
Appendix B - Statewide Need Assessment

Introduction:

Three aspects of Alaska's housing needs are assessed in this appendix: overcrowded housing, cost-burdened housing, and One Star¹ housing. Evaluating Alaska's housing stock on these three metrics was made possible due to the availability of American Community Survey (ACS) data and the recent availability of detailed data on housing characteristics from AHFC's Alaska Retrofit Information System (ARIS), including energy use and costs. This analysis differs from the 2009 Housing Assessment that reported housing need in terms of overcrowding² and unsalvageable condition but did not report on housing affordability.

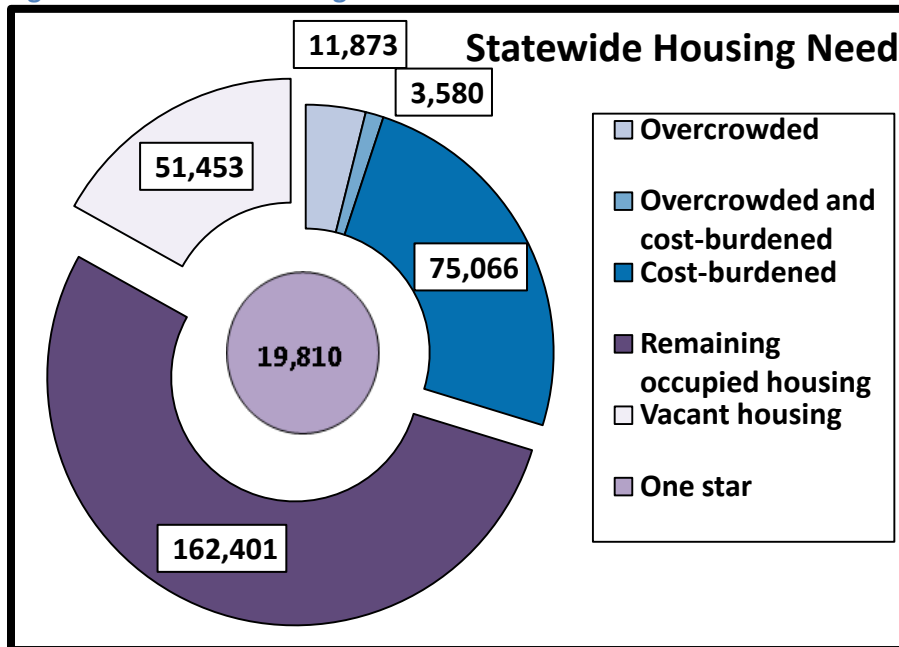
According to ACS data, there is a significant amount of cost-burdened housing in Alaska, with more than 75,000 housing units spending 30% or more of income on housing costs (Figure 1).³ There are also an estimated 15,453 units which are overcrowded or severely overcrowded in Alaska, of which 3,580 are estimated to be both overcrowded and cost-burdened. Additionally, there are an estimated 19,810 homes in Alaska that would receive a One Star energy rating, meaning they use at least four times as much energy as a new home built to the Alaska Building Energy Efficiency Standard (BEES). These homes are shown in the center of Figure 1 because it is unknown how much they overlap with the other housing need categories, as they were estimated using ARIS data.

¹ Homes that receive less than 40 points using AHFC's AkWarm energy modeling software are considered One Star. Low scores indicate lower energy efficiency.

² The 2009 Housing Assessment used a different definition of overcrowding that is not directly comparable to this report.

³ CCHRC's analysis of ACS energy costs indicate that there are systematic underestimations for rural Alaska, suggesting that ACS-based cost-burdened housing estimates are low. See Appendix A, "Analysis of American Community Survey Energy Cost Estimates."

Figure 1: Statewide Housing Need Breakdown



Overcrowded Housing Need:

In general, "overcrowding" is a subjective term based on cultural and personal values and varies widely across the globe. This assessment uses the U.S. Department of Housing and Urban Development's (HUD) definition of overcrowding. Under this definition, a housing unit is considered "overcrowded" if there is more than one person per room, and severely overcrowded if there are more than 1.5 people per room. In this case, a "room" includes any space that is separated by a partial or complete wall, including bedrooms, kitchens, living rooms, dining rooms, etc., but not including bathrooms, porches, balconies, foyers, halls, or unfinished basements.

