

American Planning Association

**POLICY GUIDE ON PLANNING &
CLIMATE CHANGE**

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Policy Guide on Planning and Climate Change

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INTRODUCTION

Today, planners have the opportunity and obligation to address the historic challenge of global climate change. The planning profession and the process of planning are uniquely suited to help communities make the changes needed to rise to this challenge and achieve the outcomes needed to create communities of lasting value. This Climate Change Policy Guide recommends a policy framework to assist communities in dealing with climate change and its implications. Success will require new policies and a bold new approach to planning.

The earth is getting warmer and it will continue to do so well into the future. The key question is how fast and how severe the impacts will be and whether we can adopt policies for mitigating against and adapting to these impacts. Climatologists reporting for the United Nations Intergovernmental Panel on Climate Change (IPCC) see human activities as the major contributor to global warming and express growing fears that warming will accelerate in the coming years with potentially devastating impacts.

In recent years, new conditions and certain extreme experiences have brought the issue of climate change into the forefront for planners, lawmakers and the public. We now have clear evidence of climate change leading to specific, measurable effects ranging from arctic melting and sea rise to heightened storm and drought severity. The earth's temperature may have reached a tipping point where such changes accelerate even more rapidly than originally predicted. These conditions make it imperative that planners and policymakers work immediately to implement new policies to address climate change.

Although scientists believe that the effects of human induced global warming cannot be eliminated because of the volume of greenhouse gases (GHG) already emitted into the atmosphere, the rate and volume of GHG emissions can be reduced lessening the dangerous impacts on ecosystems, communities and human health. The built environment is a primary contributor to climate change and GHG emissions. This makes planning central to any policy solution. Planners must play a key role in promoting energy efficiency in the existing built environment and changing development patterns, transportation systems, and regulations in ways that reduce GHG emissions. This policy guide provides planners, engaged citizens and elected officials with strategies to slow the pace of climate change and adapt to its impacts.

1.1 The Role of Planners

A dramatic new response to climate change is required. Business as usual or small, marginal reforms will not suffice. The nation and our communities must commit to incorporating climate change considerations in a thorough, comprehensive new approach to physical, social and economic planning. Planners must promote this major shift in the public policies that drive development decisions, growth and infrastructure investment.

Until recently, most planning practice has not directly addressed climate change issues. Although many planners have been concerned with climate change issues since the 1990's, few incorporated climate issues explicitly into their work. Physical change has been so gradual that the global warming crisis was until recently not taken seriously by many and was considered primarily a debatable political issue by elected officials and other policymakers.

For the last decade, planners have rightly focused on smart growth and sustainability but have not always seen them as directly connected to climate change. The American Planning Association ratified policy guides on both topics. Innovation in these areas have been important; however the growing climate crisis and the emerging policies to address it make it essential for planners to respond to climate change issues now. Policy action on climate change is happening across the nation. More than 500 cities have pledged to significantly lower their emissions and , the majority of states now have special commissions or adopted action plans on climate change. Nearly half have already set overall GHG emission or vehicle-based GHG emission targets. Planners will be called upon to implement many aspects of these new programs and craft plans that meet new emission targets.

Planning can play an important role in influencing societal actions that can slow the pace of climate change, mitigate the effects that do occur and allow adaptation to the ultimate impacts of global warming. The planner's role will be extremely important because it will deal with such basic issues as community design, transportation networks and use and increasing development density. Elected leaders and citizens will rely on plans direct investment, design, and development strategies that are efficient and sustainable. Planners will also have to address the potential costs imposed on households by climate change and the policies adopted to address it. The climate challenge will require the comprehensive, long-term perspective that planning is uniquely qualified to provide.

Four ideas form a framework for this guide. First, the policy responses to climate change need to be based on the best possible science. Because climate change is bringing about previously unrecorded conditions, projections based on new scientific modeling are the best way to anticipate and respond. Planners must have access to vital data, information and resources to help them interpret these unprecedented changes

Second, the specific impacts of climate change are highly regional and even local in nature. Therefore, climate change policies cannot be based on a one-size-fits-all approach. Planners must be aware of what the future holds for their particular geographic region and formulate their strategies accordingly. While plans and policies must reflect the individual needs of local areas, any successful mitigation effort will require a national, and indeed international, framework for addressing GHG emission.

Third, adapting to climate change is just as important as mitigating it. Planners can have a significant effect on climate change mitigation through a variety of actions, including encouraging higher density development, reducing vehicle miles traveled (VMT), using green building techniques, and supporting alternative energy sources. However, due to the extent of potential impacts projected under even the most aggressive mitigation scenarios, planners will

also need to address the effects of climate change including rising sea levels, greater drought conditions and flood control in planning for adaptation.

Finally, planners need to communicate about climate change in new and different ways. Policies that we develop now will have a long-range timeframe. Given that it is often hard to keep people engaged over even the short-term, planners will need new communication tools to explain climate change issues and maintain the focus on long-term adaptation and mitigation responses. Citizen participation and engagement is vital to the success of climate change efforts.

Planning is vital because of its comprehensive approach to the built environment, but traditional approaches are not enough to mitigate and adapt to climate change. A new type of planning and public policy has to be developed. Through these new policies, planners can work to mitigate the extent of climate change and adapt to the new conditions

1.2 General Scientific Findings

Finding 1: Climate change largely results from a buildup of carbon dioxide and other GHG concentrations in the atmosphere. This buildup is principally caused by human activities, including fossil fuel burning for residential and industrial processes and transportation, changes in development, and deforestation. Global GHG emissions created by human activities have grown dramatically, with an increase of 70% between 1970 and 2004.

Finding 2: Warmer winters with related snow and ice melts in the arctic will create higher sea levels. The impacts of rising sea levels will be flooding in lowland areas and submersion of coastal beaches. In addition, submersion will allow saltwater intrusion into groundwater and freshwater estuaries, as well as upstream from where rivers now empty into oceans. Longer and deeper droughts coupled with high temperatures may result in flooding and effect water supplies in many regions. The loss of habitat caused by these changes will affect many species of plants and animals. Because of increased urbanization and the speed with which climate changes are expected to occur, many, if not most, species will be adversely affected and threatened.

Finding 3: Advances in scientific analysis show that discernible human influences extend beyond average temperature to other aspects of climate such as: (1) sea level rise during the last half of the 20th century; (2) changes in wind patterns, affecting extra-tropical storm tracks and temperature patterns; (3) increased extreme temperatures both hot and cold; and (4) increased risk of heat waves and drought and frequency of heavy precipitation events.

Finding 4: Despite current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades. Human induced global warming and sea level rise will continue due to the time scales associated with climate processes and how they respond to changes. Even if GHG concentrations are stabilized the response will be slow. Global warming is likely to create impacts that are abrupt or irreversible, such as the elimination of certain animal species.

Finding 5: The ability of populations to adapt to the effects of climate change is intimately connected to social and economic development but is unevenly distributed across and within societies with greater impacts on the poorer and more vulnerable.

Finding 6: Neither adaptation nor mitigation alone can eliminate all climate change impacts; however, they can complement each other and together can significantly reduce the risks of climate change. It is possible that some of the impacts of climate change can be reduced, delayed or avoided by aggressive implementation of mitigation strategies. Mitigation efforts and investments over the next two to three decades will have a significant impact on achieving lower stabilization levels.

1.3 Core Principles

The following are core principles based on the abovementioned findings. These principles are the foundation of the recommended policies herein. The Core Principles of planning for climate change are:

- Reduce GHG emissions primarily through reducing fossil fuel use and establishing a progressively more energy efficient economy. This is critical to slowing the pace of climate change. The United States must adopt an overall goal or target for GHG reduction that results in 80% reductions by 2050 beginning with short-term reductions to 2000 levels by 2010.
- Coordinate the climate change-related policies and actions government at all levels. Successful mitigation and adaptation efforts will require local, regional, state, federal and international action.
- Promote interdisciplinary, coordinated action among design professionals and among the public, private and non-profit sectors.
- Select strategies that are economical and maximize effectiveness as determined through a comprehensive assessment of community energy resources and use.
- Establish a balanced approach. Action on climate change must include a mix of education (providing more complete information so decision-makers make better choices), incentives (whether through funding or other means), subsidies, and regulation.
- Target assistance to the people and places that most need it. Special assistance is needed for critical populations unable to afford short-term solutions or adapt to long-term impacts of climate change. Consider social and environmental justice and equity in crafting climate policy.
- Encourage the increased funding and development of rail and mass transit.
- Develop strategies and systems that enable US climate action to be transferred to and replicated in an efficient manner by other countries when applicable. Build plans which offer solutions that can be easily focused to the particular needs of different communities around the globe, working collaboratively with international organizations.

1.4 Policy Guide Overview

The following policy recommendations are organized in 3 categories. Section 2 presents policies on **Planning to Reduce Climate Change**. Included in this section are policies dealing with planning practice, as well as communication and education. These policies promote planning outcomes that lead to lower GHG emissions, such as mixed use development, high density development near transit, infill and redevelopment to utilize existing utilities and services.

Section 2 presents planning policies related to transportation modes and systems that can be used to reduce VMT and related emissions. Planning policies suitable for communities of all sizes, including rural and agricultural areas, are discussed.

Section 3 provides policies on **Mitigating Climate Change**. This section includes policies setting standards, regulations and incentives to lower GHG emissions. To address global warming, standards and regulations used in planning practice will need to be revised or expanded. In addition, new standards, processes, incentives and regulatory structures will be required to meet GHG targets. Policies in this section discuss changes needed to reduce emissions related to transportation, buildings, electricity generation, industrial uses, landfills, and agriculture.

Section 4 presents policies on **Adapting to Climate Change**. These policies acknowledge that some level of climate change is inevitable, and communities must to adapt and prepare for the impacts. Such policies include avoiding development in hazardous areas like flood plains or fire prone dry areas.

Adaptation and mitigation are both vital policy solutions, and both must be addressed in any comprehensive policy solution. Plans must be developed to respond to the changes that are occurring and will continue into the future.

1.5 Climate Change Policy Findings

Finding 1: Land use patterns play a significant role in reducing VMT and thus in reducing energy consumption and its associated GHG emissions. VMT can be reduced by promoting strategies such as compact development, high density development arranged to encourage pedestrians, bicycle and transit use, transit oriented development, and mixed-use development.

“When viewed in total, the evidence on land use and driving shows that compact development will reduce the need to drive between 20 and 40 percent, as compared with development on the outer suburban edge with isolated homes, workplaces, and other destinations. It is realistic to assume a 30 percent cut in VMT with compact development. Making reasonable assumptions about growth rates, the market share of compact development and the relationship between CO₂ reduction and VMT reduction, smart growth could, by itself, reduce total transportation related CO₂ emissions from current trends by 7 to 10 percent as of 2050.” (Ewing et al, *Growing Cooler*)

Finding 2: Transportation and parking policies can be employed to discourage private auto use and reduce VMT and its associated emissions. Current policies encourage auto use through a variety of direct and indirect subsidies. Programs such as congestion pricing, parking cash out, transit benefit equity, elimination of minimum parking requirement, and demand responsive parking pricing can be effective tools to reduce transportation-related GHG emissions and save energy costs.

Finding 3: Local programs that encourage the **preservation of historic buildings** and their adaptive reuse result in energy conservation. These buildings are typically closer to population centers and adaptive reuse generally involves lower impacts on natural resources than new construction. Technology exists to change and adapt the heating, cooling and ventilation systems of older structures so as to achieve the energy efficiency of modern construction. In

addition the maintenance, restoration and adaptive reuse of existing urban areas (including their buildings, infrastructure and other assets) reduce energy use and VMT.

Finding 4: Use of “**green**” **building standards** result in energy conservation compared to conventional codes. About 75% of the electricity used in the country goes toward heating, cooling, and lighting buildings. Since over 70% of electrical energy is generated by conventional electrical power sources such as coal- and gas-fired generation plants, reducing the amount of power consumed by buildings is as important to addressing climate change as reduction of auto emissions. Research indicates that sufficient energy falls on the roof and south face of buildings to satisfy the power demands of those buildings.

Finding 5: Providing a **range of housing opportunities** within a community decreases commuting and its associated greenhouse gas emissions. It also reduces the need for private vehicle trips associated with job commutes.

