AkWarm Home Inputs

Client
Prototype Home
AK

Home Location
Interior, YK Delta, Bristol Bay Region
Fairbanks, AK

Reference City: Fairbanks
Electric Utility: Golden Valley Electric - Residential
Gas Utility: Fairbanks Natural Gas - Residential

Rating Information
Rating Type: From Plans
Date: 10/24/2014

Rater
Dustin Madden
Cold Climate Housing Research Center

Occupancy
4 Occupants
Owner Occupied

House Type/Size
House Type: Single Family
Heated Floor Area, sq.ft.: 1,906
Conditioned Garage Floor Area, sq.ft.: 670.9
# of Bedrooms: 3
Windshielding: Average

Actual Energy Costs
Annual Fuel Cost: $0.00
Annual Electric Cost: $0.00

Air
From Blower Test CFM @ 50 Pascals: 2310
ACH @ 50 Pascals: 5.66
Average Ceiling Height to Ground or Exposed Floor: 15.2
Heated Volume: 24,483.4
Ventilation System Type: None
Improvement to Evalutate: Install Heat Recovery Ventilation
DIY Costs: No

Heating
Thermostat Setpoint: 70
Night Setback Thermostat: None

Primary System
Fuel Type: #1 Fuel Oil
Equipment Type: Improved efficiency boiler
Flame retention burner; improved heat exchanger, vent dampers, modulating aquastat
Certified AFUE: 70
Upgrade Devices: None
Heat Distribution: Hydronic

0% in Un-conditioned Space, Not Insulated
0% in Semi-conditioned Space, Not Insulated
Improvement to Evalutate: New Boiler
Location: Primary Heating System
Excluded Levels: ...
Level: 83%
Level: 87%
Level: 94%, <130 F distribution
DIY Costs: No

Secondary System
No System Installed

Cooling
Cooling System: None Present

Hot Water Heater
Fuel Type: #1 Fuel Oil
Equipment Type: Standard Oil Tank
Conventional storage tank with 1 inch of fiberglass insulation - pre 2004
Standard Energy Factor: 0.55
Location: Conditioned Space, > 60 deg F
Improvement to Evalutate: Oil On-Demand Type
DIY Costs: No

Other
Dryer: Electricity
Range: Electricity
Misc. Electric Use: Average

Fuel Prices
Electricity, ($/kWh): $0.24 (Approx. Utility Price)
#1 Oil, ($/gallons): $3.05 (Library Price)

Shell Components

Floors - Total Area 1,601.7 sq. ft.

Below Grade Floor Perimeter: Garage
Temperature: Garage
Gross Area, Sq. Ft.: 208.3
Distance to Grade: On Grade
Insulation Covers Slab Perimeter: Yes
Insulation for 0' to 2' Perimeter: None
Insulation for 2' to 4' Perimeter: None
Insulation Quality: OK
Calculated R-Value: 6.7

Below Grade Floor Center: Garage
Temperature: Garage
Gross Area, Sq. Ft.: 253.5
Distance to Grade: On Grade
Center Insulation: None
Insulation Quality: OK
Calculated R-Value: 35.5

Below Grade Floor Center: House

Temperature: Living Space
Gross Area, Sq. Ft.: 679.3
Distance to Grade: 4.16 feet below
Center Insulation: None
Insulation Quality: OK
Calculated R-Value: 44.5

Below Grade Floor Perimeter: House
Temperature: Living Space
Gross Area, Sq. Ft.: 460.6
460.60
Distance to Grade: 4.16 feet below
Insulation for 0' to 2' Perimeter: None
Insulation for 2' to 4' Perimeter: None
Insulation Quality: OK
Calculated R-Value: 17

Walls - Total Area 2,587 sq. ft.

Above Grade Wall: Garage
Temperature: Garage
Gross Area, Sq. Ft.: 433.8
Wall Type: Single Stud
Siding Configuration: Siding and Sheathing
Insul. Sheathing: None
Structural Wall: 2 x 6, 16 inches on center
R-15 Batt:FG or RW, 3.5 inches
Window and door headers are insulated: Yes
Insulation Quality: OK
Calculated R-Value: 15.7

Below Grade Wall: House
Temperature: Living Space
Wall Length, Ft.: 123.9
Average Wall Height: 4.16
Top of wall section: On Grade
Is a Crawlspace Wall: No
Wall Type: Masonry
Insul. Sheathing: None
Masonry Wall: Concrete block, 2 core
Insulation Quality: OK
Calculated Area, Sq. Ft.: 515.4
Calculated R-Value: 4.7

