

King County Green Building Handbook

The Green Building Handbook may be found on the DPER website with active hyperlinks at www.kingcounty.gov/property/permits.aspx

Provided by the Department of Planning and Environmental Review (DPER)

Introduction

Whether you are building new, remodeling, or just replacing a broken system, green building can save you money, protect your health, contribute to your community, and preserve King County's great natural resources. The King County Green Building Handbook is your guide to over 20 ways you can increase efficiency in your project and reap rewards.

Strategies included in this handbook benefit you in many ways:

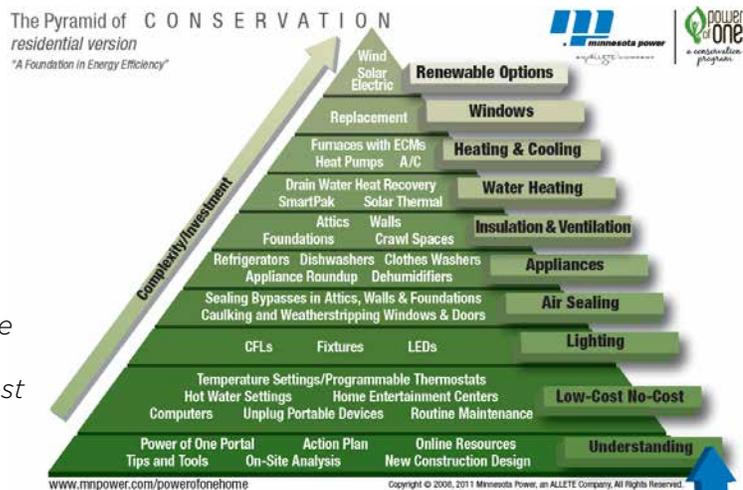
- Making the cost of operating and maintaining a home more affordable;
- Protecting air quality and health in your home and community;
- Supporting regional businesses and local jobs;
- Keeping local services like drinking water and waste collection available and reliable; and
- Protecting natural resources and the global environment.

Simple, low-cost measures are the first step to save energy in your home or business. Do these first before investing in more complex, higher-cost system or changes to the building.

Source: [Minnesota Power](http://www.minnesotapower.com)

The measures in the handbook also help you meet important county code requirements and can help your project earn recognition through a green building certification program or receive incentives through local utilities.

Each measure or strategy is detailed in a "Green Sheet" that helps you pull together the right ingredients for your project. Each sheet details the benefits of the measure, when and where it applies, and provides guidance and resources to help you implement it. The handbook also explains how some of the measures can be bundled together, like a combination of ingredients, to create a recipe for success on certain types of projects. Turn to the Table of Contents for a full list of measures covered in the recipe cards and the suggested bundles by project type.



Conservation – where do I begin?

The choice to be more energy efficient may be clear, but the starting point can be more difficult to determine. The Pyramid of Conservation is designed to help you prioritize steps and develop an action plan that's right for you. By establishing a foundation in energy efficiency and gaining a better understanding about how you use energy, you can more effectively work your way up the pyramid.

DPER GREEN SHEET



King County

Department of Permitting
and Environmental Review (DPER)

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How to pick the best strategies for your project

Some strategies yield more savings or work better if another measure is done first, so it is beneficial to select measures that are the right ones for your project at that time. The bundles, or groupings of Green Sheets, provided in the Table of Contents can help you understand how measures can interact and work together. Information in each recipe card also explains when and where the measures best apply.

A good example of the importance of prioritizing strategies is making your home more energy efficient. The pyramid on page 1 emphasizes a suggested hierarchy for upgrades to a home (start at the base of the pyramid).

Before you invest in new heating equipment, consider simple, low-cost measures to make your home easier to heat and cool such as routine maintenance, adjusting temperature settings, or sealing around windows and electrical outlets. Leaky buildings require bigger heating and cooling systems to stay comfortable and are more likely to have problems with drafts and mold. Hiring a professional to test for air-tightness can help you understand how leaky your home or business is for a few hundred dollars before you invest thousands in a new, over-sized heating system. The table here demonstrates the relative ease of implementation, relative cost of implementation, and savings and payback estimates for both new homes and existing homes.

