THE POWER OF ENERGY EFFICIENCY IS IN YOUR HANDS
When you add a well-proportioned and well-positioned tree to the landscape, you’re making your home more energy efficient, attractive and its outdoor spaces more enjoyable. You’re creating a more inviting habitat for some of nature’s small creatures and saving money at the same time.
The Beautifying, Energy-Saving, Comfort-Giving Home Improvement

There is a lot we can do to make our homes more energy efficient. One of the most beneficial and aesthetically pleasing is planting trees. Trees provide shelter, beauty, increased comfort and energy cost savings. It’s hard to imagine any other single home improvement capable of all that and at such a moderate cost.

By adding the right tree – or trees – in the right place around your home, you can make a very real, very positive impact on your home’s total energy use for heating and cooling. In summer, trees reduce the amount of direct sunlight that strikes and warms your home so you can cut back on the use of air conditioning and still be comfortable. In winter, thoughtfully positioned trees – especially evergreen trees that hold their needles – act as a windbreak for your home, protecting against blustery winds and saving on heating costs.

Savings on a Larger Scale

Looking at the bigger picture – with more trees available to provide year-round protection of homes and other buildings from the elements – total energy needs are lower. That means there’s less need for new power plants and contracting additional supplies of natural gas, which helps MidAmerican Energy Company keep rates as low as possible. One thing more: No matter how efficient or clean-burning it may be, every electric generating plant powered by fossil fuels produces carbon dioxide emissions as a by-product of combustion. By lowering total electric demand, the amount of emissions will be less. What’s more, since trees themselves absorb carbon dioxide, and produce oxygen, we all can breathe a little easier by planting more trees.
Different types of trees grow to different heights at maturity, so you need to give careful thought to where you will be planting each tree. Choosing the very best location for new trees is important for several reasons.

You need to:

- Plant a proper distance from electric lines and other obstructions – your house, garage, garden, patio, driveway, etc., as well as your neighbors’ property.
- Plant the tree with its size at maturity in mind in order to allow enough space for proper development and long life.
- Plant in a location that best enhances the overall appearance of your home and yard.

SELECTING THE RIGHT LOCATION

Sunshine Changes with the Seasons
Have you ever noticed the difference between the shadows the sun casts in summer and those of winter? In summer, the sun arcs high overhead, creating shadows that are shorter, compared with winter shadows, which are longer due to the sun’s lower position in the sky. So, you’ll want to choose a site for your new shade trees where they will provide maximum protection for your home during the hot months of summer. Maximum energy savings are achieved when you locate trees for shade on the southeast and west sides of a home or building. Trees planted along the west side of a home do the best job of providing summer shade.

Deciduous Trees Offer Summer Shade and Winter Warmth
Here in the Midwest, we don’t get a lot of winter sun. But when we do, we can use it to help warm our homes during the daylight hours. Deciduous trees have leaves in the warmer months – late spring, summer and early fall – but drop their leaves in late fall. Evergreen trees, on the other hand, hold their needles throughout the year. So, if winter sun is desired, use deciduous trees rather than evergreens on the east and west sides of your home. They let sunshine through bare branches during the colder months of the year. Strategically placed evergreens can be used effectively, not only for their year-round decorative appearance, but because they provide excellent protection against winter winds and energy savings of your heating fuel. They’re widely used in both rural and urban areas.
Avoid Utility Lines Overhead and Underground

When selecting trees, check to determine their height and spread (canopy) at maturity. Always avoid planting trees under power lines or near utility equipment. Remember that you are planting for tomorrow, so when you plant a young tree, choose a location it can grow into. Make sure the mature tree won’t shade your garden area, won’t scratch vehicles parked in your driveway, won’t obstruct pedestrians on sidewalks, or won’t scratch your home’s exterior with its branches. Plant trees far enough away from sidewalks and patios that roots won’t crack or lift the concrete. By fitting the mature size of a tree to its specific location, future problems with power lines and other potential obstacles can be avoided. Put large trees in large yards, small trees in small yards.

Before you dig, be certain there are no underground utility lines in the area. Cutting into buried power lines or natural gas lines can result in interrupted service, possibly to a wide area. But more importantly, you risk serious injury, even death, if you cut into a buried utility line.

Here are some guidelines for recommended distances of tree plantings from overhead power lines.

