LANDSCAPING THAT PAYS YOU BACK

Save money, increase your home's value
and enjoy your yard

ENERGY SAVER

Energy Saver 101: Everything You Need to Know About

LANDSCAPING

Landscaping doesn't only add beauty to your home, but it can also improve your home's comfort and **lower your energy bills.**

On average, a well-designed landscape saves enough energy to pay for itself in less than **8 YEARS.**

Lower maintenance

Reduce your water use

allowing you to better deal with water restrictions!

Cut your heating and cooling costs

Protect your home from cold winter wind and hot summer sun

Help lower noise and air pollution

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Payback Areas

1. Use less energy to cool your house
2. Use less energy to heat your house
3. Use less water
4. Send less water into the storm sewer
5. Increase your property value

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1. Use Less Energy to Cool Your House

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Landscaping for Shade

Shading is the most cost-effective way to reduce solar heat gain in your home and **cut air conditioning costs.** To effectively shade your home, you need to know the size, shape and location of the shadow that your shading device casts.

FACT: In tree-shaded neighborhoods, the summer daytime air temperature can be up to **6 degrees cooler** than in treeless areas.

#DidYouKnow: A well-planned landscape can reduce an unshaded home's air conditioning costs by **15-50 percent.**

Deciduous vs. Evergreen.

What's the difference?

Maple leaves change color with the seasons

Deciduous trees block solar heat in the summer but let in sunlight during the winter.

Evergreen trees and shrubs provide continuous shade.

Camphor trees are evergreen trees that can grow up to 30 m tall.

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- 17% shade over your house during the day = a savings of $10 a month on your A/C bill
- Increasing that shade to 50% decreases your A/C bill by an additional $20 per month.
- One study estimates that within 5 years of planting you can realize a 3% energy savings and by 15 years that savings can increase to 12%.
- Planting trees to shade the air conditioner unit can also conserve energy. Trees and their branches should be at least several feet away from the units to allow for easy airflow.

Source: "Tree Planting for Lower Power Bills," Beau Brodbeck, Auburn University & Sharon Jean-Philippe, University of Tennessee. eXtension.org http://articles.extension.org/pages/70092/tree-planting-for-lower-power-bills

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Planting Tips

Plant a 6-8 foot deciduous tree near your home, and it will start shading your windows in the first year. Depending on the species and the home, it will shade the roof in **5-10 years.**

Plant deciduous trees to the south of your home -- they can screen 70-90 percent of the hot summer sun while allowing breezes through.

Plant trees with crowns lower to the ground on the west if you want to shade from lower, afternoon sun angles.

Plant bushes, shrubs or climbing vines with a trellis to shade your patio area.

To cool air before it reaches your home, plant **shrubs and groundcover plants.**

Where to Plant Trees for Shade

PLANT DECIDUOUS TREES SO THEY WILL

- Shade east-facing walls & windows from 7 – 11 am in June, July, August
- Shade west-facing walls & windows from 3 – 7 pm in June, July, August
- Plant smaller deciduous or evergreen trees with lower limbs on the Northwest and Northeast sides of houses to provide late afternoon and early morning shade

Source: "Planting Trees for Energy Conservation: The Right Tree in the Right Place," Michael Kuhns, Extension Forestry Specialist, Utah State University Extension Forestry. http://forestry.usu.edu/htm/city-and-town/tree-selection/planting-trees-for-energy-conservation-the-right-tree-in-the-right-place

