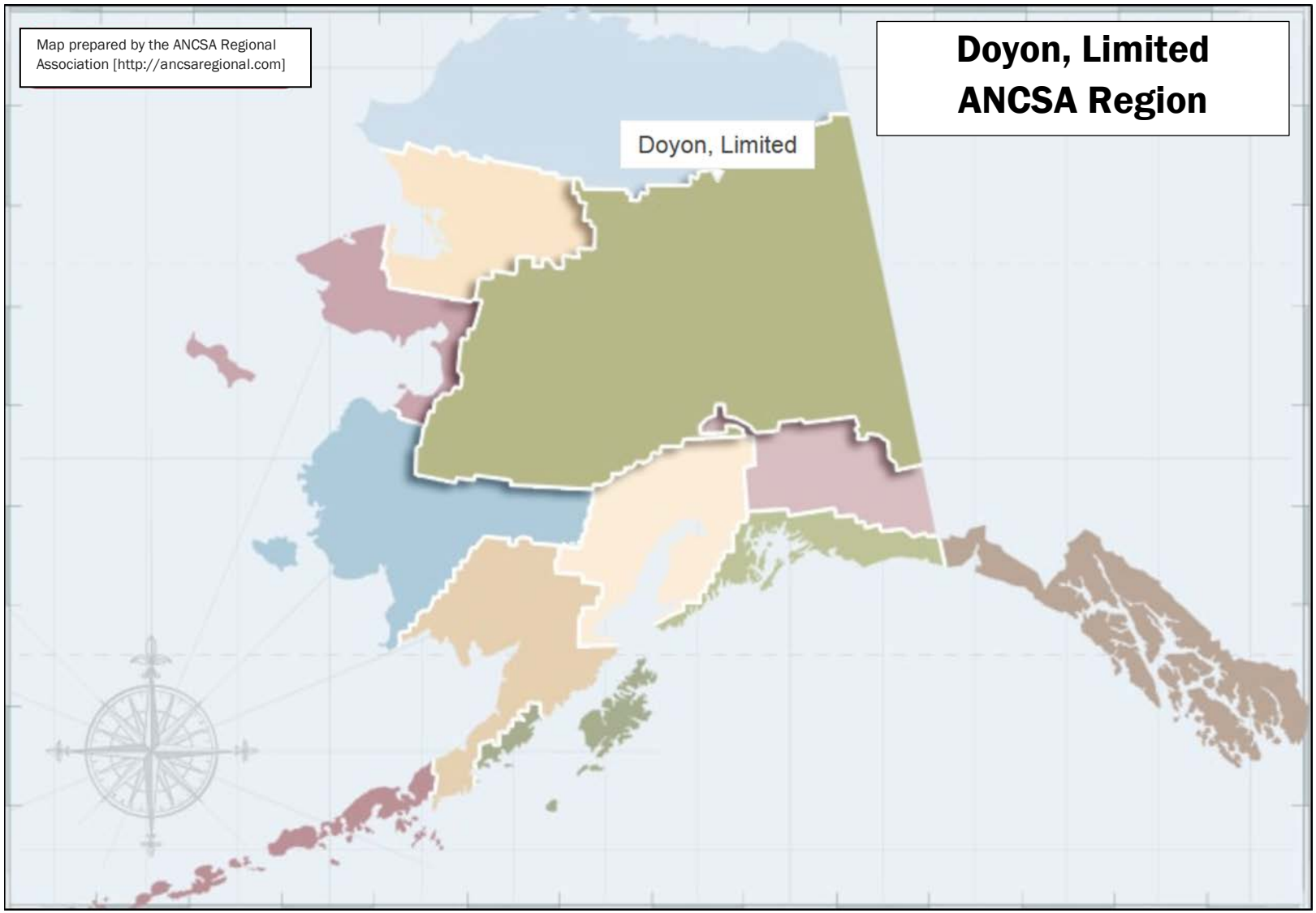
Map prepared by the ANCSA Regional Association [http://ancsaregional.com]
Doyon, Limited
ANCSA Region
Doyon, Limited

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Regional and Statewide Housing Characteristics

This ANCSA region summary only includes the highlights of housing characteristics at the ANCSA region level. The 2017 Alaska Housing Assessment provides a significant amount of data and analysis at statewide, ANCSA region and census area levels. That assessment provides a statewide analysis of housing characteristics, how they compare to national numbers, and the estimated housing needs. Within the 2017 Alaska Housing Assessment, written summaries are available for each individual ANCSA region and census area, and data profiles are also available characterizing the housing stock from the perspective of community, overcrowding, energy, affordability and need. These different tiers of information and analysis allow researchers, housing authorities, policymakers and others to generate answers to specific questions. For a more detailed discussion of estimating housing need and comparison of methods to previous housing assessments, see Appendix C Selected Methodology in the 2017 Alaska Housing Assessment.