<table>
<thead>
<tr>
<th>DISTANCE FROM HIGH VOLTAGE OVERHEAD LINE*</th>
<th>CHOOSE TREES WITH THIS MAXIMUM HEIGHT AT MATURITY**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20 feet</td>
<td>20 feet</td>
</tr>
<tr>
<td>20-30 feet</td>
<td>40 feet</td>
</tr>
<tr>
<td>Beyond 30 feet</td>
<td>Any height</td>
</tr>
</tbody>
</table>

* Within either side of overhead line. If you plan to plant near a cross-country transmission line, contact MidAmerican Energy.
** See foldout section for specific tree recommendations.

CALL 811 BEFORE YOU DIG

To be sure there are no utility lines or other equipment buried underground, call 811 before you start digging. It’s the law! Sponsored by the Common Ground Alliance, the Department of Transportation and the Federal Communications Commission, the free 811 service will send someone to your home to determine if there is underground equipment in the area where you’re thinking of planting a tree. Give the service at least two working days’ notice before you start to dig. For more information about the 811 service and campaign, visit www.call811.com.
COUNTRY TREES, CITY TREES

In the Country
Trees play a key role not only in our individual comfort and enjoyment, but also in the success of our state’s agricultural economy. Windbreaks and shade trees on the farm shield farm homes and outbuildings from frigid winter winds as well as the scorching summer sun. Trees help protect cattle, hogs, sheep and other livestock – resulting in less stress to the animals and fewer livestock losses. Planting trees in shelter belts alongside farm fields provides protection against the wind’s erosive power. Reducing the wind’s velocity with trees helps protect our precious topsoil, retains moisture in the soil and enhances crop yields.

In the City
In urban areas, trees make a positive impact on both our comfort and our pocketbooks. Unshaded expanses of concrete streets, driveways and parking lots can create pockets of heat, also known as heat islands, that are 6 to 9 degrees warmer than surrounding areas. These higher temperatures place a greater demand on our home air conditioning systems and on electric generating facilities that must be capable of meeting electric needs during periods of peak demand. In the city and in the country, there’s no better way for all of us to leave our mark on the landscape and, at the same time, help control total electric demand than by planting trees.
Visualize how a tree would look in your yard by driving around your community, or visiting a city park or arboretum, to find mature examples of the trees you’re considering — before you buy.

SELECTING THE RIGHT TREE

Size

In addition to selecting trees that won’t grow into overhead utility lines, consider the size of the tree in relationship to the size of nearby structures. For example, a tree that grows to about 40 feet at maturity works best as a background (that is, planted behind the home) or framing (planted beside the home) for a one-story home. A larger tree, over 40 feet at maturity, works better as a background and framing for a multistory structure. For trees planted on streetside locations, check with city officials for tree ordinances or other planting requirements. A combination of conifers (evergreens), deciduous trees (small and medium) and large shrubs (those that grow to 15 feet or less at maturity) are the best choice for windbreaks and visual screens. Shrubs and small trees also work well for dampening street noise.

When you visit the garden center to select new trees, they all look pretty much alike at 6-8 feet tall, but many types of trees will grow to 60, 70, even 80 feet or more at maturity. And the tree that looks attractive after 4 or 5 years of growth may dwarf your home in 15 or 20 years. So the best piece of advice is: buy trees that will fit the site at maturity. Before you purchase a tree, it’s a good idea to find out what it will look like when it’s fully grown.
Slow-Growing vs. Fast-Growing Trees
There’s a great temptation to choose fast-growing trees so we can begin to enjoy their growth and mature appearance sooner. However, fast-growing trees offer several disadvantages and usually aren’t the best choice.

For example, fast-growing trees generally have softer wood. This makes them especially susceptible to damage from ice storms, high winds and heavy snow. Fast-growing species often are relatively short-lived, have poor branching habits, and are more prone to disease. On the other hand, slower-growing species, such as hard maples and oaks, tend to be long-lived and have strong, dense wood. These species attract wildlife and are less prone to damage from insects and disease.

Avoid the instant gratification of fast growth. In the long run, you’ll be happier if you select slower-growing trees.
GOOD TREES MAKE GOOD NEIGHBORS

When selecting trees, keep in mind the rights and feelings of your neighbors. Ask yourself if your new shade tree also will shade their vegetable garden, or drop fruit or leaves into their lawn. Be aware of any local ordinances that control or prohibit the types of trees that may or may not be planted in public areas, along parkways, etc. Consult with your local public works or parks department before you purchase or plant any new trees in the city right-of-way.