Where to Plant Trees for Shade

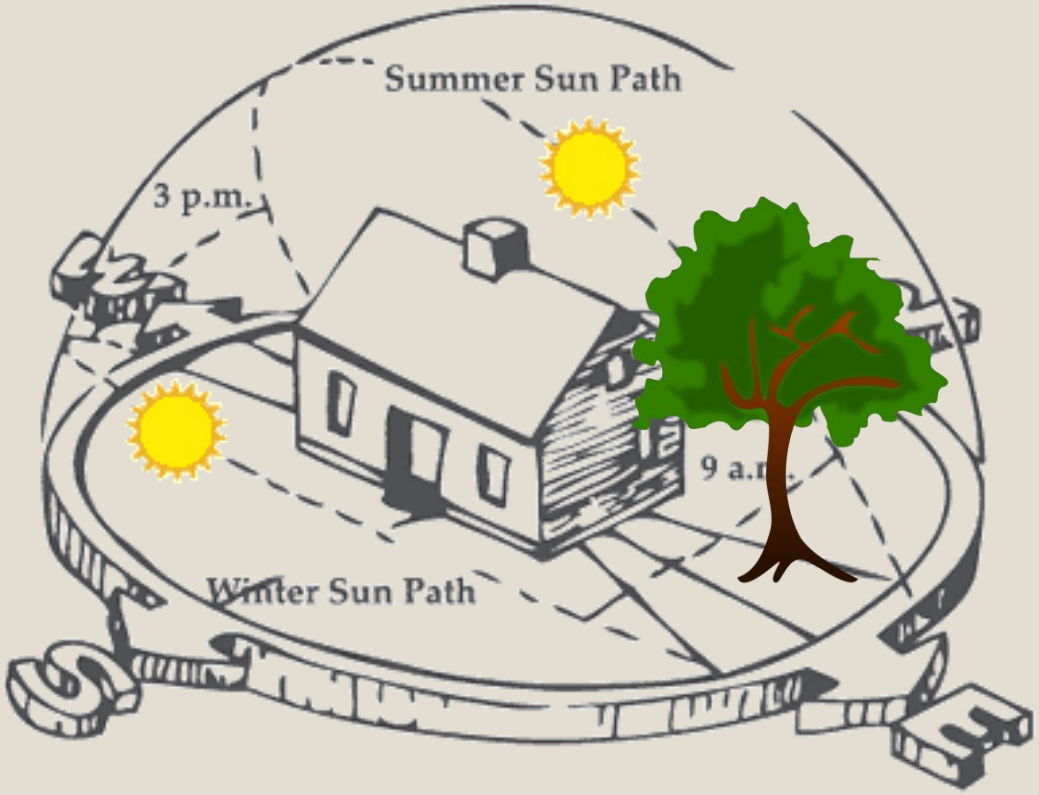
LOCATION AND SIZE

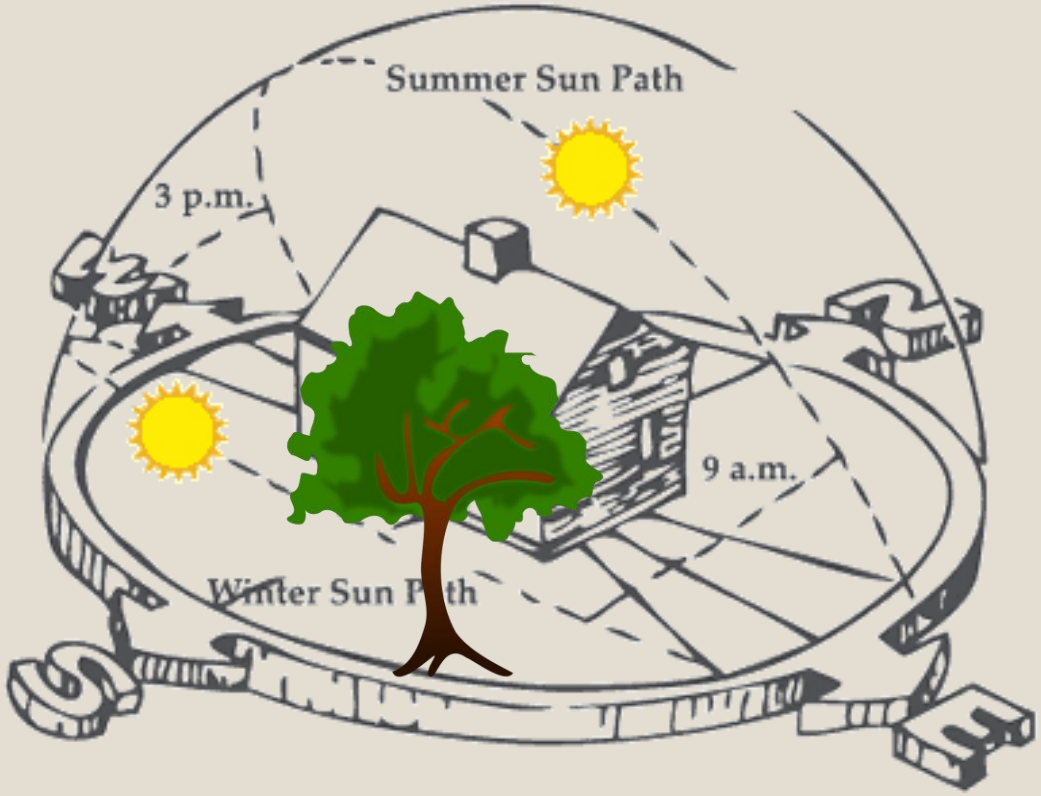
- East & west sides: 10-20' from house if tree's mature height is at least 25'
- South side: Plant trees no closer than 2-1/2 times their mature height

DON'T PLANT TREES

- On the southeast, south or southwest sides of a house if branches extend over a roof. They'll shade the roof in the winter.