Finding 6: Communities can encourage the production and use of **energy generated from renewable resources** by changing land use, building and site design standards. Changing the source of fuel used for electrical power generation to renewable energy will reduce GHG emissions. At the same time, technologies to cleanse emissions from traditional sources should also be expanded. Coal generation of electricity produces the bulk of GHG emissions. Policies should reduce reliance on coal fired plants, expand use of renewables, and promote technologies to reduce emissions from coal fired power plants. Climate change planning must address the new opportunities and problems arising from increased use of renewable energy sources.

Finding 7: Communities can be made more resilient and defensible to the effects of climate change through land use policies that encourage **development in areas away from hazards** such as wildfires, land erosion and floods. Areas likely to experience floods and wildfires are expanding and threatening more populations due to a combination of the growth of new development into wilderness areas and changing weather patterns driven by climate change.

Finding 8: Protecting and enhancing green spaces in and near communities provides natural carbon sinks in soils, vegetation, and streambeds to mitigate carbon emissions. Greenspace protection programs should not only be sensitive to natural ecological processes and habitat needs but also include an accurate calculation of GHG mitigation. The built environment and urban design should maximize natural areas and assets and incorporate indigenous plants or others appropriate to the community’s climate to reduce energy and water consumption.

Finding 9: Promoting water conservation, and the use of nearby water sources reduces the amount of energy necessary to transport it, and therefore lowers greenhouse gas emissions.

Finding 10: Growing food for local consumption lowers transportation costs thereby lowering the use of fossil-based fuels. Climate change and its impact on arable land will reduce the amount of land available for **agriculture production** or future development of any kind.

Finding 11: Centralized facilities equipped with **communications technologies** such as videoconferencing allow community residents and businesses to conduct business and share information in ways that minimize travel thereby reducing VMT.

Finding 12: Planning and development policies to address climate change may vary based on size, economy, and ecosystem. While all of places can play a role in addressing climate change, the specific role may vary. Regardless of its specific variations, climate change planning must start at the local level.

Finding 13: Planning is a tool that must guide change, engage citizens, and **assist decision-makers**, including regional agencies and groups; local governments; neighborhood organizations; property owners; real estate and development professionals; insurance and finance companies; business leaders; hospitals, school boards, colleges and universities; and state and federal agencies to ensure better decisions and policies that address climate change.

Finding 14: **The transportation sector** is responsible for approximately one-third of GHG emissions, and if current trends continue, those emissions are projected to increase rapidly. The transportation sector's emissions are a function of vehicle efficiency, fuel content, and vehicle miles traveled. Significantly reducing emissions in the future requires improvements in all three areas. While improving vehicle and fuel efficiency are critically important, growth in VMT must be addressed in order to achieve overall reductions in GHG emissions. It is important to develop planning strategies to reduce and shift travel demand to modes that have the lowest carbon output and reduce VMT.

Findings 15: Economic strategies that reduce GHG emissions such as a nationwide and economy-wide **cap and trade system** for carbon emissions are needed to promote reduction in greenhouse gas emissions in an amount necessary to slow climate change.

Finding 16: Few communities **regulate and evaluate development** in a way that accounts for or reduces GHG emissions. Planning, regulations and development reviews should directly address climate factors. New or revised standards, regulations, practices and technologies are needed to reduce GHG and prepare communities to adapt to the effects of climate change.

Finding 17: **Sea level is rising** and the long-term impact of this phenomenon requires a systemic change in thinking. While difficult to predict, sea level rise will likely be nonlinear. Coastal ecosystems will likely be subjected to a combination of accelerating sea level rise rates punctuated by catastrophic flooding events. Traditional strategies that have been used and worked in the past will probably be inadequate. New options and adaptive management of coastal areas will be necessary to maintain the viability of many coastal areas. Successful strategies will include planning for both natural succession and ecosystem management. The highest priority for new initiatives should be placed on those areas in which the most immediate and substantial risk exists and in which the impacts can be significantly reduced or avoided.

Finding 18: **Climate models**, impact models and data are important tools that help communities anticipate and respond to a wide range of possibilities resulting from climate change. Anticipating these changes is critical to developing appropriate responses unique the region.

2. Planning to Reduce Climate Change

The essential ingredients of a successful planning process are vital to successfully addressing climate change. First, there must be agreement on the vision or goal that is the desired result of planning and implementation. Second, there must be a collaborative approach that includes all levels of government, the diverse interests that will be affected by climate change and the various professional disciplines that can contribute to solutions. Third, the action plan must include a balance among educational efforts, creation of incentives and regulatory tools. Finally, the people and places that are most impacted but least able to address change on their own must receive special attention to provide social and environmental justice with appropriate action for critical sites.

Planners use this approach in a wide range of settings and are well suited to play leadership roles in preparing for and acting on the effects of climate change. Planning is an essential part of climate change solutions, but planning policy and practice must lead change in communities and development patterns to reduce GHG emissions and climate change impacts.

2.1 Emission Reduction Goals & Plans

General Policy #1: The American Planning Association, its Chapters and Divisions, and planners support the adoption of greenhouse gas emission reduction goals that limit increases in global average temperature to no more than 2°C (3.6°F) above pre-industrial levels.

Specific Policy #1.1: Emissions Reduction Goals

Planners support emission reduction goals and policies at federal, state, and local levels that will result in reducing greenhouse gas emissions at least 80% below 1990 levels by 2050, with appropriate near-term goals to reach that target and minimize cumulative emissions, such as reductions of 25-40% of 1990 levels by 2020.

Reasons to support:

Emission reductions at this level, in conjunction with similar actions worldwide, have a 50% chance of stabilizing global average temperatures at 2°C (3.6°F) above pre-industrial levels.¹

- The United Nations and European Union have both adopted the goal of stabilizing global temperature at no more than 2°C (3.6°F) above pre-industrial levels. (By comparison, 'best estimates' based on the continuation of current trends indicate an increase of 1.8°C to 4°C by 2100.)
- Failure to reduce emissions to this level increases the likelihood of catastrophic impacts of climate change from melting ice sheets and rising sea levels, widespread land and marine species extinction, intensified natural disasters, and threatened water supplies.

¹ Sources: IPCC, Union of Concerned Scientists.

- Global reduction of emissions to levels stabilizing temperatures at 2°C (3.6°F) above pre-industrial levels can be achieved using existing technology and technology anticipated to be available in coming decades.
- Reducing greenhouse gas emissions to this level is estimated to reduce global GDP growth no more than 0.12% per year.
- Near-term action is particularly important given the cumulative nature of greenhouse gas emissions (reductions in the near term result in a lower eventual atmospheric concentration than the same reductions delayed several decades into the future).
- Continuing scientific research suggests that smaller increases in temperature may exceed critical ecosystem thresholds, resulting in more dramatic short-term effects than previously projected. The prospect of such abrupt ecosystem changes makes it even more important to stabilize global temperatures at or below these goals.

Specific Policy #1.2: National Action on Climate Change

Planners support strong leadership by the federal government in establishing policies, programs, national standards, and funding prioritization that mitigate greenhouse gas emissions and prepare communities to adapt to climate change.

Reasons to support:

The Federal government can provide funding, produce research and establish baseline regulation and policy on many topics related to climate change, such as motor vehicle fuel efficiency standards and energy policy. Also, action at the federal level can establish larger and more predictable markets for cap-and-trade emissions reduction systems than can state or regional actions. Providing for such action at the federal level will result in a consistent approach nationwide and greater potential for successfully achieving emission reduction goals.

Specific Policy #1.3: State, Regional and Local Action on Climate Change

Planners support action by state, regional and local governments and governmental agencies to set greenhouse gas emission goals; develop and implement plans to address climate change; and incorporate climate impacts, indicators, benchmarks and targets in plans and development reviews.

Reasons to support:

Regardless of federal policy on climate change, there is a need to act at the state, regional and local level. Impacts of climate change will be felt in different ways in different parts of the U.S., so local, state or regional plans are necessary to provide the appropriate guidance for specific areas and communities. In addition, decisions about development patterns and infrastructure investments will have an important impact on the nation's ability to reach greenhouse gas emission goals. These decisions are usually the responsibility of local governments so they should play an active role in planning for, and taking action on climate change.

Specific Policy #1.4: Planning to address uncertainty

Planners support policies requiring climate change plans that provide a framework for decision-making and actions which prepare communities to mitigate and adapt to climate change, but which are flexible enough to address the continuing complexities and uncertainties of pace and degree. New planning and stakeholder participation methods are needed to help communities

embrace and address this complexity and uncertainty, including longer planning horizons, multiple scenarios, and indicators and triggers to guide action.

Reasons to support:

Planning to address climate change is particularly subject to uncertainties: there may be a long time horizon before impacts are felt, there is uncertainty about the changes occurring in the global systems, and there are many unknowns about the costs and benefits of local action. However, this is also an issue where action must begin now. So the planning processes for climate change mitigation and adaptation must build consensus on direction and on ways to respond to future uncertainties while taking action in the short run based on the best available assessments.

Pursue a planning approach that enables states, regions and communities to address climate change and build agreement about actions at three different levels of impact. First, avoid the impacts of climate change on communities by locating development outside areas with the highest potential for climate change-related risk (such as areas that will be inundated by sea level rise). Second, mitigate the potential effects of climate change by planning for and taking action to reduce greenhouse gas emission in the state, region or community. Third, enable the community to adapt to climate change effects that have a high probability of occurring.

Suggested techniques for planning include: the use of a longer impact horizon (100 years) and development of long-range plans; the use of scenarios to map and address critical concerns and evaluate alternative outcomes; future analysis methods that explore the structure and sensitivity of a wide range of possible outcomes; and the use of indicators and ‘triggers’ that will enable the community to react to actual experience and refine the plan’s direction over time, and periodic monitoring and evaluation to ensure that changing scenarios are addressed.

Specific Policy #1.5 Reporting Greenhouse Gas Impacts at All Levels of Planning

All regional and comprehensive plans should seek to quantify and report estimated greenhouse gas emissions, and compare this to the community and regional targets and averages. Where emissions cannot be precisely quantified, plans should discuss the impacts of recommendations on greenhouse gas emissions on a qualitative basis. Climate planning elements should be incorporated in comprehensive plans and considered in environmental and other development review processes.

Reasons to support:

Understanding the impacts of plan recommendations and development proposals on greenhouse gas emissions is an essential first step. Allowing planners, elected officials and the public to judge the impact of a plan on emissions will help them evaluate the extent to which it contributes to greenhouse gas reduction goals and the long term consequences of climate change.

Specific Policy #1.6: U.S. International Leadership on Climate Change

Planners support U.S. leadership in international efforts to create and adopt the next international framework for achieving appropriate greenhouse gas emissions reductions.

Reasons to support:

The Kyoto Protocol, which established an international framework for addressing climate change, was adopted in 1997 and went into effect in 2005. It will expire in 2012. Before its expiration, a new international framework will be needed that incorporates more recent scientific findings and the experience gained through implementation of the Kyoto Protocol. Since the United States is and will remain one of the world's top greenhouse gas emitters, it should participate in creating and implementing this new framework. International agreements are critical to the protection of climate-critical endangered natural assets such as the South American rainforests. U.S. involvement also brings extensive scientific expertise and other resources to this effort. U.S. leadership is vital to bringing emerging economies, especially China and India, into an international climate change regime.

An Inclusive and Interdisciplinary Approach

General Policy #2: The American Planning Association, its Chapters and Divisions, and planners support programs to address climate change that involve all levels of government and that rely on interdisciplinary collaboration and coordination.

Specific Policy #2.1: Federal Support for Intergovernmental Climate Change Planning

Establish and fund federal assistance programs for planning for climate change and expand eligible activities under existing federal community development, transportation and energy programs to promote the integration of climate change and greenhouse gas emissions into local and regional planning. Fully fund the federal energy efficiency block grant program.

Reasons to support:

Among the best ways to address climate change at the local and regional level is by adapting and improving planning, policy priorities and capital funding that already direct public and private investment and development. Changing planning to address climate change will require new analysis and implementation techniques that many communities have not undertaken or used in the past. Federal funding, such as a 'climate change planning grant' administered by the Environmental Protection Agency, the Department of Energy, or the Department of Housing and Urban Development, could provide needed resources to help communities adopt plans and policies changes to address the issue. In addition to direct funding of local and regional comprehensive planning, these resources could also fund pilot programs and research into best practices. Expanding existing grant, research and pilot programs to include new discretionary funding and policies that support investments to address climate change would further enhance the ability of local communities to confront climate impacts in planning and development.