For example, a three bedroom house with a separate kitchen, dining room, and living room would be considered "overcrowded" if it had seven occupants or more, or "severely overcrowded" if it had 10 occupants or more. This definition was based on research that determined the level of overcrowding that started to cause negative health and childhood education impacts for the occupants.^{4,5} This definition differs from the previous Alaska Housing Assessment, which measured three different levels of overcrowding and primarily reported estimates of the number of housing units with less than 200

⁴ Measuring Overcrowding in Housing, Prepared for US Department of Housing and Urban Development, Office of Policy Development and Research, September 2007. Prepared by: Econometrica, Inc., Blake, Kevin S., and ICF International. Available at: http://www.huduser.org/publications/pdf/measuring_overcrowding_in_hsg.pdf

⁵ The United Kingdom Office of the Deputy Prime Minister. "The Impact of Overcrowding on Health & Education: A Review of Evidence and Literature." Office of the Deputy Prime Minister Publications, 2004. Available at: <http://dera.ioe.ac.uk/5073/1/138631.pdf>

square feet of living space per person.⁶ While the persons-per-room metric is not directly comparable to the square-footage-per-person metric, a HUD-commissioned study by Econometrica, Inc. estimated that the threshold of more than one person per room is roughly equivalent to a threshold of less than 165 square feet per person.⁷

The overcrowding metric in this Housing Assessment also differs from the 2009 assessment in methodology. The 2009 Housing Assessment conducted a telephone survey of 1,700 randomly sampled Alaska households and extrapolated the results to the whole state. This 2014 Housing Assessment uses the U.S. Census Bureau's American Community Survey (ACS) 5-year estimates. These estimates are derived from 31,213 housing unit surveys conducted on a statistically random sample in the period between 2007 to 2011.

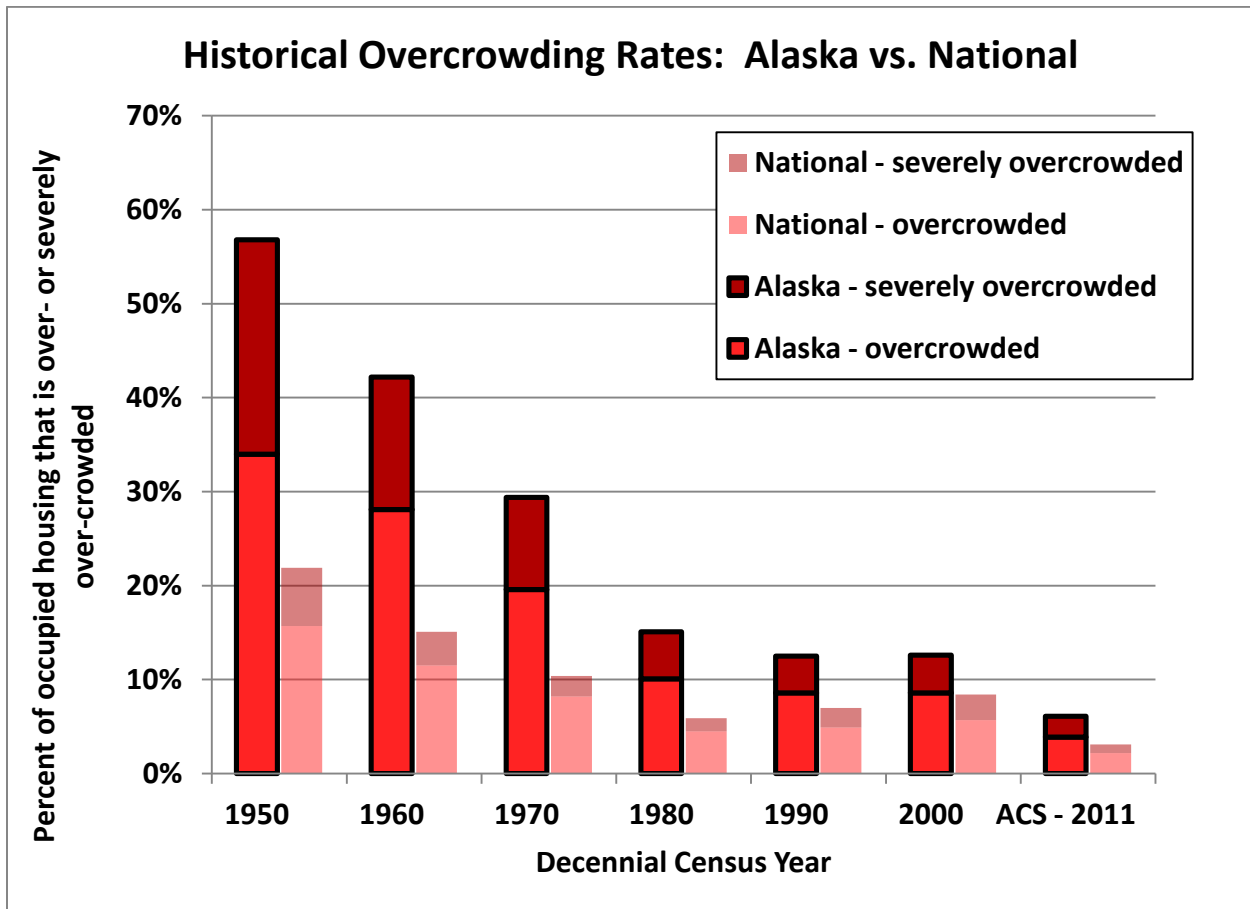
ACS data indicate that statewide, there are an estimated 9,782 overcrowded housing units, and an additional 5,671 severely overcrowded housing units for a total of 15,453 housing units that face overcrowded conditions. These overcrowded units account for 6.1% of Alaska's occupied housing units, roughly double the national overcrowding rate of 3.1%. Thus 7,841 housing units would need overcrowding alleviated through new construction, affordable housing programs, or other means to reach national overcrowding levels.

