



## A Series of Factsheets on New Construction Issues

# Site Development for Environmental Preservation and Energy Efficiency



### Efficient and Environmental Landscaping Facts

A properly designed and landscaped home can be a homeowner's or homebuilder's best long-term investment

for reducing future heating, cooling and water costs as well as reducing pollution. Consider the following:

- Carefully positioned trees can save up to 25 percent of a household's energy consumption for heating and cooling.
- On average, a well-designed landscape provides enough energy cost savings to return the initial investment in less than eight years.
- Shading and loss of water from trees can reduce surrounding air temperatures as much as 9 degrees. Because cool air settles near the ground, air temperatures directly under trees can be as much as 25 degrees cooler than air temperatures above nearby blacktop.
- Trees and vegetation control erosion, protect water supplies, create habitat for wildlife and clean the air by absorbing carbon dioxide and releasing oxygen.
- Clear cutting for lawns, roads, parking lots and building sites exacerbates stormwater runoff and erosion problems. By increasing paved areas and decreasing the amount of buffer areas less rainfall and pollutants contained in the runoff can be absorbed.
- Pollution is often amplified at "typical" site developments due to increased pesticide use for large lawns and petroleum-based products washed from large parking areas during storms.



### Steps to Follow while Designing a Home's Site and Landscaping Plan

Every building site provides designers, owners and builders with different challenges and opportunities to locate

buildings and develop landscapes that are efficient and environmentally friendly. Some environmentally friendly site development opportunities are encouraged by local building codes, however code requirements can also limit the possibilities.

Review and develop your plans according to each of the following steps to determine if and how they may affect your home.

#### 1) Locate the home on the site to utilize the existing grade.

- This allows a homeowner or builder to:
- a) Reduce the amount and cost of site grading.
  - b) Reduce the cost of replacing topsoil and groundcover materials that are removed when a site is clear-cut.
  - c) Reduce the costs associated with water and pollution control that is required when a site is clear-cut.

### Summary

Well designed and thought out site and landscape plans provide new homeowners with cost-effective yet eye-pleasing ways to:

- Cut the summer and winter energy costs
- Protect their home from winter wind and summer sun
- Reduce initial landscaping costs
- Reduce future consumption of water, pesticides and fuel for landscaping and lawn maintenance
- Help reduce noise and air pollution

- d) Reduce future energy costs by locating the home to effectively use the site's sun access, prevailing winter wind directions, tree locations, drainage and land buffers for winter and summer wind use.
- e) Reduce future landscape watering costs by locating the home and landscape features to utilize the site's natural drainage.

#### 2) Design sidewalks and driveways to limit the amount of paving and sidewalk materials and specify paving with permeable materials.

This allows a new homeowner or builder to:

- a) Reduce the amount and cost of site grading and/or tree removal.
- b) Reduce the amount and cost of the paving material.
- c) Reduce the amount of water runoff and the sewage sizing requirements to the home.

#### 3) Preserve existing landscape materials.

This provides a new homeowner or builder with:

- a) Reduced costs for replacing existing topsoil and landscaping materials that have been removed during construction.
- b) Reduced construction waste costs or costs associated with topsoil and landscape material removal and landfilling.
- c) Reduced future maintenance costs because existing, native landscape materials require less water and maintenance than new shrubs or trees.

#### 4) Preserve existing trees.

This provides a new homeowner with:

- a) Reduced landscaping costs for replacing existing trees that have been removed during construction.
- b) Reduced construction waste costs or costs associated with tree removal, chipping and/or landfilling.
- c) Reduced future energy costs if the site planning process includes an analysis of the trees' potential for home shading or winter wind breaks.
- d) Reduced future maintenance costs because existing trees require less water and maintenance than new trees.

**5) Locate trees to provide winter wind breaks and summer shading.** This can provide a new homeowner with:

- a) Reduced future energy costs.
- b) Reduced future maintenance costs and the environmental impacts associated with sun-fading of construction materials and wind damage.

**6) Plant native or low water using grasses and landscaping materials.** This can provide the new homeowner with:

- a) Reduced future landscape watering costs.
- b) Reduced future costs and environmental impacts because native grasses and landscaping materials require fewer pesticides.



**Nebraska Green Building Program**

Builders participating in the Nebraska Green Building Program are encouraged to utilize environmentally friendly and energy efficient building siting and landscaping during the construction of their homes. Implementing the following environmentally friendly and energy efficient options provides participating builders with “Green Building” credits.

- Saving and reusing all site topsoil.
- Planting deciduous trees and plants on the south and west sides of the home to block summer sun and maximize winter sun.
- Planting or preserving natural wind breaks on west and north sides of the home.
- Installing a composting system in yard (manufactured or made at site).
- Grading site to direct water away from the foundation to areas that prevent runoff.
- Installing water conserving irrigation systems: rain-override timer or soil moisture sensor, drip irrigation, soaker hoses and bubblers; irrigation zoned for plants’ needs with separate valving.
- Using trees removed from the site for mulching, replanting or other uses, such as fence posts or fuel (but not put in landfill).
- Installing permeable paving materials in 60 percent of areas used for all walkways, patios and driveways.
- Planting grass that uses less water such as blue gramma, buffalo or fescue in turf areas.
- Xeriscaping in more than 80 percent of non-paved area.
- Providing a list of native drought resistant plants to the homebuyer.

Follow These Plans to	Reduce Costs and Materials for								
	Water runoff	Construction waste	Environmental	Energy	Grading	Landscaping	Maintenance	Water	Paving
Install permeable pavement materials in the smallest area possible	✓	✓		✓					✓
Locate the home site to utilize the existing grade	✓	✓	✓	✓	✓	✓	✓	✓	
Locate trees to provide winter wind breaks and summer shading			✓			✓			
Plant native or low water use turfs and landscaping materials	✓		✓			✓	✓		
Preserve existing landscape materials	✓	✓	✓			✓	✓	✓	
Preserve existing trees		✓	✓			✓	✓	✓	

**Landscaping Terms**

**clear-cut** — the process of removing all of the site’s landscaping and trees to allow easier access to the site for construction, vehicles and utilities.

**deciduous tree** — leaf-shedding tree.

**microclimate** — the climate immediately surrounding your home.

**xeriscaping** — a landscaping technique that uses vegetation that is drought resistant and is able to survive on rainfall and groundwater once the plant is established.

**Resource**

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Recycled Construction Materials is one in a series of factsheets on issues related to energy and resource efficient construction of new homes and buildings.

Other factsheets and additional information can also be found at: [www.neo.ne.gov/home\\_const/design\\_build.htm](http://www.neo.ne.gov/home_const/design_build.htm)

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