Recommended Trees for This Area
In the Midwest, trees should be planted according to USDA Plant Hardiness ratings. These ratings are based on average minimum temperatures in each zone and give a guideline for tree suitability. The lower the number, the hardier the tree. You only should consider trees that are rated for your hardiness zone or a lower number. Many trees with a lower Plant Hardiness Zone rating also will do well in this area, and once it is determined that the plant meets hardiness requirements, other factors can be considered to determine whether it is well suited for your area. And, for best results, plant trees that are native and/or adapted to your particular location. This will help ensure that your new trees will thrive in the Midwest’s relatively harsh climate.
**Flowering Crabapple**  
*Malus spp.*  
(15-20 ft. tall)  
Hardiness Rating: 4

Hundreds of types available with a wide variety of flower and fruit colors and growth habits; choose one that is disease-resistant. Excellent small ornamental tree.

*Suggested cultivars:*  
Red Splendor, Prairifire, Profusion, Harvest Gold, Sugar Tyme, Purple Prince, Royal Raindrops, Donald Wyman

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**Washington Hawthorn**  
*Crataegus phaenopyrum*  
(20 ft. tall)  
Hardiness Rating: 5

White flowers in June, followed by reddish orange fruit in autumn.

**Thornless Cockspur Hawthorn**  
*Crataegus crusgalli var. inermis*  
(20 ft. tall)  
Hardiness Rating: 4

Use as a single specimen or in groupings; white flowers and red-to-purple fall color.
**American Hornbeam**
*Carpinus caroliniana*
(20-25 ft. tall)
Hardiness Rating: 3
Plant in sites that will accommodate its wide spreading branches; performs best when given partial shade. Commonly referred to as Musclewood.

**Serviceberry**
*Amelanchier spp*
(30 ft. tall)
Hardiness Rating: 4
Handsome, smooth gray bark with colorful white spring blossoms and rich reddish-orange fall color.

**River Birch**
*Betula nigra*
(30-40 ft. tall)
Hardiness Rating: 4
Attractive specimen tree; good for wet locations. Single stem or clump forms available.

* This species has a number of cultivars, or varieties. For a complete list, contact your Extension office or your local nursery.
**American Hophornbeam**  
*Ostrya virginiana*  
(35 ft. tall)  
Hardiness Rating: 4

Extremely hardy, tough, drought-tolerant, but with graceful appearance. Grows well in sun or shade. Yellow autumn foliage.

**Glenleven Littleleaf Linden**  
*Tilia cordata ‘Glenleven’*  
(50 ft. tall)  
Hardiness Rating: 3

Very symmetrical tree, tolerant to Midwest climate.

**American Sentry American Linden**  
*Tilia americana ‘American Sentry’*  
(45 ft. tall)  
Hardiness Rating: 3

Pyramid-shaped tree; good choice for shade tree in the Midwest.
**Thornless Honeylocust**  
*Gleditsia triacanthos var. inermis*  
(40-60 ft. tall)  
Hardiness Rating: 4  
Small, bright green foliage that filters sunlight; usually an open, spreading crown.

**Swamp White Oak**  
*Quercus bicolor*  
(60 ft. tall)  
Hardiness Rating: 4  
Native tree with a broad open crown. Performs well in areas with poor drainage. Makes a handsome shade tree.

**Red Oak**  
*Quercus rubra*  
(60 ft. tall)  
Hardiness Rating: 4  
Relatively fast-growing, native tree; good red autumn color.
Sugar Maple
Acer saccharum*
(65 ft. tall)
Hardiness Rating: 4
Long-lived hardwood with outstanding fall color.

White Oak
Quercus alba
(80 ft. tall)
Hardiness Rating: 4
Large, wide-spreading native oak. Fall color from brown to rich burgundy reds. Excellent, long-lived lawn or shade tree.

* This species has a number of cultivars, or varieties. For a complete list, contact your Extension office or your local nursery.