Historically, overcrowding rates have been much higher (Figure 2). Both national and Alaska overcrowding rates have dropped precipitously since 1950, but Alaska's overcrowding rate remains twice the national rate.

⁶ "2009 Alaska Housing Assessment: Part I and Part II". Prepared for Cold Climate Housing Research Center and the Alaska Housing Finance Corporation. Prepared by: Information Insights, Inc., Lister, Cady, et. al. 2009. Available at: http://www.cchrc.org/docs/reports/TR_2009_02_2009_AK_Housing_Assessment_Final.pdf

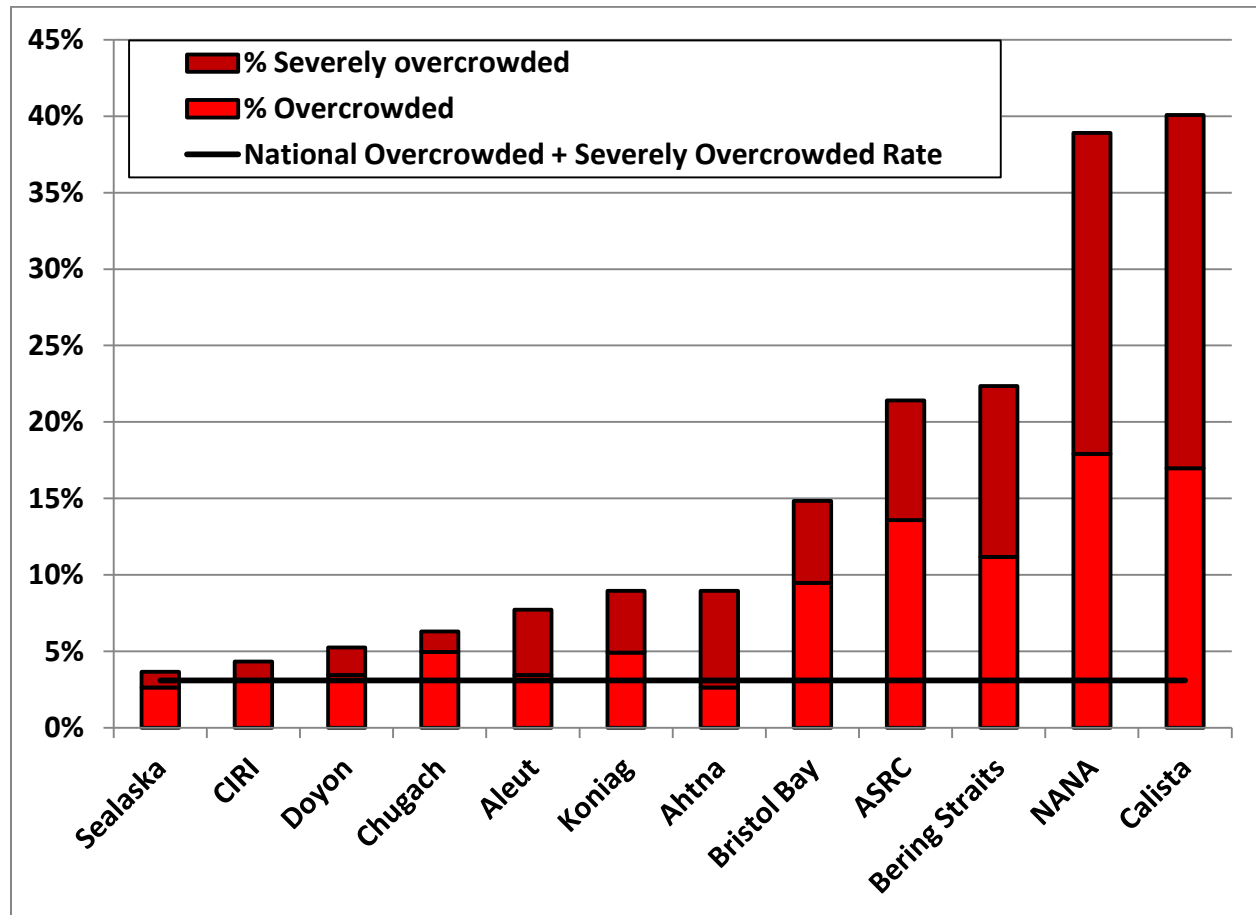
⁷ Measuring Overcrowding in Housing, Prepared for US Department of Housing and Urban Development, Office of Policy Development and Research, September 2007. Prepared by: Econometrica, Inc., Blake, Kevin S., and ICF International. Available at: http://www.huduser.org/publications/pdf/measuring_overcrowding_in_hsg.pdf

