

# Planning for Climate Change

By Rebecca Carter

Land use planners have long had a hand in shaping the communities of the western United States—particularly in recent decades, as the region’s population has exploded, the economy has changed, and limited resources, such as water, energy, and open space have had to be shared among more residents. Now a new challenge, global climate change, is adding another dimension to the role of land use planners in determining the future.

The need for rapid implementation of effective land use-related climate action policies is particularly urgent in the western United States, where projected population growth means continued rapid development of housing, commercial, and service buildings; and transportation, water, and energy systems. Land-use planners in this region have a unique opportunity to determine the region’s future in a changing climate.

Land use-related climate change policies have the potential to be among the most cost-effective and efficient ways of reducing greenhouse gas emissions. In fact, if the land-use planning-related policies contained in Western state climate action plans were fully implemented, it could reduce current total greenhouse gas emissions by approximately 20 percent and result in cost savings for many communities.

## Land Use-Related Climate Change Policies

The phrase “land use-related climate change policies” is a bit cumbersome, but it accurately describes a specific set of policies primarily intended to mitigate further climate change (although many of these measures have adaptation value as well). Implementation of these policies is within the purview of land-use planners and other local decision makers. In fact, although state climate action plans include many such policies, they cannot be effectively implemented

without the support and initiative of local city and county governments.

These policies include:

- Green/energy-efficient buildings—municipal, industrial, commercial, residential.
- Reduction in vehicle miles traveled (VMT) through smart growth principles, such as walkable communities, and mixed use, high-density development.
- Increases in mass transit.
- Transit-oriented development.
- Alternative energy—distributed generation and combined heat and power within urban areas.
- Open space conservation.
- Urban forestry.
- Wild land-urban interface fire management.

## Analysis of Western State Climate Action Plans

Despite the lack of federal action to curb climate change, western states are leading the way in enacting policies to accomplish this goal. When this research was conducted in Fall 2007, eight of the 11 western states had produced climate action plans. Five of these plans had sufficiently quantified both the potential emissions reduction effectiveness, and the cost-effectiveness of various policies such that they could be analyzed. Each of the state plans we analyzed was created using a similar methodology with the assistance of the Center for Climate Strategies (CCS), a

	Arizona	California	Montana	New Mexico	Washington
Total Number of Climate Action Policies	35	39	48	64	58
Total Potential GHG Emissions (MMTCO <sub>2</sub> e)	645.3	138.5	125.5	322.9	448.2
Total Land Use Planning-Related Policies	11	8	10	19	13
Total Potential GHG Emissions Reduction from Land Use-Related Policies	128.5	25.32	12.75	56.50	110.87
Percentage of Total GHG Reductions Possible from Land Use Planning-Related Policies	19.9	18.3	10.2	17.5	24.7

Table 1. Summary from five state climate action plans.

non-profit organization. This implies a degree of consistency between state plans and provides a basis for comparison of the greenhouse gas reduction potential and cost-effectiveness of different policies.

By providing comparisons of various land use-related strategies, this analysis paves the way for communities to select a locally-appropriate mix of policies and create an effective implementation plan. Of course, since this is an analysis of state-level policies, the results will apply to different degrees at the local scale, depending on local circumstances. Perhaps more important than the exact figures, therefore, is the insight they provide for comparison and prioritization among policies.

### Results

The five state climate action plans were analyzed to separate out land use-related policies, compare each policy’s carbon reduction potential and cost-effectiveness, and calculate the proportion of total greenhouse gas emissions goals that could be achieved if such policies were fully implemented.

### Twenty Percent of Reduction Goals Achievable

Table 1 shows the total number of policies included in each plan, as well as the potential greenhouse gas emissions reduction that could be achieved if all policies were fully implemented. It also shows how many of the policies were considered to be land use planning-related, how much emissions could be reduced if they were fully implemented, and what percentage of each state’s total greenhouse gas reduction goal could be achieved.

The percentage of greenhouse gas reductions that could be achieved is near 20 percent for Arizona, California, and New Mexico, and near 25 percent for Washington. The percentage for Montana is considerably lower, at approximately 10 percent, because a larger proportion of this state’s emission reductions could be achieved through policies related to agriculture and coal consumption than is true for other states. While land use-related policies alone are not the “silver bullet” many are searching for to solve the climate crisis, they are an important component of the “silver buckshot” of solutions that is required to confront the issue.

### Some Policies More Effective

Although climate action policies for each state vary somewhat in their specifications, we were able to calculate average effectiveness of the primary types of land use-related policies described in the five plans analyzed, both in terms of the percentage of the state’s total desired greenhouse gas emissions reductions each policy could account for, and for cost effectiveness.

