



Alaska Housing Yesterday and Tomorrow

Session 1 – Day 1

Presented by

Sandra K. Adomatis, SRA, LEED Green Assoc.



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Objectives

- **Identify Alaska's current housing inventory**
- **Reveal the new building science that may be here
now or coming soon**



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Poll Question 1

Are buyers in your market concerned about energy efficiency of a home when purchasing?



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Poll Question 2

Are buyers in your market willing to pay more for the energy efficient home?



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Part 1.

Alaska's Current Housing Inventory

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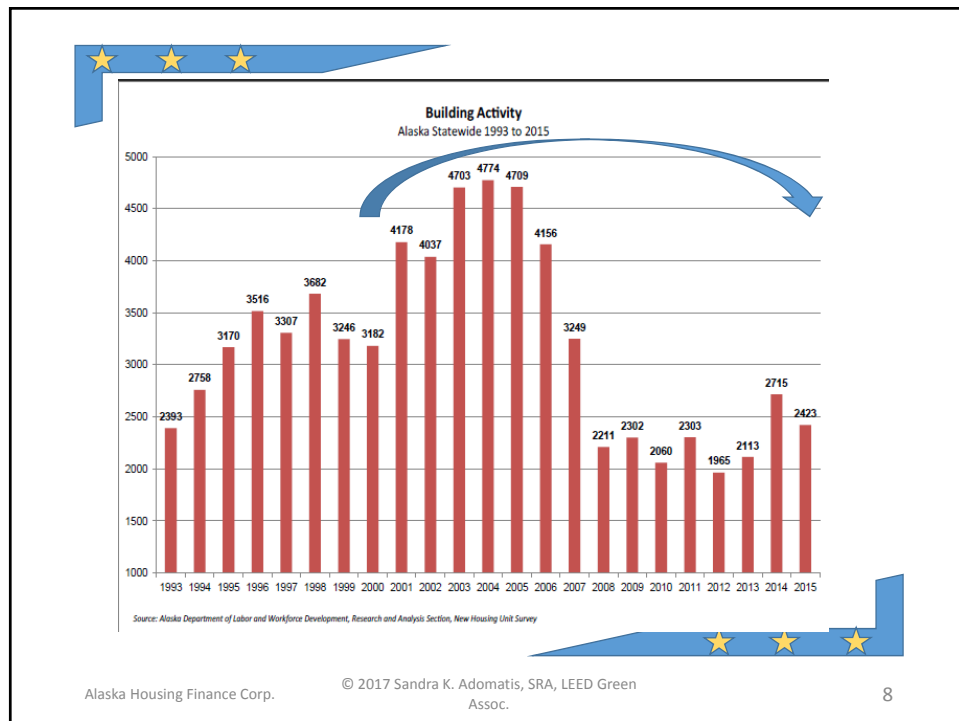
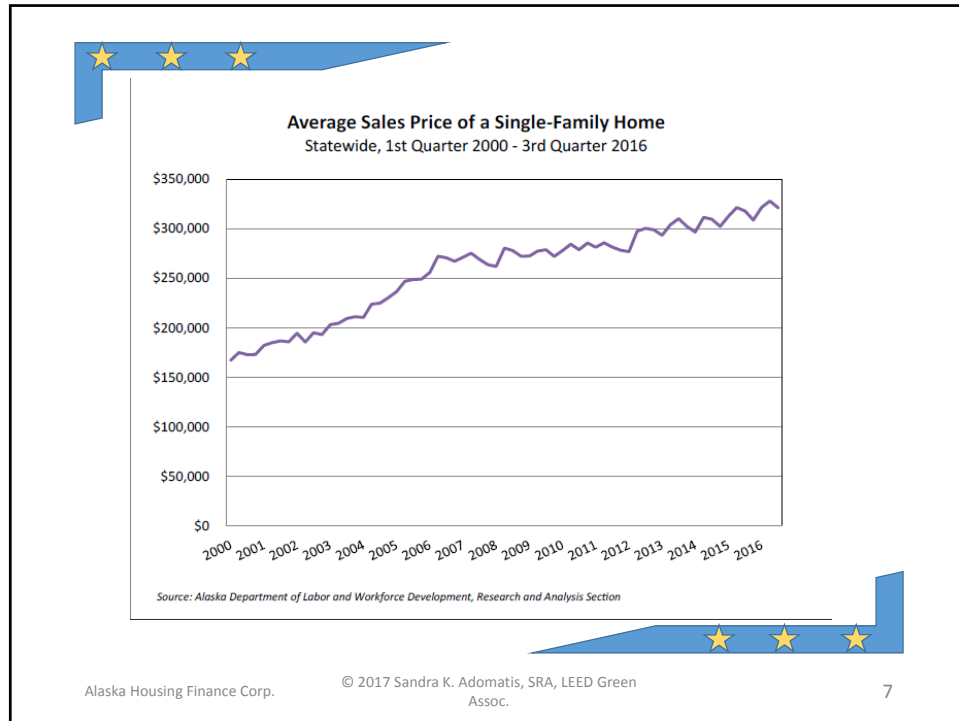
Alaska Housing Inventory

Alaska Housing Statistics	
Number of Houses as of 2015	309,448
Median Value of Houses	\$325,000
Average Value of Houses	\$308,687
Median Year Houses were built	1960-1990
Population as of 2015	738,432
Number of Occupied Households	253,000
Persons per Household	2.81

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Where does Alaska's energy consumption per capita rank?