Federal funding might be administered by either the U.S. Environmental Protection Agency or the U.S. Department of Energy. If a separate categorical federal planning assistance program is not possible, then amendments to the federal Surface Transportation Act might allow such planning for Metropolitan Planning Organizations; and further, the federal Community Development Block Grant program might be amended to provide planning funds to local general purpose units of government. In both latter cases, the U.S. Environmental Protection Agency might work with the U.S. DOT and HUD in the administration of these climate change planning programs in a fashion similar to which the U.S. EPA now successfully works with the U.S. DOT

in air quality conformance analysis and implementation. Finally, regardless of how these funds are delivered, the White House Council on Environmental Quality might provide an overall policy framework for the evolution of climate change planning as related to other related climate change considerations such as energy security and economic globalization.

Specific Policy #2.2: Regional Coordination

Encourage coordination and collaboration in multi-jurisdictional planning initiatives to address climate change and its implications at a regional level, including adopting new requirements and structures for collective action on climate-related planning and projects.

Reasons to support:

Action to address climate change involves decisions at all levels, including choices made by individual local jurisdictions. However, collaborations among jurisdictions can make it easier for each community to act because research, programs and facilities can be shared. Regional coordination will be necessary in order to meet aggressive targets for reduction of GHG emissions. Reaching these targets will not be possible based on the actions of individual jurisdictions or communities. In addition, action that affects regional investments or assets will be more effective if it is the result of regional initiatives and partnerships. Regional visioning programs and blueprint plans create excellent opportunities to build action agreements to address climate change and to set goals in conjunction with coordinated planning for regional development and infrastructure investment. Regional governance structures and agencies can be very valuable in developing and implementing integrated approaches to climate change mitigation and adaptation.

Specific Policy #2.3: Intergovernmental Transportation Planning

Develop improved systems for integrating transportation planning at the federal, state, regional and local levels to ensure a consistent approach towards developing transportation systems that reduce vehicle miles traveled by ensuring transportation choice. This will likely include shifting funding into transit, promoting enhancements and “complete streets” that accommodate all users, ensuring the interconnection of local, regional and national transportation systems and discouraging single occupancy vehicles as the primary source of transportation. Project funding should be linked to GHG reduction metrics and performance standards.

Reasons to support:

The successful functioning of a transportation system has deep and long-term consequences for the quality of both the built and natural environments and the people who inhabit them. Transportation represents a significant area of concern for professional planners as one of the largest and fastest growing sources of GHG emissions, and should be a major focus of interest in policy options to improve planning processes so they address climate change.

Specific Policy #2.4: Federal Surface Transportation Authorization

Support new authorization of the federal surface transportation programs with increased priority for funding public transit and non-motorized travel and integrated regional and metropolitan planning as means to reduce the greenhouse gas emissions from the transportation sector. The federal program needs to explicitly incorporate climate change and shift priorities toward programs that encourage reinvestment in existing infrastructure and communities, supports

public transportation and transit oriented development, and improves and empowers metropolitan planning.

Reasons to support:

The reauthorization of the federal surface transportation program presents an opportunity to direct federal funding decisions and priorities to help address climate change. The reauthorization should establish goals for reduction of transportation-related greenhouse gas emissions. Coordination of transportation networks with comprehensive planning and urban design is critical to this effort, and should be a top priority in the way funding is allocated. Funding for public transit and for alternatives (such as walking and biking) that reduce the need for automobile travel within metropolitan areas should receive high priority. Restructuring of the program is needed so metropolitan areas can set their own investment priorities and allocate funds across all transportation modes. In these ways, the nation's investments in transportation can make a positive and significant impact on its efforts to address climate change.

Specific Policy #2.5: Reform Transportation Models & Enhance NEPA Processes:

To recognize when shifts are taking place in the true costs of road and transit, the surface transportation authorization legislation should encourage the development of up-to-date models and tools that measure the relative shifts in auto and transit costs, both up-front and on an operating basis as well as costs related to climate impacts and performance. Further, the U.S. Department of Transportation should be directed to develop ways and means to enhance the NEPA process in this regard as NEPA is central to all highway and transit project investment analysis.

Reasons to Support:

In transportation modeling and the NEPA process, the implicit assumption for the last 50 years has been that the relative costs of highway and transit are the same. However, this may now be changing, especially with the rapidly escalating costs of oil which may well prove to be a permanent change. Further, existing models do not adequately take into account performance-based savings over time or climate-specific impacts. Therefore, a new methodology and process is needed which indicates when costs shifts take place. One of the most important places to do this is in the NEPA process as it remains the central evaluation tool for all significant transportation capital investment.

Specific Policy #2.6: Inter-Disciplinary Approach

Establish opportunities for collaboration among design professionals (e.g., planners, architects, engineers), scientists, social scientists, economists and other key professions to develop and carry out plans that reduce generation of greenhouse gas.

Reasons to support:

Effective action to address climate change will rely on expertise, analysis and recommendations from many different disciplines. Climate Change cannot be solved by a single discipline or by actions affecting only one area of expertise. Since planners often are responsible for programs that engage stakeholders from diverse backgrounds, they are particularly well-positioned for leadership in convening and conducting the interdisciplinary processes needed to address various aspects of climate change. APA can play a leadership role in building a coalition that brings these interests and professional perspectives together to address climate change.

Specific Policy #2.7: Climate-Related Performance and Location Efficiency Standards for Federal Infrastructure and Community Assistance

Establish evaluation criteria and requirements for new and existing federal and state grant, loan, and tax credit programs supporting infrastructure investment and community development that take into account performance standards and measures of efficiency supporting key climate goals, including reduction of greenhouse gas emissions and adaptation to the impacts of climate change.

Reasons to Support:

Federal funding is one of the single most important catalysts for and determinants of key infrastructure investments and development decisions. Federal policy should recognize this role and incorporate climate-related criteria into decisions about the allocation of federal assistance. In addition, infrastructure and community development programs should explicitly expand eligibility to cover climate and energy efficiency activities. As noted elsewhere in this guide, available funding for such programs should be increased. These necessary increases in funding should be linked to specific standards of performance and carbon-reducing outcomes.

Balance Among Interests and Impacts

General Policy #3: The American Planning Association, its Chapters and Divisions, and planners support actions to address social equity issues in concert with plans and actions for climate change mitigation or adaptation.

Specific Policy #3.1: Stakeholder Interests

Engage all affected stakeholder groups in initiatives to create and implement climate change plans to ensure that no group is isolated from the process.

Reasons to support:

Success in addressing climate change will require many groups to change their current behaviors, business practices and investment decisions. These stakeholders should be part of the processes that create climate change goals, plans and implementation measures. An inclusive process allows diverse concerns (economic, environmental and equity) to be considered and increases the potential that these stakeholders will support the plans and actions that result. In particular, constituencies likely to experience disproportionate impacts should be engaged in the climate planning process.

Climate change plans should reflect the adage that one should think globally and act locally. As with many environmental issues small incremental impacts may have broad cumulative impacts. Local initiatives and participation encourage a greater sense of ownership and consequently greater buy in to responsibility. The work of planners should encourage personal responsibility in the daily actions of local communities and the individuals who live in them.

Specific Policy #3.2: Action Toolkit

Use the full complement of planning and implementation tools – including educational efforts, incentive programs and regulatory measures – to address climate change in ways that are appropriate and successful in diverse local settings.

Reasons to support:

Every community, large or small, has a role to play in addressing climate change. Individual households, businesses and organizations can each contribute to success. Successful climate change plans should be tailored to include the mix of tools and techniques that are most appropriate to a community's location, characteristics, institutional structure and culture. This mix of tools is most likely to be implemented and is thus most likely to be effective in reducing greenhouse gas emissions.

Specific Policy #3.3: Equity Assistance and Environmental Justice

Support standards, regulation, incentives, green housing developments, and energy efficiency services to reduce the impacts of climate change on those populations (particularly minorities, children, the elderly, and low-income populations) least able to manage the impacts and to ensure that climate-related planning works well for everyone.

Reasons to support:

Like other environmental justice issues, climate change is likely to hit hardest the populations hardest who are least able to adapt, such as low-income communities in flood prone areas or families who cannot afford adequate home insurance or higher energy prices if GHG mitigation measures substantially raise those prices. Action to address climate change should seek to reduce impacts on these communities, both of climate change itself and of the programs to address it.

Many policy and regulatory responses to climate change adaptation and mitigation pose the potential for initial disproportionate impacts and costs on low-income communities. These impacts on low-income households and communities should be addressed and, to the greatest degree possible, off-set as part of any comprehensive federal or state approach to climate change.

2.2 Regional and Community Planning

Creation of Sustainable Green Communities

General Policy #4: The American Planning Association, its Chapters and Divisions, and planners support green communities – places that are sustainable, resilient and regenerative in their contribution to climate change.

Specific Policy #4.1: Communities with Reduced Greenhouse Gas Emissions

Create (whether new or existing) neighborhoods, communities and regions that enable the nation and the world to reach global carbon reduction targets. Restructure policies and public incentives to encourage investment and development decisions that support GHG emission reduction goals.

Reasons to support:

Reduction of greenhouse gas emissions in the U.S. requires different patterns of development and community design than those that have been common in the past 50 years. Action to address climate change begins with neighborhood planning that alters these patterns, giving residents the ability to reduce their own greenhouse gas emissions. Similarly, neighborhood, area, and major development plans should reduce greenhouse gas emissions. These plans form the building blocks for communities and regions to help achieve their overall climate change goals.

Specific Policy #4.2: Land Use and Transportation

Integrate spatial planning and transportation planning so that the development patterns support mobility choices and reduced trip lengths to meet basic needs thereby allowing the transportation facilities to help achieve community climate change goals.

Reasons to support:

A community's ability to achieve climate change goals will depend on whether its residents can make choices that reduce greenhouse gas emissions. Since trip choices and lengths – whether to travel in a single-occupancy auto or take transit, whether to walk or drive to local shopping and restaurant areas, how long a route is required from home to work – all affect transportation-related greenhouse gas emission, it is important that residents be able to choose trips that lower these impacts. By closely integrating the planning for land uses and all forms of transportation, communities can make these choices more realistic and desirable for their residents.

Specific Policy #4.3: Sustainability

Build communities (whether new or existing) that are sustainable, resilient and regenerative. Incorporate new standards and regulations that promote sustainable practices and measure both performance and outcomes.

Reasons to support:

Addressing climate change requires a dramatic departure from 'business as usual' for community design and development. While traditional measures of success are still important (such as adding jobs, building new subdivisions or increasing the tax base), reducing greenhouse gas emissions requires that communities consider additional criteria for success.

Sustainable communities manage their resources to meet today's needs while retaining resources for future generations to use. They help address climate change because they use resources like energy and water more efficiently, and thus reduce greenhouse gas generation from carbon-based fuel consumption.

Resilient communities respond to changes in the environment, the economy, technology and other areas in a way that continues their appeal as places to live and work. They help address climate change because they accommodate future residents in existing places, reducing greenhouse gas emissions because they decrease the pressure to expand urban areas outward and use carbon-based resources to pave new areas, build new structures and extend vehicle trip lengths.

Regenerative communities are designed so they do not just minimize damage to the natural environment, but actually restore the natural systems of the community and the connections of

people to community. This evolving design approach helps address climate change because it restores natural ‘green infrastructure’ instead of relying on engineered systems that require higher energy and carbon inputs. By strengthening the connections between people, a particular community and its unique natural setting, these communities may help build the political will and civic engagement that are essential to modify lifestyles and expectations enough to have an impact on climate change trends.

Development Patterns that Reduce Transportation-Related Greenhouse Gas Emissions

General Policy #5: The American Planning Association, its Chapters and Divisions, and planners support development patterns in new development and redevelopment that minimize the emission of greenhouse gas from transportation and travel.

Specific Policy #5.1: Mixed Use Development

Plan for development patterns that mix land uses so jobs, services, schools, shopping and other destinations are near residents’ homes and neighborhoods. Adopt specific incentives and requirements that promote mixed-use development, including removing barriers to mixed use project financing. Federal and state housing, transportation and infrastructure programs should incorporate specific standards for mixed-use development.

Reasons to support:

Mixed-use development reduces climate change impacts in several ways. By locating diverse uses close to one another, it reduces the volume of daily vehicle trips, as well the need for private vehicles and parking facilities. Reducing travel distances reduces greenhouse gas emissions, even if the trips are taken in gasoline-powered vehicles. Shorter distances also make alternative travel modes – such as biking or walking – more feasible and likely, further reducing the emission of greenhouse gases.

