

Building Envelope

Pacific Power provides incentives for many types of energy-efficient technologies. Please read the following sections carefully to ensure that you follow the appropriate steps for securing your incentive. Equipment may be subject to inspection prior to incentive payment. All incentives for Building Envelope require the space to be cooled by mechanical systems which use a refrigeration cycle to provide cooling.

Incentives for additional measures may be available. For more information about the FinAnswer Express program, eligibility requirements, incentive levels or other general inquiries, contact your local equipment dealer or Pacific Power. You can visit the program website at pacificpower.net/wattsmart and submit your inquiry online, or you can call our energy services hotline at 1-800-222-4335.

WALL INSULATION

Measure description: Wall insulation reduces the rate of heat loss through the walls of a building. Increasing the amount of wall insulation reduces building heat gain and subsequently reduces the cooling load for the enclosed building space. Insulation is rated according to an R-value, with higher values providing a higher resistance to heat loss, which contributes to the total assembly U-factor.

Applicability: New construction and retrofit installations are eligible.

Equipment eligibility: Insulation must be installed in facilities that are cooled with mechanical systems using a refrigeration cycle, and must meet all other program terms and conditions. Compliance with the minimum efficiency requirements of Wall Insulation measures may be demonstrated with equivalent U-factors, subject to approval of Pacific Power.

- *Retrofit Applications:* Wall insulation installed must provide an additional R-10 equivalent over the R-value of existing installed insulation.
- *New Construction/Major Renovation:* To qualify for incentives in new construction/major renovation projects, an additional minimum increment of wall insulation above that required by the applicable Washington energy code must be installed, as described in Table 1 on the following page.

**Table 1. Program Requirements for Wall Insulation
in New Construction/Major Renovation**

Assembly Type	WSEC 2009	
	Code Requirements	Minimum Program Requirements
Mass ¹	≥ R-5.7 ci or U ≤ 0.150	≥ R-9.4 ci
Metal Building or Steel Framed	≥ R-13 + R-7.5 ci or U ≤ 0.064	≥ R13 + R-11.2 ci
Wood Framed & Other	≥ R-21 or U ≤ 0.057	≥ R-21 + R-3.7ci
Any Assembly Type with Electric Resistance Heating	NA	NA

1. Nonresidential walls may be ASTM C90 concrete block walls, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with material having a maximum thermal conductivity of 0.44 Btu-in/h•ft²•°F.

ci = continuous insulation.

R = R-value which is the resistance of the insulation to the conduction of heat.

U = U-factor or U-value which is the rate of heat loss through the window assembly including the frame and glass.

ASTM = American Society for Testing and Materials

Items to submit with application:

1. Dated sales receipt/invoice for the installed materials.
2. Itemized listing of insulation type, square footage, and R-value installed.
3. If retrofit, include pre-existing R-value and total R-value (post-installation).
4. A completed copy of Table 3, the Envelope Application Supplement.
5. A current copy of the Pacific Power utility bill for the address where the item(s) are installed.

Prequalification required? No. Prequalification is recommended, but not required to receive incentives. Contact your vendor or Pacific Power for more information.

<u>Equipment code</u>	<u>Measure description</u>	<u>Incentive</u>
WAINRE	Wall Insulation Retrofit	\$0.10 / square foot
WAINNE	Wall Insulation New Construction/Major Renovation	\$0.05/ square foot

ROOF/ATTIC INSULATION

Measure description: Roof insulation reduces the rate of solar heat gain through the ceiling/roof assembly of the building. Increasing the amount of roof insulation reduces building heat gain and subsequently reduces the cooling load for the enclosed building space. Insulation is rated according to an R-value, with higher values providing a higher resistance to heat gain, which contributes to the total assembly U-factor.

Applicability: New construction and retrofit installations may be eligible for incentive via a post-purchase application process.

Equipment eligibility: Insulation must be installed in facilities that are cooled with mechanical systems using a refrigeration cycle, and must meet all other program terms and conditions. Compliance with the minimum efficiency requirements of Roof Insulation measures may be demonstrated with equivalent U-factors, subject to approval of Pacific Power.

