AHFC’s Energy Programs

Betty Hall
Energy Information Specialist
Today’s Topics

- Energy Programs
- Building Science 101
- Energy Saving Tips
AHFC Programs

- Weatherization
- Home Energy Rebate
- New Home Rebate
- Second Mortgage for Energy Conservation
- Alaska Energy Efficiency Revolving Loan Fund
- Interest Rate Reductions for Energy Efficiency
• Individuals who meet income guidelines may apply for the Weatherization Program
• Homeowners and renters may apply
• The weatherization provider will provide program services at no cost to qualified applicants
• Individuals may not participate in both the Weatherization Program and the Home Energy Rebate Program
Individuals who meet income guidelines may apply for the Weatherization Program through the weatherization service provider in their area:

- Fairbanks, the North Star Borough or on the road system south to Cantwell and east to Delta Junction: Interior Weatherization 452-5323 or 1-800-478-5323  www.interiorwx.org
- Mat-Su Borough, Kenai Peninsula Borough, Copper River Valley, Southeast Alaska (except Juneau), Bristol Bay, Kodiak, Prince William Sound or the Aleutians: Alaska Community Development at 746-5680 or 1-800-478-8080  www.alaskacdc.org
- Anchorage, Juneau, Western Alaska and Northern Alaska: Rural Cap at 1-800-478-7227  www.ruralcap.com
- Interior Alaska villages: Tanana Chiefs Conference at 1-800-478-6822  www.tananachiefs.org
- If you are living in a house owned by a state designated housing authority, you may contact your housing authority directly.

Homeowners and renters may apply.
The weatherization provider will provide program services at no cost to qualified applicants.
Individuals may not participate in both the Weatherization Program and the Home Energy Rebate Program.
<table>
<thead>
<tr>
<th>Community Name</th>
<th>INCOME LIMIT - 1 PERSON</th>
<th>INCOME LIMIT - 2 PERSON</th>
<th>INCOME LIMIT - 3 PERSON</th>
<th>INCOME LIMIT - 4 PERSON</th>
<th>INCOME LIMIT - 5 PERSON</th>
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<td>93,300</td>
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<td>77,700</td>
<td>83,500</td>
<td>89,200</td>
<td>95,000</td>
</tr>
</tbody>
</table>

2010 DOE Poverty Income Levels

|                | 27,060 | 36,420 | 45,780 | 55,140 | 64,500 | 73,860 | 83,220 | 92,580 |

Effective May 14, 2010
$200 million Allocated

- 2008-2009
- 2010
- 2011

$200 million Allocation
Homes Weatherized

- 1978-2008: **600 annually**
- 2009: **1,864**
- 2010: **3,139 (current)**
- 2011: **4,000 (projected based on funding)**
- Statewide weatherization providers and housing authorities have now achieved a sustainable capacity.
Communities Served

- 2008: 56
- 2009: 90
- 2010: 100+
- 2011: 100+
• For individuals who do not qualify for Weatherization Program
• No income requirements
• Owner-occupied, year-round residences
• Homeowners pay upfront & are then rebated for making eligible improvements they choose
• “Before & After” energy ratings required
• Individuals may not participate in both the Weatherization Program and Home Energy Rebate Program
How do I participate?

1. **Request a home energy rating.** Sign-up at [www.akrebate.com](http://www.akrebate.com) or contact the AK-REBATE Call Center at 1-877-257-3228.

2. **Get the first rating.** A rater will call to schedule and perform the first energy rating. Rater fees vary, so ask for their rate. Contact the Call Center if you would like a different rater.

3. **Fill out and send in the first energy rating paperwork.** You will be entered into the program and reimbursed up to $325 for the rating. **You have 18 months from the first rating to complete the program.**

4. **Choose and make the energy-efficiency improvements** listed in your energy rating.

5. **Get a second energy rating** after the improvements are done.