Figure 2: Historical Overcrowding Rates in Alaska and the U.S.



Overcrowded housing in Alaska is not evenly distributed geographically (Figure 3). The lowest estimated rates of overcrowding are found in three ANCSA regions that include the largest urban areas: Sealaska (1,054 units), Cook Inlet Region (6,781 units), and Doyon (2,143 units). The highest estimated rates of overcrowding are found in Western and Northern Alaska. The NANA region (699 units) and the Calista region (2,408 units) have overcrowding rates of 39% and 40%, respectively. This is nearly double the amount of overcrowding of the next most overcrowded region, Bering Straits, where approximately 22% (or an estimated 616 units) of occupied housing units are considered overcrowded or severely overcrowded.

Figure 3: Overcrowding by ANCSA Region



Every ANCSA region has a higher rate of overcrowding than the national average of 3.1% (Figure 3). The most overcrowded regions in Alaska have more than 12 times as much overcrowding as the national average with high proportions of these households considered severely overcrowded.

Cost-Burdened Housing Need:

The HUD definition of "Cost-Burdened Housing" is any household spending 30% or more of annual household income on housing costs.⁸ Housing costs include rent/mortgage payments, energy costs, water and sewer charges, taxes, fees and interest. Household income includes all earnings from salaries, stocks, gifts, public assistance, etc. Households spending more than this amount on housing costs "may have difficulty affording necessities such as food, clothing, transportation and medical care."⁹ According to ACS estimates, Alaska has 78,646 cost-burdened housing units, accounting for approximately 31% of occupied housing units in the state. ACS estimates are the most comprehensive estimates available for cost-burdened housing, but CCHRC's analysis has found that energy costs are systematically underestimated in areas outside of Anchorage. The actual number of cost-burdened

