

Appendix D: Glossary

Building Science Terms and Abbreviations

ACH50	Air changes per hour at 50 pascals of pressure. A measure of a building's air-tightness calculated by a blower door test that creates a 50-pascal pressure differential and then measures the airflow to estimate the number of times the entire volume of air in the house is exchanged per hour.
BTU	British thermal unit: a measurement of energy equivalent to the amount of energy needed to heat one pound of water by one degree Fahrenheit. BTUs are often expressed in millions of BTUs (MMBTU), thousands of BTUs (kBTU) or as BTUs.
Conditioned Square Feet	The area of a structure that is heated.
Continuous Mechanical Ventilation	A system in which fresh air is supplied continuously or at regular intervals using a humidistat, timer or other control system. These systems may be exhaust only or balanced.
DHW	Domestic hot water
ECI	Energy cost index: the total amount of money spent on energy in a year divided by the square footage of the conditioned space in the building.
EUI	Energy use intensity: the annual energy consumption of BTUS divided by the structure's conditioned square feet. EUI is often expressed in thousands of BTUs per square foot per year or kBTU/SF/YR.
HDD	Heating degree days: a measure of the heating requirement for a geographic location that is calculated based on the time and number of degrees that the temperature stays below a base temperature of 65 degrees Fahrenheit. The HDD values used in this report are 30-year averages between 1960 and 1990. They are retrieved from the AKWarm energy library.
HHI	Home heating index: the annual space heating energy consumption in BTUs divided by the structure's conditioned square feet and by the location's heating degree days. Thermal HHI is often expressed in BTUs per square foot per degree day per year or BTU/SF/HDD/YR.
HRV	Heat recovery ventilation system: a balanced ventilation system that

recovers heat from warm outgoing air by passing it through a heat exchanger next to the cool incoming ventilation air.

IAQ	Indoor air quality: a term used to discuss the presence of moisture, pollutants and odors inside a building and whether these constitute a health risk.
kWh	Kilowatt-hour: a measure of electricity consumed.
MMBTU	1 million BTUs
Noncontinuous ventilation	A house that lacks a continuous ventilation system. Such a house may include bathroom and kitchen fans that operate only on a switch.
Space Fuel Cost per Million BTUs	The modeled total cost of space heating fuels for a home divided by the modeled total space heating energy consumed by that home.

State of Alaska Terms and Abbreviations

1-Star Homes	Homes that receive an AKWarm Rating score of less than 40 points. This rating point level indicates that a household uses at least four times more energy than a comparable house that is built to the 2012 Building Energy Efficiency Standard established by AHFC. This value on the AkWarm rating scale was used as the cutoff to indicate inefficient housing.
AHFC	Alaska Housing Finance Corporation
AKWarm	An energy modeling software program developed by AHFC to conduct home energy ratings for various energy-efficiency programs. The software is free and available to the public.
AKWarm Energy Costs	AKWarm energy costs are estimated based on the modeled energy use of a home and the energy prices.
AKWarm Rating Points	The AKWarm home energy rating produces a rating point score based on how much more or less efficient a home is in comparison to a reference home that is based on the 2012 Alaska Building Energy Efficiency Standard. A home that uses the same amount of energy as this reference home will score 85 points; more efficient homes will score up to 100 points and less efficient homes may receive a score as low as 0 points.

AKWarm Rating Stars

The star rating of a home is based on the number of rating points it receives, a measure of how much energy the home is estimated to use relative to a reference home in compliance with the 2012 Alaska Building Energy Efficiency Standard. The star rating ranges are shown in the following table:

Points	Rating	Points	Rating
0–39.9	1 Star	78–82.9	4 Star
40–49.9	1 Star +	83–88.9	4 Star+
50–59.9	2 Star	89–91.9	5 Star
60–67.9	2 Star +	92–94.9	5 Star+
68–72.9	3 Star	95–100+	6 Star
73–77.9	3 Star +		

ANCSA

Alaska Native Claims Settlement Act: a federal law passed in 1971 that created 12 Alaska Native regional corporations covering the entirety of the state and one additional nongeographic regional corporation.¹

ARIS

Alaska Retrofit Information System: an AHFC database that stores detailed information from every energy audit conducted using the AKWarm software. The database now houses information for approximately 34 percent of occupied housing in Alaska.

BEES

Alaska Building Energy Efficiency Standard. This standard for energy efficiency in new construction was developed in 1992 by AHFC and is updated approximately every three years based on the ICC’s *International Energy Conservation Code, International Residential Code* and AHFC’s Alaska-specific amendments.

