climate change. This means that many more people are or will be more vulnerable to increased flooding impacts. This is particularly an issue for more vulnerable populations. The following strategies should be employed to achieve this policy outcome:

### **C.9.1 Promote protection of floodplains and other vegetated buffers around and along rivers, streams, and wetlands.**

Due to the uncertainties of future climatic impacts (which depend on the global response to mitigate GHG emissions), and the dynamics of these natural systems, it is imperative to analyze and then buffer floodplains to accommodate potential increased flooding over time. This type of analysis and policy position should start with the comprehensive plan and support efforts to cross-utilize these areas for multiple community benefits (e.g., drainage protection, heat island reduction, wildlife movement, and community recreation and tourism).

**C.9.2 Promote a watershed approach to water and drainage planning and more frequent assessments.** Water movement changes over time and does not recognize jurisdictional boundaries. Planners should support more interjurisdictional collaboration and more frequent assessments to identify the most proactive solutions to mitigate or adapt to future flood risk.

### **C.9.3 Promote improved infrastructure resilience and climate adaptation.**

Incorporate the applicable results of climate projections into zoning and development regulations, infrastructure design, investment appraisal criteria, and model building codes. Redevelopment and infill of our urban areas will require taking advantage of opportunities to reduce or mitigate future flood risk (e.g., buyouts, transfer of development rights, better infiltration, improved drainage or detention, etc.) and increased community resilience (i.e., learning to adapt and bounce back after being flooded).

### **C.9.4 Promote solutions that use natural systems, mimic natural processes, or work synergistically with traditional approaches to protect our floodplains and watersheds.**

In addition to increased rainfall and extreme weather events, growing urban populations are increasing the concentrations of impervious surfaces in our cities while at the same time reducing natural drainage infrastructure. The use of natural or nature-based approaches can effectively meet infrastructure needs while at the same time creating healthier environments (e.g., improved water quality and wildlife habitat), improved social ties (e.g., through open space protection and community recreation), healthier populations (e.g., through the promotion of physical and mental health, cleaner air and water, and reductions in heat), and stronger economies (e.g., through the reduction of future climate risk and better recreational, tourism, and economic development opportunities).

## D. Resilient Economy

Reliance on the current “straight line” economic system of production, consumption, and disposal has contributed to the climate crisis. Besides being wasteful and inefficient in its use of resources, the current economic business-as-usual practices externalize environmental and social costs and are unsustainable. A resilient economy incorporates the hitherto missing concept of “return,” changing the current linear economic system into a circular one. Going forward the price of goods must incorporate the total economic cost of production, which includes the social and environmental costs. The shift to a regenerative economic vision aims to produce a healthy environment, broad community prosperity, and more equitable outcomes for all community members. A regenerative economic system can also more easily withstand the dynamism and disruption of an increasingly warming planet.

### GENERAL POLICY D—RESILIENT ECONOMY

The American Planning Association and its Chapters and Divisions strive to ensure that all communities are prepared to deal with both positive and negative changes in economic health due to climate change, and to initiate sustainable urban development and redevelopment strategies that foster green business growth and build reliance on local assets. In order to accelerate transformative change that meets the challenges of the current climate crisis, we support the following specific policies to build a resilient economy.

### SPECIFIC POLICIES

#### Resilient Economy Policy D.1. Ensure that economic development is attuned to climate strategy while maximizing economic benefits to all

A diversified economic base is better able to withstand the economic shocks and stressors that climate change is likely to bring. The use of LCA and other tools to incorporate the full or total costs of development (including social and environmental) over the long term are needed and planners should encourage and use them. Promoting a circular economic development strategy and policy will benefit our nation, states, and communities as well as encourage innovation and create new economic opportunities for our citizens. The following strategies should be employed to achieve this policy outcome:

- D.1.1 Diversify local economies.** Diversify economies to reduce risks that climate change impacts, including weather-related disasters, will overly affect certain economic sectors, leaving communities without important services.
- D.1.2 Promote a circular economy.** Use the circular economy model as a guide to evaluate economic development projects and proposals. Key questions for policy makers include: Does the project or policy regenerate natural systems, design out waste and pollution from the system, and keep products and materials in use?
- D.1.3 Brownfield redevelopment.** Advocate the reuse of remediated brownfield and “grayfield” sites to reduce distances between destinations and relieve pressure to develop greenfields.
- D.1.4 Promote density.** State and local governments, metropolitan planning organizations, and other regional and local agencies should pursue a policy of intentional densification of urban places with good multimodal connections among mixed-use commercial, low-impact employment, and diverse housing areas.
- D.1.5 Account for the full costs of the economy.** Encourage the use of LCA tools when analyzing economic development prospects to provide a fuller dimension and analysis of the long-term social and environmental costs and benefits of projects.
- D.1.6 Ensure economic growth is inclusive.** Implement policies that will result in shared economic growth (inclusive growth) to combat income inequality and provide increased living standards across all economic sectors and a more resilient economy that will benefit all.



## Resilient Economy Policy D.2.

Promote workforce development to meet the needs of a clean-energy and sustainable economy

Support a just and equitable transition of our economic system from one heavily reliant on fossil fuels to one based on renewable sources of energy that incorporates the more efficient use of materials and resources inherent in a switch to a circular economy. The following strategy should be employed to achieve this policy outcome:

**D.2.1 Green-collar jobs.** Support job training for green-collar jobs and the equitable transition to renewable energy and a sustainable economy. Use comprehensive planning to designate suitable areas for small, innovative green businesses. Shift economic development and workforce training programs to support local jobs in sustainable businesses. Incorporate clean energy job training programs for local residents into rooftop solar and other energy projects.

## Resilient Economy Policy D.3.

Promote regional clean energy strategies

Communities, regions, interstate compacts, and states should pursue appropriately scaled energy policies and actions to address climate change. The climate and the need for clean energy does not respect jurisdictional boundaries and planners should work to create policies, plans, and actions at the appropriate scale. The following strategies should be employed to achieve this policy outcome:

### D.3.1 Create municipal targets for renewable energy.

Communities should create mechanisms to ensure transparent and accountable progress toward clean energy targets. This could be for municipal operations or applicable to both public- and private-sector development. As a corollary consideration for all of a community's energy-related decisions, planners should recognize and make decision makers aware that continued investment in new fossil fuel infrastructure locks communities into repaying this investment for the next 30 to 40 years.

### D.3.2 Advocate for renewable energy when replacing aging infrastructure.

Currently, a majority of our energy infrastructure dates far back into the 20th century (and beyond) and is not designed to handle today's changing climate and extreme weather events. Renewable energy projects should be part of the natural replacement cycles for our aging infrastructure systems and will help significantly reduce GHG emissions. Existing nuclear plants can be seen as part of the transition to a renewable energy future, although the industry as it exists today carries unanswered questions about safe fuel disposal and other issues.

### D.3.3 Promote clean energy and energy efficiency to decrease the use of fossil fuels in energy production.

In addition to climate benefits, a reduction in the use of fossil fuel production will result in improvements to human health and our natural environment (e.g., lower local air and water pollution will result in less haze, smog, acid rain, mercury contamination). Converting transportation from fossil fuels to renewably sourced electricity generates the biggest impact for reducing greenhouse gases that cause climate change.