Specific Policy #5.2: Development Centers with Higher Density

Plan for local and regional development with higher density mixed-use development centers near transit stops and stations, and in other key locations such as historic town squares. Regulatory and other incentives should be adopted to encourage higher density development, particularly near transit. Development reviews policies and processes should acknowledge the GHG emission reduction impacts of higher density development and the negative climate impacts of sprawling, low density projects.

Reasons to support:

Pollution generated from transportation constitutes a major portion of GHG emissions worldwide. Development patterns that reduce the number and length of trips in single-occupant motor vehicles will reduce these emissions. Higher intensity centers accomplish this objective in several ways. Higher intensity development itself means that more desired destinations are close by, making walking or biking feasible choices, and making it easier to take care of several tasks in a single trip. Town centers, historic or newly-created, illustrate these advantages. If these higher intensity centers are located near transit stops and stations, then more people will be able to use transit for more trips.

Specific Policy #5.3: Transit-Ready Locations

Use comprehensive planning efforts and policy incentives to create and encourage ‘transit-ready’ development patterns in major metropolitan regions (or parts of metropolitan regions) that do not yet have public transit. Change federal transit investment review criteria to better acknowledge climate impacts, economic development impacts, and supportive comprehensive planning.

Reasons to support:

It is very difficult to justify transit in areas that have already developed at very low densities. At the same time, many growing communities are not served by transit, so they are reluctant to plan for a development pattern that may never be served or have market support. ‘Transit-ready’ development patterns create centers with more intense, mixed use development compared to their surrounding development pattern. Before public transportation (bus, BRT, or fixed rail) is available, these areas can give residents the ability to reduce VMT by allowing each vehicle trip to serve multiple purposes, or by making trips on foot or by bicycle easier. If or when the community or region decides to invest in public transportation, those facilities will serve a development pattern that has already been designed to support public transportation.

Specific Policy #5.4: Jobs-Housing Proximity

Plan for jobs and appropriately priced housing located close to one other so people at all income levels can live near their places of work. Adopt policies that incentivize mixed-income development near job centers and recognize the positive fiscal impacts on households in transit-accessible, high density locations.

Reasons to support:

In many places, the cost of housing prevents people from living in the community where they work. These workers must find more affordable housing in locations that are distant from their jobs and may be accessible only by automobile. This development pattern results in increased vehicle miles traveled and increases in greenhouse gas emissions. One of the means of identifying positive fiscal impacts would be research and measurement of housing/transportation affordability impacts, including combined housing cost/commute expense, dual household commute costs, and drive to school versus walk to school factors.

Specific Policy #5.5: Location of Public Facilities

Ensure that schools and public facilities are accessible by walking, biking or transit; these facilities should be jointly located whenever appropriate. GHG emission impacts, particularly through potential for VMT reduction, should be considered in all location and investment decisions for public facilities.

Reasons to support:

Schools and other public facilities are major trip generators, and planners have great influence over their siting. Planners should seek to locate schools in areas with good transit, pedestrian and bicycle connections to their attendance areas, helping to make Safe Routes to School programs feasible and reducing the emissions from dedicated school transportation and parents driving children to school. Similarly, public facilities with significant customer traffic should be located where there is good transit, pedestrian or bike access. Co-location of public facilities such as

schools and parks, and location near town centers, further helps to reduce greenhouse gas emissions by reducing the number and length of trips needed to use public services.

Specific Policy #5.6: Compact, Higher Density Communities

Support community design and public investment decisions that create compact development patterns and higher densities that reduce vehicle miles traveled within a community. Policies should also prioritize the modernization of infrastructure supporting such development.

Reasons to support:

More compact communities make it easier for people and goods to move within a community by walking, bicycling or utilizing mass transportation instead of using an automobile. With average residential densities of 10 to 12 units per acre, compact development can support public transit systems, further reducing travel by private automobile. Conversely, by minimizing sprawling development (lots between 1 and 5 acres) on the edges of urban areas, a region can reduce greenhouse gas emissions from vehicles and retain natural areas that provide carbon sinks.

Specific Policy #5.7: Compact Regions

Use planning policies regarding infrastructure investments, extension of urban services and utilities and preservation of natural or agricultural areas to create compact regional development patterns that reduce vehicle miles traveled within the region.

Reasons to support:

Compact development patterns, particularly when in close proximity to existing development, encourage the use of alternative transportation modes by reducing the distance between uses. Compact regions can support lower levels of motor vehicle use and resource consumption than lower density, sprawling development. Policy tools that can support compact regional development include establishment of urban growth boundaries, decisions to invest infrastructure funds in already-developed areas, policies regarding extension of urban services, such as adequate public facilities ordinances, and initiatives that create greenbelts around urban development. There are various planning approaches and tools which might be used to bring about such compact, dense regions, one of the most promising being that of transfer of development rights at the local, or even state, level.

Specific Policy #5.8: Infill Development and Redevelopment

Promote infill development, redevelopment of existing neighborhoods, preservation of historic structures and the adaptive reuse of buildings within the currently-developed areas of communities and regions. Create incentive and policies that promote infill development, redevelopment of existing neighborhoods, preservation of historic structures and the adaptive reuse of buildings. Prioritize infill development in state and federal housing, transportation and infrastructure programs. Tax credits and other incentives and assistance should target the reuse and rehab of vacant properties.

Reasons to support:

Existing neighborhoods and communities are an important asset in efforts to address climate change. Public and private sector investments have created infrastructure and amenities to serve homes and businesses in these areas. Reinvestment in these sites allows a community (or a

region) to accommodate new residents and businesses within its existing fabric. Such reinvestment maximizes the use of existing infrastructure, encourages the preservation and continued use of historic buildings and supports existing businesses and services. It reduces the need for new roads and infrastructure, and can encourage walking, biking and use of transit. It preserves open space and greenfields, thus reducing sprawl and retaining areas that serve as carbon sinks.

Specific Policy #5.9: Brownfields

Advocate the reuse of remediated brownfield and “grayfield” sites to reduce distances between destinations and relieve pressures for greenfield development. Expand and improve current state and federal brownfields programs to further encourage development, continue addressing liability issues, increase project funding, and improve coordination with comprehensive planning.

Reasons to support:

Open, undeveloped land provides valuable resources and ecosystem services such as the local provision of food and fiber, carbon sequestration, habitat, and flood protection. The use of remediated brownfield sites returns land to productive use and increases the supply of land necessary to meet the demands of growing populations. This, in turn, reduces the demands on undeveloped open lands. Brownfield sites are typically within developed areas connected to existing infrastructure networks, reducing demands on communities to provide new infrastructure and reducing the need for travel outside of the community to equivalent greenfield sites. It helps address climate change because it reduces vehicle miles traveled and retains land for vegetation that can serve as a carbon sink.

Land Use Patterns that Support Green Business

General Policy #6: The American Planning Association, its Chapters and Divisions, and planners support planning efforts that incorporate and promote new technologies and sustainable businesses to further economic growth.

Specific Policy #6.1: Technology and Communications

Support technology and business practices that encourage telecommunities 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.

Reasons to support:

Evolving communications and computer technology allow people to work together without being in the same physical location. These changes allow effective collaboration with fewer vehicle miles traveled, and thus lower greenhouse gas emissions. They provide for more efficient use of space (i.e. building materials, parking, roads) when home offices are combined with “hot desking” (one desk shared by many people at the main office). They also can provide social and economic benefits by offering more flexibility to accommodate full-time parents, the handicapped, and part-time workers.

Changes to development patterns that support these trends include increased flexibility for home office uses, the potential for satellite offices within residential neighborhoods with wireless

communication to main office when some collaboration is desirable, and business support centers in neighborhood commercial areas.

Specific Policy #6.2: Green-Collar Jobs

Use comprehensive planning and shift economic development and working training programs to support local jobs in sustainable businesses.

Reasons to support:

Businesses in ‘green’ industries (or businesses that use ‘green’ approaches to traditional industries) will become increasingly important to greenhouse gas reduction and to sustainable economies. As companies and individuals seek to reduce their ‘carbon footprints’, they will look for more sustainable materials, technologies and services. Support for the businesses that are using green practices will make it possible for local climate change goals to be met. These businesses can also form the foundation for ‘green’ economic growth that can reduce reliance on fossil-fuel-based economies. Green businesses can be a positive focus for economic development which supports a living wage, offers career ladders as well as robust training programs to increase income to help everyone adjust to increasing costs.

Specific Policy # 6.3: Eco-Industrial Development

Planners should support the efficient use of resources through encouraging collocation to enable by-product exchanges so that one firm’s waste stream is another firm’s source of raw materials. Planners should review their regulations to enable and encourage this type of industrial development. Planners should encourage the more efficient use of materials, water and energy through discussing with developers the need to cascade these resources and arranging development to take advantage of this approach.

Reasons to support:

Harmonizing economic development and climate change is crucial for a prosperous future for humanity. Integrating economic development opportunities into our future is important and encourages a shift toward a more efficient use of resources throughout society, in keeping with the concept of the circular economy.

2.3 Natural Assets and Open Spaces

General Policy #7: The American Planning Association, its Chapters and Divisions, and planners support actions that enable natural assets and green spaces to contribute to the health of communities and regions, and to reduce their regions’ overall contributions to climate change.

Specific Policy #7.1: Natural Asset Protection

Protect important natural assets and areas of communities and regions to maintain their roles as ‘carbon sinks’. Government, business and institutions of higher learning should help communities identify and map these assets.

Reasons to support:

Throughout much of the 20th century, urban development relied on engineering methods and

construction to modify the natural environments surrounding growing communities. The need to reduce greenhouse gas emissions adds another reason to support a different approach to natural assets – one in which they provide valuable benefits to the community and the world.

Nature preserves and other areas that remain in a natural state – such as grasslands, wetlands or forest –serve as carbon sinks, trapping carbon from the atmosphere. Disturbance of these areas releases carbon into the atmosphere; protecting them prevents this release and additional plantings in these areas may trap additional carbon and reduce its levels in the atmosphere. These natural areas may become the basis for a community’s receipt of ‘carbon credits’ if the carbon trading system recommended in this policy guide is established.

Specific Policy #7.2: Green Infrastructure

Create, protect and manage systems of green infrastructure (i.e., urban forests, parks and open spaces, green roofs, natural drainage systems) in regions and communities. 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.

Reasons to support:

When a community uses and enhances its natural environmental assets as an integral part of its infrastructure, that community also reduces its impact on climate change and increases its ability to adapt to changes that may occur. For example, shade from the urban forest reduces the need for air conditioning in the summer, thus reducing electrical demand and the greenhouse gas emissions caused by electrical generation and transmission. Preservation of urban forests found in floodplain or other low-lying areas also enables a community to adapt should future changes in global climate increase the intensity of flooding or raise sea levels. Programs to plant new trees in urban areas, and other green systems provide similar opportunities.

These systems should form an important part of the infrastructure framework upon which a region’s climate change planning is based. Since many green infrastructure systems extend beyond the boundaries of individual communities, they should be addressed at a watershed or other appropriate regional level. Smaller cities and towns should take this approach with natural systems that provide their green infrastructure as well. Green infrastructure should be incorporated and emphasized in planning and related policies across geographic scales from local to national. Green infrastructure also provides a framework for implementing adaptive ecosystem management and flood hazard mitigation strategies.

2.4 Agricultural and Agricultural Industries and Activities

Modern industrial agriculture is responsible for approximately 25 percent of the world’s CO₂ emissions, 60% of the methane, and 80% of the nitrous oxide. Modern industrial agriculture uses 6-10 times more energy than alternative sustainable technologies to produce the same amount of cereal or vegetable.

General Policy #8: The American Planning Association, its Chapters and Divisions, and planners support action to reduce greenhouse gas emissions from agriculture and agricultural industries, food production and transport and major sources of pollution.

Specific Policy #8.1: Greenhouse Gas Emissions through Agricultural Practices.

Establish educational programs and incentives to promote agricultural cultivation and livestock best management practices that reduce greenhouse gas emissions. Local, state and federal standards and regulations should be reformed to support agricultural practices that reduce emissions and curtail practices that increase GHG emissions.

Reasons to support:

Today's agricultural practices contribute to climate change in several ways: through fossil fuel combustion by farm machinery and vehicles; through the use of nitrogen fertilizers; through the release of carbon stored in plants and soils; and through methane gas production in livestock and other operations. County and rural area plans that include agricultural preservation can include policies that promote sustainable agriculture. Development incentives (such as density bonuses for clustered development) can be increased for agricultural properties that meet greenhouse gas reduction targets. Plan implementation can include education and training programs.