DCCED

The Alaska Department of Commerce, Community and Economic Development

Drafty

Drafty homes were defined as having test results between 7 and 12 air changes per hour at 50 Pascals (ACH50) when subjected to a blower door test.

Energy Rating

An energy rating is an analysis of the current energy efficiency of a home by a licensed energy rater. The energy rater models the home in the AkWarm energy rating software by entering in the observed and assumed characteristics of the home and the software estimates the

¹ See <http://ancsaregional.com/resources/> for a list of resources on the Alaska Native Claims Settlement Act.

annual energy use and cost for the home, as well as potential cost-effective energy-efficiency upgrades that could be performed. An energy rating models the efficiency of the home and not the occupants' usage behavior.

High Risk of Indoor Air Quality Issues

Homes that have less than 0.3 natural air exchanges per hour and don't have continuous mechanical ventilation are considered high-risk. Data have shown homes to be at risk for moisture or indoor air quality issues under these conditions. This metric indicates that there is a risk, not that such issues have been detected.

Home Energy Rebate Program

This AHFC program was funded by the state legislature and provided up to \$10,000 in rebates for homeowners who chose to make energy efficiency improvements to their house.

ICC

International Code Council

Moderate Risk of Indoor Air Quality Issues

The air-tightness level for homes at moderate risk is defined as between 0.3 and 0.5 natural air changes per hour with no continuous mechanical ventilation installed. This is the cutoff where there is an increased risk of negative health outcomes. This metric indicates that data have shown homes to be at risk for moisture or indoor air quality issues, not that such issues have been detected.

Senior Citizen

Person aged 65 and older

Senior Facility Beds

A living space and care capacity suitable for one senior citizen in a licensed assisted living or independent living senior facility. These are counted as "beds".

Very Drafty

Very drafty homes were defined as having test results greater than 12 air changes per hour at 50 Pascals (ACH50) when subjected to a blower door test.

Very Inefficient / Inefficient

Homes rated 1-star in the Alaska Home Energy Rating system are "very inefficient," typically using more than four times the energy of a new home built to AHFC's Building Energy Efficiency Standard.¹ These 1-star buildings have disproportionately high costs to maintain a comfortable indoor environment.

Weatherization

The AHFC Weatherization Assistance program. This program is funded by the state legislature with a combination of state and federal money and provides energy efficiency and health and safety retrofits to housing that qualifies based on income eligibility at no cost to the

homeowner or tenant.

Youth Dependency Ratio The youth dependency ratio is created by dividing the youth population (ages 0 to 15) by the working age population (ages 16 to 64) and multiplying by 100. The youth dependency ratio is a subset of the total dependency ratio, which divides the nonworking age population by the working age population.

Census and HUD Terms and Abbreviations

ACS American Community Survey: a five-year survey conducted from 2010 to 2014 by the U.S. Census Bureau. This is a stratified, random sampling survey that was conducted via telephone and mail in road-connected areas of Alaska and in person in rural Alaska.

Affordable and Available Housing Housing units are considered affordable for a household if the total costs are less than 30 percent of household income. Housing units are considered available for extremely low income households when their numbers exceed the demand of higher income renters in the private market.

Average Renter Wage Average renter wage is the compensation (including non-wage forms) that a typical renter is likely to receive for an hour of work. The estimated average hourly wage is based on the average weekly earnings of private (non-governmental) employees and is generated from 2014 data reported by the BLS in the Quarterly Census of Employment and Wages. This measure is different from median household income.²

“Cold/Very Cold” Climates These are the Building America climate zones. “Cold” climates are defined as having 5,400 to 9,000 heating degree days. “Very cold” climates are defined as having 9,000 to 12,600 heating degree days. “Cold” climates are equivalent to the International Energy Conservation Code climate zones 5 and 6, and “very cold” climates are equivalent to the International Energy Conservation Code climate zone 7. Parts of Alaska are in climate zones 6, 7, 8 and 9.

Complete Kitchen A kitchen is considered “complete” when it has a sink with a faucet, a stove or range and a refrigerator.