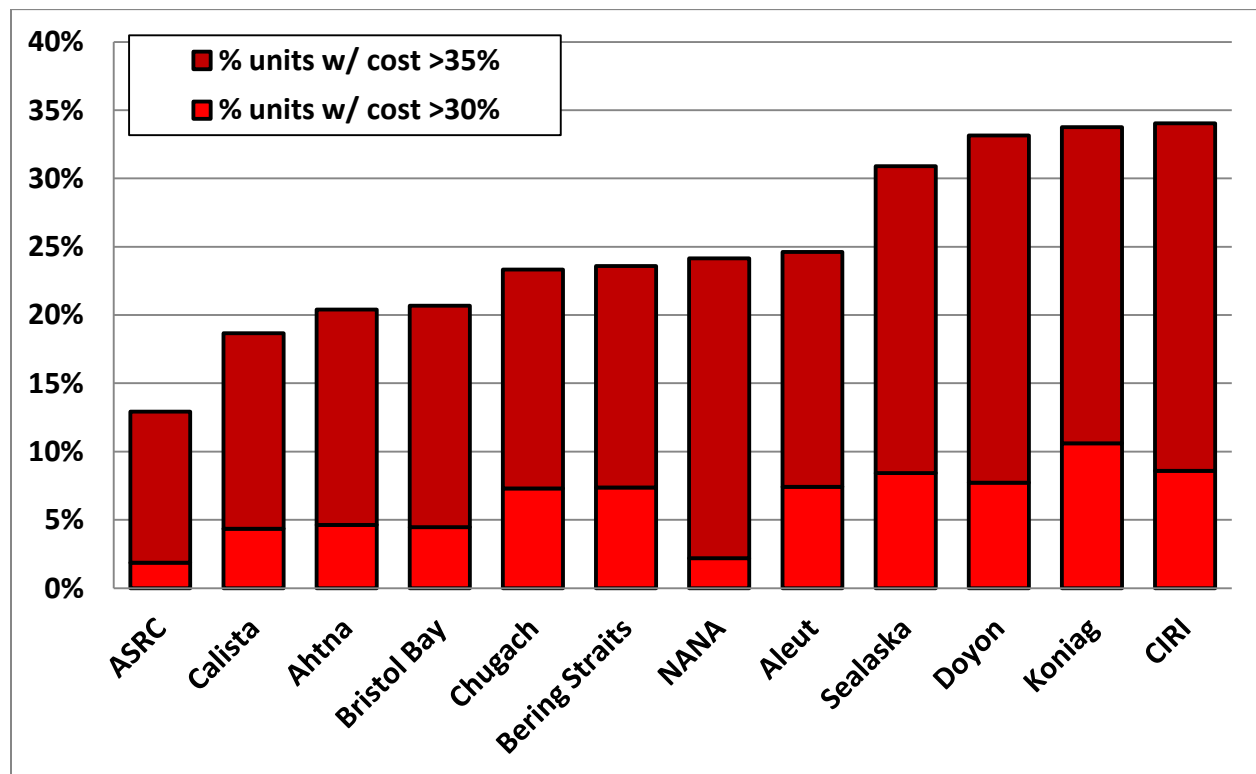
⁸ <http://www.hud.gov/offices/cpd/affordablehousing/>, accessed April 10, 2013

⁹ http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing/, accessed Feb 21, 2014

housing units is likely to be higher especially in rural Alaska. See Appendix A, "American Community Survey Energy Cost Estimates."

Rates of cost-burdened households are higher in ANCSA regions that contain Alaska's denser urban regions including CIRI, Doyon, and Sealaska (Figure 4). Systematically underestimated energy costs in rural Alaska contribute to rural ANCSA regions appearing less cost-burdened. Other potential influences include the Alaska Department of Commerce, Community and Economic Development (DCCED) Space Heating Assistance subsidies and subsidized rents and lease-to-own programs in rural Alaska that likely also decrease the proportion of cost-burdened households. In addition, the Municipality of Anchorage and the city of Juneau have seen steady population growth without a matching rate of new housing construction. High housing demand and low vacancy rates in those communities have driven up rents and housing prices.^{10,11}

Figure 4: Percent of Occupied Housing That is Cost-Burdened by ANCSA Region



On a national level approximately 37% of housing units are considered cost-burdened, slightly more than the Alaska rate of 31%, though these numbers may be more similar if more accurate energy costs in Alaska were used. While Alaska may not have higher rates of cost-burdened housing than the nation,

¹⁰ Juneau Housing Needs Assessment, November 2012. Available at <http://www.jedc.org/sites/default/files/2012%20Juneau%20Housing%20Needs%20Assessment%20v%2011%20%2012.pdf>

¹¹ Anchorage Housing Market Analysis, March 2012. Available at <http://www.muni.org/Departments/OCPD/Planning/Documents/Anchorage%20Housing%20Market%20Analysis%20Summary%20Report.pdf>

affordable housing is a concern, with nearly one out of three households potentially unable to meet other basic needs because of the high cost of housing.