Source: "Planting Trees for Energy Conservation: The Right Tree in the Right Place," Michael Kuhns, Extension Forestry Specialist, Utah State University Extension Forestry. *http://forestry.usu.edu/htm/city-and-town/tree-selection/planting-trees-for-energy-conservation-the-right-tree-in-the-right-place*


Summer Sun Path
3 p.m.
9 a.m.
Winter Sun Path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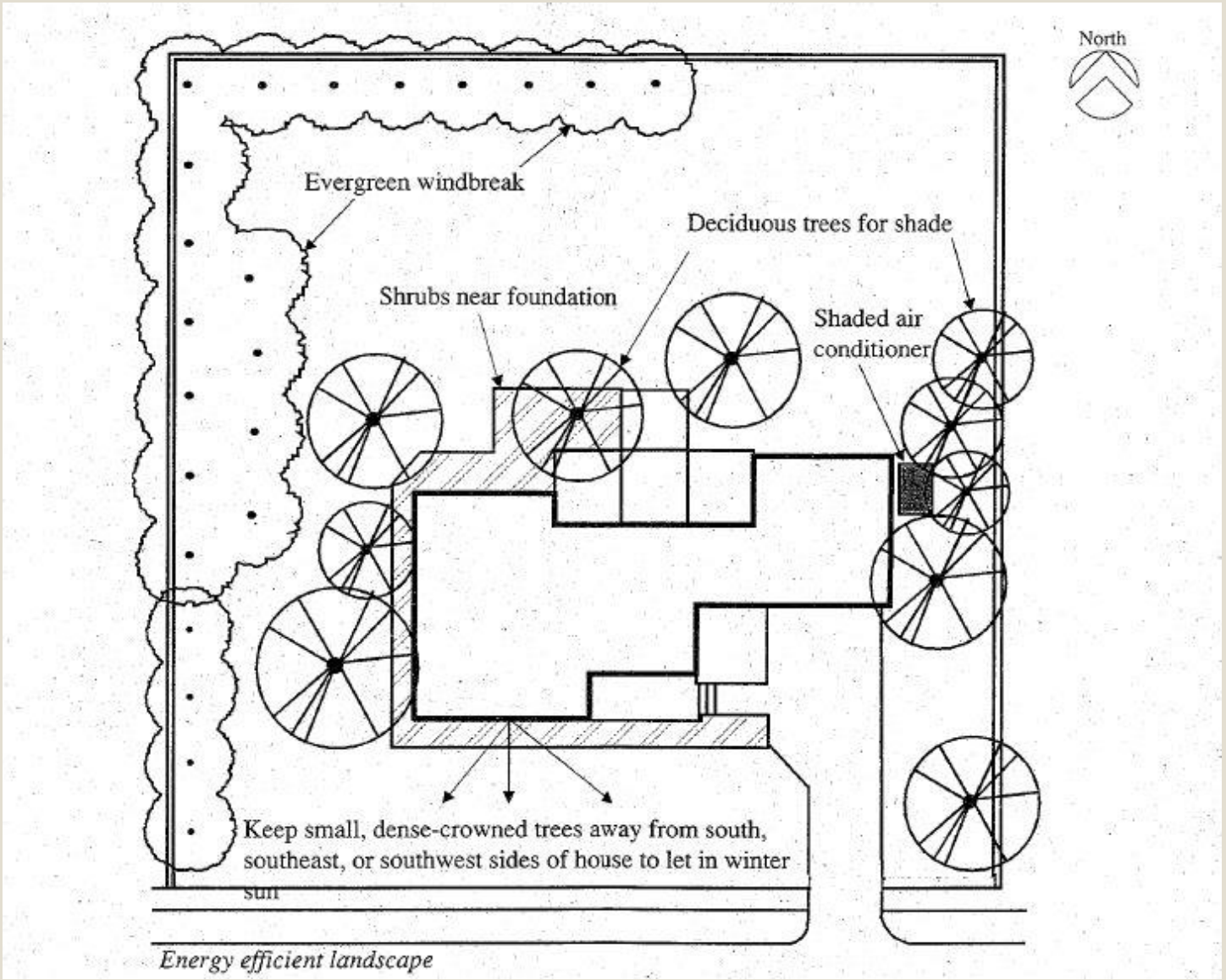