Doyon Region Dashboard

Population: The Alaska Department of Labor and Workforce Development's current (2015) population estimate for the Doyon region is 112,546, an increase of 16 percent from 2000.

Housing Units: There are currently 50,822 housing units in the Doyon region. Of these, 40,302 are occupied, 2,398 are for sale or rent, and the remaining 8,101 (16 percent) are seasonal or otherwise vacant units.

Energy and Energy Costs: The average home in the Doyon region is 1,935 square feet and uses 237 million BTUs of energy annually, compared to the statewide average of 227 million BTUs per year. Using AKWarm estimates, the average annual energy cost for homes in Doyon region is $5,254. This is approximately 1.3 times the statewide average and 2.3 times the national average.

Overcrowding: In the Doyon region 2,176 (5 percent) of occupied units are estimated to be either overcrowded (4 percent) or severely overcrowded (2 percent). This is nearly twice the national average and the fourth least overcrowded in the state.

Drafty Homes and Ventilation: Approximately 10,479 (26 percent) of homes in the Doyon region are drafty, exceeding 7 air changes per hour at 50 Pascals (ACH50). The statewide average is 36 percent. In contrast, there are an estimated 23,375 occupied housing units (58 percent) in the Doyon region that are relatively airtight and lack a continuous ventilation system. These houses are at higher risk of issues with moisture and indoor air quality.

Affordability: On average, approximately 13,939 (35 percent) of households in the Doyon region are cost-burdened, spending more than 30 percent of total household income on housing costs, which include rent, utilities and energy costs. Statewide, 31 percent of households are cost-burdened.

Senior Housing: There are an estimated 503 beds in senior housing facilities in the Doyon region. Currently the Alaska Department of Labor and Workforce Development estimates there are 10,639 seniors in the ANCSA region and projects an increase to 19,915 by 2030.

Housing Issues: There are an estimated 15,033 homes built before the 1980s in the Doyon region that have not been retrofit through a state program in the past 10 years. Approximately 2,766 (7 percent) homes in the Doyon lack complete kitchens and approximately 3,279 (8 percent) lack complete bathrooms.

Doyon Region Housing Need Highlights

The primary housing need in the Doyon region is to retrofit existing housing stock to increase energy efficiency and ensure homes are healthy. Annual energy costs for homes in the region are three times the national average.[1] It also has the highest percentage of occupied homes in Alaska (58 percent) that are relatively airtight and lack mechanical ventilation. These homes are at risk for issues with poor indoor air quality and moisture.

The need to retrofit homes to decrease energy use has been identified in two regional documents. The *Interior Alaska Regional Energy Plan*[2] identified building energy efficiency as one of six focus areas for action. This includes improving and expanding participation in state programs for residential and public building audits and upgrades. The report lists several proposed actions specific to increasing energy efficiency for residences, including an education and awareness campaign, addressing barriers to participation in residential energy efficiency and conservation programs, offering rural residents a list of energy-efficient appliances, implementing a cash-for-clunkers program for residents to exchange light bulbs and appliances for more efficient versions, and designing a prototype for a super-energy-efficient small home that would raise awareness of energy efficiency in the region.

Regional Housing Strategy for Rural Villages Located in Alaska's Interior[3] focused on assessing housing and identifying overall housing needs. Authors used a survey of residents in rural communities to identify retrofit priorities. The top priority was to add insulation to existing homes because 77 percent of homes in rural communities needed minor or major repairs. Other priorities included improving indoor air quality, replacing windows with more energy efficient versions and roof repair.

Housing Gap: The Doyon region has 50,822 housing units, of which 79 percent are occupied. Approximately 5 percent are vacant and for sale or rent (remaining vacant units are seasonal or other purposes). Approximately 5 percent of units are either overcrowded or severely overcrowded. This is approximately 1.6 times the national average and just less than the statewide average.[4]

Affordable Housing Need: Approximately 35 percent of households in the Doyon region are cost-burdened, spending more than 30 percent of their income on housing costs.[5] This is approximately the same as the national average. High energy costs contribute

[1] See Appendix C: Methodology for details.
[2] Tanana Chiefs Conference, Information Insights, & WHPacific, Inc. (2015). *Interior Alaska Regional Energy Plan. Phase II: Stakeholder Engagement*.
[3] Tanana Chiefs Conference, Interior Regional Housing Authority, Nulato Tribal Council, Chalkyitsik Village Council, Rampart Village Council, Fort Yukon Tribal Council, … & Tanana Tribal Council. (2016). *Regional Housing Strategy for Rural Villages Located in Alaska's Interior*.
[4] U.S. Census Bureau. (2016). *American Community Survey, 2010–2014 American Community Survey Five-year Estimates*.
[5] U.S. Census Bureau. (2016). *American Community Survey, 2010–2014 American Community Survey Five-year Estimates*.

to housing affordability: residents in this region pay an average of $5,254 annually in energy costs, which is more than twice the national average and the third highest average energy cost in the state. Energy retrofits that reduce energy usage will help with affordability.