### D.3.4 Develop and use climate-protective tax incentives and other financial tools.

The use of tax incentives and other financial tools (e.g., tax credits, research, grants, etc.) will be needed to promote the development, distribution, and implementation of renewable energy sources and use. Work with investment interests, including local banks and insurance companies, to coordinate with their long-term risk assessments and encourage their participation in climate-ready development.

### D.3.5 Promote local clean energy regulations and incentives.

This could include adopting, incentivizing, or removing the barriers to entry for locally produced energy in zoning, development, and building codes. This could also include supporting initiatives that increase the use of on-site or small-scale renewable energy production (e.g., rooftop wind and solar, neighborhood-scale solar farm, etc.) or increase energy efficiency.

**D.3.6 Promote partnerships.** Promote partnerships between public utilities and other public and private entities that can leverage combined buying power to increase purchase of renewable energy and develop projects which increase energy efficiency.

**D.3.7 Include externalities in the total cost of production and price accordingly.** Support adding the valuation of externalities (e.g., human and environmental health costs) to the costs of developing and burning fossil fuels to ensure the full impact of using those fuels is accounted for.

## Resilient Economy Policy D.4. Require resource-efficient economic development

Our natural resource base on the planet is limited. Planners should collaborate with economic developers to assure that our resources are used efficiently, repurposed, shared, and reused to the maximum extent feasible. The following strategies should be employed to achieve this policy outcome:

- D.4.1 Encourage combined heat and power.** Facilitate the installation of combined heat and power systems in industrial and institutional applications and in homes and businesses through education, grants, and the adoption of microgrids, district heating, and net metering at the appropriate scale.
- D.4.2 Support eco-industrial development.** Use a systems approach to siting industrial development: placing industries that use the by-products of other industries or that can share energy systems and other resources in close proximity to one another, using treated wastewater as industrial process water, anticipating green construction and infrastructure in industrial park layout and design, collaborating with the surrounding community for services or resources or to ensure compatibility, and using other synergistic and environmentally friendly practices. The goal is to create a node of industrial sustainability that minimizes waste, enhances interindustry cooperation, and more effectively and efficiently utilizes local resources. Planners should revise their master plans and regulations to support the creation of eco-industrial parks.
- D.4.3 Foster innovation.** Put in place a coherent system of regulations and incentives to encourage innovation and smooth the transition to a just and equitable economy. For example, waste bans and product take-back requirements can spur innovation in the industrial sector, as CAFE standards have done for vehicles.
- D.4.4 Ensure sustainable consumption and production patterns.** Planners should work with their constituents and decision makers to help educate them about circular economy principles and provide education about sustainable choices in the marketplace. Citizens' choices can drive change in the economy, such as wood construction for mid-level buildings or products that reduce maintenance costs for our wastewater treatment facilities.
- D.4.5 Support federal, state, and local policies to promote the reuse and repurposing of materials and spur innovation.** Policies such as banning construction and demolition debris and food waste from landfills has encouraged the growth of recycling industries and composting firms.
- D.4.6 Integrate resilient economy elements into plans and regulations.** To ensure economic development occurs in a sustainable way, state and local governments should make sure that the elements of a resilient economy are fully integrated into climate action plans and other planning and regulatory measures.

### Resilient Economy Policy D.5. Advocate for community-based economic development

Local planning, growth management, and economic development strategies can support and foster a diverse array of businesses and economic opportunities at the local level. The following strategies should be employed to achieve this policy outcome:

- D.5.1 Green building standards.** Support the continued development and application of green building standards. Develop and promote the means and standards to reach the goal of all new buildings being carbon neutral by 2030. Incorporate green building and energy efficiency standards in all public facilities.
- D.5.2 Performance-based code alternatives.** Support the addition of performance-based alternatives to energy codes and appropriate sections of the building code.
- D.5.3 Ongoing investment in building energy efficiency.** Support the adoption of standards requiring existing buildings larger than a certain size threshold to periodically invest in energy-efficiency improvements that have a reasonable payback period. Support incentives and standards that retrofit and redevelop existing buildings to improve energy efficiency while respecting the historic integrity of buildings and communities.
- D.5.4 Incentivize and require green roofs.** Encourage and incentivize the use of green roofs through landscaping and building regulations. Plants and other green infrastructure (natural systems) absorb carbon and clean pollutants such as SO<sub>x</sub>, NO<sub>x</sub> and particulate matter from the air. Green roofs are an excellent way for municipalities to simultaneously address stormwater management and quality, reduce air pollutants, increase energy efficiency of buildings, mitigate the urban heat island effect, and provide green space, habitat, and a potential food source.
- D.5.5 Promote incentives and education for green development.** Support the creation of incentives and education programs to encourage homeowners and developers to invest in green development improvements by fast-tracking permits for projects that incorporate these components, providing appropriate tax credits, and financing energy-efficiency improvements with repayment through assessments on property tax bills.

### Resilient Economy Policy D.6. Provide climate-ready infrastructure capacity

Encourage the use of smart renewable-based technologies, promote appropriately scaled energy distribution systems such as microgrids, and protect public infrastructure. The following strategies should be employed to achieve this policy outcome:

- D.6.1 Technology and communications.** Support technology and business practices that encourage telecommuting and enable people to reduce vehicle miles traveled from home to work. These include the use of home offices and technology such as wireless communications and videoconferencing, and the expansion of high-speed, affordable broadband to all communities.
- D.6.2 Support the orderly development and deployment of technology and infrastructure.** Enable the broader operation of electric vehicles through close collaboration with private-sector firms entering the mobility field.
- D.6.3 Support targeted hardening of infrastructure to protect the public health, safety, and environment.** Rising sea levels and increasing risks of floods and wildfires pose a serious threat to infrastructure and key facilities, including nuclear power plants.
- D.6.4 Support decentralized energy distribution.** Decentralized systems—often powered by renewable energy, with shorter transmission lines and smaller distribution areas—are more climate resilient. In the event of a disaster, a community with its own decentralized energy supply isn't affected by power outages in other areas. Smaller, more manageable power sources can also recover from disasters more rapidly. Low-carbon technologies such as solar panels and batteries can also provide reliable, clean energy to critical services like hospitals in rural areas that aren't already connected to the grid or experience frequent power outages.

## Resilient Economy Policy D.7. Plan for post-disaster economic recovery

Encourage preparedness and the deployment of redundant systems and programs to assist the economy to recover more quickly from disasters. The following strategies should be employed to achieve this policy outcome:

**D.7.1 Address physical and sector vulnerabilities.** Create and implement climate action and resilience plans and programs that identify strategies to address physical and sector vulnerabilities exacerbated by climate change, utilizing risk assessment practices. Such studies also need to take into consideration uncertainties in climate change impacts at regional levels so that adaptive responses are balanced with potential for risk.

**D.7.2 Support business disaster preparedness and recovery.** Support the development of business disaster recovery and continuity plans and actions and business emergency operations centers to spur faster recovery after a disaster.