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Photo Courtesy of Corey Fuehrer

2. Use Less Energy to Heat Your House

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- Blocking cold winds is the biggest contribution trees can make towards energy conservation in winter.
- It is estimated that 11% of America's energy use goes into heating and cooling homes and 53% of that goes directly to heating.
- A well-designed windbreak can reduce heating costs by 10-25%.
- Windbreaks work by reducing wind speed and diverting air up and over homes.

Source: "Tree Planting for Lower Power Bills," Beau Brodbeck, Auburn University & Sharon Jean-Philippe, University of Tennessee. eXtension.org http://articles.extension.org/pages/70092/tree-planting-for-lower-power-bills

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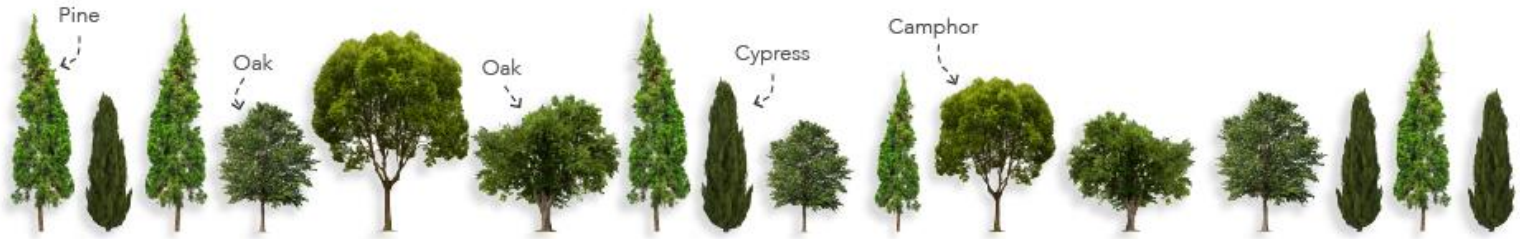

Landscaping for Windbreaks

A windbreak reduces heating costs by lowering the wind chill near your home. It also creates dead air space that insulates your home in the summer and winter.

#DidYouKnow:

Windbreaks to the north, west and east of houses cut fuel consumption by an average of 40 percent, according to a study in South Dakota.

- Plant evergreen trees and shrubs to the **north and northwest** of your home to stop wind.
- If snow tends to drift in your area, **plant low shrubs on the windward side** of the windbreak to trap snow before it blows next to your home.
- The distance between your home and windbreak should be **two to fives times the height of the mature tree** for maximum protection.
- Plant trees on either side of your house to **direct cooling wind toward it** in the summer.
- **Install a fence or wall** in addition to evergreen trees to deflect the wind over your home.

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Where to Plant Trees for Windbreaks

