



MISSOURI DEPARTMENT OF NATURAL RESOURCES
 DIVISION OF ENERGY – ENERGY REVOLVING FUND
WINDOW REPLACEMENT/WINDOW REDUCTION WORKSHEET

BUILDING	LOCATION	DATE
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To estimate the savings of replacing existing windows with efficiency upgrades, the following information must be known:

- The R-Value of the new wall (window reduction only). U-Value=1/R-Value
- The U-Value of the existing window (See U-Value table below).
- The U-Value of the replacement window (see U-Value table below).
- The total area of the windows being replaced (square feet).
- The heating energy cost (\$/million Btu).
- The heating plant efficiency (in percent).

SAVINGS CALCULATIONS

	(a) Old Windows	(b) New Windows	(c) New Wall (window reduction)
1. Enter the U-Values	_____	_____	_____
2. Infiltration Factor	_____ 1.00 _____	_____ 0.14 _____	_____ 0.00 _____
3. Add line 1 to line 2	_____	_____	_____
4. Enter area	_____	_____	_____
5. Multiply line 3 by line 4	_____	_____	_____
6. Multiply line 5 by .100 or [(degree days)*24/10 ⁶]	_____	_____	_____
7. Enter the heating plant efficiency (percent divided by 100)	_____	_____	_____
8. Divide line 6 by line 7	_____	_____	_____
9. Enter the energy cost (\$/million BTU)	_____	_____	_____
10. Multiply line 8 by line 9	_____	_____	_____

ANNUAL SAVINGS

11. Subtract line 10b and 10c from line 10a \$ _____ /year

PROJECT COST

12. Enter the total cost of the window replacement including material, labor and design..... \$ _____

SIMPLE PAYBACK

13. Divide line 12 by line 11 _____ years

WINDOW U-VALUE TABLE

Window System Type	U-Value*
Single Glass	1.10
Single Glass with storm window	0.50
Single Glass, low E coating	0.91
Single Glass, low E coating with storm window	0.44
Insulating Glass (double glass).....	0.55
Insulating Glass (double glass), with storm window	0.35
Insulating Glass (double glass), low E coating	0.38
Insulating Glass (double glass), low E coating with storm window	0.32
Insulating Glass (triple glass).....	0.35
Insulating Glass (triple glass), with storm window	0.25

*U-Values adapted from the 1985 ASHRAE Fundamentals Handbook.

DESCRIPTION PAGE

Window Replacement/Window Reduction Energy – Conservation Measure

Describe the existing system and the proposed energy-conservation measure (use additional sheets if necessary):