## Resilient Economy Policy D.8. Link regional food systems and conservation to economic resiliency plans

Forested lands and wetlands act as important carbon sinks. Protecting these vital natural systems should be a priority when planning for economic resilience. Designing and developing a regional and local food systems approach can enhance the resiliency of community food systems and will reduce both the costs of transportation to market and attendant greenhouse gases. The following strategies should be employed to achieve this policy outcome:

**D.8.1 Use economic development programs to enhance conservation efforts.** Design economic development programs to take advantage of conservation lands. Two examples are heritage tourism, which allows visitors to experience a rural lifestyle, and ecotourism, which promotes the ecological uniqueness of conserved lands. Promoting forested lands and wetlands as carbon sinks for the community is another method of adding value to undeveloped lands.

**D.8.2 Work to remove barriers and provide incentives for composting and reducing food waste.** Forty percent of food produced in the United States is wasted throughout the supply chain. Food makes up the largest component of municipal landfills, releasing methane, a powerful GHG.

**D.8.3 Promote the benefits of sustainable agroforestry.** Agroforestry has the potential, if broadly applied, to significantly reduce 25 percent of all GHG emissions from current forestry and agriculture practices, provide significant sequestration opportunities, and help foresters and the economies of local communities.

**D.8.4 Support the preservation of prime agricultural and forest land.** Prime land has the potential to sequester significant amounts of carbon and also provides local economic and food security benefits. Assess the suitability of suburban backyards to support home-scale agriculture by reviewing underlying predevelopment soils maps and/or reducing manicured lawn area.

**D.8.5 Support the creation and retention of both local and regional food producers.** The consumption of locally or regionally produced food reduces GHG emissions and food waste associated with transporting food, supports biodiversity within the region, and adds to the regional economy. However, zoning ordinances may require revisions to better allow local production, such as via urban gardens or rooftop gardens. The “upcycling” of food waste to create new food products will also be an emerging theme with high-impact potential.

## E. Interwoven Equity

The United States has a long history of inequity toward communities of color and low-income, indigenous, immigrant, and other historically marginalized or underrepresented communities in public planning and development processes. This fact challenges planners because of the mandate within our [AICP Code of Ethics](#) and Professional Conduct “to serve the public interest” and “to plan for the needs of the disadvantaged and to promote racial and economic integration.” Awareness of this fact should urge us to dedicate ourselves to the fair treatment of all members of the communities we serve. The 2019 [APA Planning for Equity Policy Guide](#), which delineates APA’s updated, proactive stance on matters of equity, states that APA and its divisions are committed to “explicitly [removing] barriers in policies and regulations that perpetuate inequity in the United States.” Heightened attention to the impact of multiple crises affecting marginalized communities simultaneously—crises of economic well-being, health, and disaster preparedness and recovery—must be top-of-mind in our plans and actions.

In planning, equity is a principle of fairness related to the provision and impact of public policies and services. As stated in [Planning for Equity](#), “planning for equity is intended to challenge those planning practices that result in policies, programs, and regulations that disproportionately impact and stymie the progress of certain segments of the population more than others.” It is recognized that the impacts of climate change, such as extreme weather events, serve to exacerbate existing inequities. Specifically, climate equity focuses on addressing the systems and responsibilities for generating GHG emissions, eliminating the disproportionate distribution of climate change burdens, reducing inequities in the conditions that make certain groups more vulnerable to climate impacts, and ensuring just distribution of the benefits of climate protection efforts.

What is meant by the term “interwoven equity”? As [Planning for Equity](#) states, “equity is a thread that is woven through the fabric of all plans, regulations, developments, and policy options.” So, in the process of creating a “fabric” of equitable, climate-ready regions, we must continually weave equity considerations into climate adaptation and mitigation decision making and action, alongside the other decision factor “threads.” Taking the analogy a step further, the final “fabric” will only be strong when the important threads of equity are woven in.

Whether we are engaging with community residents about local climate risks or planning for major infrastructure investment to support a climate-ready land development pattern, we have an ethical obligation to address the social and economic impacts of the choices ultimately made. An enlightened decision process that considers these factors will allow for “interwoven equity,” by which the benefits of climate readiness and resilience may accrue to all.

### GENERAL POLICY E—INTERWOVEN EQUITY

The American Planning Association and its Chapters and Divisions recognize that interwoven equity is essential in planning for climate readiness and upholds it as a policy priority. We strive to ensure that equity concerns are interwoven into all climate adaptation and mitigation policies and actions.

## SPECIFIC POLICIES

### Interwoven Equity Policy E.1. Integrate equity considerations into all forms of climate action

Integrate social equity factors into all climate adaptation- and mitigation-related analysis, planning, decision making, and project implementation. The impacts of climate change will affect most urgently those with the fewest resources, the least financial security, the poorest access to information, and the least ability to influence large-scale decisions. Finding new avenues for disadvantaged communities and/or communities of color to influence and participate in climate preparation will increase their resilience and assure that communities participate in and benefit from climate actions. Community engagement alone will not fully address climate inequities, thus measures to assess current climate conditions, impacts, and burdens and to track progress and measure equity outcomes are vital to advancing climate equity. The following strategies should be employed to achieve this policy outcome:

- E.1.1 Use environmental justice principles.** Utilize the principles of environmental justice, defined by the U.S. Environmental Protection Agency as “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies” in all aspects of climate change evaluation, planning, and selection of mitigation alternatives.
- E.1.2 Use meaningful and inclusive public involvement processes.** Utilize collaborative problem solving and participatory planning, working with community partners to put community-based climate action, recovery and resiliency plans into effect.
- E.1.3 Ensure an inclusive, fair, and two-way information exchange.** When analyzing community risk and needs in the process of developing climate plans and actions, ensure that traditionally underrepresented communities have a strong voice in their development.
- E.1.4 Provide pro bono assistance.** Ensure that underserved, underresourced communities have the means to assess climate risks and needs, access adaptation resources, and remediate successfully following a climate event.
- E.1.5 Employ an equity-enlightened approach to cost benefit analyses.** When analyzing climate actions, ensure that factors pertinent to the circumstances of vulnerable communities are integrated into the process.
- E.1.6 Incorporate equity metrics.** When developing, measuring, and monitoring climate actions make sure that appropriate metrics are applied while assuring the commonality of metric employed.
- E.1.7 Provide outreach and educational opportunities.** Build a climate change knowledge base and an awareness of beneficial programs and opportunities (e.g., rebates, grants, nonprofit resources, etc.) in underserved and underresourced communities.