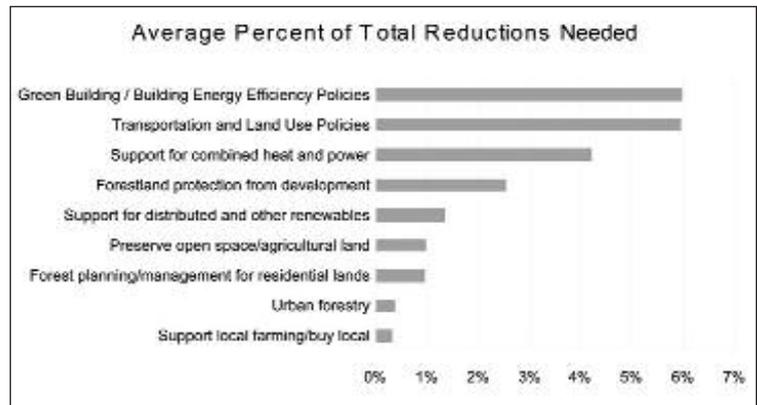


Figure 1. Average percentages of total projected reductions by type of policy.

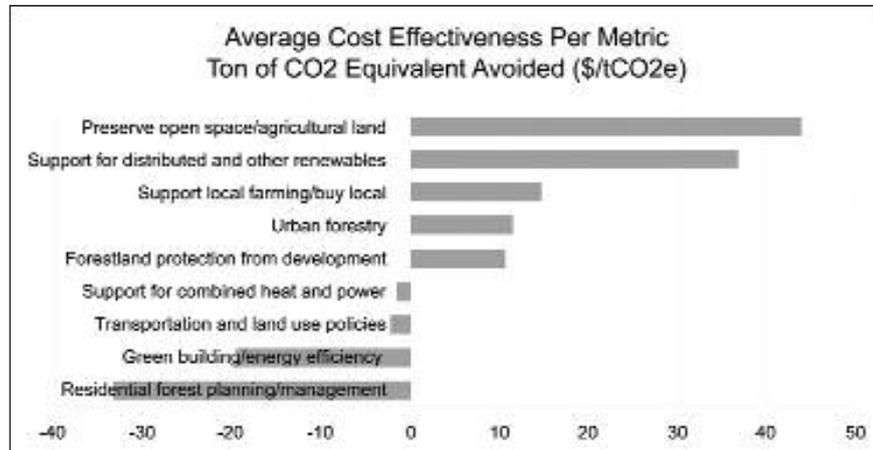


Figure 2. Negative numbers indicate the most cost-effective policies.

Figure 1 shows that green building and other building energy efficiency policies are expected to be the most effective at reducing greenhouse gas emissions, accounting for about six percent of total emissions reductions needed.

Figure 2 illustrates that such policies would also be among the most cost effective, providing savings of nearly \$20 for every metric ton of CO<sub>2</sub> avoided.

Improved transportation and land-use policies, most related to smart growth, would also be among the most effective land use-related policies to implement and would result in a slight cost savings.

Support for combined heat and power, which involves the development and dissemination of more efficient building power systems, would be an effective policy in terms of emissions reduction potential and cost savings.

On the other hand, policies to preserve open space and agricultural land from development would be less effective and more costly, although they would provide other benefits, such as open space protection and species habitat.

## Conclusions

The range of policies included in state-level climate action plans highlight the vital role that land-use planners have to play in determining how effectively the West can control its greenhouse gas emissions and adapt to the changing climate. These policies can therefore be more fully implemented—and sooner—if local land-use planners and other decision makers play an active role.

Despite political, educational, and fiscal challenges, local climate action planners and other local

decision makers can use the information in the state climate action plans to better understand which policies make the most sense in their specific context. Based on this knowledge, they can adopt policies that are the most cost-effective, have the greatest potential to reduce greenhouse gas emissions, provide additional benefits, and promote adaptation.

Increasing the ability of land-use planners to act on climate change immediately is crucial, especially in the Intermountain West, a rapidly changing region that has not embraced voluntary measures to the same degree as other regions in the United States. The form that the current explosive growth and development in the West takes, be it sprawling or compact, will largely determine the region's future ability to reduce greenhouse gas emissions and adapt to climate change. Land-use planners have a key role to play in determining the future of the West in a changing climate. ■

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*Rebecca Carter is the former climate change analyst for the Sonoran Institute-Lincoln Institute of Land Policy Joint Venture for whom she wrote this report. This article is based on a longer version published by [www.southwestclimatechange.org](http://www.southwestclimatechange.org).*

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This issue is dedicated to Luke W. Cole (1962-2009)

Founding co-editor of the journal *Race Poverty & the Environment* and founder of the Center for Race, Poverty and the Environment.



**Photos:** (Above) Montage from the Luke Cole memorial booklet published October 25, 2009. Courtesy of Nancy Shelby.

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