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A. 10th highest

B. 5th highest

* C. 4th highest

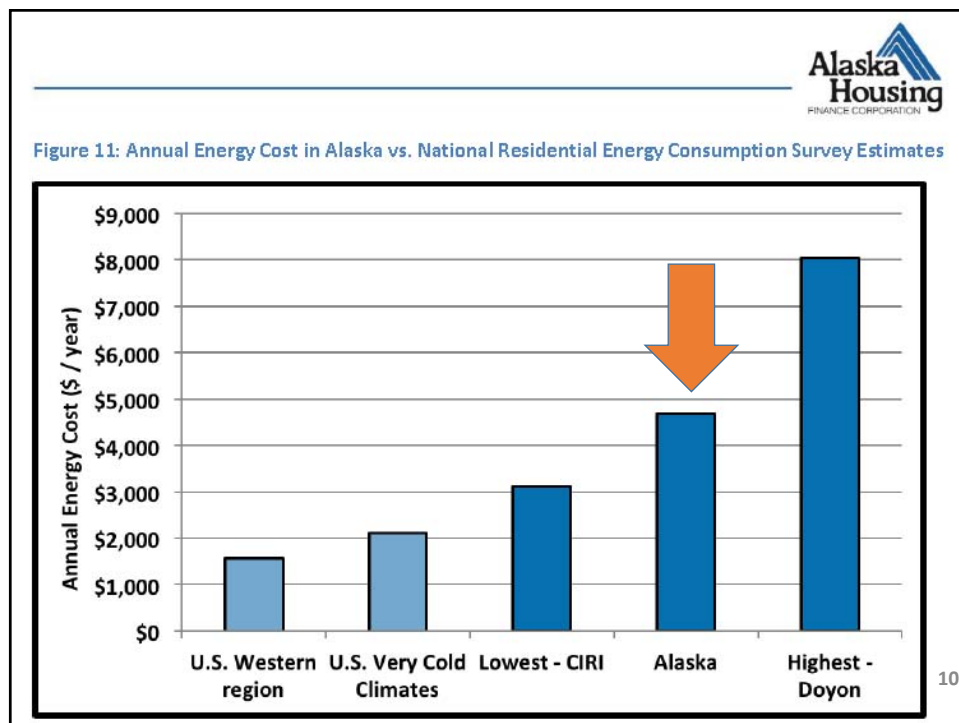
D. 1st highest

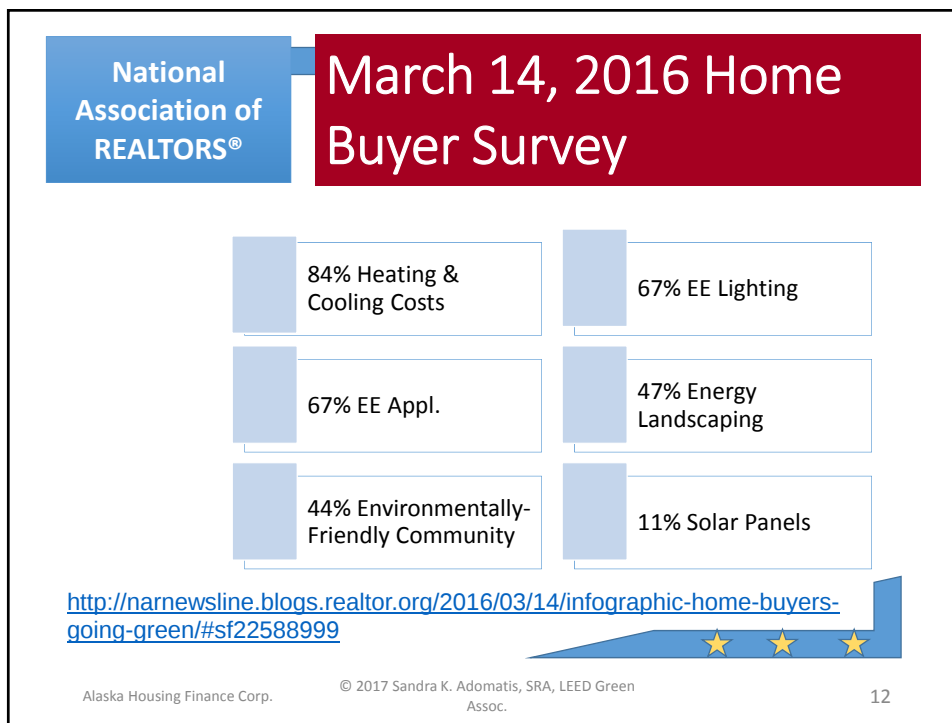
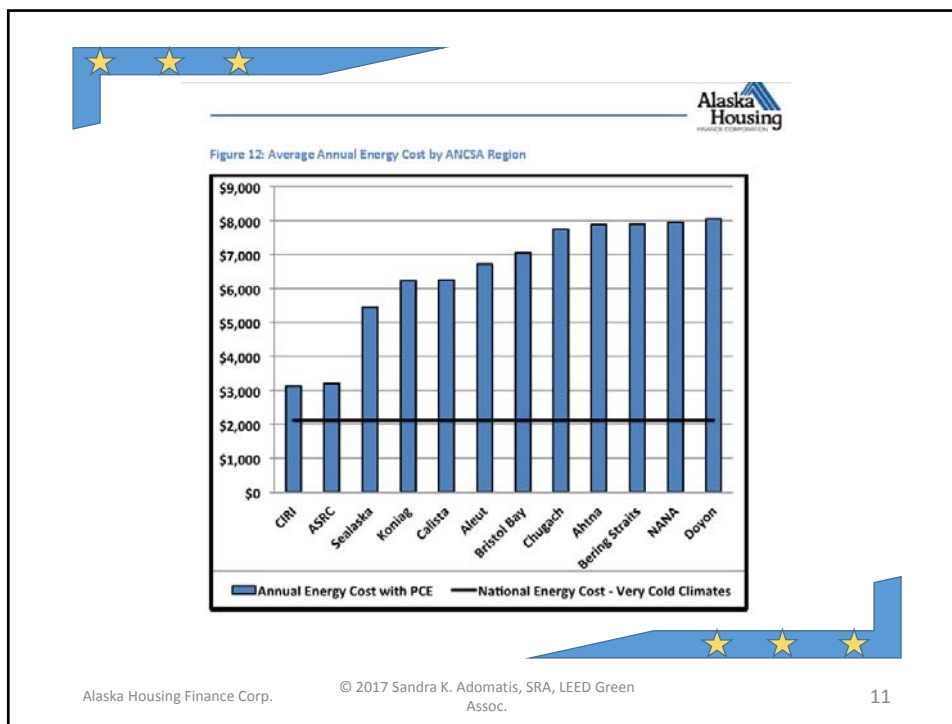
<https://www.eia.gov/state/rankings/>



