



cost cutting
trees

Landscaping for Energy Conservation and Sustainability

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We all know that landscaping contributes to the aesthetic appeal of a property, but less understood is its value as part of a home's energy efficiency plan.

While estimates in energy-saving vary widely, annual savings on heating and cooling a house with well-planned landscaping can be 10 – 30% a year.

When planning for your home's landscape, the Department of Energy suggests five areas that should be considered: the original site selection or microenvironment, shading, windbreaks, water conservation and species selection.

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Lot Selection and Microclimates

With Routt County's many mountains, canyons and streams you can gain energy savings by simply considering where you choose to live. Because of temperature inversions, property on the valley floor can be much colder than property at a higher elevation. Temperature inversions can make a difference of as much as 20 degrees Fahrenheit within a distance of less than a quarter mile. Conversely, homes placed on open, west or northwest facing hillsides are often exposed to more wind and consequently may be costlier to insulate and heat than those sites set below a hillside or placed on the leeward side. While site selection is largely an aesthetic choice, keep energy conservation in the back of your mind.

Shading

Shading a house in the summer and letting the light in during the winter is a simple and cost effective way for landscaping to help with energy conservation. Deciduous trees (trees that lose their leaves in the fall) should be planted so they shade the house, especially on the south and west sides of the structure. Large canopy trees should be placed in the southern exposure, and trees that are fuller and lower growing placed on the west side to shade the house in the late afternoon. These trees lose their leaves in the fall and let in sunshine to create passive solar heating in the winter months.

Windbreaks

While Routt County is not nearly as windy as other locations in Colorado, we do have predictable winds. A windbreak planted on the west and north side of the house will reduce wind penetration and lower winter heating costs. A windbreak can also make a yard more enjoyable during the summer. Lastly,



windbreaks are used to pile snow on areas where we want it (such as crops), and at the same time keep it off areas such as a driveway.

There are several things to consider when designing a windbreak. Trees used in windbreaks are generally evergreens, so wind is stopped by the dense branches. The trees are usually planted in at least two rows to allow for proper wind-lift. In addition, the break must be properly spaced in relation to the house. Planted too near, they will pile snow on the house, too far away and they will not be effective. The Colorado State Forest Service and Routt County Extension can provide helpful publications or personally assist landowners in designing a good windbreak. Both of these agencies have offices in Steamboat Springs. The State Forest Service Office is located in the Pine Grove Center on the second floor, and The Extension Office is in the Courthouse Annex downtown.

SOME BASIC WINDBREAK DESIGN CHARACTERISTICS DEVELOPED BY TEXAS A&M UNIVERSITY INCLUDE THE FOLLOWING RECOMMENDATIONS:

- The optimum foliage density for the windward side is about 60%.
- Windbreaks are most effective when they extend to the ground.
- The width of the planting is important as it relates to penetrability. For most evergreen plants, two or three rows are sufficient, but if deciduous materials are being used, four or five rows may be necessary. Rows should be staggered.
- Windbreaks work most efficiently when the length is 11.5 times greater than the mature width.
- The height of species within the width of the windbreak should be varied to create rough windbreak edges.

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Water Conservation

All landscapes should use trees and plants that minimize water usage or adapt easily to the environment here in Routt County. Water conservation is achieved through proper zone irrigation, species selection, use of mulch to shade the soil, and limiting the sod area. A trained landscape architect can assist you with this, or for the do-it-yourselfers, the Extension Office has many publications available on these topics. A properly designed landscape does not have to be desert looking and bleak. Xeriscaping, a word describing landscaping with water conservation as a major objective, is often used in the drier parts of Colorado, but is not a necessity here in Routt County because of the abundance of natural moisture in the form of rain or snow.

WHEN DESIGNING YOUR LANDSCAPE FOR WATER CONSERVATION CONSIDER THE FOLLOWING:

- Proper planning is the first step in landscaping to reduce water use. South and west exposures demand the greatest water use, especially near buildings or paved areas.
- Due to runoff and rapid water evaporation, steep slopes with south and west exposures require more frequent watering to maintain the same plant cover as east or north slopes.
- Terracing slopes reduces runoff and permits more water to soak in.
- Bluegrass turf should be limited to small or heavily used areas. Consider drought-resistant grasses or meadow mixes containing wildflowers in your outlying areas.
- Soil preparation is a key to water conservation.
- Proper irrigation practices and system design can lead to 30 – 80% in water savings.
- Mulching flowerbeds and shrubs reduces water use by decreasing soil temperatures and exposure to wind.

Tree Selection

You have many, many options for types of trees to plant. To help you select the right trees and other perennials, the Extension Office has fact sheets on trees and shrubs for mountain communities that give height, speed of growth, soil preference, and watering guidelines. We even have lists of trees that are deer and elk resistant. Generally speaking, native trees do best, but there are many non-natives that will thrive in the Yampa Valley. When selecting trees almost everyone wants an instant landscape. However, recent research shows that buying smaller trees (2 – 3 feet tall, versus 5 – 6 feet tall) may be better. Smaller trees cost less, have smaller root balls and establish themselves more quickly, and within just a few short years of growth they will be just as tall. Remember, it's very important to remove wire and burlap from root balls at the time of planting; insist upon this if you hire a landscape company to plant your trees. Again, the Extension Office has fact sheets on properly planting trees.

Online fact sheets from Colorado State University on tree selection can be found at
<http://www.ext.colostate.edu/pubs/garden/pubgard.html#tree>

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