## Interwoven Equity Policy E.2. Connect underserved communities to multimodal transportation options and economic opportunity

Assure good physical access from all communities to multimodal transportation systems that connect those residents to designated development growth areas and regional centers of employment and economic opportunity. The coordination of land-use, economic development, and transportation planning should not only have a great impact on overall carbon emissions but potentially on the opportunity for disadvantaged segments of the population to live, work, and prosper in new ways within a climate-ready region. The following strategies should be employed to achieve this policy outcome:

- E.2.1 Promote compact, mixed use development** patterns that support safe, effective multimodal transportation options and a range of affordable housing types.
- E.2.2 Create channels for coordination** between multimodal transportation and economic development planning that include representation of, and consider the economic opportunity needs of, disadvantaged communities. Bring transit and active transportation choices and connectivity to underserved neighborhoods.
- E.2.3 Help foster community-based efforts** to advocate for transit access and transit service improvements as well as for opportunities to live and work in locations suitable for future growth under current climate projections.
- E.2.4 Promote progressive transit pricing** policies and programs and equitable access for low-income community members for micromobility options such as biking, scooters, etc.
- E.2.5 Ensure that community-based climate resiliency plans and evacuation strategies include public transportation.** Prioritize access to transit for those who do not have access to a vehicle.
- E.2.6 Promote microtransit options.** On-demand shuttles and similar programs can provide low-income rural communities with needed transportation options.

## Interwoven Equity Policy E.3. Increase climate-ready affordable housing in transit-served areas

Incorporate resilient, energy-efficient, affordable housing community-wide, and plan for targeted growth areas to include affordable housing. Many housing units that are considered affordable may be located inefficiently in terms of their access to transportation and energy, leading to higher total housing-related costs. Assure that low-income housing is provided in locations well served by transit and areas targeted for growth of transit-supportive development. Safeguard against climate gentrification, by which climate-advantageous geographical features, or transportation, economic, or land-use climate actions fuel redevelopment pressure on existing low-income communities and price residents out of their homes. Promote energy-efficient, cost-effective, and affordably located low-income housing. The following strategies should be employed to achieve this policy outcome:

- E.3.1 Remove regulatory barriers** to affordable housing in zoning and subdivision regulations.
- E.3.2 Prioritize development of affordable housing** in transit- and active-transportation rich locations and targeted growth areas.
- E.3.3 Assure that affordable housing is built or renovated to be energy efficient,** climate ready, and minimally carbon emitting. Improve home weatherization through programs such as the Federal Low-Income Home Energy Assistance Program. Require heating and cooling appropriate to the climate.
- E.3.4 Engage housing advocates,** builders, developers, lenders, building ownership groups, and policy makers in creating affordable housing retention programs and in maintaining community cohesiveness where climate-motivated redevelopment pressure on low-income communities exists or may occur.
- E.3.5 Identify appropriate locations for buyouts or development rights transfers** of low-income housing units in floodplains or other locations at risk due to climate change. Eliminate barriers that would prevent low-income residents in such locations from relocating.
- E.3.6 Protect disadvantaged residents.** Ensure that, through land banking, housing preservation, and other intentional means of providing affordable housing assistance, investments made in underserved areas do not disadvantage or displace existing community residents.
- E.3.7 Replace traditional Euclidean zoning** with alternative land-use regulatory tools that are not exclusionary, inefficient, or deleterious to natural habitats and systems.

### Interwoven Equity Policy E.4. Improve green infrastructure and open space connectivity in underserved communities

Create good physical access to open space within communities lacking parks and green space, particularly low-income communities and communities of color. Connect these communities to a regional network of green infrastructure. The preservation and enhancement of green space within low-income, minority and/or green- and open-space-poor communities will mitigate carbon production in those areas and provide a needed health resource that strengthens overall community resilience. Natural systems that manage stormwater and reduce heat loads will also lessen the impact of climate change and extreme weather events in those communities. The following strategies should be employed to achieve this policy outcome:

- E.4.1 Expand, establish, fund, and support green and open spaces** to promote carbon sequestration, manage stormwater, and reduce urban heat islands. For instance, access to tree-shaded community spaces should be created where there is a lack of tree canopy.
- E.4.2 Increase tree biomass and use it to manage atmospheric heat loads and absorb carbon**, and engineer water-based landscapes to manage stormwater and preserve flood storage capacity, particularly in communities vulnerable to climate impacts. A wealth of case studies demonstrate effective techniques for implementing tree-planting programs and green infrastructure for climate impact management.
- E.4.3 Assure local access to nature and outdoor experiences** with the understanding that they are important for human health and well-being. Develop community-wide and regional active transportation networks to connect green and open spaces. Health impact assessments have definitively supported the relevance of open space access to community quality of life.
- E.4.4 Retain biodiversity within natural systems** as it is vital to the health and longevity of those systems. Protecting forested areas, wildlife preserves, and the connectivity of wildlife habitat should be prioritized.

### Interwoven Equity Policy E.5. Promote more equitable energy and utility systems

Work toward leveling the playing field for low-income communities that have a disproportionate household cost burden for energy and utility use while promoting new innovations that support reduced carbon production. While wealthier households generally have a larger carbon footprint due to greater driving and flying activity, larger houses to heat and cool, and greater consumption of manufactured goods and equipment, their proportional cost burden for energy is much less than for low-income households. Renewable distributed energy systems offer the opportunity—as they once did before centralized coal- and nuclear-based systems became the industry norm—to allow flexible and affordable participation in energy consumption. Small modular, next-generation energy systems currently in research and development may also offer more sustainable nuclear energy. Similar to the way home heating and water treatment was accomplished on-site in the past, energy and water systems integrated into building or district design can again mitigate the cost burden for low-income households while providing environmental benefits to all. The following strategies should be employed to achieve this policy outcome:

- E.5.1 Implement solar and other on-site energy capture programs.** Create programs to provide alternative energy sources (e.g., solar panels) that support lower utility bills for low-income communities, while also providing jobs to those communities and achieving a smaller overall energy footprint. Support development of community-located solar arrays where rooftop resources are limited.
- E.5.2 Promote a progressive carbon tax** that addresses the disproportionate cost burden of energy on low-income households through, for example, dividend programs or tax shifts. Address severe cost burden issues during extreme temperature conditions that make it hard or impossible to afford adequate heating or cooling.
- E.5.3 Support the expansion of renewable energy programs,** rebates, and direct program resources to underresourced communities, such as from the Low-Income Energy Assistance Program or the Weatherization Assistance program.
- E.5.4 Promote local building insulation and weatherization programs** to reduce heating and cooling costs while lowering the carbon footprint of buildings. These programs are an opportunity for a significant number of new jobs that can be prioritized for local residents.
- E.5.5 Provide accessible programs and tools** to support residential facility energy tracking, audits, and benchmarking.
- E.5.6 Promote inclusion of on-site rainwater capture and water treatment and recycling systems** for new and retrofitted construction in low-income communities to reduce the cost of relying on centralized water delivery systems.

**Interwoven Equity Policy E.6.**

Create policies and programs that support an equitable, resilient economy

A diverse and resilient economy is critical to supporting a disadvantaged community's ability to adapt and respond to climate change, including extreme weather events. Low-wage workers, retirees with fixed incomes, and unemployed or underemployed individuals may lack the financial resources to prepare for or respond to disruptions in supply chains or economic activities. Limited access to services or resources can widen gaps in resiliency and increase risk factors for vulnerable populations. Diverse economic activity, a skilled workforce, and equitable distribution of goods, services, and other resources increase resilience throughout communities. In addition, as action on climate change generates economic benefits and green jobs, communities should take measures to ensure that low-income communities and small businesses are afforded full participation in the opportunities and benefits from the green economy and green jobs. The following strategies should be employed to achieve this policy outcome:

- E.6.1 Fold vocational, educational, and other local training programs into climate-readiness initiatives** to foster employment opportunities in growing the green housing and renewable energy industries.
- E.6.2 Institute equitable procurement practices** that include women- and minority-owned businesses to provide services in adaptation and mitigation efforts.
- E.6.3 Encourage the business community to educate itself** (employers, managers, and employees) on climate change risks and opportunities.
- E.6.4 Strive for equitable access** to goods, services, and resources across a community, including a balance between housing, employment, and economic opportunities.
- E.6.5 Seek economic and employment opportunities** for residents of at-risk, disadvantaged, or distressed neighborhoods while avoiding gentrification pressures. Incentivize business owners to achieve employee diversity.