- *Retrofit Applications:* Roof insulation installed must provide an additional R-10 equivalent over the R-value of pre-existing installed insulation.
- *New Construction/Major Renovation:* To qualify for incentives in new construction/major renovation projects, an additional minimum increment of R-5 above that required by the Washington State Energy Code 2009 (WSEC 2009) must be installed.

Table 2. Program Requirements for Roof Insulation in New Construction/Major Renovation

(Washington State Energy Code 2009, Table 13-1) Assembly Type	Code Requirements	Minimum Program Requirements
Attic and Other	$\geq R-38$ adv or $\geq R-49$ or $U \leq 0.027$	$\geq R-43$ adv or $\geq R-54$
Metal Building	$\geq R-25 + R-11$ Ls or $U \leq 0.031$	$\geq R-30 + R-11$ Ls
Insulation Entirely above Deck	$\geq R-30$ ci or $U \leq 0.034$	$\geq R-35$ ci
Single-Rafter	$\geq R-38$ or $U \leq 0.027$	$\geq R-43$

ci = continuous insulation.

adv = advanced framed ceilings

R = R-value which is the resistance of the insulation to the conduction of heat.

U = U-factor or U-value which is the rate of heat loss through the window assembly including the frame and glass.

Ls = Linear System

Items to submit with application:

1. Dated sales receipt/invoice for the installed materials.
2. Itemized listing of insulation type, square footage, and R-value installed.
3. If retrofit, include pre-existing R-value and total R-value (post-installation).
4. A completed copy of Table 3, the Envelope Application Supplement.
5. A current copy of the Pacific Power utility bill for the address where the item(s) are installed.

Prequalification required? No. Prequalification is recommended, but not required to receive incentives. Contact your vendor or Pacific Power for more information.

<u>Equipment code</u>	<u>Measure description</u>	<u>Incentive</u>
ROOFRE	Roof/Attic Insulation Retrofit	\$0.08 / square foot
ROOFNE	Roof/Attic Insulation New Construction/Major Renovation	\$0.04 / square foot

Table 3. Envelope Application Supplement
(Submit copy of table with application for insulation or windows)

Customer	Customer name					
	Facility address					
	Facility city, State, Zip					
	Is primary heating provided by electric resistance?		YES		NO	
	Facility square footage					
	Roof/Attic assembly type (check one)		<input type="checkbox"/> Attic & Other	<input type="checkbox"/> Insulation above deck		
	Wall assembly type (check one)		<input type="checkbox"/> Metal building	<input type="checkbox"/> Mass		
	Is building space mechanically cooled? (circle one)		YES		NO	
Required Insulation Information (Roofs & Walls)	Select project type (check one)		<input type="checkbox"/> Retrofit	<input type="checkbox"/> Major Renovation		
	Select type of wall insulation (check one)		<input type="checkbox"/> Blown-in insulation	<input type="checkbox"/> Batts or Rolls	<input type="checkbox"/> Continuous Insulation	
	If retrofit, provide R-value of pre-existing wall insulation:		Pre-existing wall insulation R-value =			
	Select type roof/attic insulation (check one)		<input type="checkbox"/> Blown-in insulation	<input type="checkbox"/> Batts or Rolls	<input type="checkbox"/> Continuous insulation	
	If retrofit, provide R-value of pre-existing roof insulation:		Pre-existing roof/attic Insulation R-value =			
	Please provide information about the type and amount of insulation installed in the table below:					
	Blown-in insulation			Batts and Rolls		
	Number of bags used:		Roof	R-value	Thickness (inches)	Area Insulated (sq. ft.)
	Area insulated (sq. ft.):					
	Insulation thickness:	in.				
	R-value of insulation:					
	Type of insulation (check one):		Walls			
	<input type="checkbox"/> Cellulose					
	<input type="checkbox"/> Fiberglass					
	<input type="checkbox"/> Other					
Continuous Insulation						
Manufacturer/Brand		Thickness Installed (inches)				
R-value per Inch		Area Insulated (sq. ft.)				
Roof assembly final U-value =		Wall assembly final U-value=				
Window Information	Select type of windows installed (check one or both)		<input type="checkbox"/> Pre-fabricated assemblies	<input type="checkbox"/> Site-built windows		
	Prefabricated window assembly U-value					
	Prefabricated window assembly SHGC					
	Area of prefabricated windows installed (sq. ft.)					
	Site-built window glazing U-value					
	Site-built window glazing SHGC					
	Does window frame contain a thermal break (circle one)		YES		NO	
	Area of site-built windows installed (sq. ft.)					