Senior Housing Needs: There are 503 beds available in senior housing facilities, with 218 of those in assisted living facilities.[6] This is a fraction of the 10,639 seniors in the region, and the elderly population is expected to increase to 19,915 by 2030.[7] Increasing the amount of senior housing in the census area should ensure adequate assisted and independent living facilities for the projected population.

Retrofit Needs: Approximately 26 percent of occupied homes in the region are drafty, and an additional 58 percent of occupied homes face the opposite issue of being relatively airtight but lacking a mechanical ventilation system.[8] This is the highest percentage of homes that are airtight and without mechanical ventilation in Alaska and puts these homes at risk for moisture-related and indoor air quality-related problems. Approximately 41 percent of all homes were built before 1980 and have not been retrofitted. All of these homes have high potential for an energy retrofit that could increase the safety and comfort of the home while decreasing energy use.

[6] AHFC Senior Housing Office. (2016). *Inventory List: Assisted Living Homes/Facilities*. Revised 5/02/2016.
AHFC Senior Housing Office. (2016). *Inventory List: Independent Living Homes/Facilities*. Revised 5/02/2016.
Retrieved from https://www.ahfc.us/senior-support/
[7] Hunsinger, Eddie, Sandberg, E., & Brooks, L. (2016). Alaska Population Projections 2015 to 2045. Alaska Department of Labor and Workforce Development, Research and Analysis Section.
[8] See Appendix C: Methodology for details.

Doyon Region Summary

Community

The Doyon Limited ANCSA region occupies the majority of Interior Alaska, stretching from the Canadian border on the east and to the regions of NANA, Bering Straits and Calista on the west. The average home size in the Doyon region is 1,795 square feet.

The ratio of dependents, both those under 16 and those over 65, relative to the working-age population in the Doyon region is lower than the statewide average and lower than the national ratio.[9] The Doyon region is expected to see an increase in the nonworking age population by 2030.

The ratio of senior age dependents to the working age population is higher than the statewide average and lower than the national average. The Doyon region is projected to see the ratio of senior age dependents to working age dependents increase by 1.9 times by 2030.

There are an estimated 503 dedicated beds in senior housing in the Doyon region, with 218 of those dedicated to assisted living.[10] Currently the Alaska Department of Labor and Workforce Development estimates there are 10,639 seniors in the Doyon region and projects that there will be 19,915 senior citizens by 2030.[11] In the Doyon region 2 percent of senior citizens are in assisted care housing. This is lower than the statewide rate of 2.8 percent. Nationally, approximately 3.5 percent of senior citizens are in senior living facilities.[12]

Comparison of the growth rates in the senior age (65+) segment of the population to the young dependent age (0 to 15) population indicate that in the Doyon region the primary pressure for new housing over the next 15 years will come from households with elderly people.