**Interwoven Equity Policy E.7.**

Mitigate climate change health and safety risks to vulnerable population groups

Climate change poses health and safety risks to many population groups. Equity in planning often focuses on income, race, and ethnicity. In the context of climate change, it is critical to consider additional population groups that are particularly burdened by their climate vulnerability, such as older adults, youth, persons with disabilities, those suffering from asthma or other chronic health conditions, transportation-disadvantaged households, and people who do not speak or read English proficiently. Many of the most vulnerable populations experience multiple health and safety risk factors and exposures. Overall, community health is a critical factor in resilience to climate change. Extreme weather events pose additional health and safety risks. It is critical to prioritize health and safety to foster sustainable, resilient communities. The following strategies should be employed to achieve this policy outcome:

- E.7.1 Develop emergency management and evacuation strategies** that prioritize vulnerable populations, including designing warning systems to reach those with limited English proficiency and persons with disabilities, and evacuation strategies that focus on persons with disabilities, the transportation-disadvantaged, and those living in flood- or fire-prone areas.
- E.7.2 Develop resiliency plans** that address continued access to key services in underserved areas, such as electrical supply, backup power, and access to clean water, as well as the mitigation of pollutants in the built and natural environments, improved air quality, increased outdoor exercise and recreation opportunities, and reduced sensitivity to natural and man-made hazards.
- E.7.3 Identify and address existing disparities in access to health care and health opportunities**, including healthy foods, green spaces, opportunities for exercise, and active transportation.
- E.7.4 Promote localized food production** in disadvantaged areas to improve access to, and reduce the cost of, food for residents while also reducing reliance on energy-consuming, carbon-producing modes of food production and delivery. Local gardens, farmers markets, and co-ops can be a great source of healthy, fresh food at low cost to residents.
- E.7.5 Improve digital access to information** in underserved communities through programs that bring current technology and connectivity to those residents, especially critical health and safety information, including advance warning and notification systems.
- E.7.6 Provide targeted educational opportunities and outreach programs** to address health and safety risks. For example, work with employers to educate outdoor workers on risks associated with extreme heat and strategies to improve worker safety. Educate communities on resources available to assist vulnerable populations in the event of extreme weather events.

## F. Healthy Communities

Climate change is significantly impacting the health of communities across the nation and globe, and the impacts are projected to become more severe as global warming increases. The *Fourth National Climate Assessment* stated that “climate change affects human health by altering exposures to heat waves, floods, droughts, and other extreme events; vector-, food- and waterborne infectious diseases; changes in the quality and safety of air, food, and water; and stresses to mental health and well-being.” According to the Centers for Disease Control and Prevention, specific impacts include:

- **Air Quality.** Increased ground-level ozone and/or particulate matter pollution; shifts in flowering time and release of pollen by allergenic plant species; particulate matter, carbon monoxide, nitrogen oxides, and volatile organic compounds from wildfire smoke; and indoor air quality problems, such as the growth of indoor fungi and molds resulting from extreme rainfall and rising temperatures.
- **Temperature Extremes.** Increased deaths and hospital admissions during summer heat waves; urban heat islands, combined with an aging population and increased urbanization, are projected to increase vulnerability to heat-related health impacts in the future.
- **Precipitation Extremes.** Increases in severe flood events, resulting in injuries and deaths during storms and health hazards in their aftermath; environmental exposure to a range of health hazards during drought conditions.
- **Vector-Borne Diseases.** Effects on the geographical distribution and incidence of diseases born by vectors such as fleas, ticks, and mosquitoes.
- **Food Security.** Impacts on global food production, certain aspects of food quality, and food prices and distribution systems.
- **Mental Health.** Mental health and stress-related disorders, including increased suicide rates with rising temperatures; some patients with mental illness are especially susceptible to heat.

People and communities are differentially exposed to hazards and disproportionately affected by climate-related health risks. Populations experiencing greater health risks include low-income communities, communities of color, children, and older adults. APA’s Planning for Equity Policy Guide identifies climate change and resilience as a cross-cutting equity issue and includes a policy to consider social equity in all climate change adaptation and mitigation decisions.

APA recognizes that the COVID-19 health crisis of 2020 may affect how this Policy Guide will be implemented. There is clearly a connection between health concerns and the built environment that must be recognized and carefully considered in every community. For example, one term that can cause some serious misunderstanding is “density.” There can be a tendency to use it broadly to describe some of the characteristics of cities. In reality, and as it is used here to describe planning and design concepts that are beneficial in combating the impacts of climate change, well-designed, dense urban environments are highly beneficial to community and individual health. The assumption in this guide is that compact, mixed-use urban development will be designed in ways that are fully cognizant of, and responsive to, health concerns.

## GENERAL POLICY F—HEALTHY COMMUNITIES

The American Planning Association and its Chapters and Divisions support efforts to increase community resilience and effectively manage public health impacts resulting from climate change, prioritizing the needs of vulnerable populations.

### SPECIFIC POLICIES

#### Healthy Communities Policy F.1. Improve community health and resilience to climate change by planning for the social determinants of health

According to Healthy People 2020, the social determinants of health (also referred to as attributes of place) are “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.” These conditions profoundly affect health outcomes, as reflected in stark disparities in life expectancy and chronic disease rates between affluent populations and low-income and other groups that are particularly vulnerable to the effects of climate change. Planners can play a key role in influencing the social determinants of health to improve community health and resilience. The following strategies should be employed to achieve this policy outcome:

- F.1.1 Reduce exposure to toxins and pollutants** that increase vulnerability to health impacts from climate change, for example, outdoor and indoor air pollutants that contribute to cardiovascular and respiratory conditions such as asthma.
- F.1.2 Increase public safety and reduce injury risk** through design of the built environment, for example by reshaping transportation networks to reduce mortalities and injuries caused by vehicles. (A study found an association between abnormally warm temperatures from climate change and increased deaths from car crashes.)
- F.1.3 Promote physical activity and healthy lifestyles** to reduce the incidence of obesity and other chronic conditions that increase vulnerability to health impacts from climate change. This strategy will have the added benefit of reducing GHG emissions (a study found that emissions associated with obesity are equivalent to approximately 1.6 percent of the global total).
- F.1.4 Provide equitable access** to parks and recreation facilities, healthy foods, and community-serving facilities and services to address health disparities that make low-income communities, communities of color, and other groups more at risk from climate change impacts.