Specific Policy #8.2: Local Food Production

Include the local production of food and energy among the uses addressed in comprehensive plans and local regulations. Reform federal agricultural policy to shift resources and funding priorities toward support of locally produced food distribution and access. Remove regulatory barriers to the distribution, consumption and purchase of locally produced food.

Reasons to support:

Local food production can reduce "food miles" – the distance that food must travel – and consequently greenhouse gas emissions. Food in a grocery store typically travels 1,000 miles or more while the typical food in a farmers market travels 1/10th of that distance. Planning for land used for community farming can help protect and ensure the retention of these properties for local food and commodity production. The result will help minimize VMT by limiting food transport and avoiding regional imports of consumer goods that can be produced locally.

Specific Policy #8.3: Agricultural Lands

Establish strategies to promote redevelopment and compact new development that will minimize the conversion of farmland and woodland for urban use. Fully fund programs to help farmers incorporate environmental protection practices. Promote federal, state and local funding for preservation of open space, farm and forest land.

Reasons to support:

Reducing our conversion of agricultural and woodlands to an urban use is important not only for food production, but the vegetation not destroyed is important to convert carbon dioxide to oxygen.

Specific Policy #8.4 Major Sources of Pollution That Create GHG

Support policies, programs and funding of projects that will assist industries that are point sources of pollution to rehabilitate their facilities to reduce or eliminate the source of pollution.

2.5 Transportation Systems

Transportation Between Regions

General Policy #9: The American Planning Association, its Chapters and Divisions, and planners support the planning and development of interregional transportation systems that can reduce greenhouse gas emissions.

Specific Policy #9.1: Airport Planning and Air / Rail Network Planning

Support development of transit access to airports and long-distance rail networks to increase national connectivity and reduce vehicle use for freight and long-distance passenger trips.

Reasons to support:

Congestion and energy consumption can be reduced through a more integrated multimodal intercity transit system. Enhanced intercity rail service will take both passenger vehicles and heavy-duty trucks off the highway. Planning airports so that they connect with a variety of transit options including rail and bus networks will create alternatives to short-haul flights as well as reduce the number of vehicle trips to and from airports. Encourage alternatives to airplane transportation for trips less than 500 miles where rail infrastructure exists.

Specific Policy #9.2: High Speed Rail & Intercity Rail Transit

Evaluate and encourage the use of high speed rail to connect urban areas within 500 miles of each other, and create programs to foster implementation. Fully fund intercity rail and support the design, development and funding of regional rail initiatives. Establish a new national rail corridor initiative.

Reasons to support:

Mobility between major urban areas is vital to American society. Americans travel a total of 1.3 trillion person-miles of long distance trips a year or about 2.6 billion long-distance trips, or 7.2 million trips per day. Currently almost 90 percent of these long-distance trips are by personal vehicle. High speed rail offers an alternative that reduces vehicle miles traveled and greenhouse gas emissions.

Existing railroad routes provide an attractive, practical location for high speed rail service that meets present and future mobility demands, in an environmentally-sustainable manner. Planning should begin on the next generation of truly high-speed trains to serve U.S. travelers. For some communities the development of new public transportation organizations should be encouraged and supported. To adjust to the needs of communities under the pressure of climate change, new strategies of transit delivery will be necessary.

Specific Policy #9.3: Goods Movement and Freight Systems Planning

Support integrated multi-modal goods movement networks that minimize financial and environmental costs by making choices about operational methods and transportation modes that minimize greenhouse gas emissions.

Reasons to support:

The U.S. is part of a vibrant global economy, with goods sourced, produced, and marketed around the globe. Goods movement is a complex issue and is comprised of several discrete but inter-related components. While it affects every community differently, every community faces some measure of each of these components:

- port, inter-modal and transfer facilities
- long-haul movements
- short-haul and local market movements
- transformation and value-added facilities
- end user distribution services, and
- support facilities such as weigh stations, inspection facilities and staging areas.

At each step in the process, choices about operational methods and transportation mode will affect the amount of greenhouse gas emission associated with the transport of a particular shipment. Local comprehensive and metropolitan transportation plans should support goods movement and operations that reduce greenhouse gas emissions.

Currently, tractor-trailers are not subject to federal fuel efficiency standards and their fuel economy has declined over the last decade. One estimate of federal fuel economy standards for heavy-duty trucks assumes that a 50 percent improvement in fuel economy could be achieved for those vehicles by 2020.

Transportation within Regions

General Policy #10: The American Planning Association, its Chapters and Divisions, and planners support the planning and development of multi-modal regional and local transportation systems that reduce greenhouse gas emissions including reducing vehicle miles traveled and other means.

Specific Policy #10.1: Integration with Land Use Planning

Incorporate planning for transit, bicycle and pedestrian networks within local and regional comprehensive planning. Encourage development patterns that support transit and multi-modal transportation networks. Restructure state and federal funding to incentivize projects that demonstrate coordination and provide demonstrable impacts on reducing GHG emissions through supportive land use-transportation decisions.

Reasons to support:

Transit, bicycle and pedestrian facilities give people the ability to choose non-automobile travel modes for their trips and thus reduce the amount of greenhouse gas emissions from cars. In areas where transit, pedestrian and bicycle networks have not yet been defined, identification of potential future networks through land use and comprehensive planning projects can help

preserve the opportunity to create these travel options in the future. Planning for such facilities establishes the policy basis to require their extension during the review of new development as provided by Specific Policy 10.2 below.

Specific Policy #10.2: Transportation Facility Siting and Community Design

Use community design and development review processes to secure rights-of-way and require provision of facilities needed to provide highly-connected street, transit, bicycle and pedestrian networks in neighborhoods, communities and regions.

Reasons to support:

If transit, bicycle and pedestrian routes are not available from a resident’s neighborhood to a desired destination, travel to that destination will involve a car. Routes for these alternative transportation modes should be located and provided for through the planning and subdivision processes in the same way as roadways are. Highly-connected street patterns facilitate travel by all modes, but are especially beneficial for walking and biking, since they eliminate the need to walk or bike on a busy arterial or collector street.

Specific Policy #10.3: Transportation Investment Priorities

Give higher investment priority to transportation infrastructure, programs and services that will reduce greenhouse gas emissions. Performance standards should be incorporated into infrastructure assistance programs. Performance standards for climate and related metrics, such as reduced VMT, should be incorporated in federal and state transportation, and infrastructure programs should include measures to reduce in the amount of freight hauled by truck, prioritize transit investment, and encourage of shared parking programs.

Reasons to support:

Most communities do not have enough funding to build the transportation infrastructure they need. Their processes for establishing funding priorities consider a variety of factors, such as project traffic volumes, connectivity to other facilities, safety enhancement and local support. Investments that support an appropriate land use pattern and alternative transportation modes will help the community reduce its greenhouse gas emissions. These factors should be considered when transportation funding priorities are being set. This policy would apply to capital investments and also to investment in programs and services (such as transportation demand management or operation of a joint parking district) that enable residents to reduce vehicles miles traveled.

Specific Policy #10.4: Invest in Transit

Transportation programs and policies should support substantially increased investment in transit, including commuter rail, heavy rail, light rail, bus rapid transit, and bus service. Transit investment should be given greater priority in the allocation of funding. Transit has demonstrated significant GHG reduction capacity. Investment should support both the development of new systems and the expansion/maintenance of existing systems. Transit options that include alternative energy, renewables or low-emission systems should be encouraged.

Reasons to support:

Rail transit reduces greenhouse gas emissions because it reduces the vehicle miles traveled by auto. Providing transportation choice on a local and regional level allows growing metropolitan

regions to shape their growth around transit stops, maximizing open space and multimodal connections to activity hubs. Congestion, an impediment to the flow of people and goods, is reduced via rail transit. BRT systems reduce emissions and can be less expensive to develop and implement in many cases than traditional rail transit. Local bus service fills network gaps by serving less densely populated neighborhoods, providing not only access to local destinations but connections to the larger transportation network. In smaller communities, local bus service is the only practical way to provide transit services throughout the community

Specific Policy #10.5 Local Street Network & Design

Support local street network connectivity and complete streets designed to accommodate all users and multiple transportation modes through context sensitive solutions. Adopt complete streets policies at the federal, state, regional, and local levels. Support continuing training and research in new techniques for transportation design professionals.

Reasons to support:

Local street networks with easy connections to a variety of uses enable transportation choice and increased mobility. Street design that includes right-of-way for existing or future transit options, pedestrian-friendly sidewalks and street wall environments, bicycle lanes and appropriate bike and pedestrian accommodation, and safe crossings encourages the reduced use of automobiles for short and long trips, and increases multimodal traffic capacity. Supportive land use decisions are essential to making complete streets policies successful. By reducing the number and length of automobile trips, greenhouse gas emissions are also reduced.

Specific Policy #10.6: Multi-Modal Transportation Corridor Improvements

Develop major transportation corridors for multi-modal operation to minimize transportation-related greenhouse gas emissions associated with travel in the corridor.

Reasons to support:

Historically transportation routes have served a single travel mode, and improvements over time generally replaced one mode with another instead of creating multi-modal corridors (as, for example, when trails for travel by horseback were replaced with train tracks, which were then replaced with interstate highways). Planning and construction of multi-modal transportation corridors create alternatives for travelers, allowing them more efficient use of their time and money resources and providing travel choices that have lower greenhouse gas emissions. For the region, multi-modal design builds in flexibility. Pricing and other tools can be used to encourage people to switch to modes that reduce congestion and greenhouse gas emissions. Over time, technological advances may lead to new, 'greener' travel choices. A multi-modal corridor design will be most able to take advantage of these changes while continuing to serve established travel routes.

Specific Policy #10.7: Transition between Transportation Modes

Support coordination and seamless transitions between transportation modes to increase the use of modes with lower emissions for the movement of people and freight.

Reasons to support:

Transferring between modes of transport is often inconvenient and can be costly. For commuters, connections between buses, trains or airplanes can be disrupted by network congestion, weather or equipment failure. Frequently, schedules of different modes are not coordinated. In other cases, physical distance between routes and stops make transfers impossible. If someone is not confident about simple things, like knowing when a bus will arrive at the stop near her home and whether she'll make the connection to the rail system, she may simply forego a mode choice that will emit lower levels of greenhouse gases. The use of bus circulators and shuttles can provide greater transit options, "door-to-door" mobility, and low-cost options to decrease automobile dependence.

In the realm of goods movement, transferring goods from one mode to another is time consuming and labor intensive, thus costly. Seamless inter-modality for freight means bringing a range of appropriate modes directly to transfer points, so that goods do not have to be transferred more than once. Efficient goods movement also involves providing adequate and appropriately located and equipped staging facilities for trucks near major facilities such as ports. Goods movement is a 24-hour activity and moving goods during off-peak hours provides considerable energy savings, but many facilities, especially at the retail end of the chain, are poorly equipped for 24-hour operation. By reducing congestion at transfer points, smooth goods transfer also reduces greenhouse gas emissions from idling motor vehicles.

Transportation System & Demand Management

General Policy #11: The American Planning Association, its Chapters and Divisions, and planners support the management of transportation demand and systems to reduce greenhouse gas emissions by reducing vehicle miles traveled.

Specific Policy #11.1: Transportation Demand Management & Systems Strategies

Create and implement local and regional Transportation Demand Management Strategies that result in more efficient use of transportation resources and reduce vehicle miles traveled (VMT). Support local and regional Transportation Systems Management strategies that reduce greenhouse gas emissions associated with the use and operation of transportation systems.

Reasons to support:

Transportation demand management (TDM) strategies focus on changing travel behavior – trip rates, trip length, travel mode, time-of-day, etc. – to reduce the number of vehicle trips and increase mobility options. Most TDM projects and programs reduce emissions through trip or VMT reductions or by shifting trips from peak periods to less congested periods. TDM strategies can achieve public goals such as reduced traffic congestion, improved air quality, and decreased reliance on non-renewable energy consumption, in addition to reducing greenhouse gas emissions.

