



Trees and Energy Consumption

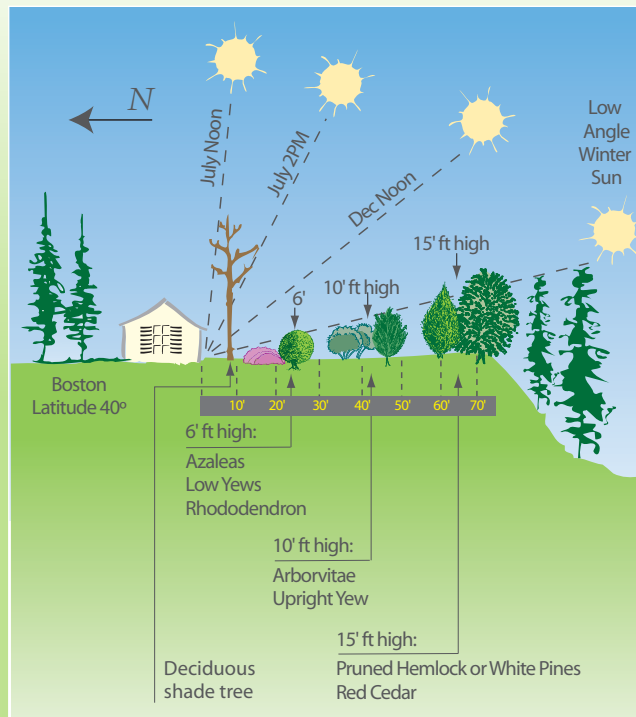
The interior climates of most buildings are primarily controlled with expensive energy-consuming systems like air conditioners, furnaces, and humidifiers. Home and office heating and cooling costs can be reduced, however, and energy conserved, with informed tree planting.

By transpiring water and shading surfaces in the summer, and blocking winds and allowing the warming rays of the sun to pass through their leafless canopies in the cold winter months, trees can modify temperatures and reduce home and office energy expenditures. For example, research has shown that properly placed trees can save from 30-58% in daytime air conditioning costs by reducing the amount of summer sunlight reaching a building and by lowering surrounding air temperatures.

In temperate climates such as ours, trees planted along western exposures of buildings effectively block the rays of the high-angled summer sun. These plantings can be either deciduous or evergreen. Since dwellings receive no beneficial winter sun from the west, there is no need to worry about blocking sunlight with deciduous tree canopies.

On southern and southwest exposures, deciduous trees are often the best choice, although evergreens may be suitable candidates as long as their height at maturity will not interfere with the low-angled winter sun. Before planting a deciduous tree, its maturity height needs to be determined by both the position of the high summer sun and its distance from a building. A tree planted 10 feet from a home should be only 25 feet tall at maturity to shade well, while a tree placed 20 feet from the dwelling needs to be 50 feet tall to be beneficial.

On northern and northwest exposures, a tree of any type or height may be planted as northern aspects are more often affect-



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ed by wind than by sun. Of course, existing trees can also be pruned to enhance their position in the landscape and to maximize the sunlight reaching a home.

Wind is one of the easiest natural forces to control using landscape techniques. Trees help reduce residential energy use by slowing and blocking cold winter winds. When air movement is desirable, as in summer when cool breezes blow from the south and southwest, plants can be used to direct air flow to specific areas. For example, a "funnel" of tall hedges will channel prevailing winds and can provide natural air conditioning; the narrower the funnel, the greater the cooling.

Trees remove carbon dioxide from the atmosphere and store carbon in their wood. With the cooling shade they provide, they lessen reliance on air conditioners so that less fuel is consumed at power plants. Consequently, less overall carbon is released into the atmosphere. Trees are thus very efficient tools in fighting greenhouse effects.

One mature tree shading your home can absorb carbon dioxide at a rate of 48 pounds per year and release enough oxygen back into the atmosphere to support two human beings. If applied nationwide to buildings currently not utilizing trees, the shading benefits alone could reduce our nation's consumption of oil by 500,000 barrels a day.