TREES NOT RECOMMENDED

A number of species have characteristics that make them unsuitable for urban areas. These trees are highly susceptible to storm damage and disease, have limited hardiness, or are considered unusually messy due to dropped fruit and limbs. In addition, several municipalities have ordinances restricting the planting of some or all of these trees. As a result, you should avoid planting the following trees in urban areas:

Black Locust
Bolleana Poplar
Boxelder
Cottonless
Cottonwood
Green Ash
Lombardy Poplar
Mulberry
Russian Olive
Siberian Elm
Silver Maple
(Soft Maple)
Tree of Heaven
Weeping Birch
White Ash
White Poplar
Willow
PREPARING THE SITE

The hole for the tree should be dug with vertical sides and a flat bottom. The hole should be 1 foot wider and the same depth as the tree’s root system. If you are planting in compacted or heavy soil, dig a slightly wider and shallower hole. Remove all large clods, stones or other debris.

Most trees thrive in well-drained soils, so check for sufficient drainage. To do this, partially fill the planting hole with water. If drainage is adequate, the water should soak away within two hours.

Place the tree in the center of the hole, facing its best side in the direction from which it will be most frequently viewed. Plant your tree at its original growing depth or slightly above grade in heavy or wet soils. This will be at the point where the “root flare” is found or where the trunk widens out into the first lateral roots, which should be level with the ground. Be careful not to plant your tree too deep.

PLANTING BARE ROOT TREES

Planting Bare Root Trees
Special steps need to be taken when planting bare root trees. Build a firm, cone-shaped mound of soil in the middle of the planting hole. Spread the roots to their natural position over the mound. Add backfill in layers over the roots until the hole is three-fourths full. Gradually work each layer of soil around the roots.

Water well to settle the backfill soil and remove any air pockets. Finish adding backfill to the hole to completely cover the roots. Use any excess soil to construct a ridge around the rim of the planting hole to form a watering basin. This ridge should be 3-4 inches high. Fill the basin with water and allow it to settle. Give the tree a good soaking, 4-5 gallons from a bucket or a hose on a trickle for 20 minutes, at its base one to three times a week, especially when it is hot and windy, during the growing season until the ground freezes, unless a significant rainfall of 1/2 to 1 inch has recently occurred. According to the nursery industry, overwatering of young trees is the biggest reason for tree death. So be careful not to overwater your tree by checking the soil moisture with your fingers at ground line and below before watering; if the soil is moist, wait another day or so and recheck.
Balled and Burlapped Trees
Handle plants by the soil ball and do not lift by their tops. Set the balled and burlapped tree into the hole on solid ground. The top of the ball should be level with the surrounding grade. Extreme care should be taken to not plant the tree too deep. Again, the root flare, where the trunk widens out into the first lateral roots, should be level with the surrounding grade. You may have to remove several inches of soil from the top of the rootball to find the first lateral roots. With the plant in the hole, remove any wire, rope or plastic material covering the soil ball. Remove all twine or wire holding the burlap from around the base of the tree trunk. If the burlap can be removed while leaving the rootball intact, do so. If not, fold the burlap back into the hole or cut it away from the soil ball. Backfill with layers of soil around the ball until three-fourths of the planting hole is full. Water the tree to eliminate any air pockets and to settle the backfill soil. Finish filling the hole with backfill. Construct a basin around the tree, as noted on the previous page, and water once again. Be sure to remove any plastic strings from around the tree trunk. Follow the same watering schedule for bare root tree plantings.

Container-Grown Trees
Use the same techniques for balled and burlapped trees; however, container-grown trees may become potbound or rootbound over time, so prune the root systems of potbound trees prior to planting. Remove the container prior to planting. (The so-called plantable or papier-mâché containers also should be removed before planting.) Then, make an “X” cut across the bottom of the rootball about a 1/2 inch deep. Make three or four slits from the bottom to the top along the sides of the rootball. This will assist development of new roots and tree establishment. Plant the same as other types of new trees, including backfilling, creating a basin to retain moisture and watering. It is extremely important not to plant these trees too deep, and you want to locate the point where the “root flare” is found, where the trunk widens out into the first lateral roots, and plant it so this is level with the surrounding grade. You may have to remove several inches of soil from the top of the rootball to find the first lateral roots, as they are often too deep in the container.
Mulching New Trees

After you construct a basin around the base of your new tree, fill it with mulching material 2-4 inches deep. Keep a 1- or 2-inch area around the tree free of mulch to discourage damage from rodents. An organic mulch of wood chips, bark or other locally available material is preferable to rock because it replenishes nutrients as it decomposes. An organic mulch also insulates the soil more effectively from temperature extremes. You may wish to expand this mulch basin as the tree grows.