Transportation system management (TSM) improves vehicle flow on the roadway system by focusing on changing the operation of the transportation system. Tools to reduce traffic congestion include HOV lanes, synchronized signals, incident management, variable message signs, wayfinding signs, and other forms of intelligent transportation systems (ITS). Some

strategies focus directly on encouraging changes in driving behavior through educational information, incentives, or restrictions on driving speeds, operating patterns, and idling. TSM techniques can help reduce greenhouse gas emissions by discouraging driving during peak periods, when congestion and slow traffic speeds reduce fuel efficiency and increase emissions.

2.6 Water and Energy Systems

General Policy #12: The American Planning Association, its Chapters and Divisions, and planners support efforts to reduce greenhouse gas emission related to the distribution and use of water.

Specific Policy #12.1: Community Locations and Water Availability

Direct development that connects to and sustains available water supply capacity. Water availability and quality should be considered in development reviews, planning decisions, infrastructure investments, and development incentives.

Reasons to support:

Communities that are developed in areas without adequate water supplies must transport water to meet their needs, requiring the use of energy to build infrastructure and to deliver water to the community. Failure to take into account availability of adequate water supplies to serve new development results in overburdening limited supplies in many localities and in expending large quantities of energy to transport water from other locations. Changes in state and federal policy can give local planners better information to guide development and remove incentives for development that cannot be adequately or sustainably supplied with water. Transporting water over long distances requires systems of pumps, pipelines and canals, operated by electricity, currently provided mostly by greenhouse gas generating power plants. Greenhouse gas emissions from water treatment, supply and distribution can be reduced by locating development and redevelopment in areas where water is available nearby.

Specific Policy #12.2: Water Conservation

Support planning and design that reduces water consumption per capita and support implementation of water conservation practices. State and federal efforts, including the collection of data and distribution of infrastructure aid and development incentives, must support improved water planning and watershed-level decision making.

Reasons to support:

More efficient use of limited water supplies helps address climate change because it reduces energy consumption in the operation of the water system. It can reduce the need for extensions of these systems to bring water from more distant sources, further reducing greenhouse gas emissions related to construction and energy consumption in distribution. Reuse of existing water sources can also conserve water supplies. New design and construction techniques including re-use cisterns, low flow toilets, and xeriscape landscaping should be encouraged. Improved site planning and quantifying water-use over an entire site can significantly reduce water consumption.

General Policy #13: The American Planning Association, its Chapters and Divisions, and planners support efforts to reduce greenhouse gas emission related to the production and use of energy in the built environment.

Specific Policy #13.1: Energy Sources to Reduce Climate Change

Encourage and prioritize in policy, regulation and investment decisions the use of energy sources that contribute less greenhouse gas through their production, distribution and consumption, and discourage less efficient energy sources. Provide tax incentives for the development, distribution and implementation of renewable energy sources and use.

Reasons to support:

While coal is currently the cheapest energy source available for large-scale electricity generation, it also is the most damaging in its climate impacts. New coal-fired plants in particular, but also other power plants relying on non-renewable energy sources, will overwhelm any reductions in greenhouse gas emissions mandated by the various domestic and international programs to reduce global warming. Ending tax breaks for coal companies could result in a reduction of CO₂ emissions of 1 to 4 percent by 2010.

Bio-fuels, often touted as an alternative to petroleum fuels, also are highly destructive to the environment, taking large land areas out of food production, consuming large quantities of water and using large amounts of energy in the production process. Growing crops for fuel may actually result in higher food costs and reduced GHG mitigation benefits of agricultural land. Some biofuel sources, notably switchgrass, have shown promise in providing energy while not negatively effecting food production or land conservation. However, issues about costs remain. Research into these alternative sources should continue. Investment in the development of renewable energy and more efficient energy sources would reduce climate change impacts, minimize reliance on large energy-producing facilities, and drive new areas of economic development.

Changes in energy generation technology over time may mean that the energy source with the lowest level of greenhouse gas emission may change. Planning for energy supply and consumption should evaluate greenhouse gas emissions of alternative sources, and should support those sources that lower greenhouse gas emissions per unit of energy delivered.

Specific Policy #13.2: Local Energy Generation from Renewable Sources

Support initiatives that generate energy from local renewable sources as a part of economic development efforts.

Reasons to support:

Electricity generation is responsible for 32% of U.S. greenhouse gas emissions. Local generation of energy meets community needs without the costs – and greenhouse gas emissions – related to long-distance transmission. In addition, the use of renewable sources reduces greenhouse gas emissions from carbon-based fuel sources. Not only does this approach help address climate change, it can form the basis for new economic opportunity as well.

Specific Policy #13.3: Facilitating Renewable Energy Sources

Plan for and establish strategies to facilitate the use of energy sources that generate lower levels of greenhouse gas emissions. Establish incentives, including expanded tax credits, for research and implementation of renewable energy generation, distribution, and deployment. Support minimum Renewable Portfolio Standards for utilities.

Reasons to support:

Fossil-fuel based energy sources and long-distance transmission of energy are significant contributors to climate change. Planning and development of communities must include efforts to reduce the need for these energy sources and systems. In the past, land use planning in many communities included delineation of transmission line routes, but it did not identify sites where energy could be generated locally. Since rapid development of large-scale renewable energy systems on such sites can help reduce U.S. dependence on carbon-based energy sources, planning for cities and regions should include identification of sites for local energy generation.

Some sites are of particular value for wind or geothermal energy. Other sites may also be desirable for sustainable projects because of their unique characteristics (for example, sites that have ample sunshine, few other development constraints, and proximity to transmission facilities). By including energy production sites in comprehensive planning processes, their impacts on the environment and adjacent uses can be evaluated and those sites that have particular value can be planned and zoned for these uses.

Specific Policy #13.4: Design for Alternative Sources of Energy

Support urban design strategies that maximize use of renewable, sustainable, active and passive sources of energy design in architecture. Increase and/or extend tax credits for the use of active energy in design and construction practices.

Reasons to support:

Site planning and building design have a significant effect on the amount of energy needed to heat, cool and light buildings to meet the needs of their occupants. Site and building design techniques can reduce energy consumption on-site, thus reducing demand for energy generated elsewhere and its related greenhouse gas emissions. Planning and design should encourage the use of passive solar energy and other on-site alternatives.

Specific Policy #13.5: Funding for Energy Efficiency and Conservation

Fully fund federal energy efficiency and conservation block grants to communities.

Reasons to support:

Even though energy conservation and the use of renewable energy may save money in the long term, higher up-front costs often prevent their use. The federal Energy Bill would provide resources to localities (through block grants) that could be used to reduce or offset these initial costs. This funding can play an important role in reducing reliance on fossil-fuel based energy and the greenhouse gas emissions from these energy sources.

Specific Policy #13.6: Encourage Combined Heat and Energy

Facilitate the installation of Combined Heat and Energy (CHP) systems in Regional Application Centers as well as homes and businesses through education, grants, and the adoption of net metering nationally.

Reasons to support:

The average efficiency of the fossil-fuel power plants in the U.S. is approximately 33%. This means that in the process of generating electricity two-thirds of the energy in the fuel is lost as heat; an average of 8% more is lost in the transmission and distribution of electricity to users. CHP is the production of electricity and use of the heat created in that process. CHP systems use waste heat that would normally be released to the surroundings. In residential applications the heat can be used for domestic hot water, space heating, absorption cooling, or dehumidifying, at the building where it is produced. CHP systems consist of a package of equipment with a prime mover (for apartment buildings, most often a reciprocating engine or microturbine) driving an electric generator. If all of the recoverable heat is used, they can achieve overall efficiencies of about 80%.

In addition to greater efficiency and the security of a distributed network, CHP reduces emissions of CO₂ and other gases. The Intergovernmental Panel on Climate Change recognized Combined Heat and Energy as a “key mitigation technology currently commercially available” as did the U.S. Congress in 2007.

Specific Policy #13.7 Energy Generation

When siting energy generation facilities, planners should encourage the power generation plant to become an anchor of an eco-industrial park. By cascading energy resources through the combined production of electricity, heat and steam, energy generation facilities can be made more efficient and collocating industries which benefit from the use of these resources, more competitive in the world marketplace.

2.7 Research, Education and Communications

General Policy #14: The American Planning Association, its Chapters and Divisions, and planners support continuing research and education to understand the causes of climate change and to develop strategies to reduce climate change and to mitigate and adapt to its impacts.

Specific Policy #14.1: Education for the Community and for Decision-Makers

Include education about climate change in community outreach efforts undertaken for long-range planning programs aimed at the public and local policymakers. Explicitly recognize and discuss climate impact and considerations in public review and participation process related to comprehensive plans and regional plans.

Reasons to support:

Success in addressing climate change requires different choices in the way communities are planned, developed and maintained. Yet many public and private sector decision-makers are not informed about the current status of climate change research and the potential communities have

to affect this global issue. Members of the general public may have even less information about what their daily choices mean for the future of the planet. Most planning processes include public involvement, interaction and education. Whenever appropriate, information about climate change and strategies for mitigation and adaptation should be incorporated into these public outreach campaigns. The effort to create a community climate change action plan will clearly include this educational component. Community outreach should be geared toward ethnic inclusion and community-based solutions. Other planning efforts where these issues should be incorporated include the creation or update of local or regional, comprehensive and general plans; planning for regional transportation improvements and other capital improvement programming; and plans to address air quality issues. Climate change may also be an appropriate part of public education and outreach for the review of master planned projects, changes to form-based zoning, updates to building codes and other efforts.

Specific Policy #14.2: Planner Education and Training

Support updating planning school curricula to specifically address and prepare students for new approaches to planning associated with climate change adaptation and mitigation. Support on-going professional development for professional planners dealing with tools and techniques associated with climate change planning.

Reasons to Support:

Planning schools can play an important role in providing new planners with key skills and insights related to the emerging trends and tools of climate change adaptation and mitigation. By specifically incorporating climate change into the university planning curriculum, new research will be encouraged that will benefit both current and future practice and policy. Continuing education and training for professional planners is equally vital in ensuring that planners are positioned to play a leadership role in helping communities address and prepare for climate change.

Specific Policy #14.3: Communities and Climate Change

Support research that improves the ability of communities to reduce their carbon footprint by quantifying their impacts on climate change and the effect of their actions to address this issue. Support the research and development of new modeling and scenario planning techniques that incorporate climate change measurement.

Reasons to support:

Global research on climate change is rapidly increasing scientific knowledge about this issue and making more specific connections between climate change and human activities. As this research builds the knowledge base, it is important that people gain information about the ways they affect climate change. Communities need to know what current human actions are contributing the most GHG, so they can target those actions. Continuing research is needed so communities, neighborhoods and individual residents or businesses can take action in ways that will help to mitigate or adapt to climate change.

Specific Policy #14.4: Carbon Sequestration

Support continued research into biological and geological carbon sequestration technologies. Additional research is needed to determine the exact technical feasibility, costs, and benefits of these strategies.

Reasons to support:

Global warming can potentially be mitigated through technologies to sequester carbon – that is, to keep it out of atmospheric circulation for long periods of time. However, the benefits, costs, feasibility and best practices for various sequestration methods are not yet clear. Some sequestration methods would rely on vegetation to sequester carbon. These approaches could lead to community preservation of wetlands, grasslands and forests as ‘carbon sinks’ and potential beneficiaries of future carbon credit systems. Planting more trees in urban areas, or preserving trees, is an obvious one.

Specific Policy #14.5: Effects on the Local Communities and Conditions

Support research to better understand the effects of global warming on regions, communities, natural systems, and the built environment. Expand and fund state and federal programs that supply vital data related to climate change and its impacts to local and regional planning agencies. Require new reporting and measurement of climate impacts in planning and development processes and reviews.

Reasons to support:

Changes in climate due to global warming ultimately will be local in their effects. Changes can occur in the availability of arable land, length of the growing season, amounts of rainfall, temperature changes, levels of disruptive weather, and ecological balance, just to name a few. In addition to research about the implications of climate change for communities and urban areas in general, research is needed that will enable specific places to develop appropriate plans for action to mitigate and adapt to climate change. This research will help regions and communities plan for future urban development locations and patterns, identify and protect natural assets, and develop strategies to support local agriculture as it deals with changing climate.

3. Mitigating Climate Change

3.1 Greenhouse Gas Emissions

General Policy #15: The American Planning Association, its Chapters and Divisions, and planners support economic strategies that reduce greenhouse gas emissions.