Overcrowded and Cost-Burdened Housing Need:

Need is greatest for those households that are both overcrowded and cost-burdened. CCHRC’s analysis of the ACS Public Use Microdata Sample (PUMS) indicates that of the 15,453 overcrowded housing units and 78,646 cost-burdened housing units in Alaska, an estimated 3,580 housing units statewide fall into both categories. Figure 5 shows the PUMS regional breakdown of where these overcrowded and cost-burdened housing units are located.

Figure 5: Overcrowded and Cost-Burdened Housing Units by U.S. Census Public Use Microdata Area

Public Use Microdata Area ¹²	Area Description	Overcrowded and Cost-Burdened
101	North Anchorage	697
102	South Anchorage	469
200	Mat-Su & Kenai Peninsula	849
300	Road system / marine highway	793
400	Rural: off road system	772

Energy-Burdened Housing: One Star Homes

Previous Housing Assessments have focused on identifying "substandard" or "unsalvageable" housing units based on survey questions asking residents whether they consider their homes to be "falling apart." As a survey was not conducted for the 2014 Housing Assessment, this metric is not available. As an alternative, this report uses the estimated numbers of homes that would receive a "One Star" AKWarm energy rating¹³ for each region in Alaska. CCHRC chose this metric because 1) it is an objective measure of a housing unit’s energy performance based on a professional energy rating, 2) there is a large quantity of energy rating data in the ARIS database representing approximately 30% of the occupied housing stock in Alaska, and 3) AHFC's star rating system is well-known and understood by much of the general public. Strictly speaking, a One Star rating in AKWarm means that a home uses at least four times as much energy as it would if built to AHFC's 2012 Building Energy Efficiency Standard. While in some cases a low rating is attributable to a very inefficient heating device, generally it is a good indicator that a home is drafty, very poorly insulated, and in need of significant retrofit work.

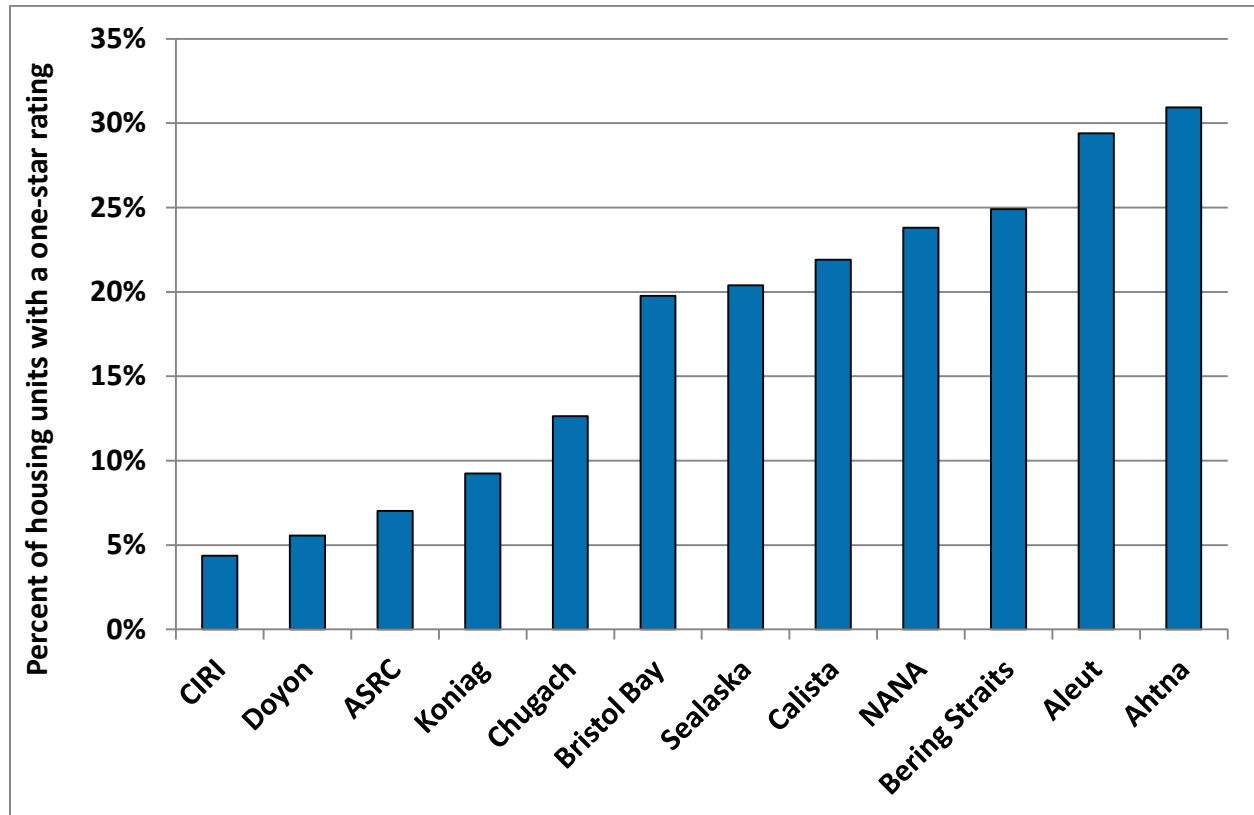
Statewide, there are an estimated 19,810 homes that would receive a One Star AKWarm rating, which totals approximately 8% of occupied housing in the state. These homes are most in need of an energy efficiency retrofit as they are using significantly more energy than homes of a similar size in the same area. As can be seen in Figure 6, the percentage of occupied housing units that would receive a One Star rating varies significantly by ANCSA region with a high of approximately 31% (or an estimated 421