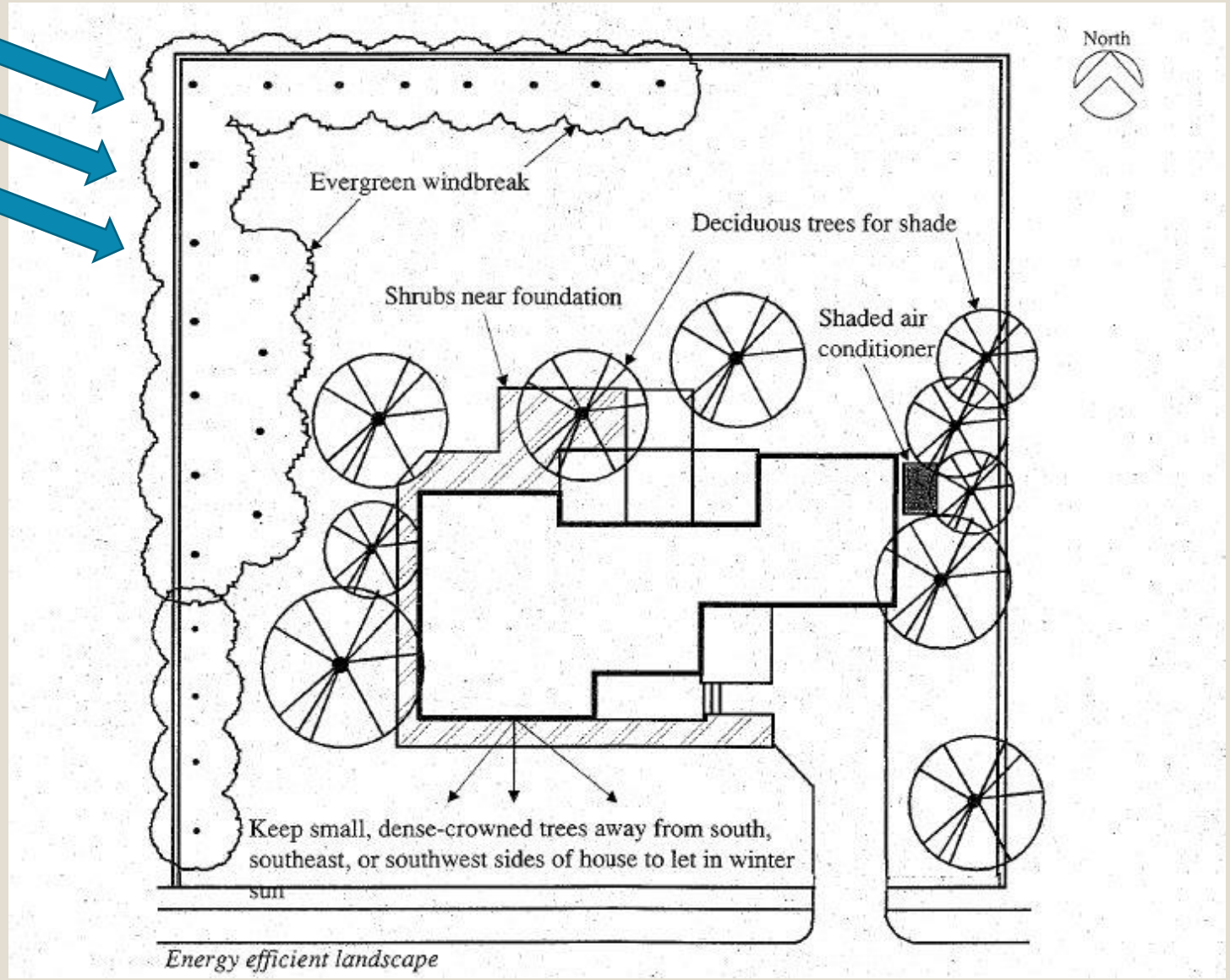
PLANT CONIFEROUS TREES (junipers, spruces, firs, evergreen shrubs)

- Upwind of the area to be protected
- In straight or curved rows or linear groupings

LOCATION AND SIZE

- Often on the west, northwest, and north sides of a house
- Plant close enough together so their crown edges meet when mature without overcrowding
- Small trees: 6-8' apart, Larger trees: 15' apart, Shrubs: 2-4' apart
- Wind protection extends downwind 10-20 times the windbreak height
- Snow drifting is worst at 2-3 times the windbreak height

Source: "Planting Trees for Energy Conservation: The Right Tree in the Right Place," Michael Kuhns, Extension Forestry Specialist, Utah State University Extension Forestry. http://forestry.usu.edu/htm/city-and-town/tree-selection/planting-trees-for-energy-conservation-the-right-tree-in-the-right-place



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3. Use Less Water

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- The EPA estimates that 30% of the 29 billion gallons of water used by U.S. households **daily** is devoted to outdoor water use.
- That's nearly 9 billion gallons.
- Use regionally appropriate, low water-using and native plants
- Group plants according to their water needs
- Recognize site conditions and plant appropriately
- Place turf grass strategically

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Source: "Water-Smart Landscape Design Tips" United States Environmental Protection Agency

Landscaping for Water Conservation

Design your landscape to not only save energy but also conserve water.

Always group plants with **similar water needs together.**

Reduce the use of turf and **use low-water-using types of turf grass.**

Aerate your soil -- it improves water flow to plants' roots and reduces water runoff.

Water in the morning when it is cooler and evaporation rates are low.

Organize your turf grass in **continuous patterns** -- it's easier to maintain and uses less water.

In the summer, **raise your lawn mower cutting height** -- longer grass blades help shade each other & retain more water.