So how does your home or office rate? How much are you benefiting from the plantings which surround it? Is it exposed and drafty in winter and steamy in summer? A carefully planted tree can help minimize the effects of natural forces, reduce your energy costs, and help the environment on multiple levels. You can do something easy to benefit your home, office, landscape, and the environment: go outside and plant a tree! 🌿

Hemlock Woolly Adelgid Resurgence

For close to twenty years now there has been an infiltration of hemlock woolly adelgid in our area. Many hemlocks have succumbed to the damage of this introduced insect. However, trees that have received ongoing treatment have fared well as the adelgid population is controlled to a level that is not irreversibly damaging.

Hemlock woolly adelgid, an aphid-like insect, is widely found throughout Massachusetts and continues to be a problem. This particular adelgid, believed to be native to Asia, is a serious pest of Eastern hemlock and Carolina hemlock. The small, white cottony insect has had a serious impact on urban landscapes and continues to threaten forested areas of New England.

Hemlock woolly adelgid, *Adelges tsugae*, was first introduced in the United States in 1924 in Portland Oregon. It was then transported from the West Coast to Pennsylvania in the 1960s. By the 1980s it had spread into Connecticut and New York and made its first appearance in the Boston area in 1990.

The adelgid attacks hemlocks of all sizes and ages, and depends on birds, storms and wind to move from one tree or area to another. All hemlock woolly adelgid insects are female, which lay the eggs under the cottony wax, and produce two generations per year. Because the hemlock woolly adelgid insect is so prolific, only one adult insect needs to survive to maintain a viable population. Left untreated, this insect will eventually kill even the healthiest trees.

Our preferred control strategy is to apply two to three applications of horticultural oil, depending on the initial level of infestation. We also successfully treat with systemic insecticides and continue to explore alternative treatment options to ensure the most effective and efficient means of control.

We have seen hemlocks not properly treated die in a period of three to five years. The adelgid prefers new twig growth and feeds on sap within the foliage. This causes needle discoloration,

eventual defoliation and results in a loss of overall tree vigor. Gradual limb dieback, usually beginning at the bottom of trees, can occur within two years. Treated hemlocks, with moderate infestations, may require several years to recover, but should improve over time. However, once the initial infestation is contained, hemlocks still may require annual treatments.

Populations of woolly adelgid can fluctuate greatly in response to various factors, such as cold winter temperatures, declining tree

health and drought. Although the insects can tolerate cold temperatures in its native range in Asia, we suspect that cold weather seems to affect the adelgid in our area. After the record breaking cold weather of January 2004, we witnessed a noticeable decrease in the adelgid population. With the generally milder winter temperatures we have experienced since, and last winter specifically, we are

again forecasting resurgence in adelgid population.

Our advice is to regularly inspect your hemlocks for presence of white, cottony masses on the undersides of needles. We also recommend keeping bird feed away from hemlock whenever possible, to help prevent birds from carrying hemlock woolly adelgid to your trees. Contact us to develop a treatment program if you suspect the presence of hemlock woolly adelgid. 🍃



Hemlock woolly adelgid is a small insect, with a white cottony covering, producing two generations each year

Photograph: Courtesy of USDA Forest Service/Conn. Ag. Ex. Service

The Lesson of Diversity

The American elm was once the dominant tree in the American Northeast. Every city, suburb, and rural town used this tree to line its streets and shade its commons. From the early 1830s to the mid-1950s, the American elm was used almost exclusively to create the urban forest; "Elm Street USA" and its name-sake were part of our culture.

The elm was first used in the 1830s in New England for civic improvement projects. Saplings were dug out of wetlands and planted. They were plentiful and easy to transplant. From these humble beginnings the elm evolved into the perfect street tree. It grew quickly and was quite strong, so there was little concern about storm damage (which is unusual for a tree that grows so rapidly). Further, it thrived in poorly drained and often compacted urban soils. As it matured it took on a beautiful vase shape with few lateral limbs and could easily be trained to grow over wires. Even when elms grew to be giants, forming canopies covering entire streets, they still allowed filtered sunlight to reach the road. Of all of these characteristics, its greatest quality was its toughness. The American Elm's ability to thrive in difficult conditions made it an exceptional street tree.