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The new home competition

Risk	Differentiation	Innovation
Aging housing stock with: • High utility bills • Poor comfort • Health risks • Moisture problem risks • Excessive bugs/pests • Durability issues • Obsolete technology		



85%
of homes
sold

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Nothing is hidden anymore!



This existing home can be X-rayed by an infrared camera to expose the hidden.

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Nothing is hidden anymore!

What do you think this says about this ceiling?

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Nothing is hidden anymore!

Wow! Do you want to stand in front of this window?

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Imagine the MLS Photo Gallery Showing this!





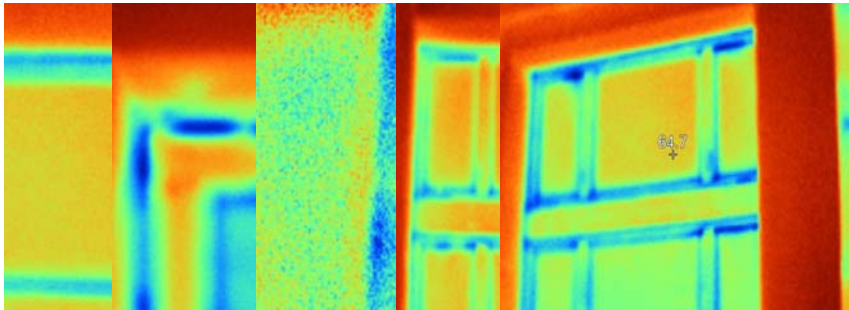

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Comfort? Low Energy Cost?





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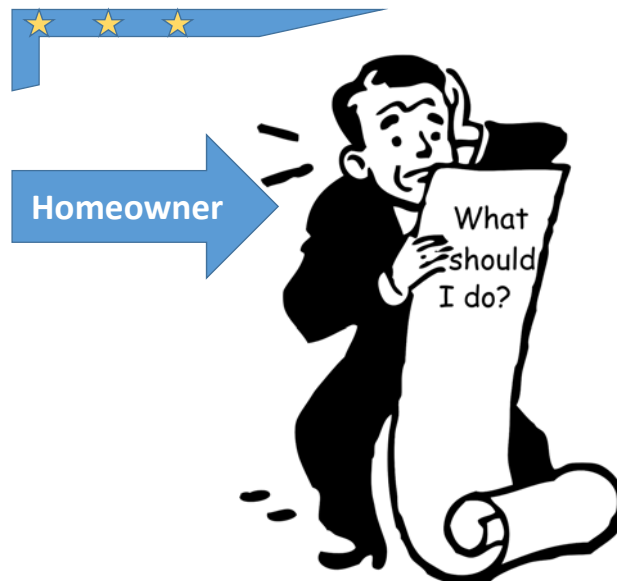
Characteristics of Houses Built to Higher Standards

- Energy Efficient
 - Comfortable
 - Improved Air Quality
 - Healthier
- 

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How many hours of building science were you required to take prior to becoming licensed as a real estate appraiser or sales/broker?



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Part II

New building science
that may be here now or
coming soon

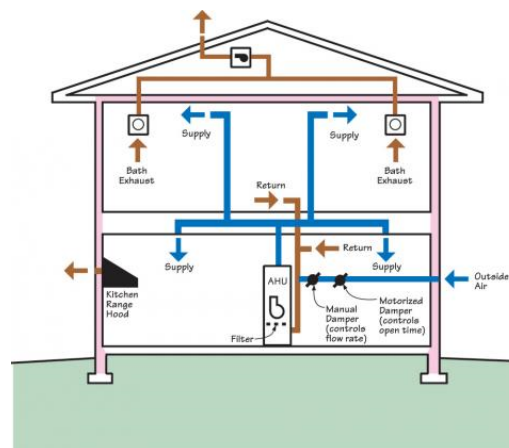


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Building Science Must Consider