Use mulch to keep plant roots cool, minimize evaporation and reduce weed growth.

Sources: Energy Saver (www.energy.gov/energysaver), the Energy Department (http://www1.eere.energy.gov/library/pdfs/16632.pdf) and EPA WaterSense (http://www.epa.gov/watersense/outdoor/landscaping_tips.html).

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4. Send Less Water into the Storm Sewer

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Stormwater Management Fees

- The Northeast Ohio Regional Sewer District (NEORSD) has embarked on a **$3 billion** stormwater management program, mandated by the EPA.
- The cost will be funded primarily by users
- Beginning in 2016, residential customers will be assessed a quarterly stormwater fee
- For every 3000 square feet of impervious surfaces on your property (roofs, driveways, sidewalks, patios, decks), you will be assessed a fee of $5.15 per month ($15.45/quarter or $61.80 annually)

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Stormwater Management Fees

- There are three "Tiers" of fees based on square footage of impervious surfaces on a property:
  - Tier 1 (less than 2000 sq. ft.) = $3.09/month
  - Tier 2 (2000-4000 sq. ft.) = $5.15/month
  - Tier 3 (over 4000 sq. ft.) = $9.27/month
- A **25% reduction in fees**—or dropping to the next lowest tier—is available to residents who implement a *Stormwater Control Measure* (i.e., they put less water into the storm sewer)
- Two Stormwater Control Measures involve LANDSCAPING:
  - **Planting a Rain Garden**
  - **Planting a Vegetated Filler Strip**

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Stormwater Management Fees

- To find out more about the fees and fee reductions offered by NEORSD, go to *https://www.neorsd.org/stormwaterprogram.php*
- You can download a residential credit manual for an explanation of credits available and an application.
- There is an interactive "Fee Finder Map" where you can see an estimate of the impervious surface area on your property and your stormwater fee. *http://www.neorsd.org/stormwaterfeemap.php*

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Stormwater Management

- HRRC is sponsoring a free talk by Jeff Jowett of the NEORSD on Thursday, April 7 in Shaker Heights. Jeff will talk about Rain Gardens and Vegetated Filter Strips as ways to reduce stormwater management fees.
- HRRC is also holding a "Build a Rain Barrel" workshop on Tuesday, April 26.
- As always, go to hrrc-ch.org to register

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5. Increase Your Property Value

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Landscaping can increase your property value, according to a 2007 paper by Virginia Tech horticulturalist Alex Niemiera that brought together research from the previous decade.

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Source: "The Effect of Landscape Plants on Perceived Home Value," Alex X. Niemiera, Extension Horticulturist, Department of Horticulture, Virginia Tech https://pubs.ext.vt.edu/426/426-087/426-087.html

Design Sophistication Level 1: foundation planting only

Design Sophistication Level 2: foundation planting with one large, oblong island planting and one or two single specimen or shade trees in the lawn

Design Sophistication Level 3: a foundation planting with adjoining beds and two or three large island plantings, all incorporating curved bedlines.

What was the increase in perceived value?

- The change in value (from no landscape to well-landscaped) ranged from 5.5 percent (Louisiana) to 11.4 percent (South Carolina).

- The increase in home value from the least valued landscape to the most valued landscape in the Michigan study was 12.7 percent.

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- A home valued at $150,000 with no landscape (lawn only) could be worth $8,250 to $19,050 more with a sophisticated landscape with color and large plants.

- Interestingly, the multi-state study found that very minimal landscapes (simple design with small plants) **detracted** from the value of a landscape.

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A landscape upgrade from **average** *to* **excellent** *can increase a home's value by 10% to 12%*

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What to Plant

- Riverside Native Trees. Easy to use Native Species search engine to see characteristics of trees native to the area. *http://riversidenativetrees.com/*
- Ohio Division of Natural Resources, Division of Forestry. Common Ohio Trees provides pictures of leaves, bark, and fully grown trees. *http://forestry.ohiodnr.gov/trees*
- TreesForMe. List of Ohio coniferous trees (pines & firs)
- Genius Loci, inc. Catalog of native shrubs, vines and grasses *http://www.indigination.com/catalog.htm*

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National Tree Benefit Calculator

Calculate the economic and ecological benefits of your tree.

Resources used in this presentation are available for download on our website:

www.hrrc-ch.org

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Thank you for attending!

www.hrrc-ch.org

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