6. **Fill out and send in the final rebate paperwork.** You will be reimbursed up to $175 for the rating and receive a rebate based on your home’s improved energy-efficiency and your eligible receipts.
$160 Million

Funds: Fully obligated
Expended: $98.4 million

3.29.2011
Wait List: 3,311

Anchorage = 1,526

Fairbanks = 217

Juneau = 175

3.25.2011
Program Snapshot
Average Costs of 11,800 Homeowners

$10,869 spent
-$6,303 rebate
= $4,566 homeowner investment

$1,535 annual energy savings
3 year payback

2.25.2011
### Energy & CO2 Results

<table>
<thead>
<tr>
<th>HOMES</th>
<th>Before</th>
<th>After</th>
<th>Total Saved</th>
<th>Per Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>9,840</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Cost</td>
<td>$51,429,591</td>
<td>$36,680,758</td>
<td>$14,748,833</td>
<td>$1,535/yr</td>
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<tr>
<td>CO2 lbs/year</td>
<td>422,132,557</td>
<td>300,342,735</td>
<td>121,789,822</td>
<td>12,443 lbs/yr</td>
</tr>
<tr>
<td>Rating Stars</td>
<td>2+</td>
<td>4</td>
<td></td>
<td>3 steps</td>
</tr>
<tr>
<td>BTUS</td>
<td></td>
<td></td>
<td>978 Billion</td>
<td>99.48 Million</td>
</tr>
</tbody>
</table>

Average energy use reduced 33.15 percent
Average energy cost reduced 30 percent

Equivalent energy savings:
- 168,766 barrels of crude oil
- 7 million gallons of fuel oil
- 717 gallons of fuel oil per home
Home Energy Rebate & Weatherization Results

April 2008 – March 29, 2011

- Ratings: 41,475
- Rebates: 12,719
- 5+ Homes: 995
- Weatherized: 5,003

18,717 homes now more energy efficient since 2008
# Home Energy Rebate & Weatherization Results

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>AFTER</th>
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<tbody>
<tr>
<td>• Ratings</td>
<td>25,557</td>
</tr>
<tr>
<td>• Rebates</td>
<td>n/a</td>
</tr>
<tr>
<td>• 5+ Homes</td>
<td>2,345</td>
</tr>
<tr>
<td>• Weatherized</td>
<td>10,704</td>
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</tbody>
</table>

18,717 homes now more energy efficient since 2008
Job Creation & Retention

Estimate 2,500 jobs created:

• 1,500 from weatherization
• 1,000 from rebate
• ISER confirmation in progress
2008-2010 Residential Weatherization Training

- Alaska Works Partnership Inc.
- Alaska Housing Finance Corp
- Denali Commission

- 872 Individuals trained
- 115 Alaskan communities
New Home Rebate

• There is a $7500 rebate for a new 5 Star Plus home.
• Purchased on or after April 5, 2008.
• Not more than 1 year old at time of sale.
• For original owner.
• Must meet all AHFC property financing requirements & have a 5 Star Plus energy rating.
• Individuals participating in the 5 Star Plus New Home Energy Rebate may not participate in the Home Energy Rebate program for existing homes or the Weatherization Program.

To Participate: Call AK-REBATE at 1-877-257-3228
New Home Rebate

5*+ Homes to date:  995

Total spent:  $7,462,500

3.29.2011
Second Mortgage for Energy Conservation

2nd Mortgage up to $30,000

- 15 Year Loan at the Taxable Rate
- 90% LTV single family and duplexes
- 80% LTV for triplexes and fourplexes
- Must meet AHFC requirements
- Energy Rating
- Rebate applied to loan

To Participate: Call Alaska USA Federal Credit Union
907-786-2800 (toll free 1-888-425-9813)
Second Mortgage for Energy Conservation

- Second mortgage up to $30,000
- 15 Year Loan at the Taxable Rate
- Active Loans: 89
- Loans Paid Off: 39
Alaska Energy Efficiency Revolving Loan Fund (AEERLF)

“Alaska Sustainable Energy Act” - $250 million revolving loan fund

- Energy efficiency improvements for
  - Regional Educational Attendance Areas (REAAs)
  - University of Alaska
  - State facilities
  - Municipal facilities
- Guaranteed savings from energy efficiency improvements are used to pay off the loan
- Requires Retrofit Energy Assessment for Loan (REAL)
Goals of the AEERLF program:

• Reduce energy costs for public facilities by providing funding for comprehensive energy efficiency retrofits that go beyond lighting and heating system upgrades

• Get baseline data for Alaska: energy consumption/sf for buildings with specific energy end uses
Retrofit Energy Assessment for Loan (REAL)

- **Initial Project Evaluation**
  - Energy benchmark

- **Energy Audits**
  - Audits by Certified Energy Auditor (CEA) or Certified Energy Manager (CEM) certification through the Association of Energy Engineers (AEE), or an AHFC-approved equivalent.