² Yentel, D., Aurand, A., Emmanuel, D., Errico, E., Leong, G. M., & Rodrigues, K. (2016). *Out of Reach 2016*. National Low Income Housing Coalition. Retrieved from http://nlihc.org/sites/default/files/oor/OOR_2016.pdf

Complete Plumbing	Complete plumbing facilities include hot and cold running water, a flush toilet and a bathtub or shower. All facilities must be located inside the housing unit but not necessarily in the same room.
Cost-burden	Housing units are considered cost-burdened if they spend 30 percent or more of total household income on housing expenses. Housing expenses include mortgages, deeds of trust, contracts to purchase, or similar debts on the property; real estate taxes; fire, hazard and flood insurance on the property; utilities; and fuels. It also includes, where appropriate, the monthly condominium fee for condominiums and mobile home costs.
Extremely Low-income Households	Households are considered extremely low income if their income is at or below the federal poverty level, which is defined as below 30 percent of the area median income. ³
Fair Market Rent	The fair market rent is used by Housing and Urban Development to determine how much rent should be covered through Section 8 for individuals with low income. It is calculated as the 40th percentile of gross rents for typical rental units that are not substandard and are occupied by those who have recently moved in a local housing market. ⁴
Gross Rent	Gross rent is the contract rent plus the estimated average monthly cost of utilities and fuels if paid by the renter. This metric is used to eliminate differences in rent cost by differing practices of including or excluding utilities.
Housing Costs / Household Expenses	For homeowners monthly housing costs include mortgage payments, taxes, insurance, utilities and fuels. Gross rent is equivalent to “housing costs” for renters.
Housing Gap	The housing gap is an estimate of the number of new housing units needed due to overcrowding and projected population growth.
Housing Unit	Per the U.S. Census bureau, “a housing unit is a house, an apartment, a group of rooms, or a single room occupied or intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants do not live and eat with other persons in the structure and which have direct access from the outside of the building or through a common

³ Yentel, D., Aurand, A., Emmanuel, D., Errico, E., Leong, G. M., & Rodrigues, K. (2016). *Out of Reach 2016*. National Low Income Housing Coalition. Retrieved from http://nlihc.org/sites/default/files/oor/OOR_2016.pdf

⁴ U.S. Department of Housing and Urban Development Office of Policy Development and Research. (1998) *Fair Market Rents*. Retrieved from <https://www.huduser.gov/periodicals/ushmc/winter98/summary-2.html>

hall.”

HUD	United States Department of Housing and Urban Development
Median Income	Median income includes wages/salary, self-employment income, interest/dividends and all forms of Social Security or public assistance income.
Overcrowded and Severely Overcrowded	Households are considered “overcrowded” if occupancy is more than one person per room. Households with more than 1.5 people per room are considered severely overcrowded. “Rooms” include living rooms, dining rooms, kitchens, bedrooms, finished recreation rooms and lodger’s rooms. Excluded are bathrooms, halls, unfinished basements etc.
PCE	Power cost equalization: an Alaska Energy Authority program funded by the State of Alaska that subsidizes the cost of electricity for rural communities that are approved by the Regulatory Commission of Alaska. This program provides a subsidy for the first 500 kilowatt-hours of electricity used by a residential household.
Poverty Rate	The percentage of people with incomes below the federal poverty threshold. The poverty thresholds are based on family size and composition. They do not vary geographically so they can be compared across the United States. These thresholds were originally derived from the cost of a minimum food diet multiplied by three to account for other family expenses and has been updated for inflation using the Consumer Price Index since then. ⁵
RECS	Residential energy consumption survey: produced by the U.S. Department of Energy's Energy Information Administration, this survey reports energy end uses and statistics that describe national residential energy use and costs.
“Rooms” (in the context of overcrowding)	"Rooms" are any spaces separated by a partial or complete wall, including kitchens, living rooms, dining rooms, bedrooms etc., but not including bathrooms, porches, balconies, foyers, halls or unfinished basements.
Severely Cost-Burdened	Housing units are considered severely cost-burdened if they spend 50 percent or more of total household income on housing expenses. Housing expenses include mortgages, deeds of trust, contracts to purchase, or similar debts on the property; real estate taxes; fire, hazard and flood insurance on the property; utilities; and fuels. It also includes, where appropriate, the monthly condominium fee for condominiums and mobile

⁵ U.S. Census Bureau. (1997) *The History of the Official Poverty Measure*. Retrieved from <https://www.census.gov/topics/income-poverty/poverty/about/history-of-the-poverty-measure.html>

home costs.

Vacancy

Vacant units include those that are for sale and for rent as well as units for seasonal, recreational or occasional use, units that are for migratory workers, and other vacant units.

Very Cost-Burdened

Housing units are considered very cost-burdened if they spend 35 percent or more of total household income on housing expenses. Housing expenses include mortgages, deeds of trust, contracts to purchase, or similar debts on the property; real estate taxes; fire, hazard and flood insurance on the property; utilities; and fuels. It also includes, where appropriate, the monthly condominium fee for condominiums and mobile home costs.