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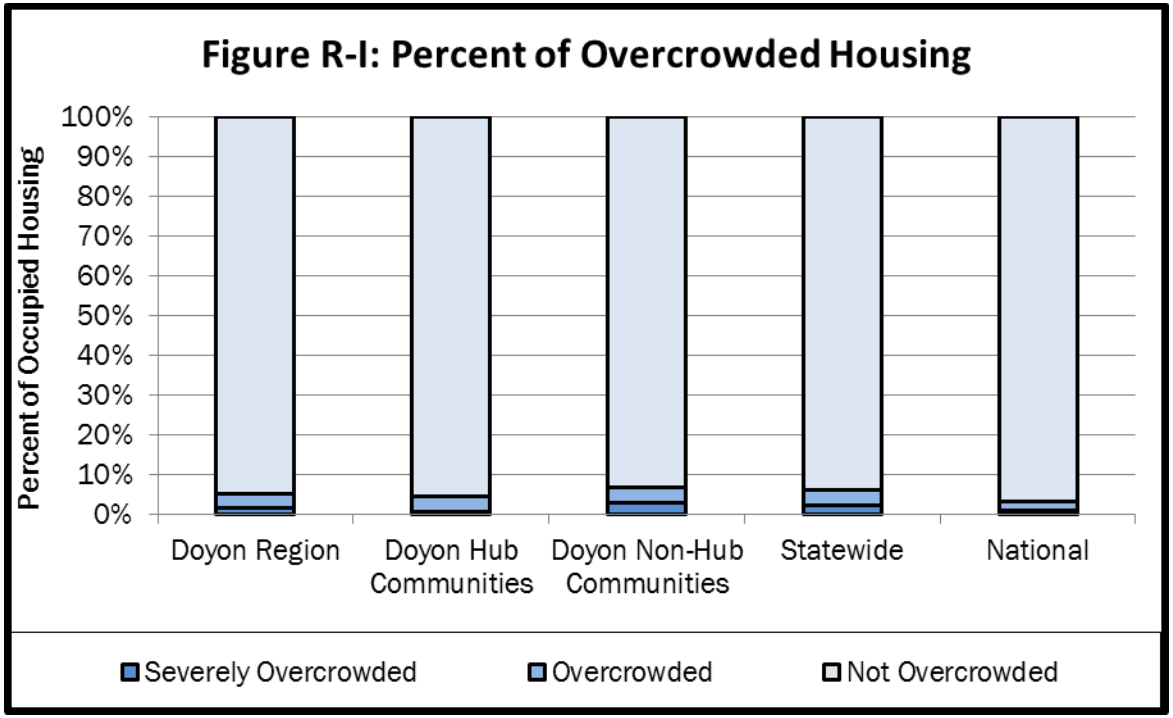
[9] Hunsinger, Eddie, Sandberg, E., & Brooks, L. (2016). Alaska Population Projections 2015 to 2045. Alaska Department of Labor and Workforce Development, Research and Analysis Section.
U.S. Census Bureau. (2016). *American Community Survey, 2010–2014 American Community Survey Five-year Estimates*.
[10] AHFC Senior Housing Office. (2016). *Inventory List: Assisted Living Homes/Facilities*. Revised 5/02/2016.
AHFC Senior Housing Office. (2016). *Inventory List: Independent Living Homes/Facilities*. Revised 5/02/2016.
Retrieved from https://www.ahfc.us/senior-support/
[11] Hunsinger, Eddie, Sandberg, E., & Brooks, L. (2016). Alaska Population Projections 2015 to 2045. Alaska Department of Labor and Workforce Development, Research and Analysis Section.
[12] Ribbe, M., Ljunggren, G., Steel, K., Topinkova, E., Hawes, C., Ikegami, N., ... Jonnson, P. (1997). Nursing Homes in 10 Nations: A Comparison Between Countries and Settings." *Age and Ageing, 26(S2), 3-12*

Overcrowding[13]

The Doyon region is the fourth least overcrowded ANCSA region in Alaska. Approximately 5 percent of households are overcrowded in the region as a whole. The rate of overcrowding in the Doyon region is nearly 80 percent of the statewide average (6.4 percent) and nearly 1.6 times the national average (3.3 percent).



Overcrowding in the non-hub communities is more than in the hub communities. Overcrowding is defined as households with more than 1 person per room. Severe overcrowding is defined as households with more than 1.5 persons per room. Non-hub communities in the Doyon region average nearly 1.6 times the overcrowding rate of the hub community, with approximately 7 percent of households overcrowded compared the hub community's 5 percent. Further, 3 percent of non-hub community households are severely overcrowded. This is three times the national average.

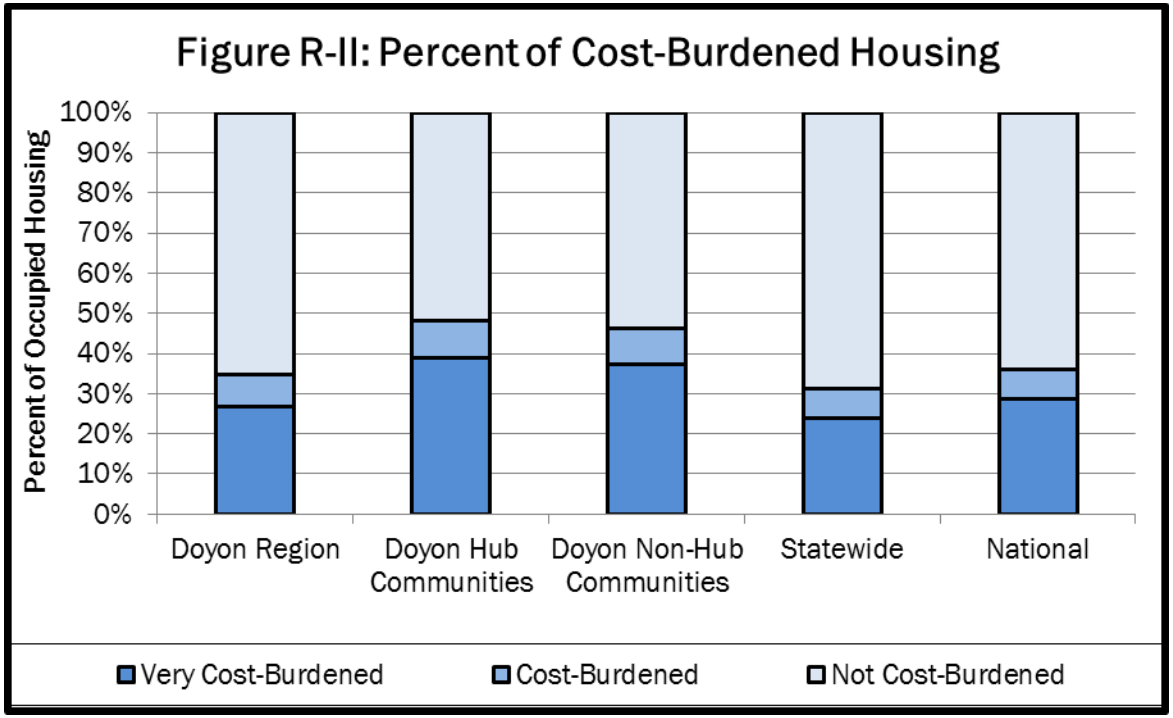
Approximately 5 percent of housing units in the Doyon region are available for sale or rent. The percentage of units for sale or rent in non-hub communities (6 percent) is approximately the same as in the hub community. Additionally, 16 percent of housing units in the Doyon region are considered vacant because they are used for seasonal, recreational or other non-year-round purposes.