¹² For a map depicting these Public Use Microdata Areas, please see Appendix A, "American Community Survey Energy Cost Estimates".

¹³ Homes that receive less than 40 points using AHFC’s AkWarm energy modeling software are considered One Star. Low scores indicate lower energy efficiency.

housing units) in the Ahtna region and a low of approximately 4% (or an estimated 6,803 housing units) in the CIRI region.

Figure 6: Percent One Star Homes by ANCSA Region



There has been a significant effort in Alaska since the energy price spike of 2008 to provide incentives and programs to retrofit housing. Experience has shown that typically the largest, most cost-effective gains in energy efficiency can be made by retrofitting homes that start out with low AKWarm rating scores. Data in Figure 6 suggests areas where retrofit programs can be focused for the most cost-effective efficiency improvements.

One drawback of evaluating housing need using this method is that the data source for One Star homes, the ARIS database, is entirely separate from the ACS data about overcrowding and affordability. As a consequence, there is no way to estimate the overlap between One Star homes and the other housing need metrics.

Severity of Housing Need

It is helpful to compare the relative severity of housing needs across different geographical regions. Figure 7 presents overcrowding, cost-burdened households, and One Star housing as percentages of occupied housing units in each ANCSA region. Color coding within a column indicates the severity of

need for an ANCSA region relative to other regions.¹⁴ Differing data sources for the calculation of these metrics prohibits evaluation of overlap or identification of the percentage of units that are present in more than one of these need metrics. The ANCSA regions are presented in alphabetical order.

Figure 7: Severity of Housing Need by ANCSA Region

ANCSA Region	Percent of Cost-Burdened Households	Percent of Overcrowded Housing Units	Percent of 1-Star Housing Units
Ahtna Inc	20.4%	9.0%	11.9%
Aleut	24.6%	7.7%	16.7%
Arctic Slope Regional Corporation	12.9%	21.4%	5.5%
Bering Straits Native Corporation	23.6%	22.4%	17.3%
Bristol Bay Native Corporation	20.7%	14.8%	9.4%
Calista	18.7%	40.1%	16.4%
Chugach Alaska Corp	23.3%	6.3%	9.9%
Cook Inlet Regional (CIRI)	34.0%	4.3%	3.8%
Doyon	33.2%	5.3%	4.5%
Koniag	33.8%	9.0%	7.7%
Nana Regional Corporation	24.2%	38.9%	15.8%
Sealaska Corporation	30.9%	3.7%	17.4%

Severity of Need
Extreme
High
Moderate

Figure 8 shows severity of housing need at the census area level, which gives slightly finer detail as to where housing needs are concentrated for the categories of cost-burdened households, overcrowded housing units, and 1-star housing units. For an even more detailed figure that compares housing need between communities in Alaska, see the Chart Folio Appendix.