HIGH-EFFICIENCY WINDOWS

Measure description: High-efficiency windows are designed to reduce the rate of heat transfer through the window assembly and prevent solar heat gain while still allowing sufficient light through the window to illuminate the space. The National Fenestration Rating Council (NFRC) certifies the energy performance of window assemblies and glazing products in two categories, thermal transmission which is measured by a U-factor and solar heat gain which is measured by the Solar Heat Gain Coefficient (SHGC). Please note that a lower SHGC lowers cooling requirements for the space while potentially increasing heating requirements.

Applicability: New construction and retrofit installations are eligible for incentives via a post-purchase application process. Skylights and doors are not eligible for incentives.

Equipment eligibility: Windows must be installed in a facility that is cooled with mechanical systems using a refrigeration cycle and must meet all other program terms and conditions. The equipment requirements listed below are effective as of February 24, 2012. For information regarding requirements for equipment purchased prior to February 24, 2012 please contact us.

- Window Assemblies: Pre-fabricated window assemblies with a U-value less than or equal to 0.30 and a SHGC value less than or equal to 0.33, rated in accordance with the National Fenestration Rating Council (NFRC), are eligible.
- Site-Built Window Systems: The glazing used in site-built window systems must have a U-value less than or equal to 0.30 and a SHGC value less than or equal to 0.33, rated in accordance with the NFRC, to be eligible. Site-built metal-framed window systems must contain a thermal break.

Items to submit with application:

1. Dated sales receipt/invoice for the installed materials.
2. Itemized listing of window manufacturer, dimensions, type, U- value and SHGC.
3. Documentation of window efficiency:
 - a. Original NFRC rating stickers for pre-fabricated window assemblies.
 - b. Manufacturer specification sheet indicating U-value and SHGC of glazing product and frame assembly thermal break for site-built window assemblies.
4. A completed copy of Table 3, the Envelope Application Supplement.
5. A current copy of the Pacific Power utility bill for the address where the item(s) are installed.

Prequalification required? No. Prequalification is recommended, but not required to receive incentives. Contact your vendor or Pacific Power for more information.

<u>Equipment code</u>	<u>Measure description</u>	<u>Incentive</u>
WNSBRE	Retrofit Site-Built Window	\$0.34 / square foot
WNASRE	Retrofit Pre-Fabricated Window	\$0.34 / square foot
WNSBNE	New Construction Site-Built Window	\$0.34 / square foot
WNASNE	New Construction Pre-Fabricated Window	\$0.34 / square foot

REFLECTIVE WINDOW FILM (RETROFIT ONLY)

Measure description: Window films are thin layers of polyester film that are typically applied to existing windows to reduce solar heat gain. Adding window films to existing windows reduces building heat gain and subsequently reduces the cooling load for the enclosed building space. The National Fenestration Rating Council certifies the SHGC and visible transmittance of window film products from participating manufacturers. Please note that a lower SHGC lowers cooling requirements for the space while potentially increasing heating requirements.

Applicability: Retrofit installations only are eligible for incentives via a post-purchase application process.

Equipment eligibility: Reflective window films must be purchased and professionally installed. The customer/contractor will be required to submit the square footage of film installed, performance characteristics of the existing window, applied window film specifications, and the orientation of the window (i.e., North, East, South or West). Incentives for window films are calculated based on square footage, window orientation and other system parameters at \$0.12/kWh annual energy savings and are subject to approval by Pacific Power. Window films must be installed in a facility that is cooled with mechanical systems using a refrigeration cycle and must meet all other program terms and conditions.