**Healthy Communities Policy F.2.**

Address public health in all stages of planning for the impacts of natural disasters, including hazard mitigation, adaptation, and response/recovery

Climate change is exacerbating the human health impacts of natural disasters and extreme weather. Maintaining individual and community health should be prioritized through mitigation (acting before a disaster strikes to reduce health risks), adaptation (addressing health impacts from changing conditions associated with climate change), and response/recovery (protecting public safety during a disaster and human health and well-being during short- and long-term recovery following the disaster). Special consideration should be given to the needs of vulnerable populations, for example by increasing the urban tree canopy and providing parks and greenspaces in underserved neighborhoods. The following strategies should be employed to achieve this policy outcome:

**F.2.1 Reduce exposure to health risks from hazards.** Mitigation strategies include: limiting development in floodplains and other disaster-prone areas; modifying existing buildings and infrastructure to reduce health impacts from property damage, flooding, loss of power, etc.; maintaining and restoring the functions of natural systems; and increasing public awareness of the potential risks of hazards and ways to mitigate them.

**F.2.2 Anticipate climate impacts on health, assess vulnerabilities, and implement adaptation strategies.**

Examples include: green stormwater infrastructure and other nature-based solutions to reduce flooding and provide health co-benefits; street tree and tree canopy plantings, parks and green space; cool (highly reflective) roofs; and other actions to ameliorate the urban heat island effect, and accounting for projected effects of climate change (extreme precipitation, sea level rise, etc.) in planning for facilities and infrastructure that are essential to public health.

**F.2.3 Develop and implement evacuation and emergency response plans** to minimize injury and loss of life during disasters.

**F.2.4 Address the social and mental health needs** of dislocated populations following disasters.

**Healthy Communities Policy F.3.**

Apply an integrated equity, health, and climate lens to all phases of the planning process and implementation

The **Healthy Communities and Planning for Equity Policy Guides** call for “Health in All Policies” and “Equity in All Policies” approaches, respectively. As noted in the Equity Policy Guide, these approaches are analogous to using a “lens” to view, frame, and consider the policies and practices of planning. Equity and health are interrelated topics (as evidenced by health disparities related to access to socioeconomic opportunities and resources), and climate change is a cross-cutting issue with profound implications for both. The following strategies should be employed to achieve this policy outcome:

**F.3.1 Integrate equity, health, and climate change**

**considerations** into all components of the planning process and its implementation, including long-range community visioning and goal-setting; plan making (comprehensive plans, functional plans, area plans, etc.); standards, policies, and incentives; current development work; and public investment.

**F.3.2 Build relationships** among planners, public health professionals, and other disciplines to promote a cross-sectoral approach to addressing health and equity issues related to climate change.

**F.3.3 Apply tools** such as Health Impact Assessments, Health Lens Analysis, and Healthy Community Checklists to inform policy and decision makers about the potential impacts of proposed policies, projects, and programs related to health, equity, and climate change.

**F.3.4 Support policies linking public health to planning.** Federal, state, and local governments should utilize funding programs to embed public health issues into their funding programs and policies. For example, Community Development Block Grants should focus on policies such as green roofs in communities with higher rates of asthma, as vegetation and other green infrastructure can help purify the air in those communities.



## G. Responsible Regionalism

Planners working in all sectors and at every scale will encounter a connection—or a need for one—between actions at the local level and those at the regional level. The appropriate response to regional-local disconnects is what APA calls “responsible regionalism.” Regionalism, on its own, is a perspective that accounts for systems that operate at a regional scale, such as transportation, housing, economic development, natural environments and open space, and equity, social, and cultural frameworks. Responsible regionalism is that same perspective enlightened by an accounting for these same factors at the community scale in a coordinated manner, and an acknowledgment of the interdependence between a community and the region as a whole.

The changing climate has planning implications that supersede jurisdictional boundaries and yet is tangibly felt on the local level, such as in the flooding of a downtown business district, or localized storm damage, or in new temperature extremes that affect personal health, homes, or businesses. It is vital to bring the perspective of responsible regionalism to climate adaptation—and to support adaptation action at the regional scale through regional governance and/or planning authority—because it promotes effective and strategic investment that maximizes benefit to local constituents and the region as a whole simultaneously.

Regionalism already points us to the cross-sectoral implications of planning decisions: transportation investments affect development investments just as economic development priorities affect the availability and affordability of housing. The challenge of changing climate conditions creates a new and important imperative: collaboration among sectors—building, infrastructure, housing, open space planning, financial markets, the insurance industry, etc.—is more essential than ever if we are to achieve effective and timely adaptations that safeguard our communities for the future. To put this collaboration into effect responsibly, attention must be given to simultaneous cross-sectoral needs at the local and regional scales with intentional inclusion of community perspectives and deference to local control on local matters.

### GENERAL POLICY G—RESPONSIBLE REGIONALISM

The American Planning Association and its Chapters and Divisions recognize that responsible regionalism is essential in planning for climate readiness and upholds it as a policy priority. We strive to ensure that discussion and coordination take place among local and regional entities as a means of aligning planning priorities in a productive manner.

## SPECIFIC POLICIES

### Responsible Regionalism Policy G.1. Foster regional cooperation and collaboration on climate action

Form a regional climate partnership among local leaders, planners, and public and private organizations to develop a regional vision and strategy and get everyone on board with climate action. States should foster such partnerships to create interplay between planning at the regional and local levels by supporting forums for mutual information sharing, stakeholder inclusion, visioning, and coordination of climate mitigation and adaptation activities. Regional planning entities can play a critical role in leading, facilitating, and building momentum from partnership activities. Inviting diverse public and private entities to participate in region-wide discussions and coordination will result in more equitable solutions as well as more sound economic and land-use strategies in the face of climate challenges. One community can learn from the successes and failures of another: sharing tools, resources, and ideas will enhance the efficiency and efficacy of climate actions. Planners and elected leaders should set the tone by demonstrating leadership that promotes regional collaboration on climate. The following strategies should be employed to fulfill this policy outcome:

#### G.1.1 Develop a regional climate action and resiliency plan

and implementation strategy with local decision makers, planners, and business and other groups representative of the region’s population.

#### G.1.2 Factor local opportunities, needs, and priorities into regional planning and decision making.

Find synergies with existing programs and continue building strong partnerships with multiple government agencies and business and community organizations.

#### G.1.3 Leverage federal, state, philanthropic, and academic resources

where possible to achieve regional goals through joint municipal and regional planning leadership and to advance acceptance of a regional-local approach to planning and decision making.

#### G.1.4 Utilize education, tax and fee policy, and other economic incentives

to influence the purchasing and location decisions made by individual consumers as well as private business.

#### G.1.5 Support development of regional planning funding mechanisms

as well as regional governing authority (such as through an effective metropolitan planning organization) organized around natural geography such as a regional watershed.

#### G.1.6 Support and sustain multiregional and multistate stakeholder coalitions

to secure adaptation and mitigation policy and funding support from outside the region.

## Responsible Regionalism Policy G.2. Link regional climate goals on housing, economic development, and transit to define growth areas

Advocate for TOD to move communities and regions away from fossil fuel dependence and its myriad environmental and cultural challenges. Because urban form is one of the biggest drivers of carbon production, TOD development offers a model that will not only reduce per capita vehicle trips, VMT, and GHG emissions, but also reshape and reposition a region for compact, climate-ready new development, economic strength and stability, and equitable participation in its economy.