- **Energy Performance Contracts (EPCs)**
  - Energy Service Companies (ESCos) qualified by Alaska Housing Finance Corporation (AHFC) and Alaska Department of Transportation and Public Facilities (DOT/PF) may be used.

Retrofits may be managed by qualified Energy Service Companies (ESCOs) or the facility owner (if under $250,000).
Benchmark Effort Underway

• Two firms collecting data statewide –
• Asking for building inventory, age, size, occupancy, energy use
• First time effort to capture statewide public facility energy use
Benchmark Effort Underway

- State DOT also collecting benchmark information on state owned facilities
- University collecting on UA system facilities
- All added into Alaska Retrofit Information System (ARIS) database
Education
Building Science 101
The House is a System
Ventilation System

“Build tight, ventilate right”
Combustion Air
Direct Vent or Sealed Combustion Heating & Hot Water Heaters

- SWG SERIES POWER VENTER (100% Negative Pressure)
- COMBUSTION AIR TEE
- RC DRAFT CONTROL (Regulates Air Flow)
- STANDARD GALVANIZED PIPE
- OIL FURNACE, BOILER, OR WATER HEATER
- VRV-4 VACUUM RELIEF VALVE (Safety Valve)
- FIELD AIR BOOT™ (Controls Combustion Air)
The House is a System

“Build tight….ventilate right!”
Energy saving tips

Be an informed consumer!
Air Sealing & Insulating Information

More information at www.energystar.gov

Some items may qualify for federal tax credits.
Plug the holes in the ceiling
11. WEATHERSTRIP THE DOOR

- Self-adhesive foam weatherstrip
- New wood stops
- Existing molding

12. ATTACH FASTENERS

- Compressed weatherstrip
- Hook-and-eye latch
- Hatch door

Image: Energy Star
9. FILL HOLES WITH CAULK

Image: Energy Star
10. STUFF GAPS WITH INSULATION

PLUMBING VENT

EXPANDING FOAM

GAP AROUND PLUMBING VENT

Image: Energy Star
5. CUT ALUMINUM FLASHING
Areas To Foam Or Caulk

Seal and insulate
Air Sealing Tips

- Seal BEFORE insulate.
- Seal high and low
- Use special care around items which produce heat (like chimneys, recessed light fixtures).
- Add mechanical ventilation for good indoor air quality

More information at www.energystar.gov
Insulating Tips

- Install properly
- Count bags for blown-in type insulation (like cellulose),
- Do not block roof ventilation

More information at www.energystar.gov
### Window & Door Information

**U = 1/R**

**R = 1/U**

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**World's Best Window Co.**

**Millennium 2000+**

VINYL-CLAD WOOD FRAME

DOUBLE GLAZING • ARGON FILL • LOW-E

**Product Type:** Vertical Slider

<table>
<thead>
<tr>
<th>ENERGY PERFORMANCE RATINGS</th>
<th>ADDITIONAL PERFORMANCE RATINGS</th>
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<tr>
<td><strong>U-Factor (U.S./I-P)</strong></td>
<td><strong>Solar Heat Gain Coefficient</strong></td>
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<td><strong>0.30</strong></td>
<td><strong>0.30</strong></td>
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<td><strong>Visible Transmittance</strong></td>
<td><strong>Air Leakage (U.S./I-P)</strong></td>
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<td><strong>0.51</strong></td>
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<td><strong>Condensation Resistance</strong></td>
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<tr>
<td><strong>51</strong></td>
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Manufacturer stipulates that these ratings conform to applicable NFRC procedures for determining whole product performance. NFRC ratings are determined for a fixed set of environmental conditions and a specific product size. NFRC does not recommend any product and does not warrant the suitability of any product for any specific use. Consult manufacturer's literature for other product performance information.