[13] U.S. Census Bureau. (2016). *American Community Survey, 2010–2014 American Community Survey Five-year Estimates*.

Affordability[14]

According to estimates from the U.S. Census American Community Survey (ACS), 35 percent of households in the Doyon region are cost-burdened, that is, spend more than 30 percent of their income on housing costs. Non-hub communities have a lower percentage (46 percent) of households that are cost-burdened than the hub communities (48 percent). The rate of cost-burdened households in the Doyon region is approximately the same as the national average (36 percent).

The median household income in the Doyon region is $68,721. This is lower than the statewide median of $71,829. The national median is $53,482.



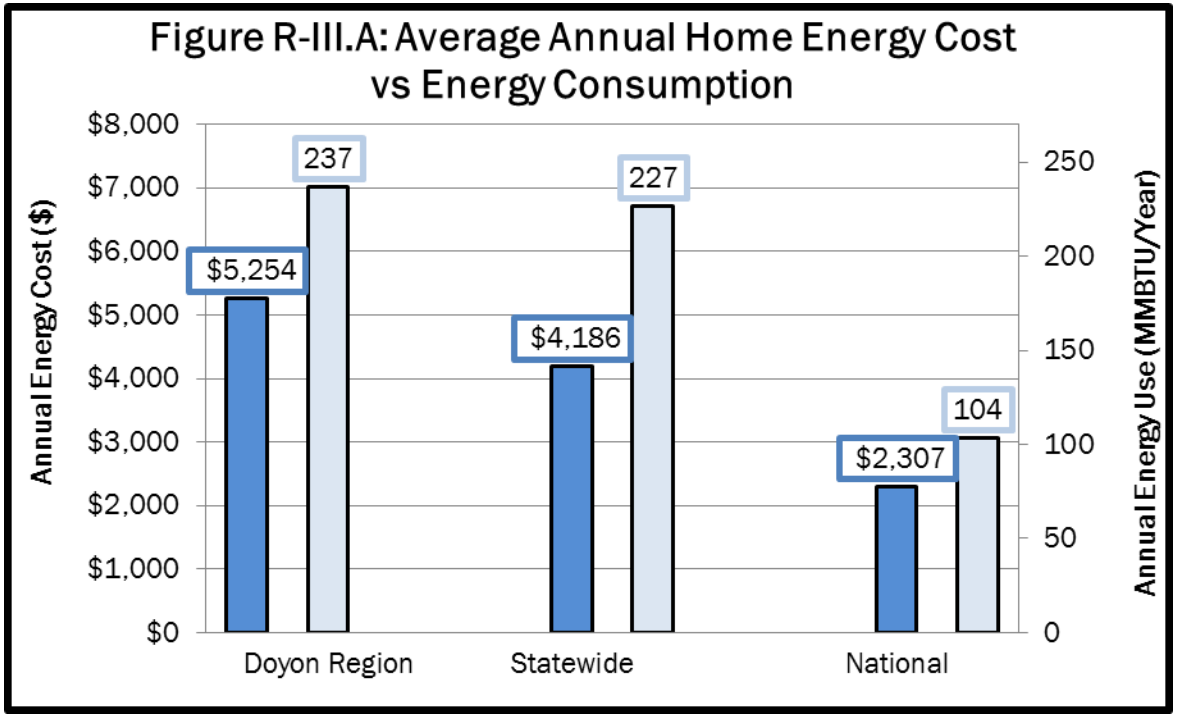
[14] U.S. Census Bureau. (2016). *American Community Survey, 2010–2014 American Community Survey Five-year Estimates*.