- Site Orientation
- Water Efficiency
- Energy Efficiency
- Indoor Air Quality
- Materials that last and are environmentally friendly
- Operations and Maintenance – Financial benefits

The Building as a Whole System





Site Orientation

N

- Build to the orientation
- Take advantage of site assets
- Solar access for daylighting
- Minimize site weaknesses
- Keep water runoff on site
- Landscape minimizing water needs



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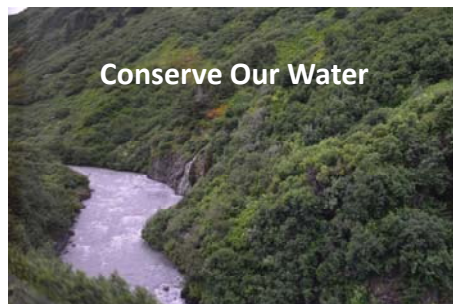
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Water Efficiency

- Low Flow Show Heads-
Faucets-toilets
- Recycle greywater



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Energy Efficiency

- High Efficiency Appliances
- Solar Thermal or PV
- Daylighting
- High Efficiency Mechanicals
- Low-E Windows-Double/Triple Pane



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Three Rs to a Better Business Model

1. Retrofit it
2. Rate it
3. Record it



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AkWarm©

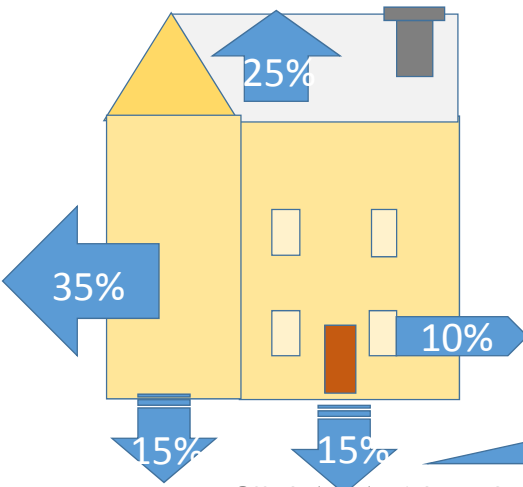
Score	Stars		Score	Stars
0-39	1		78-82	4
40-49	1+		83-88	4+
50-59	2		89-91	5
60-67	2+		92-94	5+
68-72	3		95	6
73-77	3+			



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Areas of Air Leaks



**Energy Loss –
Windows are not
the top of the list
or the lowest
lying fruit.**

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What are Your Climate Zones?



Climate Zones: 6,7,8,9

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Tight Envelope

Envelopes have ratings too – Review the AK HERS BEES – Climate Zones 7-8

	Envelope Tightness ACH50 Requirements	Climate Zones
Energy Star V3.0	3	7-8
2009 IECC	7	1-8
2012 IECC – Modified for AK HERS BEES	<4	7-8
2000-2006 IECC	No requirement	1-8
Passive House	0.6	1-8
AK since 1991	<7	7-8

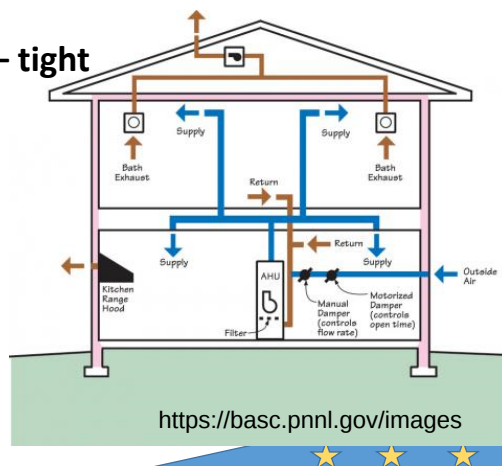
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Indoor Air Quality

- **HRV or ERC– Air Ventilation System – tight envelope**
- **Low VOC Materials**
 - Paints
 - Carpets
 - Dyes – Mastics
 - Furniture



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Indoor Air Quality

Known Radon Potential:

