

If you have any questions,  
please feel free to give us a call.  
(509) 773-3706 or (800) 583-8078

Or come by the office at:  
Court House Annex  
228 W Main St., Goldendale, WA

Office Hours:  
Monday-Friday 8am – 5pm

[www.klickitatcounty.org](http://www.klickitatcounty.org)

[buildingdept@klickitatcounty.org](mailto:buildingdept@klickitatcounty.org)

Klickitat County Planning Dept.  
228 W Main St., MS-CH-17  
Goldendale, WA 98620  
509-773-5703 or 800-765-7239

Klickitat County Road Dept.  
228 W Main St., MS-CH-19  
Goldendale, WA 98620  
509-773-4616 or 800-583-8074

Klickitat County Health Dept.  
228 W Main St., MS-CH-14  
Goldendale, WA 98620  
509-773-4565 or 888-291-3521

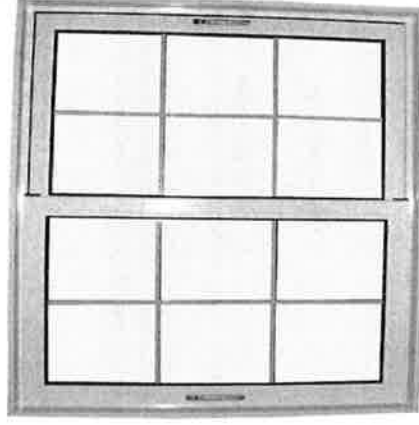
Electrical Inspector/Permits  
State of Washington  
Department of Labor & Industries  
312 SE Stonemill Dr., Ste. 120  
Vancouver, WA 98684  
360-896-2300

Klickitat County PUD  
1313 S Columbus St.  
Goldendale, WA 98620  
509-773-5891 or 800-548-8357

If your property is located in the National Scenic Area, the Columbia River Gorge Commission requires you to comply with all National Scenic Area regulations. They can be contacted at 509-493-3323

## WHAT'S IN A

## WINDOW



This brochure is to give you basic information regarding windows.

Windows are a lot more than sash and glass, and the terminology used to describe them can be confusing. Before you sit down with your building or remodeling contractor you will want to learn the language. Here is a short course that will take you a long way.

Terms you will hear include U-value, R-value, Gas filled, and Low E. What do they mean?

**R-VALUE** is a measure of an object's resistance to low heat flow. The higher a material's R-value, the lower it's U-value and the less energy it will lose. A window's R-value depends on three factors: the number of layers of glass called glazing, what's between those layers, (either air or gas), and whether one or more layers of glazing have been treated with a Low E Coating.

**U-VALUE** represents the amount of heat that escapes through a wall, window, roof, or other surface in an hour's time. The lower the U-value, the more energy efficient a material is.

R-values and U-values are reciprocal. That is, if one is known, the other can be determined.

Example:  $U = 1/R$  and  $R = 1/U$

Determine U-value of R-11:  
 $U = 1/R$   
 $= 1/11$   
 $= 0.0909$  or  $0.091$

**LOW E** stands for low emissivity, a property unique to materials that light can pass through. Filtering out part of the light spectrum, (the part that transmits heat) greatly reduces a window's U-value and increases its R-value. The benefits of Low E glass include greater energy efficiency, increased comfort and reduced fading of fabrics. Your building or remodeling contractor can recommend a glazing option that meets your needs.

### GLAZING TYPES

**SINGLE-GLAZED** windows have a single pane, usually Low E Coating. Because single-glazed windows have a very low R-value, they're best used where energy efficiency isn't a concern, like in a garage or tool shed.

**DOUBLE-GLAZED** windows, commonly classed insulated or Insul glass, have two panes with either air or low-conductivity gas such as argon or krypton tightly sealed between them. For

added energy efficiency, one or both panes can be treated with a Low E Coating.

**TRIPLE-GLAZED** windows have three panes separated by two air-spaces. Filling these spaces with argon or a mixture of argon and krypton and applying Low E Coatings to two of the panes dramatically improves energy efficiency.

### SASH VARIATIONS

**FIXED GLASS**, also known as direct set windows, don't open at all and consist of glazing held in place by square, rectangular, triangular, octagonal, arched or even round frames. Fixed glass windows are often combined with other windows to provide wide-open windows. Fixed glass also works well for clerestory, (pronounced "clear story") windows. A clerestory directs light from a point usually high on a wall to a room or area that would otherwise be without natural light.

**AWNING** windows have a single sash hinged at the top or bottom to open out by means of a geared crank or slide bar. An extending-arm hinge holds them in position. They're easy to clean, provided good ventilation and most have integral screens.

**CASEMENTS** consist of a single sash or a set of sash hinged vertically along the outer jamb, (the side of a window opening). They open by means of a crank or lever and provide maximum ventilation.

**SLIDING** windows have two sashes that move horizontally or vertically in a common frame. Since they can be placed high on a wall, they're a good way to provide plenty of light and ventilation without sacrificing privacy and wall space.

### WINDOW FRAMES

Glass is only part of a window. The window frame and sash typically make up 10% to 30% of the total window area and have a significant impact on the overall U-value.

**WOOD:** Wood window frames generally perform well from an insulation standpoint, but wood does require maintenance. Many wood window manufacturers add aluminum or plastic covering on the exterior, which nearly eliminates exterior maintenance. If this covering is aluminum, it should be only the exterior portion of the frame so that it doesn't conduct heat around the wood frame to the outdoors.

**VINYL:** Although vinyl window frames have been available for over 20 years in the U.S., they are relatively new to the Northwest, and they are not widely marketed. Test results

show that they can have efficiencies comparable to a wood window.

**FIBERGLASS:** Fiberglass window frames have only recently been marketed in the U.S. Thermal characteristics are similar to wood and vinyl but the windows are not widely available.

**ALUMINUM:** All-Aluminum frames have been in use for many years, since they usually cost less and require less exterior maintenance than wood. Unfortunately, solid aluminum conducts heat rapidly, reducing the window's efficiency. Moisture condensation is a common winter problem on solid aluminum frames, leading to mildew and even rotting of wood sills and house framing.

**THERMAL BREAK** To improve aluminum windows, some manufacturers offer frames with "thermal breaks". The thermal break is a piece of insulation plastic which separates the outdoor portion of the aluminum frame from the indoor portion. Because plastic is a poor conductor of heat, it reduces heat loss and moisture condensation. When comparing thermally broken aluminum windows, check to see that the thermal break is continuous through all parts of the frame. Some manufacturers only break the main part of the frame. Performance will be much better if the movable sash and all mullions are also thermally broken.

### Do I need to obtain a permit to replace windows?

In most cases, you will not need a permit to install windows. However, if you are altering the size of the opening, you will need to obtain a permit. Additionally, when replacing windows, a minimum U-value is required by the Washington State Energy Code. You can visit their website ([www.energy.wa.edu](http://www.energy.wa.edu)) or contact the Building Department for additional information.