Above Grade Wall: House
Temperature: Living Space
Gross Area, Sq. Ft.: 1,637.7
Wall Type: Single Stud
Siding Configuration: Siding and Sheathing
Insul. Sheathing: None
Structural Wall: 2 x 6, 16 inches on center
R-15 Batt:FG or RW, 3.5 inches
Window and door headers are insulated: Yes
Insulation Quality: OK
Calculated R-Value: 15.7
Improvement to Evalutate: ADD rigid foam to interior or exterior, no wall covering costs
Location: Above-Grade Wall: House

Excluded Levels: ...
Level: R-5
Level: R-10
Level: R-15
Level: R-25
Level: R-30
Level: R-40
Level: R-50
DIY Costs: No

Doors - Total Area 139.1 sq. ft.

Garage Door: Garage
Temperature: Garage
Gross Area, Sq. Ft.: 93
Door Type: Sectional, polyurethane core, 1-3/8" w/ thermal break
Certified U-Value: 0.20
Insulating Blanket: None
Calculated R-Value: 5

Exterior Door: House
Temperature: Living Space
Gross Area, Sq. Ft.: 46.1
Door Type: Entrance, Fiberglass, polyurethane core, half lite
Certified U-Value: 0.31
Storm Door: None
Calculated R-Value: 3.2
Improvement to Evalutate: REPLACE door with better insulated door
Location: Exterior Door: House
DIY Costs: No

Windows - Total Area 181.7 sq. ft.

Window: SouthWindows
Temperature: Living Space
Gross Area, Sq. Ft.: 63.6
Orientation: South
External Shading: Little
Glass: Double, glass
Certified U-Value: 0.50
Certified SHGC: 0.770
Solar Heat Gain Coefficient including Window Coverings: 0.58

Window: House
Temperature: Living Space
Gross Area, Sq. Ft.: 118.1
Orientation: Not South
External Shading: Moderate
Glass: Double, glass
Certified U-Value: 0.50
Certified SHGC: 0.770
Solar Heat Gain Coefficient including Window Coverings: 0.58
Improvement to Evalutate: REPLACE window with triple pane window
Location: Window/Skylight: House
Excluded Levels: ...
Level: triple pane, low-E, argon
DIY Costs: No

Ceilings - Total Area 1,717 sq. ft.

Ceiling with Attic: House
Temperature: Living Space
Gross Area, Sq. Ft.: 1,717
Framing Type: Energy Truss
Framing Spacing: 24 inches
Insulated Sheathing: None
Bottom Insulation Layer: R-30 Batt:FG or RW, 9.5 inches
Top Insulation Layer: None
Insulation Quality: OK
Calculated R-Value: 32.4
Improvement to Evalutate: ADD blown cellulose to Energy Truss
Location: Ceiling w/ Attic: House
Excluded Levels: ...
Level: R-12
Level: R-33
Level: R-42
DIY Costs: No

Design Heat Loss
Outdoor Temperature at Heating Design Conditions Option: Use Library Value
Outdoor Temperature at Heating Design Conditions Value (deg F): -47.0
Airport Wind Speed at Heating Design Conditions Option: Use Library Value
Airport Wind Speed at Heating Design Conditions Value (mph): 3.1
Mechanical Ventilation Flow Rate Option: User Override
Mechanical Ventilation Flow Rate Value (cfm): 0.0
Main Home Heating System Distribution Efficiency Option: From Primary Heating System
Main Home Heating System Distribution Efficiency Value (%): 100.0
DHW Load is Served by Primary Heating System: No
Garage Load is Served by Primary Heating System: No
Garage Temperature (deg F): 70.0
House/Garage Uninsulated Common Area (sq feet): 0.0
Mechanical Ventilation Rate for Garage (cfm): 0.0
Garage Heating System Distribution Eff (%): 100.0

AkWarm Version Info
Application: AkWarm, Version 2.4.0.0
Calculation Engine: 2.4.0.0
Energy Library: 3/24/2015

Filename: C:\Users\dustin\Dropbox\R15 HERS\03. Work\AKWarm Test Models\15.2 Gal DHW Models \Median As-Is Models\Fairbanks Prototype - Retrofit Model - 15.2 DHW.hm2
Report Date: 3/30/2015