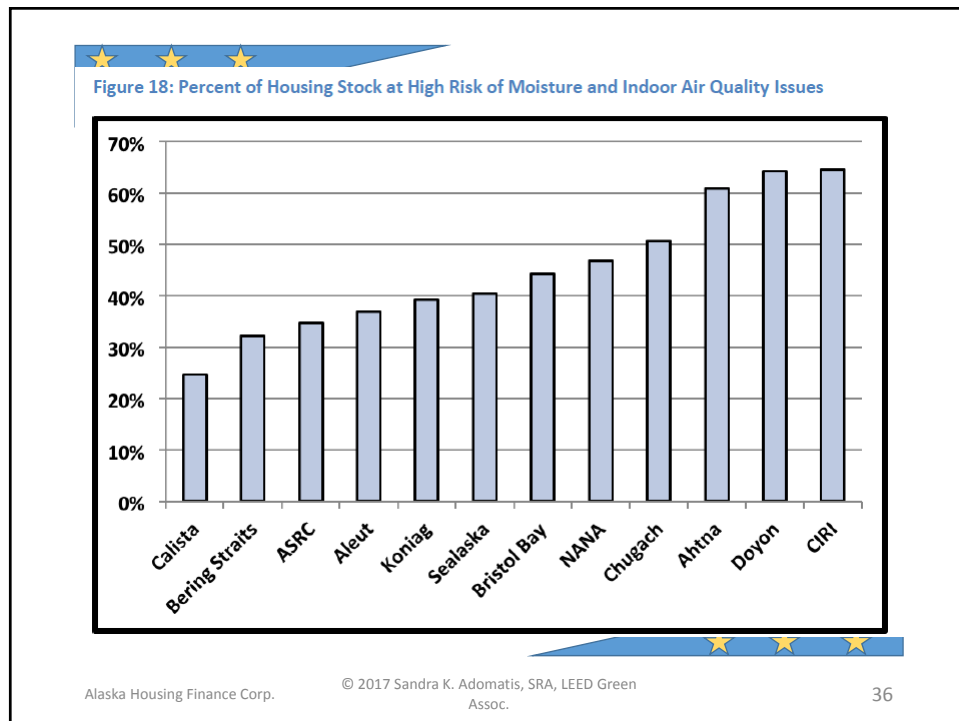
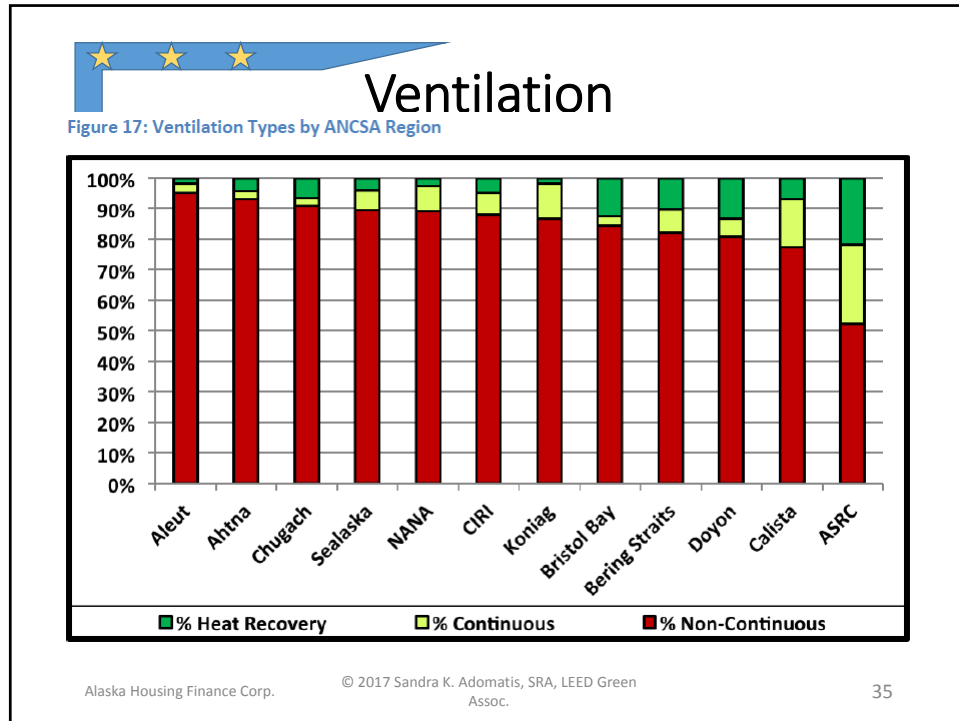
Fairbanks
Northern
Matanuska-
Susitna
Valleys



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Moisture Control

- **Ideal humidity is between 40% and 60% according to health experts**



<http://articles.mercola.com/sites/articles/archive/2014/01/13/low-humidity-health-effects.aspx#>!

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Indoor Air Quality

- **Compromised in homes by**

- Tightening the envelope without consideration of air exchange and humidity control



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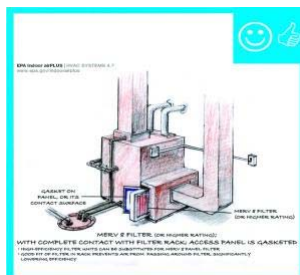
Indoor Air Quality

- **Compromised in homes by**
 - Use of materials that have formaldehyde
 - Affects the eyes, nose, throat
 - May cause headaches, nausea, asthma-like symptoms, and shortness of breath



Indoor Air Quality

- **Compromised in homes by**
 - Furnace filters that are not changed monthly



Characteristics of a Healthy Home

- **Comfortable – No hot or cold rooms**
- **Good Indoor Air Quality**
- **Good Lighting – Natural light**



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Insulation

Measure	Primary Housing Effect	Secondary Housing Effect	Expanded Health Outcomes
Insulation	Heating /Cooling retained within dwelling	• Comfortable indoor temperatures • Lower indoor relative humidity • Reduced allergens	• Reduced deaths due to temperature extremes • Reduced symptoms of respiratory disease

Source: Home Rx: The Health Benefits of Home Performance - Dec. 2016 by Dept. of Energy

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Air Sealing – Improved Heating Systems

Measure	Primary Housing Effect	Secondary Housing Effect	Expanded Health Outcomes
Air Sealing Improved	Heating provided to whole dwelling	• Comfortable indoor temperatures	• Reduced deaths due to cold
Heating System Improved	Cleaner burning heating system	• Reduced gases and particles	• Reduced symptoms of respiratory disease
Cooking Systems		• Increased useable living space	• Reduced stress and infectious disease

Source: Home Rx: The Health Benefits of Home Performance - Dec. 2016 by Dept. of Energy