RELATIVE COSTS, SAVINGS, PAYBACKS, AND SERVICE LIFE OF VARIOUS MEASURES

COMPONENT	Ease of Implementation * Easy *** Hard	Relative Installation Cost	NEW CONSTRUCTION		EXISTING HOMES		Service Life (Years) (∞ = Life of building)
			Savings in New Home	Payback in New Home (Years)	Savings in Old Home	Payback in Old Home (Years)	
Understanding/Analysis	*	\$	\$	0	\$	0	∞
Behavioral	*	Free	\$	0	\$\$	0	∞
Lighting	*	\$\$	\$	2	\$\$	1-2	3 - 5
Air Sealing	**	\$\$	\$	5-10	\$\$\$	5-10	∞
Appliances: Energy Star Clothes Washer	*	\$\$	\$	5-10	\$\$	5+	10 - 20
Appliances: Energy Star Refrigerator	*	\$	\$	15+	\$\$	10-15	10-15
Insulation and Ventilation: Install insulation in attic, walls and floor	**	\$\$\$	NA	NA	\$\$	5-10	∞



RELATIVE COSTS, SAVINGS, PAYBACKS, AND SERVICE LIFE OF VARIOUS MEASURES *cont.*

COMPONENT	Ease of Implementation * Easy *** Hard	Relative Installation Cost	NEW CONSTRUCTION		EXISTING HOMES		Service Life (Years) (∞ = Life of building)
			Savings in New Home	Payback in New Home (Years)	Savings in Old Home	Payback in Old Home (Years)	
Insulation and Ventilation: Upgrade insulation in attic, walls and floor	**	\$\$\$	\$	10-20	\$\$	10-15	∞
Water Heating: 1.5 gpm showerhead	*	\$	\$	<1	\$	<1	5-10
Water Heating: Efficiency Upgrade	**	\$\$\$	\$\$	2-10	\$\$\$	1-5	12 - 25
Heating & Cooling: Switch from oil or electric to gas or heat pump	***	\$\$\$\$	NA	5-15	\$\$\$	3-10	15 - 25
Heating & Cooling: Efficiency Upgrade	***	\$\$\$\$	\$\$	5-15	\$\$\$	3-10	15 - 25
Windows	**	\$\$\$\$	\$	20-30	\$\$	15-20	5 - 30
Renewable Options	***	\$\$\$\$\$	\$\$	6-20	\$\$	10-20	15 - 30

As a general rule, first gather information to understand the costs and benefits of a building project, then investigate the less-complex, lower-cost steps first to make sure you've built a good foundation for assuring the best value of any investment in more complex improvements or larger scale projects.

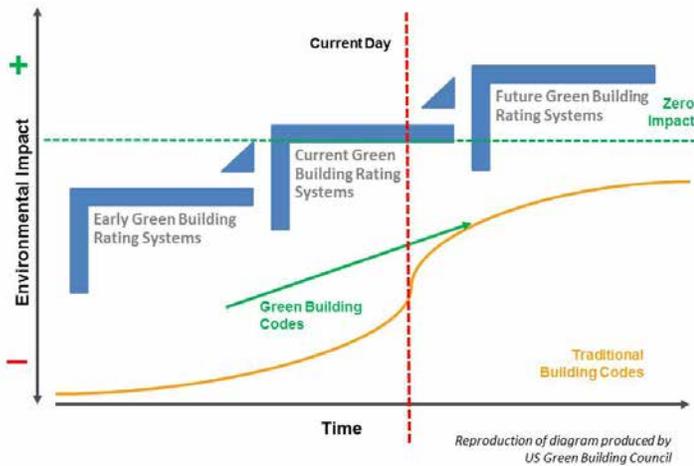
So how do you get started?
Check out this [Contractor Checklist](#) to ensure you ask the right questions when finding a contractor for your next green project.

Green Codes and Green Building Certification Systems

What do codes and green building rating systems have to do with your project? A lot!

Our region, and King County specifically, are national leaders in using green building to help create a prosperous community and healthy environment. The King County Strategic Plan goals include growing vibrant, thriving and sustainable communities and safeguarding and enhancing King County's natural resources and environment. Green building is a key way that all buildings, including your project, can contribute to achieving these goals.





Traditional building codes, green codes and green building certification systems work together to lessen the impact of the built environment, reduce risk, and increase our community's resiliency.

The County's commitment to these goals is reflected in requirements in the local building, energy, stormwater, and plumbing codes. Increasingly, national and international code agencies that set guidelines for local jurisdictions understand there is a link between the fundamental life safety purpose of codes and the necessity to build in a way that doesn't put our built environment and the people that it serves at greater risk from air or water pollution, interruption of important services, or damages from natural disasters. This knowledge has led to a growth of green building codes that set a higher baseline of what is safe, healthy, and responsible when building. King County's green codes, which are designed to safeguard human health, sustain regional energy and water systems, and protect our natural resources, are a great example.

Green building rating systems help describe and quantify the benefits of green building beyond green codes and set up structures to reward and support those that take advantage of these benefits and exceed code expectations.