Specific Policy #15.1: Cap and Trade System

Implement a nationwide and economy-wide cap and trade system for carbon emissions that reduces greenhouse gas emissions to the amount necessary to achieve an 80% reduction below 1990 levels by 2050. [interim goal] Provide funding for local, regional, and metropolitan planning agencies from cap and trade auction and allocation revenues to fund planning reforms that demonstrably reduce greenhouse gas emissions. Any cap-and-trade bill passed in the U.S. Congress should return a minimum of 5% of allowance revenue to states, regions, and localities to invest in development, infrastructure and transportation measures that reduce emissions.

Revenue should be allocated based on performance in achieving reductions in per-capita emissions.

Reason to support:

Cap and trade systems combine the force of regulation with the power of the private market to achieve public policy goals in a cost-effective manner. The United States is well-positioned to implement such a system, given its own successful efforts to reduce acid rain, and given the lessons it can learn from Europe's implementation of a carbon cap and trade system. Allocating revenues from a cap and trade system to fund local transportation and land use planning efforts that reduce greenhouse gas emissions is an effective means to build in lasting mitigation of climate change. This provides an opportunity to return a portion of this revenue to invest in local strategies to reduce VMT and emissions from buildings, such as those described elsewhere in this guide. Some of the bills currently being considered would return 1% of allowances to states to invest in transit. This proportion should be expanded, along with the types of eligible projects.

Specific Policy #15.2: Carbon Pricing

In the absence of a comprehensive cap and trade system, or in conjunction with federal legislation should establish a carbon tax for the purpose of achieving at least an 80% reduction in greenhouse gas emissions below 1990 levels by 2050. Set aside funds generated from such action to support local, regional, or state efforts related to planning and implementation measures that reduces greenhouse gas emissions.

Reason to support:

Pricing carbon would reduce distortions in existing spending patterns. Research also indicates that the use of funds from a carbon tax (or the auction phase of a cap and trade system) to support low-carbon technologies, in transportation for example, substantially lowers the overall cost of reducing greenhouse gas emissions.

Specific Policy #15.3: Regulation of Products

Use regulation to reduce the use of products with high energy use or production of greenhouse gases, including fluorocarbons, when viable alternatives exist.

Reason to support:

Many energy-inefficient or high-carbon products, such as incandescent light bulbs, will continue to be used indefinitely unless they are banned or tightly regulated. In such cases voluntary action or market mechanisms by themselves are insufficient to bring about change, and regulation is needed. Many fluorocarbons, including CFCs, HCFCs, and HFCs, are potent greenhouse gas chemicals many times stronger than CO₂. (CFCs are also responsible for depletion of the ozone layer.) Substitutes to most fluorocarbons (used primarily as coolants) are available.

3.2 Land Use

General Policy #16: The American Planning Association, its Chapters and Divisions, and planners support the elimination of barriers, the reform of zoning and development standards, and the creation of incentives to lower energy use and greenhouse gas emissions.

Specific Policy #16.1: Zoning and Development Standards Reform

Implement zoning and development standards that promote significant changes in zoning and development standards. New policies and regulations should be developed that promote mixed use development, transit-oriented design, and greater development intensity to create communities with land use patterns with reduced energy consumption, fewer vehicle miles traveled and reduced greenhouse gases. New zoning and development standards should incorporate climate change impacts and implications in required environmental reviews and decision-making. Climate change should be incorporated into comprehensive planning that meets new emission goals and targets.

Reason to support: Zoning and other development standards should be made more flexible to allow for the creation of developments, neighborhoods, and communities that allow for more pedestrian, bicycle, and transit use, thereby lowering transportation energy consumption. Changes need to be made from traditional zoning laws that are based on separating land uses and creating single-use communities. If designed improperly, standards such as parking requirements, building height limits and building setbacks may impede compact, mixed use development that reduces sprawl and facilitates transit use. For example, the elimination of minimum parking requirements reduces the incentive to drive, while concurrently reducing the amount of impervious surface necessary for auto storage.

Specific Policy # 16.2: Developer Incentives

Create development permitting processes with developer incentives, including tax credits and regulatory mechanisms for greenfield, in-fill and redevelopment projects, which encourage the fast-tracking of development that reduces energy consumption and lowers greenhouse gas emissions. Encourage demonstration projects with evaluation mechanisms.

Reason to support: Development incentives give developers a direct benefit for some concession on their parts. New regulations and standards should be paired with developer incentives. This is among the most effective, fiscally neutral strategies that can be used. Specific development incentives can include, among others, density bonuses, one-stop permitting, expedited zoning procedures and permitting, fee reductions and waivers, and reduced parking requirements.

Specific Policy # 16.3: Vehicle Miles Traveled (VMT) Reduction

Communities should establish targets for reducing their average annual per capita vehicle miles traveled (VMT).

3.3 Vehicles

General Policy #17: The American Planning Association, its Chapters and Divisions, and planners support improving standards for new vehicles to lower fuel use, use cleaner fuels, and lower greenhouse gas emissions.

Specific Policy #17.1: Increase CAFE Standards

Establish stronger Corporate Average Fuel Economy (CAFE) Standards than included in recently enacted federal energy legislation.

Reason to support: Increasing fuel economy is one of the fastest, cleanest and lowest cost options for immediate reduction in greenhouse gas emissions and oil dependence. The National Academy of Sciences found that improved fuel economy benefits the nation's economy and trade, reduces dependence on oil (much of which comes from instable regions and decreases our national security), and reduces carbon dioxide emissions. CAFE standards were increased for the first time since the 1970s when Congress passed the 2007 Energy Bill. Several states have urged even stronger regulation. APA supported the recent increase and encourages Congress to further strengthen fuel efficiency standards.

Specific Policy #17.2: Promote Clean Fuel Technology and Standards

Establish low carbon fuel standards for autos, light trucks, heavy trucks, rail, air, buses, school buses, water, and off-road transportation modes and encourage research into clean fuel options and system-wide implementation.

Reason to support: Today, planning focuses significant attention on reducing single-occupancy vehicle use, and increasing the use of non-auto transportation, including rail, air, bus, and water. However, since fuel-efficiency standards are sometimes weaker, sporadically enforced, or non-existent for these modes, clean fuel standards for all transportation modes are vital to a comprehensive transportation solution. Federal policy should actively promote new research into the development of cleaner fuels and the ability to make new fuels readily available to consumers.

Specific Policy 17.3: Federal Action on Vehicle Emissions

Pass federal legislation setting standards for greenhouse gas emissions from vehicles at levels consistent with nationwide and economy-wide greenhouse gas reduction targets.

Reasons to support:

Reducing greenhouse gas emissions from vehicles is one of the largest steps the U.S. can take to reduce overall greenhouse gas emissions. The transportation sector accounts for about 28% of gross U.S. greenhouse gas emissions. Standards for greenhouse gas emissions are more closely linked to global warming, and therefore are preferred to fuel economy standards, which are only indirectly linked to greenhouse gas emissions.

Specific Policy 17.4: Enabling State Action on Vehicle Emissions

With or without federal action on vehicle emissions, support individual state actions to establish more rigorous standards, such as the State of California's request to U.S. Environmental Protection Agency to implement vehicle emission standards that would reduce greenhouse gas emissions, and thereby encourage other states to do the same.

Reasons to support:

Allowing states to develop and implement alternative greenhouse gas emission standards encourages technological and regulatory innovation, and can reduce emissions and the impacts associated with global warming. Similar innovation at the state level, in particular the adoption of standards by states such as California that were stricter than federal standards, helped reduce local air pollution in the past. In the event of both a federal and state standard, the higher standard should supercede other, less stringent standards.

Specific Policy # 17.5: Monitor Greenhouse Gas Emissions from Transportation

Secure federal funding to develop reliable methods to quantify greenhouse gas emissions from transportation to accurately monitor progress in meeting goals. Monitoring should include gasoline consumption, VMT and CO₂ emissions disaggregated to the local or regional level. These efforts should result in new models for use in planning and related environmental or development reviews and analysis.

Reason to support: There is a need to be able to demonstrate, tangibly and separately from other factors, the impacts of greenhouse gas emissions from transportation. Establishing baseline conditions and identifying the possible impacts of proposed improvements provides critical input to plan evaluation and the setting of priorities. There is a corresponding need to be able to monitor progress over time; show the co-benefits with air quality and other similar initiatives; and – potentially – establish quantifiable benefits for use in cap and trade or similar programs. One specific model that to be developed is that which shows specific per-unit reductions in VMT and truck travel for specific projected growth units in the economy.

General Policy #18: The American Planning Association, its Chapters and Divisions, and planners support economic strategies that provide incentives to manufacturers and users of vehicles to lower fuel use, use cleaner fuels, and lower greenhouse gas emissions.

Specific Policy #18.1: Economic Incentives for Fuel Efficient Vehicles

Enact a system of fees and rebates that encourages the purchase or manufacture of fuel-efficient vehicles and discourages the purchase or manufacture of fuel-inefficient vehicles.

Reason to support:

Fees and rebates that encourage the purchase of fuel-efficient vehicles are more likely to be effective than fuel taxes in modifying behavior. Fee and rebate systems can also be designed to be revenue neutral, thus costing taxpayers little or nothing in the aggregate while conveying the benefits of reduced impacts of climate change.

Specific Policy #18.2: Efficient Use of Existing Transportation Infrastructure

Promote low-carbon commute alternatives by ensuring that the cost of the daily commute by individuals reflects the actual cost of the trip, including its environmental and greenhouse gas impacts. Support the expansion of congestion pricing systems for urban expressways, provided that there are adequate transportation alternatives, both existing and planned and particularly for transit, in a given metropolitan area and such systems are undertaken in the context of comprehensive planning and a balanced transportation network. Use the funds generated from such a system to advance low-carbon transportation technologies and to reform existing transportation taxes. Incorporate performance standards and GHG emission-related metrics into funding, budget and investment decisions.

Reason to support:

The transportation sector accounts for roughly one-third of gross U.S. greenhouse gas emissions. Actions that prompt changes in behavior in the realm of transportation can have a commensurate impact on reducing greenhouse gas emissions. Congestion pricing allocates scarce infrastructure resources more efficiently than the first-come, first-serve system that prevails today. Actions

such as mandatory parking cash-out programs, funding for transit incentives, congestion pricing and parking pricing are particularly useful because they help reveal the total environmental costs/benefits associated with particular modes of travel.

3.4 Renewable Energy

General Policy #19: The American Planning Association, its Chapters and Divisions, and planners support policies that encourage the use of renewable energy.

Specific Policy #19.1: Policy to Support a Transition to Renewable Energy

Adopt state, regional, and national policies that accelerate the transition to renewable energy sources.

Reason to support:

Greenhouse gas emissions from energy (including for transportation) amount to about 70% of worldwide greenhouse gas emissions. Policies such as feed-in tariffs (the minimum price a utility must pay to an independent renewable energy producer), tradable green energy certificates (proof that a unit of electricity was generated from an eligible renewable energy source to be sold to entities that produce too much greenhouse gas), and renewable energy portfolio standards (minimum annual amounts of electricity to be generated by renewable energy sources), and similar schemes have been shown to be effective in accelerating the transition to a low-carbon economy, though no single policy direction is appropriate for all situations.

Specific Policy #19.2: Incentives for the Small-Scale Use of Renewable Energy Systems

Establish incentives to encourage installation of renewable energy systems by homeowners and small business operators.

Reason to support:

Given the artificially low price of coal and other fossil fuels, since environmental externalities are not included, it is often not cost-effective for individual homeowners or small business operators to install alternative energy systems. Such installation may also require up-front investment that these individuals do not have. Incentives for installation of small-scale renewable energy may include a per-watt rebate for newly installed electrical capacity, loans or grants for installation, and net metering in which the property owner is paid for electricity fed back into the grid.

Specific Policies #19.3: Integration of Renewable Energy into Codes

Revise building codes and architectural design guidelines to allow for, encourage, or require integration of passive solar design, green roofs, active solar and other renewable energy sources.

Reason to Support: In many climates solar design and on-site solar systems have been shown to be effective in lowering overall building energy use. Design standards might include southern orientation of structures, extensive southern fenestration for winter heating, shielding of windows to prevent summer overheating, thermal mass to retain heat and coolness, and design for maximum natural summer ventilation, solar hot water heaters and photovoltaic electricity.

Specific Policy #19.4: Eliminate Regulatory Barriers to the Use of Renewable Energy Systems

Examine existing zoning laws and development standards and revise or eliminate provisions that act as a barrier to the use of renewable energy systems.

Reason to Support: Zoning and other development standards can act as a barrier to the use of renewable energy systems. Examples include height restrictions that limit the use of wind energy conversion systems and design requirements that limit the placement of solar energy panels.