Growth management leadership at the state and regional levels, which has worked effectively in states such as Oregon for several decades but which has faltered in other locations, can significantly influence these land development patterns. Reinvigorating state and regional policies to channel growth into a compact urban pattern will reduce GHG emissions and minimize exposure to climate-related impacts. New development centered on transit nodes—guided through policy, incentives, standards, and systems—will help shift urban form toward a climate-ready pattern and accommodate population growth. Establishing clear policy and regulatory conditions for new development will allow TOD to be achieved thoughtfully and regional VMTs to be measurably reduced. The following strategies should be employed to achieve this policy outcome:

- G.2.1 Maximize use of existing transit.** Focus regional planning for transit-oriented communities to maximize the use of existing transit infrastructure and services, to reduce regional VMT, and to coordinate local planning and decision making around expansion of transit resources and other development-supportive investments. Support legislation setting regional targets for GHG emissions reduction, like California's landmark climate change law SB 375.
- G.2.2 Invest strategically.** Invest in all transit options, including rapid bus transit, self-propelled light rail, streetcars, commuter trains, and heavy rail systems to suit the specific needs of each part of the region.
- G.2.3 Develop transit-oriented communities** that will foster multimodal mobility, be walkable and comprised of mixed-use at its core, with most community resources and job centers accessible within a radius of one-quarter to one-half mile of high-capacity transit. Encourage compact infill development to maximize the efficient use of land.
- G.2.4 Foster collaborative regional-local partnerships** to mediate the relative roles of local government and transit agencies, identify financing resources, adjust zoning codes and parking ordinances, and assure the inclusion of affordable housing choices and small and minority business representation.
- G.2.5 Define and serve growth areas by transit** but also in concert with regional housing, land-use, and economic development planning and in anticipation of projected regional population growth or decline.

## Responsible Regionalism Policy G.3. Connect communities with regional transportation options

Foster a multimodal regional transportation network that maximizes connectivity within and among communities and allows people to travel easily and affordably to their places of residence, work, and leisure without traveling long distances in single-occupant vehicles and without dependence on fossil fuel-powered modes of transportation. Climate-motivated and coordinated regional land-use and transportation strategies should inform local decisions around connectivity of transportation modes. Regionally coordinated transportation plans should form the basis for the use of federal and state funds on these projects. These plans and strategies should be backed by state legislation that sets regional targets for GHG emissions reduction.

At the local level, land development should support regional transportation access for the benefit of all community residents. Land-use planning should encourage the creation of "complete corridors" that integrate multimodal transportation access, community resources, work, leisure, and residential life. Infill development should be supported as a means of concentrating new buildings around existing transportation resources. Community walkability should be enhanced wherever possible so that daily life may include walking to a destination or to an access point for transportation modes. Regional collaboration, facilitated where possible through regional planning bodies, should lend support to these local endeavors. The following strategies should be employed to achieve this policy outcome:

- G.3.1 Invest in technologies to reduce GHG emissions.** Support transit, transportation efficiency technologies, and electric transportation options, such as the electrification of bus fleets and investment in electric vehicle infrastructure, to significantly reduce fossil fuel usage and GHG emissions.
- G.3.2 Implement "last-mile" transportation options** to bridge gaps between existing transit nodes and destinations within a community.
- G.3.3 Include nonmotorized transportation options**, such as bicycles and walking, in a regional transportation scheme, with attention to the linkages of bicycle and pedestrian infrastructure to community destinations and other modes of transportation, especially transit.
- G.3.4 Make available a range of public and private transportation options**, including ride-sharing services, to maximize choice, accessibility, and affordability.

### Responsible Regionalism Policy G.4. Link Local Open Space Plans with Regional Green Infrastructure

Plan for physical and programmatic connections between the green spaces of local communities and the open space system of their surrounding region. Green infrastructure will serve a variety of climate resiliency, human, and environmental needs when conceived concurrently at the local and regional scales. Greenway and water system engineering can create significant carbon sinks and vital stormwater-handling mechanisms. These interventions directly impact quality of life at the local level, the environmental health of the region, and climate readiness.

Regional green infrastructure plans should inform local open-space priorities, and, in turn, existing and potential local open-space resources should be included in a regional inventory. Local codes that foster investment in open-space resources and green infrastructure should be encouraged and developed. The following strategies should be employed to achieve this policy outcome:

- G.4.1 Use tree biomass** to manage atmospheric heat loads and absorb carbon, and engineer water-based landscapes to manage stormwater. A wealth of case studies demonstrate effective techniques for implementing green infrastructure for climate impact management.
- G.4.2 Assure local access to nature** and outdoor experiences with the understanding that they are important for human health and well-being. Health impact assessments have definitively supported the relevance of open space access to community quality of life.
- G.4.3 Retain biodiversity** within natural systems as it is vital to the health and longevity of those systems. Protecting forested areas, wildlife preserves, and the connectivity of wildlife habitat should be prioritized.

### Responsible Regionalism Policy G.5. Connect local and regional housing initiatives

Coordinate housing policy and initiatives with transportation, transit, economic development, and open space planning such that new and infill housing production occurs in areas deemed suitable for future growth and development based on climate projections. Regional housing strategy—backed by policy, regulation, and incentives at all levels of government—should guide the location of new housing investment and indicate the appropriateness of housing type and building methodology by location. Collaboration among local and regional housing developers, planners, and advocates should be supported. The following strategies should be employed to achieve this policy outcome:

- G.5.1 Utilize local housing policy** and incentives to foster green building and other elements of climate-ready construction.
- G.5.2 Prioritize and incentivize** local infill housing and development around transit nodes that connect to a regional transportation system.
- G.5.3 Utilize housing policy** to assure the equitable distribution of affordable housing region-wide and safeguard against potential displacement and climate gentrification outcomes.

**Responsible Regionalism Policy G.6.**

Plan for economic development that balances community needs and regional climate strategy

Tailor economic development initiatives to foster growth and diversification of the regional economy (including tourism if it is an existing or potential economic driver) where climatological forecasts indicate future growth and development is suitable. Projected population trends, climate change impacts, and efforts to reduce economic disparity should be incorporated in any regional strategy for economic development. Further, this strategy should be married to a climate-sensitive transportation plan for the region.

Communities within a region can be prosperous and economically stable if each has a differentiated market niche and if a range of employment opportunities are available. The following strategies should be employed to achieve this policy outcome:

**G.6.1 Support growth and workforce training** in green industry, foster local green building and operational practices, and allow a substantial role for small businesses and entrepreneurship, all of which will help foster a robust, sustainable regional economy.

**G.6.2 Create experience-rich communities** that help achieve key climate adaptation objectives. The “experience economy” concept, which affirms that people will spend money on experiences in addition to or while also purchasing goods and services, is an important economic rationale for a compact, mixed-use, walkable land development pattern.

**G.6.3 Plan for a range of climate-friendly housing types,** including sufficient affordable units, to accommodate a diverse workforce in designated growth areas.