Items to submit with application:

1. Dated sales receipt/invoice with install date and retailer/contractor name, address and phone number.
2. Itemized listing of window types, orientation, square footage, and film installed.
3. Manufacturer’s window film specification sheet.
4. A completed copy of Table 5, Windows Film Information Table
5. A current copy of the Pacific Power utility bill for the address where the item(s) are installed.

Prequalification required? No. Prequalification is recommended, but not required to receive incentives. Contact your vendor or Pacific Power for more information.

Note: Pacific Power has a calculation software tool available for vendors participating in our Energy Efficiency Alliance (EEA) to calculate project-specific energy savings, project economics, and eligible incentives for window film projects. Visit our website at pacificpower.net/wattsmart for a current list of participating vendors.

Table 4. Window Film Information Table

(Submit copy of table with application)

Customer name							
Facility address							
Facility city, State, Zip							
Building heating system type (check one)				<input type="checkbox"/> Natural gas heating	<input type="checkbox"/> Electric resistance heating		
				<input type="checkbox"/> Heat pump	<input type="checkbox"/> Other		
Building cooling system type (check one)				<input type="checkbox"/> Air conditioner	<input type="checkbox"/> Chilled water system		
				<input type="checkbox"/> Evaporative cooler	<input type="checkbox"/> Other		
Existing window type (check one)				<input type="checkbox"/> Clear, single pane	<input type="checkbox"/> Low-e, double pane		
				<input type="checkbox"/> Clear, double pane	<input type="checkbox"/> Low-e, triple pane		
				<input type="checkbox"/> Clear, triple pane			
Shading Coefficient (SC) of window film							
Provide square footage of window film installed based on orientation of window:							
North:		Northeast:		East:		Southeast:	
South:		Southwest:		West:		Northwest:	

Equipment code
WINDFI

Measure description
Window Film

Incentive*
\$0.12 / kWh annual energy savings

*For assistance calculating the project savings and incentives, contact Pacific Power on our energy services hotline at 1-800-222-4335 or via email to: wa.bldgenvelope@pacificpower.net. Energy savings are subject to Pacific Power approval.

REFLECTIVE ROOFING PRODUCTS (COOL ROOFS)

Measure description: Cool roofs include a variety of paints, coatings, tiles and other materials applied to or incorporated into roof surfaces that reduce the amount of solar radiation absorbed by a facility’s roof. Cool roofing products have high solar reflectance and high radioactive emittance, which reduces solar gain of the roof and building, subsequently reducing the cooling load during warmer months. However, cool roof products may increase heating loads during cooler months.

Applicability: New construction and retrofit installations are eligible via a post-purchase application process.

Equipment eligibility: Incentives are available when the qualifying product is installed over building space that is cooled by mechanical systems using a refrigeration cycle. Qualifying products must be purchased and installed, meet all other program terms and conditions, and comply with the ENERGY STAR Reflective Roof products requirements as follows:

1. For low slope roofs: Initial solar reflectance ≥ 0.65 and must be ≥ 0.50 after three years.
2. For steep slope roofs: Initial solar reflectance ≥ 0.25 and must be ≥ 0.15 after three years.

For further information on Cool Roofs and for a list of qualifying products, visit: www.energystar.gov.

Items to submit with application:

1. Dated sales receipt/invoice for the installed materials.
2. Manufacturer’s equipment specification sheet.
3. A copy of the manufacturer’s warranty statement.
4. A completed copy of Table 4, Reflective Roofing Products Information Table.
5. A current copy of the Pacific Power utility bill for the address where the item(s) are installed.

Pre-qualification Required? No. Prequalification is recommended, but not required to receive incentives.

<u>Equipment code</u>	<u>Minimum efficiency requirement</u>	<u>Incentive</u>
COOLRF	ENERGY STAR qualified	\$0.10 / square foot

Table 5. Reflective Roofing Products Information Table
(Submit copy of table with application)

Customer name		
Facility address		
Facility city, State, Zip		
Net roof area (Include only roof area over mechanically cooled space, and exclude roof openings and equipment curbs)		
Existing roofing product		
Existing HVAC equipment type		
Existing HVAC equipment size (tons or BTU/hr)		
Reflective roofing product is installed over mechanically cooled building space (circle one)	YES	NO
Heating source (gas or electric)		