Energy[15]

Single-family Units

Single-family homes in the Doyon region consume an average of 237 million BTUs per year in energy, the highest energy consumption in the state. This average annual energy consumption is approximately the same as the statewide average of 227 million BTUs and 2.3 times the national average.

Energy costs for single-family homes in the Doyon region average $5,254 annually. This is the third highest in the state. Doyon energy costs are 1.3 times the statewide average and 2.3 times the national average.



With an average footprint of 1,935 square feet, single-family homes in the Doyon region are approximately the same as the statewide average of 1,955 square feet. Nationally the average house size is 2,425 square feet.

The energy use intensity (EUI), or annual energy used per square foot, for a single-family home in the Doyon region averages 137,350 BTUs per square foot, the sixth highest in the state. This is 61 percent of the statewide average of 227,000 BTUs per square foot and 3.2 times the national average. The energy cost index (ECI), or annual energy cost per square foot, for a single-family home in the Doyon region averages $2.72, the fifth lowest in the state. This is 1.2 times the statewide average of $2.31 per square foot and 2.9 times the national average of $0.95 per square foot.

The home heating index (HHI) in the Doyon region for the average single-family homes is 7.77 BTUs/ft^2/HDD. This is the fourth lowest in the state. The HHI for the Doyon region is 88 percent of the statewide average. The normalized cost of energy, in terms

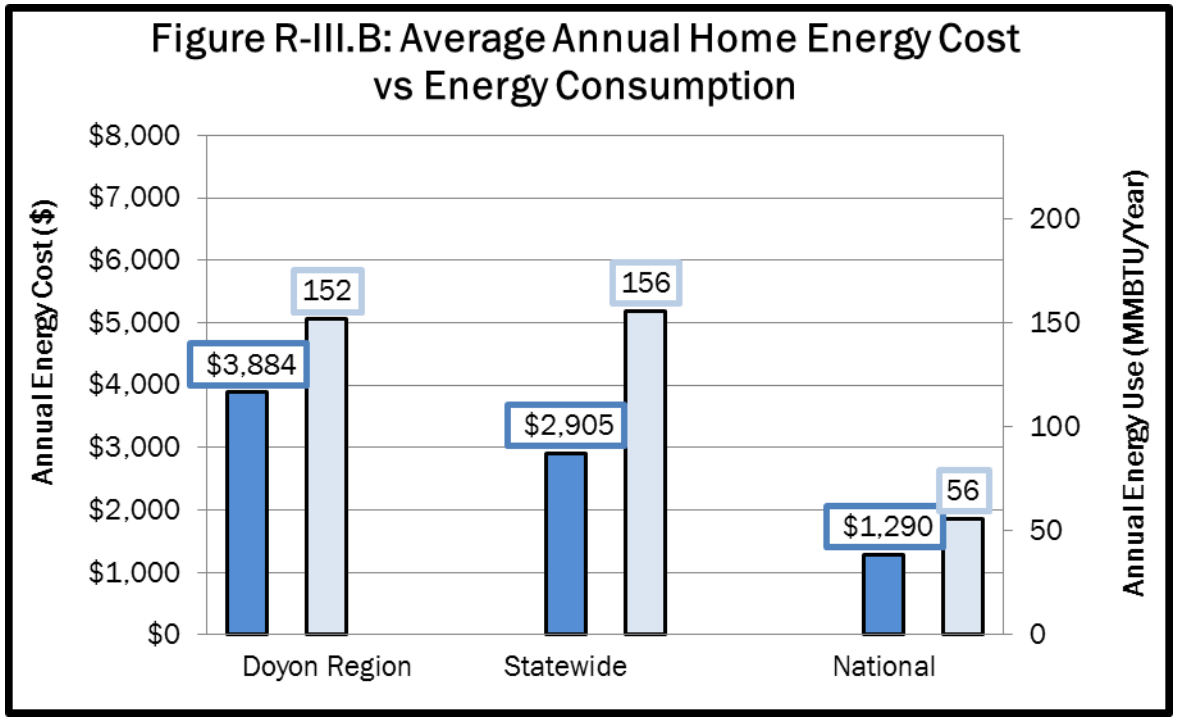
[15] See Appendix C: Methodology for details.

of dollars per million BTUs, for a single-family home in the Doyon region averages $18.73, the fourth lowest in the state. This is 1.2 times the statewide average of $15.80 per million BTUs and 84 percent of the national average of $22.27 per million BTUs.

Multifamily Units

Multifamily housing units in the Doyon region consume an average of 152 million BTUs per year in energy, the fourth highest energy consumption in the state. This average annual energy consumption is 97 percent of the statewide average of 156 million BTUs and 2.3 times the national average.

Energy costs for multifamily housing units in the Doyon region average $3,883 annually. This is the fourth highest in the state. Doyon region energy costs are 1.3 times the statewide average and three times the national average.