**Responsible Regionalism Policy G.7.**

Coordinate local and regional plans for transportation, water, waste, and energy infrastructure

Set priorities through local and regional collaboration for strategic and forward-looking infrastructure investment. New infrastructure should be targeted for locations prioritized for future growth and built to a standard that addresses future climatological conditions and population projections. New critical infrastructure should be sited according to the best available long-term scientific projections of climate impacts to the land. New road, water, and sewer investments should be prioritized in accordance with a compact development strategy for the region, thereby reducing the inefficiency, cost, and VMT associated with servicing sprawling development. Local Capital Improvement Plans should correspond with regional plans through an actively coordinated process.

Urge and incentivize the power-generation sector and water and waste management industries to engage as partners in designing regional infrastructure solutions to climate impacts and to adapt operationally to minimize their own GHG emissions. These infrastructure solutions should include a return to providing a larger proportion of energy and utilities at the district scale and supporting energy and water generation and recycling on building sites. Local production of renewable power will significantly reduce carbon emission. The following strategies should be employed to achieve this policy outcome:

**G.7.1 Advocate for resource efficiency and reduce GHG production** region-wide through support of legislation, policy, and funding that fosters renewable energy and GHG reduction as well as support for new climate-friendly utility infrastructure investments, especially in these key areas:

- Promotion of solar projects in both public and private settings
- Reduction of waste through investment in U.S.-based repurposing, composting, and recycling resources
- Enabling “smart grids”

**G.7.2 Electrify regional public transportation and utility fleets,** and provide electric infrastructure to serve local private electric vehicle use.

**G.7.3 Adopt new technologies** that reduce the ecological harm of regional transportation systems through increased efficiency.

**G.7.4 Incentivize the use of cost-effective, energy-efficient building technologies region-wide** to shift homes, offices, and factories toward on-site energy production and net-zero waste and emissions. Disseminate building energy performance information about these technologies in local communities. Examples include:

- Heat recovery systems that recapture waste heat energy and convert it into an extra source of heat, mechanical, or electrical energy
- Rooftop rainwater capture gardens that reduce a building's non-potable water consumption
- New window glass technologies that minimize a building's requirement for heating and cooling

**G.7.5 Engage leaders** of the power-generation sector and water and waste management industries in regional climate planning processes. Encourage a shift toward district-scale energy and utility provision.

**G.7.6 Incentivize and/or require** all waste and emissions producers, at the regional and local scales, to reduce those by-products.

**G.7.7 Promote watershed planning for water resources.** Water quality standards, stormwater regulations, wastewater treatment, and water supply through surface or groundwater are interconnected at the watershed scale. Individual jurisdictions are unable to adequately address negative conditions by themselves, so planners must work across jurisdictional boundaries to effect positive change on common problems.

## Responsible Regionalism Policy G.8. Coordinate regional digital connectivity and infrastructure

Support digital information sharing and connectivity that enables regional climate, energy, and water data collection, assessment of existing conditions, and coordination on regional climate change solutions. The digital technology industry should be harnessed to increase information access, safety, and convenience for all residents. Region-wide coordination can help identify funding sources, prioritize investments, integrate systems, and launch successful pilot projects. Regional technology industries can strengthen the economy while serving the purpose of climate adaptation. The following strategies should be employed to achieve this policy outcome:

**G.8.1 Create efficiencies** through digital technology solutions in energy, manufacturing, agriculture, land use, buildings, services, transportation, and traffic management to produce positive climate mitigation and adaptation outcomes.

**G.8.2 Utilize information technology advancements** to improve the efficiency, security, and accessibility of shared climate-related information and to support distance learning, business development, and telemedicine.

**G.8.3 Support tech tool innovations that lend themselves to high-speed digital infrastructure across a region, and that can offer both a regional and local scale of information.** New technology advancements offer significantly reduced energy consumption, with higher data speeds, reduced transmission delay, and improved reliability. Technologies can also be harnessed for public information storage and retrieval with built-in security by design.

**G.8.4 Foster partnerships** with universities, private labs, nonprofit organizations, and federal research and development funding programs such as the U.S. National Laboratories to support technological innovation, advance energy and climate studies, and develop regional digital infrastructure.



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## Definitions

### Biodiversity

The variety of life found in a place on Earth or, often, the total variety of life on Earth. Source: Britannica.com at <https://www.britannica.com/science/biodiversity>

### Biophilic (city)

A place that learns from nature and emulates natural systems, incorporates natural forms and images into its buildings and cityscapes, and designs and plans in conjunction with nature. A biophilic city cherishes the natural features that already exist but also works to restore and repair what has been lost or degraded. Source: *Biophilic Cities*, Tim Beatley (Island Press 2011)

### Circular economy

An economy based on the principles of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. Source: Ellen MacArthur Foundation, at <https://www.ellenmacarthurfoundation.org/circular-economy/what-is-the-circular-economy>

### Ecosystem

A system that includes all living organisms (biotic factors) in an area as well as its physical environment (abiotic factors) functioning together as a unit. Source: BiologyOnline.com at <https://www.biologyonline.com/dictionary/ecosystem>

### Ecosystem services

**Benefits people obtain from ecosystems.** The **Millennium Ecosystem Assessment**—a four-year United Nations assessment of the condition and trends of the world's ecosystems—categorizes ecosystem services as:

- **Provisioning Services** or the provision of food, fresh water, fuel, fiber, and other goods
- **Regulating Services** such as climate, water, and disease regulation as well as pollination
- **Supporting Services** such as soil formation and nutrient cycling
- **Cultural Services** such as educational, aesthetic, and cultural heritage values as well as recreation and tourism

Source: U.S. Forest Service, at [https://www.fs.fed.us/ecosystemservices/About\\_ES](https://www.fs.fed.us/ecosystemservices/About_ES).

### Green infrastructure

A cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. While single-purpose gray stormwater infrastructure—conventional piped drainage and water treatment systems—is designed to move urban stormwater away from the built environment, green infrastructure reduces and treats stormwater at its source while delivering environmental, social, and economic benefits. Source: *Subdivision Design and Flood Hazard Areas*, PAS 584 (2016)

### Life-cycle assessment (or costing)

A tool that can be used to evaluate the potential environmental impacts of a product, material, process, or activity. A life-cycle assessment is a comprehensive method for assessing a range of environmental impacts across the full life cycle of a product system, from materials acquisition to manufacturing, use, and final disposition. Source: U.S. Environmental Protection Agency, at <https://www.epa.gov/saferchoice/design-environment-life-cycle-assessments>

### Low-impact development (LID)

Systems and practices that use or mimic natural processes, which result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat. Source: *Subdivision Design and Flood Hazard Areas*, PAS 584 (2016)

### Resilience

The ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. Source: National Academy of Sciences, *Disaster Resilience: A National Imperative* (2012); also used in *Planning for Post-Disaster Recovery: Next Generation*, PAS 576 (2014)

### Watershed approach

A coordinated framework for environmental and natural resource planning that focuses all stakeholder efforts on the highest-priority problems within a hydrologically defined geographic area, such as a watershed. Source: U.S. Environmental Protection Agency