Because of these wonderful attributes it was over-planted. In 1937 there were 25 million elms growing in cities and towns across the nation. The monoculture that was created was a perfect breeding ground for an epidemic. Disease was brought into the Ohio River valley in logs from Europe that were used to make decorative furniture. The disease was first discovered on American Elms in Cleveland and Cincinnati in 1931. Logs imported to other Midwestern towns, as well as wooden pallets that arrived at the Port of New York, also brought the disease. The European elm bark beetle that had stowed away in the wood helped to spread the disease quickly. The beetles vectored the "Dutch elm's disease" pathogen (so named because it was first isolated by a graduate student from The Netherlands named Maria Beatrice Schwartz) by feeding on the bark of elm trees in America.

With so many trees planted in such close proximity, the plague easily spread, not only by the beetles but also by root grafts between trees. The winds of the 1938 hurricane helped to distribute the beetles into new areas. Within decades thousands of trees were dead. Streets that were once covered by a cascading canopy became lined with blighted trees. It was such a traumatic change to entire communities that it ranks as one of America's greatest environmental losses.



America's streets were once commonly lined with majestic American elms

Photograph: Courtesy of USDA Forest Service/Conn. Ag. Ex. Service

Although today most of the elms are gone, a few large specimens remain as well as millions of younger trees that were propagated by survivors. Ironically these plants benefit from the past devastation. With so few trees left it is more difficult for the disease to spread. Even with the reduced numbers of elms the pathogen is still as virulent, however, because there are still active beetles. Elms are still being lost.

Arborists have tried several programs and many different products over the years to control both the pathogen and the beetles. At the height of the epidemic the challenge was too great. Today, the best control is to monitor elms for "flagging." Flagging is the yellowing of leaves at the top of the plant in the summer and is an indicator that the tree has contracted the disease. Once detected the limb should be removed and inspected. If the disease is seen throughout the limb and into the trunk the tree must be removed to save other elms in the area. Although modern fungicides have greater efficacy in preventing the disease, monitoring is still the best method for protecting populations of American elms. Individual specimens can be protected with systemic fungicide treatments.

The difficult lesson learned from this epidemic is that we should avoid monocultures by planting no more than 10% of the same genus. Like a good financial plan, diversification reduces risk. Municipalities have worked over the last 20 years to plant a variety of tree species. Unfortunately, there are still trees which are over-planted due to their dependability and aesthetic qualities. 🌿



Mark Tobin presented with Award of Merit

The Tree Care Industry Association (TCIA) recently presented Hartney Greymont CEO, Mark Tobin, with the TCIA Award of Merit. This award is considered the tree care industry's most prestigious recognition given to individuals that represent leadership and long-term commitment to the field of arboriculture.



Mark Tobin, joined by his wife Mary Beth, after receiving TCIA's Award of Merit

accomplishments throughout his career. Specifically, his leadership was paramount in the development of the industry's Model Company Safety Program and in the Environmental Issues and Safety & Standards Committees. He has chaired both the Massachusetts Arborist Association and the National Arborist Association Boards of Directors. Additionally, Mark led the charge to endow a chair at the

Tom Golon, of TCIA's Board of Directors, offered the following upon presenting the award. "Mark Tobin is recognized for his visionary leadership and numerous personal, as well as, professional | Stockbridge School at the University of

EXPERIENCE OUR GUARANTEE

If you are not satisfied with any treatment or completed job, let us know. We will resolve the situation to your satisfaction, no questions asked. Our goal is not only to make sure your trees, shrubs, and lawn are as healthy as possible, but also to provide you with the peace of mind a satisfaction guarantee can bring.

Massachusetts. Mark's success at Hartney Greymont allowed his rise through the ranks from a field arborist to eventually become CEO of a highly respected, employee-owned tree care company!"

Calendar of Care

	JULY	AUG	SEPT	OCT
Review trees & landscape with arborist for summer care				
Plant Health Care visits & treatments				
Treat to eradicate Poison Ivy & Japanese Knotweed				
Naturally prune ornamental trees & shrubs				
Subsurface fertilize ornamental & shade trees				
Inspect tree structure for dormant care				
Transplant & plant trees & shrubs				
Implement landscape design & construction projects				
Compost top-dress, aerate & overseed lawns				



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