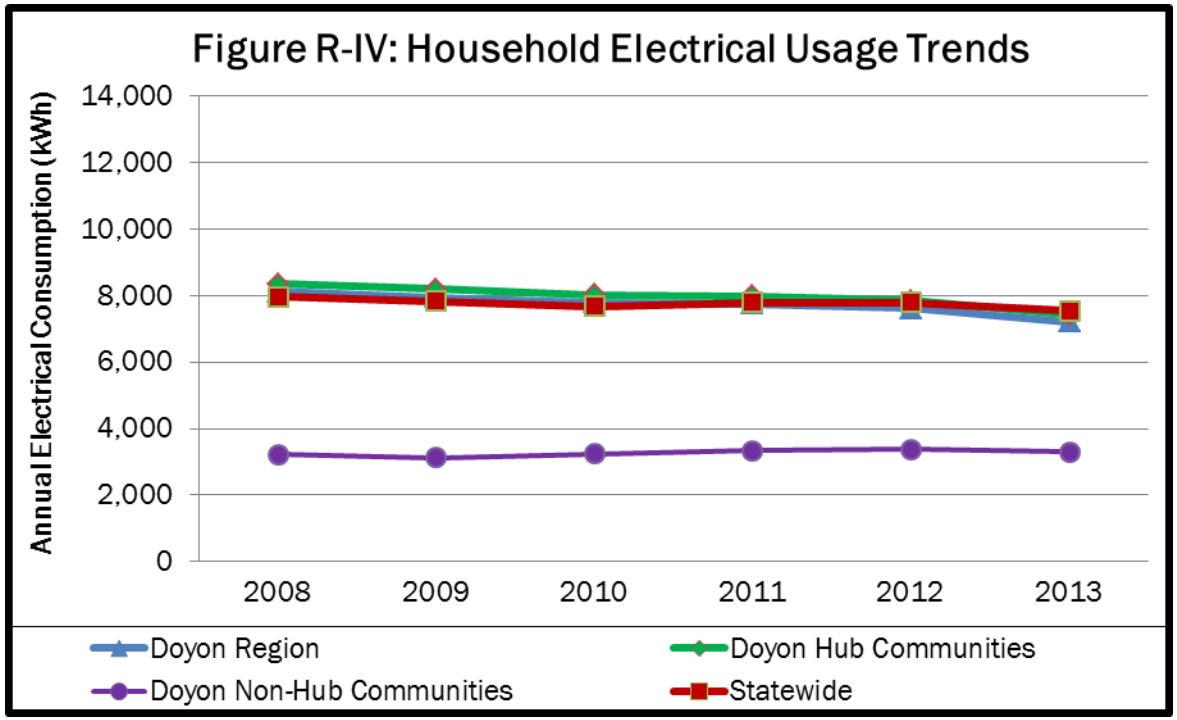
With an average footprint of 1,302 square feet, multifamily housing units in the Doyon region are approximately the same as the statewide average of 1,284 square feet. Nationally the average unit in multifamily housing is 930 square feet.

The energy use intensity (EUI), or annual energy used per square foot for a unit in multifamily housing in the Doyon region averages 126,656 BTUs per square foot, the fifth highest in the state. This is 99 percent of the statewide average of 128,000 BTUs per square foot and 2.1 times the national average. The energy cost index (ECI), or annual energy cost per square foot, for a unit in multifamily housing in the Doyon region averages $2.98, the fifth highest in the state. This is 1.3 times the statewide average of $2.27 per square foot and 2.1 times the national average of $1.39 per square foot.

The home heating index (HHI) in the Doyon region for the average multifamily housing unit is 6.51 BTUs/ft2/HDD. This is the sixth highest in the state. The HHI for Doyon is 79 percent of the statewide average. The normalized cost of energy, in terms of dollars per million BTUs, for a unit in multifamily housing in the Doyon region averages $19.25, the fourth lowest in the state. This is 1.5 times the statewide average of $12.79 per million BTUs and 83 percent of the national average of $23.12 per million BTUs.

Regional Residential Electrical Use Trends[16]

In 2013 the average household in the Doyon region consumed 7,222 kWh of electricity annually. This is approximately 11 percent less than in 2008. Hub communities in the region averaged 7,432 kWh per year. This is a decrease of 11 percent over the same period. In contrast, non-hub communities averaged 3,305 kWh in 2013, an increase of 3 percent since 2008. Statewide, the average household consumed 7,540 kWh of electricity in 2013, a decrease of 5 percent since 2008.



Inefficient and Older Homes[17]

Approximately 1,733 (4 percent) of the occupied homes in the Doyon region are estimated to be 1-star homes. A 1-star home uses approximately four times more energy than it would if built to AHFC's Building Energy Efficiency Standard (BEES). Statewide, approximately 14,966 (6 percent) of occupied homes are 1-star homes.