**NFRC**

www.nfrc.org

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*Look for the label!*
Window Replacement Tips

Keep NFRC window labels to show the rater.

Window Technologies
Energy-efficient window technologies are available to produce windows with the U-factor, SHGC, and VT properties needed for any application.
Water Heater & Heating System Information

Be an informed buyer:

- tankless / demand water heaters
- high efficiency heating systems
- proper sizing of systems

More information at [www.energystar.gov](http://www.energystar.gov)
Water Heater Replacement Tips

- Sealed combustion and direct vent systems are safer.
- Get at least 3 bids for work. Costs may vary considerably.

RESEARCH NOTE: Tankless water heaters work in Alaska when properly sized.

<table>
<thead>
<tr>
<th>Water Heater Technology</th>
<th>Average Annual Savings*</th>
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<tbody>
<tr>
<td>High-Efficiency Gas Storage</td>
<td>$30</td>
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<tr>
<td>Gas Condensing</td>
<td>$110</td>
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<tr>
<td>Whole-Home Gas Tankless</td>
<td>$115</td>
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<tr>
<td>Solar</td>
<td>$220</td>
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<tr>
<td>Heat Pump</td>
<td>$290</td>
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</table>

* Savings for average household of 2.6 people.

Five types of water heaters can now earn the ENERGY STAR. Find the one that's right for you.

Heating & Hot Water Efficiency Info
www.ahrinet.org

More information at www.energystar.gov
Heating System Replacement Tips

– ACCA Manual J or AkWarm software will properly size a replacement heating system.
– Sealed combustion and direct vent heating systems are safer
– Get at least 3 bids for work. Costs may vary by thousands of dollars.

RESEARCH NOTE: Heating systems in Alaska are oversized 120%!

Table 1. Annual Estimated Savings for Every $100 of Fuel Costs by Increasing Your Heating Equipment Efficiency*

<table>
<thead>
<tr>
<th>Existing System AFUE</th>
<th>55%</th>
<th>60%</th>
<th>65%</th>
<th>70%</th>
<th>75%</th>
<th>80%</th>
<th>85%</th>
<th>90%</th>
<th>95%</th>
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<tr>
<td>50%</td>
<td>$9.09</td>
<td>$16.76</td>
<td>$23.07</td>
<td>$29.57</td>
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<tr>
<td>65%</td>
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<td>$5.00</td>
<td>$11.76</td>
<td>$18.02</td>
<td>$24.40</td>
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<td>$32.20</td>
<td>$36.20</td>
<td>$39.20</td>
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<td>$4.38</td>
<td>$11.11</td>
<td>$17.38</td>
<td>$23.76</td>
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</table>

*Assuming the same heat output

Heating & Hot Water Efficiency Info

www.ahrinet.org

Only high efficiency heating systems qualify for federal tax credits!
Check at: www.energystar.gov
Ventilation Tips

– Quiet = 1 sone or less

– Continuous duty rated

– Proper sizing

– Energy Star

More information at [www.energystar.gov](http://www.energystar.gov) & [www.ahfc.us](http://www.ahfc.us)
# Whole Building Ventilation Sizing

in CFM (cubic feet per minute)

<table>
<thead>
<tr>
<th>Number of Bedrooms</th>
<th>0-1</th>
<th>2-3</th>
<th>4-5</th>
<th>6-7</th>
<th>&gt;7</th>
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<tr>
<td>&lt;1500 ft²</td>
<td>35</td>
<td>55</td>
<td>75</td>
<td>95</td>
<td>115</td>
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<tr>
<td>1501-3000</td>
<td>50</td>
<td>70</td>
<td>90</td>
<td>110</td>
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<tr>
<td>6001-7500</td>
<td>95</td>
<td>115</td>
<td>135</td>
<td>155</td>
<td>175</td>
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<tr>
<td>&gt;7500 ft²</td>
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<td>130</td>
<td>150</td>
<td>170</td>
<td>190</td>
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</table>
A project of the Alaska Energy Efficiency and Conservation Working Group (EECWG)
Questions?
Betty Hall
Research Information Center
(800) 478-2432