Wrapping

For a few years, wrap the trunk with white or lightly colored tree-wrapping paper in the fall to protect it from sunscald, rabbits and mice. Begin wrapping at the soil line and extend upward to bottom branches. Spiral the wrap around the tree with each turn overlapping. Remove the tree wrap the following spring.

Watering

Water a new tree through the first one to two growing seasons whenever the ground is not frozen. Give the tree a good soaking, 4-5 gallons from a bucket or a hose on a trickle for 20 minutes, at its base one to three times a week, especially when it is hot and windy. A good soaking rain can be counted as one of these waterings. Know your soil type – sandy, clay or loam – and adjust the watering schedule. You will know you have applied enough water around the tree when the water begins to stand in the basin for a minute or so.
**Fertilizing**
Most experts discourage the use of fertilizers for trees unless a specific nutrient deficiency has been identified. The use of natural, N-P-K fertilizers for lawn feeding around the tree is generally sufficient. Avoid “weed-and-feed” fertilizers.

**Pruning**
Pruning a tree is vital to its future growth and health. Removing branches that are diseased or insect-infested reduces the spread of these plant pests. Removing weak, V-shaped crotches or pruning to prevent their development minimizes tree injury from wind, ice and snow. Pruning back branches that scrape against each other prevents wound development that can provide openings for diseases. If you have an oak tree, wait until the dormant season, December to February, to do any pruning in order to avoid the spread of oak wilt. If the tree is wounded, e.g., storm damage, and pruning is necessary during the growing season, quickly paint over the wound with some latex house paint. This is the only time, for any species, that wound dressings are recommended.

When pruning a deciduous tree, prune to maintain its natural form using the three-step pruning technique shown in the illustration. Don’t simply prune back all branches. And do not cut the main leader (the trunk) on single-stemmed trees unless there is damage, disease or a safety hazard. Do remove double leaders, damaged branches, crossing branches and sharp-angled upright branches.

Do not remove all of the lower branches of a developing tree. They help prevent sunscald and provide food for plant growth. Maintain at least two-thirds of the tree’s total height in live branches for vigorous growth. As the tree matures, lower branches between 1-2 inches in diameter may be removed gradually. Never top trees; topping results in weak, undesirable growth.
Our support of thoughtful tree-planting efforts reflects our concern for energy efficiency, public safety and our commitment to provide uninterrupted service to our customers. However, as important and as basic as these reasons are, they are just part of a larger commitment we share with our customers and employees: to help provide energy savings, a more healthful environment, pleasant surroundings and community improvement.
In addition to preparing and distributing this booklet, we’re working closely with the organizations listed on this page, and with local communities and individuals in our service area, to encourage tree-planting projects. Together, we can make our homes and surroundings more enjoyable, more comfortable and more pleasant places to live.

More Information Is Available
The booklet is designed to give you broad guidelines on the selection, planting and care of new trees. But we encourage you to obtain more specific information and expert help as you choose and add trees to your home’s landscape. Call or visit with the staff of your local garden center or nursery. Or talk with a landscape architect. You also may contact any of the sources listed to the right for additional information. We wish to thank each of these organizations for its assistance and support in the preparation of this booklet.

Acknowledgements
American Forests
Iowa Department of Natural Resources – Forestry Bureau
Iowa Nursery and Landscape Association
Iowa State University Extension Forestry and Horticulture
Iowa Urban Tree Council
The Arbor Day Foundation
Trees Forever
U.S. Department of Agriculture
This booklet has been prepared to encourage you to plant trees on your property. It includes information on selecting the best types of trees, choosing the optimum location for each tree, plus tips on planting and tree care. It tells you how to keep trees away from overhead power lines, underground natural gas lines and buried electric lines. And it suggests expert resources you can call on for more in-depth information, plus answers to your questions about trees and their care. **Remember – the best time to plant a tree was 20 years ago. The second best time is now!**

**MidAmerican Energy is proud to provide the Trees Please! program to the Iowa communities we serve. As an important part of our EnergyAdvantage® energy efficiency programs, Trees Please! helps our friends and neighbors save on energy costs.**

![Trees Please!](image)

MidAmerican Energy can help put greater energy efficiency in your hands. Find out more about MidAmerican Energy’s EnergyAdvantage programs in Iowa by calling **888-427-5632** or by visiting [www.midamericanenergy.com/ee](http://www.midamericanenergy.com/ee).