Homes built before 1980 that have not been retrofit are potentially homes in need. Approximately 41 percent of all homes in the Doyon region fit these two criteria. This is higher than the statewide average of 39 percent.

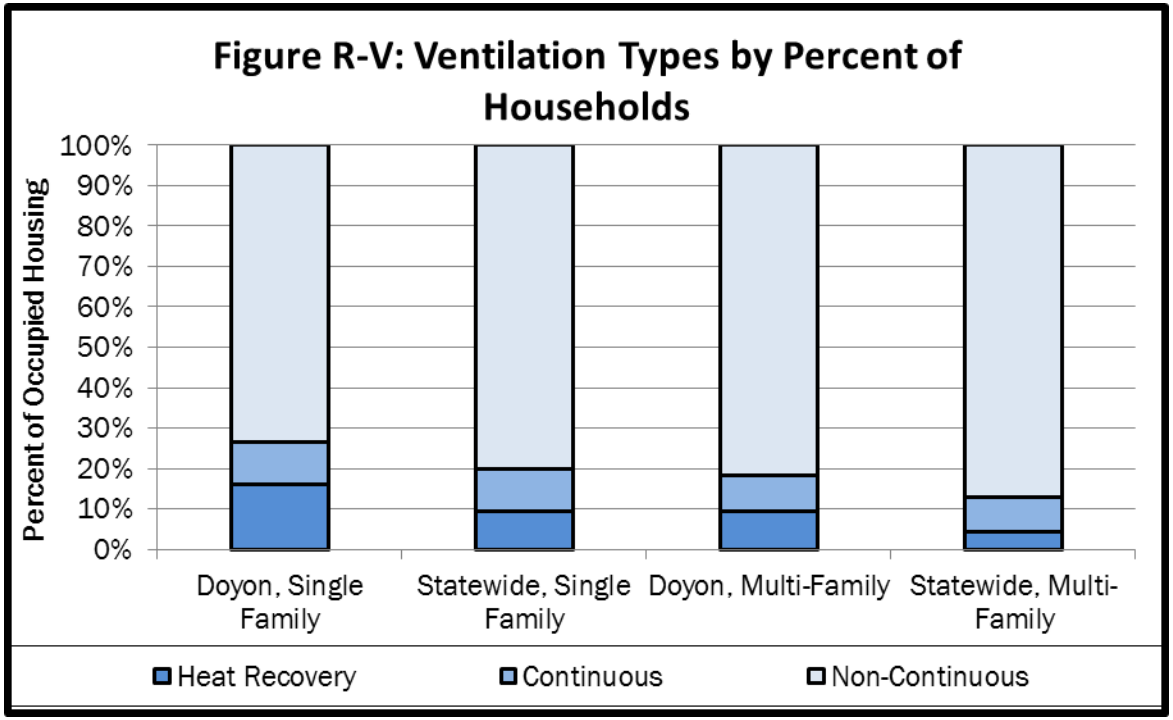
[16] Fay, G., Villalobos Melendez, A., & West, C. (2014). *Alaska Energy Statistics: 1960–2011*. UAA Institute of Social and Economic Research. Retrieved from http://iser.uaa.alaska.edu/Publications/2013_12-AlaskaEnergyStatistics2011Report_Final_2014-04-30.pdf

[17] See Appendix C: Methodology for details.

Housing Condition [18]

Ventilation

Approximately 27 percent of the occupied homes in the Doyon region have heat recovery or continuous mechanical ventilation systems installed. This is the fourth highest in the state. Statewide approximately 20 percent of occupied homes have continuous mechanical ventilation systems, with or without heat recovery.



Indoor Air Quality

A tight home with no or inadequate ventilation has an increased risk of issues with indoor air quality or moisture. The Doyon region has the highest percentage of housing units in the state that are both relatively airtight and lack continuous mechanical ventilation. Approximately 8,566 (21 percent) of the occupied homes in the Doyon region are estimated to be at moderate risk, with 14,868 (37 percent) estimated to be at high risk. Statewide, approximately 30 percent of occupied homes are estimated to be at moderate risk and 26 percent are estimated to be at high risk.

Draftiness

To quantify drafty homes, the following definitions were used. Drafty homes will see test results of between 7 and 12 air changes per hour at 50 Pascals (ACH50) when subjected to a blower door test. Very drafty homes will see test results of greater than 12 ACH50. Approximately 6,950 (17 percent) of the occupied homes in the Doyon region are estimated to be drafty, with 3,485 (9 percent) estimated to be very drafty. Statewide approximately 24 percent of occupied homes are estimated to be drafty and 12 percent are estimated to be very drafty.

[18] See Appendix C: Methodology for details.