Specific Policy #19.5: Renewable Energy Systems and Energy Efficiency in Public Facilities

Construct and renovate public facilities to serve as demonstrations of green building practices and include (where possible) renewable energy systems such as photovoltaic electricity or solar hot water panels.

Reason to support:

Public facilities can be visible examples of the benefits of renewable energy systems and act as models for the private sector to follow.

Specific Policy #19.6: Methane Emissions from Landfills and Sewer Treatment Plants

Support policies that result in the design, retrofitting, operation, and management of landfills (both existing and closed) and sewer treatment plants so that methane emissions are controlled and, where feasible, used for energy production.

Reasons to support:

Methane is the second most common GHG, after CO². Methane is produced in landfills as the result of the anaerobic decomposition of waste. Landfills are a major contributor of methane emissions, accounting for approximately 34% of all methane emission in the U.S. Methane is readily usable for the production of energy since it is a major component (95%) of natural gas. Land use planning and public facility siting policies should locate and design landfills so they provide energy resources and minimize methane emissions.

3.5 Green Building

General Policy #20: The American Planning Association, its Chapters and Divisions, and planners support the development and application of green building standards that reduce the carbon footprint of both new and existing buildings and developments.

Specific Policy #20.1: Green Building Standards

Support the continued development and application of green building standards. Develop and promote the means and standards to reach a 50% reduction below current levels in building-related carbon emissions by 2010 and carbon neutral buildings by 2030. Incorporate green building and energy efficiency standards for all public facilities.

Reason to support: A variety of organizations have developed green building standards. An example is the LEED (Leadership in Energy and Environmental Design) green building rating

system of the U.S. Green Building Council. Such standards “raise the bar” on the energy efficiency of new building construction and renovation. These standards can be used as guidance to set local standards for new construction, improvement to existing buildings, or to specify the level of energy efficiency desired in new public facilities, at the local, state, or federal level.

Specific Policy #20.2: State Adoption of Mandatory Building Energy Codes

Support and seek adoption and ensure enforcement of mandatory building energy codes for commercial and residential buildings in states that do not have them or do not actively enforce them. As an alternative, set minimum standards for energy efficiency in new buildings and ensure that all states are achieving them through adoption and enforcement of mandatory building energy codes.

Reason to support: Eleven states do not have residential building energy codes; 14 states have either no enforcement or voluntary enforcement. A like number of states do not have commercial building energy codes. This is a lost opportunity to set minimum expectations for energy efficiency in new buildings.

Specific Policy #20.3: Minimum Standards for Building Energy Codes

Support raising building energy code requirements to be at least as stringent as the most recent International Energy Conservation Code (U.S. DOE), or the most recent ASHRAE 90.1 code (American Society of Heating, Refrigerating and Air-Conditioning Engineers), or equivalent. Federal and state housing and infrastructure programs should incorporate green building standards and requirements.

Reasons to Support:

Building heating, cooling, ventilation, and lighting account for a very large percentage of greenhouse gas emissions in the United States (building contributions to GHG emissions are not aggregated as such by the U.S. EPA but are estimated at up to 48% by architect Ed Mazria, originator of the Architecture 2030 Challenge).

Specific Policy #20.4: Performance-based Code Alternatives

Support the addition of performance-based alternatives to energy codes and appropriate sections of the building code.

Reasons to Support:

Innovation in building techniques and construction is essential to raising the bar for energy efficiency standards. Unfortunately, prescriptive based building codes, which rely on tried-and-true measures, can stymie innovation. If it can be shown through energy modeling that a building using innovative techniques can achieve energy performance at least as good as an equivalent building using the prescriptive based measures, then that design should be allowed.

Specific Policy #20.5: 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 short payback period.

Support incentives and standards that retrofit and redevelop existing buildings to improve energy efficiency.

Reasons to Support:

As building energy efficiency technology becomes more cost-effective, ensuring that it is incorporated into existing buildings will benefit not only the building owner but also the larger community through lower greenhouse gas emissions. Communities will not be able to meet their targets by addressing only new construction.

Specific Policy #20.6: Green Roofs

Encourage and incentivize the use of green rooftops in the development of landscaping and building regulations.

Reasons to Support:

When intensifying in-fill development, green space within a community may be lost. By greening rooftops, the community itself can become an effective carbon sink. A significant amount of total GHG emissions come from the built environment. Green roofs can help decrease building-connected emissions and are an important element of any strategy aimed at carbon neutral building.

General Policy #21: The American Planning Association, its Chapters and Divisions, and planners support the use of incentives and education to promote green building practices.

Specific Policy #21.1: Incentives and Education for Green Building

Support the creation of incentives, including appropriate tax credits, and education programs to encourage homeowners and developers to invest in energy-efficiency improvements.

Reasons to Support:

Many homeowners and developers want to improve the energy performance of their buildings, and may be concerned about climate change. Education programs and incentives such as expedited permit review and fee waivers can encourage early adoption.

Specific Policy #21.2: Performance Rating Standard

Support the adoption of a national building energy performance rating system.

Reasons to Support:

Such a system would allow potential buyers and tenants to make informed choices about the energy costs associated with buildings. It could be similar to gas mileage ratings for vehicles and would improve market awareness of the energy performance of buildings.

4.0 Adapting To Climate Change

4.1 Preparing For Climate Change Impacts

General Policy #22: The American Planning Association, its Chapters and Divisions, and planners support the development of plans, strategies, and standards to better anticipate and prepare for the impacts of climate change.

Specific Policy #22.1: Incorporate Climate Change Adaptation into Disaster Planning

Develop a comprehensive approach to disaster planning that integrates the variety of climate change scenarios and includes pre-disaster planning, post disaster redevelopment planning and adaptation to climate change. Expand federal and state support for climate-related hazard planning.

Reason to support:

Traditional disaster planning is often separated by hazard type and uses a short planning time horizon. The cycle for most disaster planning has normally been: event - warning - response – recovery - and back to event. It is only recently that pre-disaster planning has begun to enter the process. Planners should become more engaged in disaster planning in a comprehensive way and should include climate change adaptation in disaster mitigation plans.

Specific Policy#22.2: Climate Change Scenarios

Integrate climate change scenarios into local, state and federal planning efforts. Increase funding for hazard mitigation planning that incorporates and addresses climate change-related scenarios and potential impacts.

Reason to support:

Climate change adaptation scenarios should be incorporated into standard comprehensive planning practice. Creating a resilient community in the face of climate change represents a new paradigm for land use planning.

Specific Policy#22.3: Building and Life Safety Codes

Update building and life safety codes to increase safety from the variety of disaster scenarios that are likely to result from climate change.

Reason to support:

Building and life safety codes should be updated for increased safety from disasters. For example, wind load standards and emergency exit designs for flooding should be re-evaluated.

Specific Policy# 22.4: Reducing Risk to Development in Risk-Prone Areas

Improve the ability to identify areas prone to greater risk from climate change and restrict development and redevelopment in those areas. Increase support for mapping and data collection of high risk areas and changes associated with climate change.

Reason to support:

Improvements in our predictive capabilities relative to the impact of climate changes on land use should be made. Areas prone to significant risk from climate change should not be developed or redeveloped to minimize future loss of human life and impacts to property. Communities should investigate and promote opportunities for these areas, such as flood-plain restoration, groundwater recharge, and flood compatible agriculture. Place development in low-risk, low hazard areas. Restrict the development of buildings or infrastructure in flood prone areas and

low-lying coast areas. Manage development in the urban/wildland interface area to minimize the risk from wildfire. Climate change is likely to bring increased risk of flooding to many areas, even those in which overall precipitation levels are less (due to greater storm severity, changes in the timing of precipitation, or changes in the proportion of precipitation that falls as rain versus snow).

Specific Policy #22.5: Coastal Zone Management Act Review

Reauthorize the Coastal Zone Management Act in light of increasing risks due to sea level rise and increasingly strong hurricanes and the need to improve planning and risk assessment for development in coastal areas.

Reason to support:

The national coastal zone management program should be re-evaluated based on the new understanding of climate change. With sea level rise and the potential for increasingly stronger hurricanes, the impact on coastal zone communities could be severe.

Specific Policy #22.6: Federal Assistance to State and Local Adaptation Activities

Increase federal funding for technical assistance and critical planning data to state and local governments from federal agencies responsible for climate, weather, and hazard mitigation. Support improved climate model results that provide more localized information and predictions. Support standardized monitoring and reporting GHG emissions.

Reason to support:

Many federal agencies have developed significant expertise and information regarding future climate change scenarios and potential measures to mitigate the effects of climate change. State and local governments are in need of these resources as they develop responses.

Specific Policy #22.7: Diversification of Land Uses & Local Economies

Diversify land uses to reduce risks that weather related disasters will overly impact particular land uses leaving communities without important services. Diversify and strengthen local economies to better respond after disasters.

Reason to support:

In financial portfolio management we are often told to diversify to reduce risk and optimize returns. A parallel dictum could be applied to land use. Where possible, land use should be diversified and mixed. Planners should adopt policies that anticipate potential post-disaster economic impacts and seek opportunities for self-reliance and economic resilience by developing local resources. Disasters tend to cut links to outside resources. Surpluses and supplies are needed to support the community until outside links are re-established. For basic needs there should be a local disaster recovery option even if it not exercised in normal times.

Specific Policy #22.8: Water Shortages

Establish standards, regulations and incentives to reduce water demand to be better prepared to respond to lower water supplies.

Reason to support:

Even in areas where average annual precipitation does not decrease due to climate change, global warming is expected to produce faster snow melt and changes in rainfall patterns that will disrupt fresh water supplies. Rising sea levels will threaten fresh water supplies in coastal areas, where a majority of the human population lives.

Specific Policy #22.9: Heat Island Effects

Design communities, neighborhoods and individual development projects using techniques that reduce heat absorption throughout the community and region.

Reason to support:

Heat island effects traditionally take place in urban areas where natural ground cover has been replaced with pavement, buildings, or other materials that tend to absorb and retain heat. While the resulting warmer temperatures may be benign or even welcome during colder times of the year, any such benefits are greatly outweighed by the negative impacts during hotter summer months when heat island effects significantly contribute to increased human health risk and increased use of air conditioning, resulting in greater energy use and greenhouse gas emissions.

4.2 Responding to Climate Change Impacts

General Policy #23: The American Planning Association, its Chapters and Divisions, and planners support policies that help communities better respond to the impacts of climate change related disasters.

Specific Policy #23.1: Reconstruction

Encourage local governments to develop post-disaster redevelopment plans that discourage the reconstruction of buildings and infrastructure in hazard zones following climate related disasters.

Reason to support:

After major disasters, restricting rebuilding in hazard zones should be seriously considered. Abandoning intensive land uses in the hazard zone should be strongly considered with the government looking at ways to mitigate the pain of relocation.

Specific Policy #23.2: Security after Disasters

Develop strategies to maintain energy, water, and food security during and after climate related disasters.

Reason to support:

A dependable source of energy is necessary to support essential services for surviving extreme weather events. This could include distributed location of electricity generating facilities that could operate independent of the utility grid. This plan would be integrated with emergency food systems, medical services, police and fire protection, and infrastructure such as water, sewage and street lighting systems.

Specific Policy #23.4: Risk Analysis & Event Impact Horizons

Develop scenarios to help the general public and decision-makers understand the potential risks associated with climate change and to develop contingencies for catastrophic events. As with floodplain

management, expand the timeframe associated with disaster mitigation related to climate change to 100 years.

Reason to support:

Conventional planning horizons should be extended. FEMA Flood Insurance Rate Maps (FIRM) assesses flood potential into the 100 year and 500 year probability areas. Other hazard maps should also be extended into the 100 to 500 year frame. While the FIRMs are probability maps not time horizon maps, it is an easy shift to a time perspective for flooding and other hazards. As with the FIRMs, the zones in these maps are not no-build zones but zones where the development is constructed with conditions and potential risk factors.

Specific Policy #23.5: Action Strategy

When considering climate change impacts, first seek to avoid impacts altogether, then minimize them, and finally, adapt to the unavoidable impacts as much as possible.

Reason to support:

The first decision choice on development in potential hazard areas should be avoidance. If avoidance is not possible or other requirements dictate a need to develop, evaluation should then move to minimization. This is akin to carbon footprints and the desire to minimize footprints. From a disaster planning standpoint it is minimization of areas at risk. The final decision step is mitigation to protect against the risk.

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