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Improved Ventilation

Measure	Primary Housing Effect	Secondary Housing Effect	Expanded Health Outcomes
Improved Ventilation	Combustion by-products properly vented to outdoors Increased air flow within dwelling	• Reduced gases and particulates • Reduced gases and particulates • Reduced dampness • Reduced mold	• Reduced symptoms of respiratory disease • Reduced risk of cancer • Reduced symptoms of cardiovascular disease • Reduced arthritis • Reduced depression

Source: Home Rx: The Health Benefits of Home Performance - Dec. 2016 by Dept. of Energy

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Materials that last – Durable – Environmentally Friendly

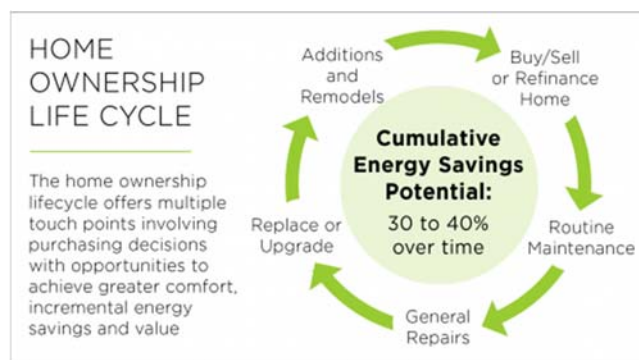


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Opportunities for Improvement



<https://energy.gov/eere/buildings/home-improvement-catalyst-hi-cat>

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What does all this building science mean to you?



- Are you listing it at the right price?
- Can you explain to a buyer why the EE Home is worth more?
- Are appraisers choosing "comparables" or just sales?

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Part 2.

Reveal the New Building Science that may be here now or coming soon

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New houses have name brands. How does the existing home compete?



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Zero Energy Ready Home



The home of the future has seven systems

1. Optimized Thermal Protection
2. Whole-House Water Protection
3. High-Performance Heating and Cooling Systems
4. Complete Package of High-Efficiency Components
5. Comprehensive Indoor Air Quality System
6. Solar Ready Construction
7. Enhanced Quality Assurance

ZERH Meets ENERGY STAR® Standards



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ZERH Spec = Clear Definition



A Zero Energy Ready Home is a...
High-performance
 home, so
energy efficient,
 all or most
 annual energy
 consumption
 can be offset by
 renewable energy.

Slide 51

• Which house would be most suitable to install solar PV?

2

1



Will we begin to see listings identifying solar potential?

Good Solar PV Potential on rear/south side of house.



For Sale



Slide 53

4% of Homes in Alaska are ENERGY STAR®

New Homes Partners in Alaska

Program Indicators in Alaska [Compare to other states](#)

- 11,782 ENERGY STAR certified homes built to date
- 67 ENERGY STAR certified homes built 2016 to date
- 66 ENERGY STAR certified homes built in 2015
- 0 ENERGY STAR for Homes Partners

Based on national averages, ENERGY STAR certified homes built in 2015 are the equivalent of:

- Reducing CO₂ emissions by 112 metric tons
- Growing 2,838 tree seedlings for 10 years
- Avoiding the consumption of 260 barrels of oil
- Removing 23 passenger vehicles from the road

Challenge - How do you find them?