The County Council passed an updated Green Building and Sustainable Development Ordinance in 2013 that requires King County-owned projects to achieve the highest level of certification available in an applicable green building rating system.

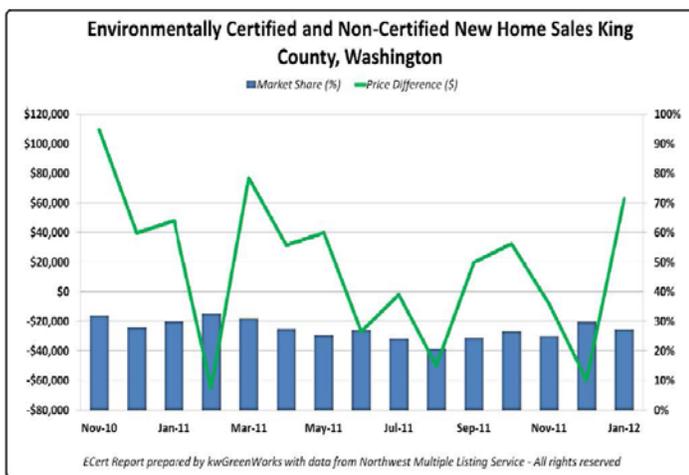
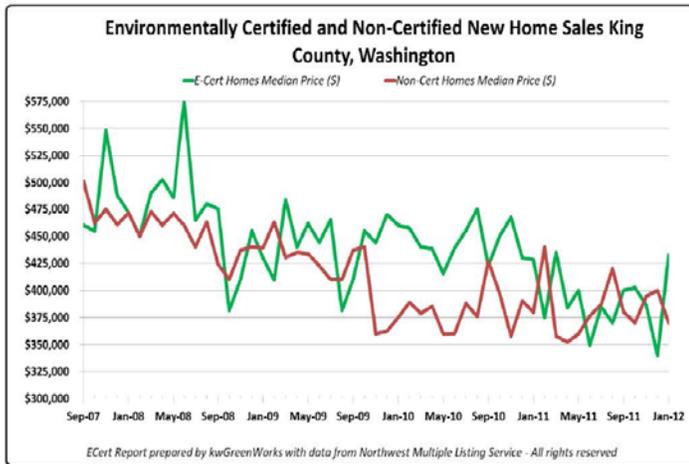
While these requirements do not apply directly to your home, they show that King County is doing its part. 98 percent of all county-owned projects are using green building practices and certification processes; this leadership in setting and following the highest green building standards helps to reduce environmental impact, reduces risk, saves money, and increases community resilience.

By using this handbook, you will better understand the value to you, your project, and your community from green code requirements, how you can capture additional financial, health, and environmental benefits from incorporating these green strategies into the "recipe" for your project, and where those strategies contribute to certification in green building rating systems.

Choosing and Using Green Building Certification Systems

For homes and small businesses in King County, there are currently about a half-dozen options to consider when choosing a green building certification system (detailed below). The first question, however, is why certify your project at all? There are three key benefits to





Data from the multiple listing shows green properties continue to generate and hold value. Analysis provided by [GreenWorks Realty](#).

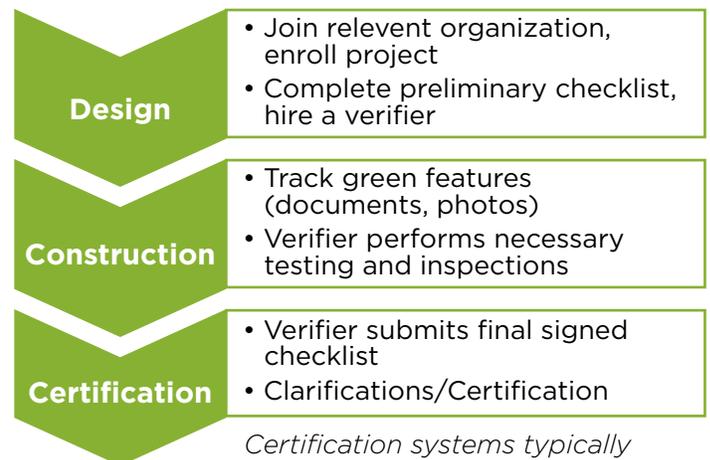
consider when deciding to use a green building certification system.

- **Information and Accountability.** The first reason is the information and support available through the program, which can be as simple as reading the rating system checklist to get a broad view of strategies or measures that might be right for your project, and the third-party verification that

the measures you chose were implemented. This is required in most rating systems now and comes at an additional cost. Third-party verification can be particularly valuable if you are hiring a contractor who may or may not be familiar with all the green strategies you or your designer selected.