¹⁴ Colors depicting severity are based on where a particular ANCSA regions housing needs are relative to other regions. "Extreme" need is defined as being in the 75th to 100th percentile of a need category, "High" need is defined as being in the 50th to 75th percentile of a need category, and "Moderate" need is when an ANCSA region lies in the 25th to 50th percentile of a need category.

Figure 8: Severity of Housing Need by Census Area

Census Area	Percent of Cost-Burdened Households	Percent of Overcrowded Housing Units	Percent of 1-Star Housing Units
Aleutians East Borough	20.5%	3.6%	11.8%
Aleutians West Census Area	25.9%	8.8%	10.8%
Anchorage municipality	35.0%	4.2%	3.8%
Bethel Census Area	19.3%	35.6%	14.2%
Bristol Bay Borough	16.2%	4.5%	5.8%
Denali Borough	17.8%	7.4%	4.1%
Dillingham Census Area	19.8%	18.0%	10.1%
Fairbanks North Star Borough	34.8%	4.5%	3.8%
Haines Borough	31.3%	2.2%	17.0%
Hoonah-Angoon Census Area	21.9%	2.9%	11.0%
Juneau City and Borough	32.2%	4.2%	10.6%
Kenai Peninsula Borough	29.5%	3.7%	4.9%
Ketchikan Gateway Borough	32.4%	2.5%	29.4%
Kodiak Island Borough	33.8%	9.0%	7.5%
Lake and Peninsula Borough	23.8%	12.8%	9.5%
Matanuska-Susitna Borough	33.7%	5.6%	4.2%
Nome Census Area	23.6%	22.4%	16.9%
North Slope Borough	12.9%	21.4%	5.5%
Northwest Arctic Borough	24.2%	38.9%	16.4%
Petersburg Census Area	23.8%	2.9%	18.9%
Prince of Wales-Hyder Census Area	20.8%	7.4%	28.1%
Sitka City and Borough	34.7%	4.1%	17.4%
Skagway Municipality	33.0%	1.4%	20.8%
Southeast Fairbanks Census Area	21.2%	8.2%	12.2%
Valdez-Cordova Census Area	19.7%	5.7%	9.9%
Wade Hampton Census Area	17.0%	51.2%	19.1%
Wrangell City and Borough	25.2%	0.2%	27.6%
Yakutat City and Borough	20.5%	12.0%	0.0%
Yukon-Koyukuk Census Area	24.7%	14.3%	8.2%

Severity of Need
Extreme
High
Moderate

Meeting Alaska's Housing Needs

Alaska's housing needs are significant. Overcrowding conditions are found in over 15,000 homes statewide, more than 75,000 homes are cost-burdened, and nearly 20,000 homes are estimated to have a One Star energy rating. Overcrowding conditions can be alleviated with a combination of new construction, retrofits, and affordable housing programs. Affordable housing programs could be expanded to help reduce the number of Alaskans who are burdened with excessive housing costs. Better financing options, improved local construction opportunities, and improved economic conditions can also contribute to reduced levels of cost-burdened and overcrowded households. Increased funding to energy retrofit programs could assist in reducing the energy burden on occupants of One Star homes by improving their quality. Figure 9 provides the unit counts for the three metric categories by ANCSA region to assist in evaluating areas in need.

Figure 9: Housing Need by ANCSA Region

ANCSA Region	Unit Counts by Metric Category		
	Overcrowded	Cost-Burdened	One Star
Ahtna	122	256	421
Aleut	123	315	468
Arctic Slope	421	215	138
Bering Straits	616	572	686
Bristol Bay	338	413	450
Calista	2,408	989	1,316
Chugach Alaska	287	1,019	576
Cook Inlet (CIRI)	6,781	51,817	6,803
Doyon	2,143	12,775	2,267
Koniag	398	1,334	410
NANA	699	373	428
Sealaska	1,054	8,510	5,847

Causal factors for identified housing needs are often interwoven and location-specific. For example, overcrowding may be due to a variety of factors. Vacant units may not be available for sale or rent. Units of sufficient size may be unavailable. Households may be combined or space rented to non-family members because available units are unaffordable due either to high rents or sale prices or to high home energy costs relative to area income levels. Detailed data provided in this Housing Assessment at the level of census areas and communities can help diagnose the sources of the three housing needs and suggest the best avenues to address the problems.