True Cost of Home Ownership

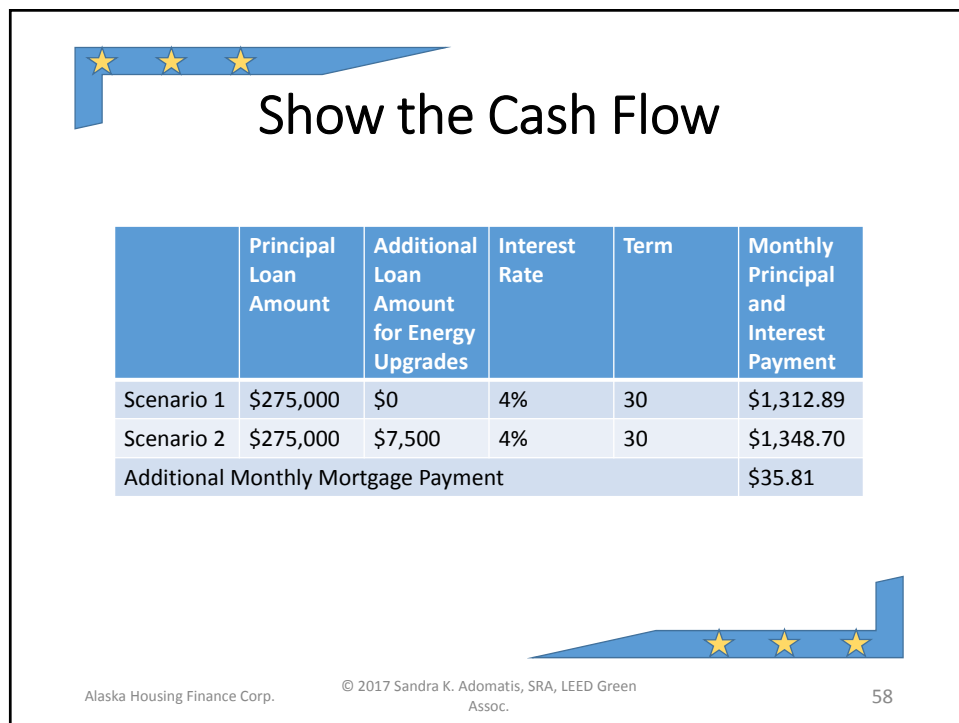
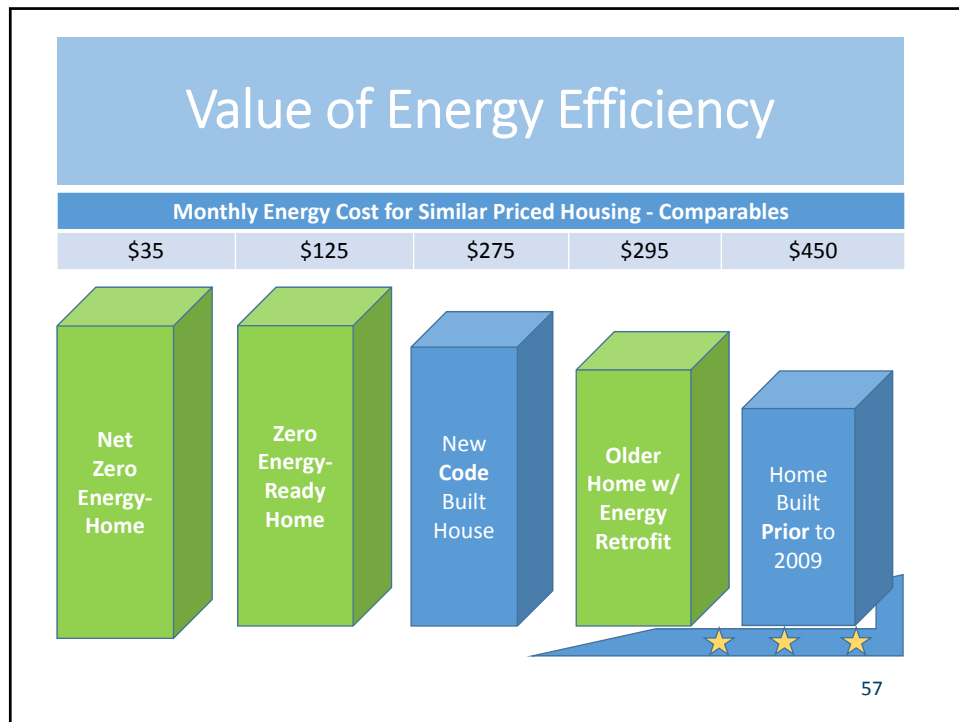


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Articulating the deal

Principle	Sale Price Financed
Interest	Interest on Loan
Taxes	Real Estate Tax
Insurance	Hazard + Private Mtg Insurance
Energy	Energy costs

Slide 56



Show the Cash Flow

Annual Energy Consumption				
	Heating	Cooling	Lighting	Total
Scenario 1	\$3,345	\$189	\$1,164	\$4,698.00
Scenario 2	\$2,744	\$159	\$1,075	\$3,978.00
Annual Savings	\$601	\$30	\$89	\$ 720.00
Average Monthly Energy Savings				\$60.00
Increased Monthly Mortgage Cost to Achieve from above (Energy Savings)				-\$35.81
Monthly Advantage – Cash Flow				\$24.19

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Pay 2% More for House and It will cost you \$24.19 per month less.



Poll Question 3

How many real estate agents show the price of a home using this technique?

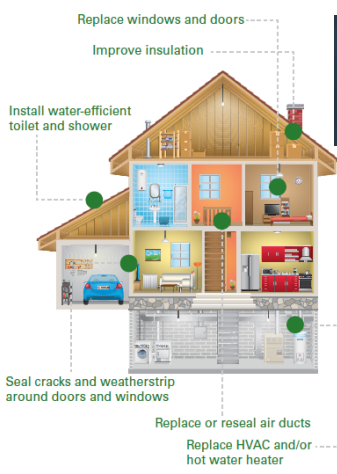


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Apply that concept to Valuation



HomeStyle® Energy Mortgage Loans

Announcement SEL-2016-03

Mar 29, 2016

This update includes the HomeStyle Energy mortgage loan, designed to help lenders offer affordable financing to borrowers who want to enhance the comfort of their homes and reduce utility costs by making energy improvements. Available to all Fannie Mae lenders.

<https://www.fanniemae.com/content/fact-sheet/homestyle-energy-overview.pdf>

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Fannie Mae Selling Guide B5-3.3-01

- verify that the recommended energy improvements are cost-effective. Energy improvements are determined to be cost-effective when the cost of the improvements, including maintenance, is less than the present value of the energy saved over the useful life of the improvements. (The cost-effectiveness of the improvements may be assessed in the aggregate and are not required to be assessed separately for each energy improvement.)

The report must meet at least one of the following standards:

- A Home Energy Rating Systems (HERS) report completed by a HERS rater who is accredited under the Mortgage Industry National Home Energy Rating Standards (HERS Standards), as adopted by the Residential Energy Services Network (RESNET®). A list of accredited HERS raters by state can be located at [RESNET's website](#).
- A Department of Energy (DOE) Home Energy Score Report completed by an independent third-party energy assessor with credentials obtained through one or more of the organizations listed as eligible under the DOE program. A list of acceptable organizations can be found on the [DOE website](#).
- A rating report completed by an independent and certified home energy consultant or auditor, comparable in rating methods and scope to the HERS or Home Energy Score evaluation, and that is permitted under a local or state level home energy certification or audit program.