- **Property Valuation.** The second is to strengthen your property value whether you are planning to sell soon or hold for the long-term. The Multiple Listing Service (MLS) now includes information about green building certifications in their data about properties and many buyers in the Northwest consider green properties more desirable. Even during recent economic downturns, green residential properties had higher average valuations.
- **Commitment and Marketability.** The third is your own personal satisfaction at a job well done, or if you operate a business from your property, the opportunity to market your contribution to the local community and environment.

So what is involved with certification? This graphic depicts typical tasks necessary to meet the requirements of most green building rating systems.



Certification systems typically include key milestones during design, construction, and certification.



THE MOST APPLICABLE GREEN BUILDING CERTIFICATION SYSTEMS FOR KING COUNTY RESIDENTIAL AND SMALL BUSINESS PROJECTS

	<p>Built Green® Built Green is an environmentally-friendly, non-profit, residential building program of the Master Builders Association of King and Snohomish Counties. The program certifies single family, multifamily, remodel, energy retrofits and projects and communities to the 3, 4, 5-star and Emerald level based on scoring points across a broad range of environmental categories. www.builtgreen.net</p>
	<p>Northwest ENERGYSTAR® Homes The Northwest ENERGY STAR Homes program is a regional initiative intended to promote the construction of energy efficient homes using the guidelines set forth by the Environmental Protection Agency (EPA). Homes that have earned the ENERGY STAR label are at least 15 percent more efficient than homes built to current state building codes. www.northwestenergystar.com</p>
	<p>LEED® for Homes Leadership in Energy & Environmental Design (LEED) is a green building certification program that recognizes best-in-class building strategies and practices. Building projects satisfy prerequisites and earn points to achieve Certified, Silver, Gold or Platinum levels of certification. LEED for Homes is available for building design and construction projects for single family homes and multifamily projects. http://www.usgbc.org/leed</p>
	<p>Living Building Challenge™ The Living Building Challenge (LBC) is a building certification program, advocacy tool and philosophy that defines the most advanced measure of sustainability in the built environment possible today. The Challenge is comprised of seven performance categories with total of twenty imperatives that must be met on all projects. LBC can be applied to almost every type of building project. www.living-future.org/lbc</p>
	<p>Passive House Passive House is the world's leading standard for energy efficient construction. It combines building enclosure efficiency and passive solar strategies in a system for designing and building cost effective, comfortable, energy efficient buildings. It is effective in all different types of climate including the Northwest and works for projects from single family homes to large commercial projects. www.phnw.org</p>
	<p>Salmon Safe Salmon-Safe is a peer-reviewed certification programs linking land management practices with the protection of agricultural and urban watersheds. Salmon Safe offers certification for farms, vineyards, residential developments, parks, golf courses, and campuses that meet requirements for management practices that protect water quality and restore habitat. www.salmonsafe.org</p>



Green Sheets' Table of Contents and Bundles

Green Sheet	Bundles					
	Envelope: Keeping the Outside Out and the Inside In	Site and Landscaping	Heating and Cooling Your Home	Construction Materials: What to Build with and How to Use it.	Things that use energy and water in your home. Equipment, Fixtures, and Appliances	Doing it Right: General Resources
Introduction	X	X	X	X	X	X
Exterior Topics						
1. Amended Soils		X				
2. Rainwater Reuse		X				
3. Permeable Surfaces / Driveways		X				
4. Roofing Materials	X	X		X		
General Green Building Topics						
5. Routine Home Maintenance	X	X	X	X	X	X
6. EcoCool Remodel Tool	X	X	X	X	X	X
7. Green Products				X		X
8. What To Do With C & D Materials				X		X
9. Advanced Framing	X		X	X		
Energy-Using Systems						
10. Air Sealing Your Home	X		X			
11. Duct Sealing	X		X			
12. High Efficiency Appliances			X		X	
13. Insulation	X		X			
14. Fresh Air Ventilation			X			
15. Toilets, Showers, and Faucets					X	
16. Thermostats			X		X	
17. Right Sizing Heating and Cooling Systems			X		X	
18. Furnace Replacement			X		X	
19. Alternative Heating Systems			X		X	
20. Solar Energy					X	

Resources

For the complete King County Green Building Handbook and individual Green Sheet PDF files, please visit our website at: <http://kingcounty.gov/property/permits/publications/greenbuild.aspx>. For additional information, please email dperwebinquiries@kingcounty.gov or call 206-296-6600.