Alaska Retrofit Information System ARIS

An AHFC database that stores detailed information from every energy audit conducted using the AKWarm software. The database now houses information for housing units accounting for approximately 30% of occupied housing in Alaska.





Energy Efficiency Calculator

- What is it?
- Designed for
 - Appraisers
 - Real Estate Agents
 - Lenders
 - Builders



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<https://akrebate.ahfc.us/AKAppraisals/AppTool.aspx>

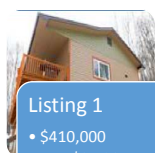
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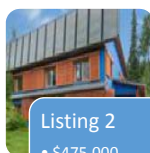
Energy Efficiency Calculator

Real Estate Agent – Builder – Buyer - Lender:



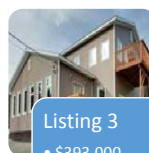
Listing 1

- \$410,000
- PITI-\$2,139
- E-\$262
- PITIE
- \$2,401



Listing 2

- \$475,000
- PITI-\$2,468
- E-\$230
- PITIE-\$2,698



Listing 3

- \$393,000
- PITI-\$2,053
- E-\$369
- PITIE-\$2,422

Help buyers make more informed choices.

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Poll Question 4

How many appraisers have used the Energy Efficiency Calculator in an appraisal?



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Search for star rating and estimated energy costs by address

Note: Data is only available for houses with energy ratings, therefore a search for a valid address may not yield results.

*House Number:

[Redacted]

*Street:

[Redacted]

City:

Fairbanks

Zip:

99712

Address	City	Zip	Star Rating	Estimated Energy Cost
[Redacted]	FAIRBANKS	99712	5 Star +	\$3152.97

Close

Run Search



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How do you handle Geothermal or Solar PV?

Fuel Types

Utility Costs Cover:

Space Heating Fuel: (Recommended Fuel Types)

Hot Water Fuel:

Appliances & Lights Fuel:

Utility Areas

Electric Utility:

Natural Gas Utility:

Electric
National Gas
Propane
Heating Oil 1
Heating Oil 2
Wood, Birch
Wood, Spruce
Coal



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Value Solar PV Using Free Tool



AKWarm can use this tool!

Offers Two Different Versions:

PV Value® Consumer

PV Value®PRO for professionals

https://www.pvvalue.com/pvvalue/property_address



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Present Value Calculation



Present Value Calculation		
Descriptor	Inputs	HP12C Keys
Annual Energy Savings	\$3,300	PMT
Discount Rate	$3\% + 2\% = 5\%$	5 I KEY
Discount Term	12 Yrs	12 N Key
Present Value	\$29,250 rd	PV Key



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Energy Efficiency Calculator uses this method also.

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Appraisers Must Explain Inputs

- **Savings Amount** – Based on subject estimated energy bill compared to comparable energy bills as established by Ratings found on Energy Efficiency Calculator
- **Term discounted** – typical homeownership period
- **Discount Rate – (Safe Rate + Risk Factor)**
 - Safe Rate – Mortgage Interest Rate
 - Risk Rate – How sure are you of saving amount?

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A Test of Reasonableness in Appraisal Report

Energy Efficiency Adjustment Support

Income Approach	Present Value	\$18,000
Added Cost		\$25,000
Paired-data		\$10,000

Reconcile the three indications by discussing the strengths and weaknesses of each method.

Appraisers Do Not Determine Value

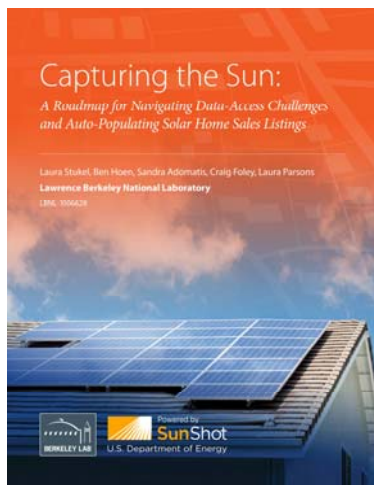


MLS must provide accurately populated searchable fields for green features.

KEY Data Sources Must Provide Energy Efficiency Facts:

If energy efficient home data does not reflect higher sales prices than non energy efficient homes, the appraised value will not reflect higher values.

Auto Populating the MLS



A Roadmap on how auto populating the MLS might work. The study provides a discussion of

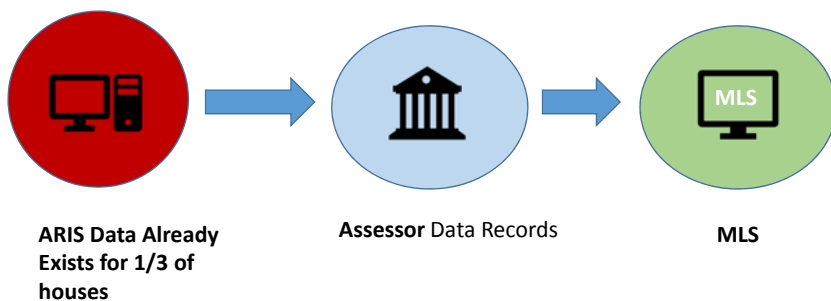
- Benefits
 - More accurate data
 - Lessen liability of agents & appraisers
 - Improve appraised values
- Challenges
 - Privacy Issues
 - Software
 - Costs

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Alaska Advantage to Auto Population



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Time for Evaluations

Speaker: Sandra K. Adomatis

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See you in the next session!

thanks

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