

## High Performance Home Cost Data Addendum

Below is a summary of the builder's incremental costs beyond local code, related to energy efficient and/or sustainable components of this property. This information is provided for real estate professionals such as appraisers and brokers, as well as prospective homebuyers.

**Instructions to Builder/Realtor/Owner:**

*Fill out page 1 summary with data from pages 2 - 3*

Property Data	
Property Address	
Property Tax ID#	
Representative Name	
Representative phone/email	

Home Energy Rating Performance Label		
Performance Label:	Performance Label Score	
Estimated Energy Costs: _____	Performance Label Date	
Benchmark:	Benchmark Score	

Home Certification Information					
Certification		Level		Year	

[illegible]

## Fill out incremental cost above code or standard practice

Copy all entries to the summary on Page 1

The following energy efficient or green features were added to this home under the categories below. Each respective category has been assigned a cost according to construction, installation, process or procurement.

Durability Strategies		
Plywood (versus OSB)		\$
Rainscreen Wall System with 3/8" Air Space		\$
Window and Door Sill Pan Flashing System		\$
40-Year Roofing Materials		\$

Wall Framing and Insulation		
Exterior Rigid Wall Insulation		\$
Structural Insulated Panel System (SIPS)		\$
Insulated Concrete Forms System (ICF)		\$
Blown-in Fibrous Wall Cavity Insulation (versus cost of batt insulation)		\$
Spray Foam Insulation		\$

Heating and Cooling		
Air Conditioning	Efficiency:	\$
Furnace	Efficiency:	\$
Heat Pump	Efficiency:	\$
Ductless Heat Pump System	Efficiency:	\$
Heat Pump:	Efficiency:	\$
Integrated Space / Water Heating System:		\$
Sealed and Tested Ductwork		\$
Heat or Energy Recovery Ventilators		\$

Appliances		
Tankless Water Heater	Efficiency:	\$
Standard Water Heater	Efficiency:	\$
Clothes Washer		\$
Refrigerator		\$
Dishwasher		\$

Air Quality		
Air Filtration System		\$
Mechanical Ventilation	Type:	\$
Green-labeled Carpet and Padding		\$
Central Vacuum System		\$

Indoor Water		
High Efficiency Toilet (1.28 gpf or dual flush)		\$
On-Demand Hot Water		\$

Irrigation		
Low-volume Irrigation System		\$
Rainwater Collection		\$

## Solar Photovoltaic and Solar Thermal

Solar Photovoltaic (PV) (solar electric system installed)		\$
System Size (Capacity): _____ KW	PV Panel Manufacturer:	
Est. Annual Production: _____ KWh	PV Panel Age:	
Array location:	PV Panel Warranty:	
	Inverter Manufacturer:	
	Inverter Age:	
	Inverter Warranty:	
Solar PV Ready (planning / infrastructure for future installation)		\$
Solar Thermal (hot water system installed)		\$
Type:		
Storage Tank Size: _____ Gallons	Solar Thermal Manufacturer:	
Solar Energy Factor (SEF): _____	Solar Thermal Age:	\$
	Solar Thermal Warranty:	
Backup System:		
Backup System Fuel:		
Solar Thermal Ready (planning / infrastructure for future installation)		\$

## Innovative Measures

[illegible]

# Glossary/Clarifications

## Home Energy Rating Performance Labels

### Energy Performance Score (EPS™)

**Range:** 0 – 200+ (lower score represents less energy used)

**Represents:** Annual energy use prediction in mBTU/ year

**Benchmark (USA outside Oregon):** State average home or other regional average

**Benchmarks (within Oregon):** Same size home built to code (new), similar sized home (existing)

### Home Energy Rating System (HERS)

**Range:** 0 – 150+ (lower score represents improvement in overall efficiency)

**Represents:** Efficiency of home compared against a computer-simulated reference home conforming to the 2006 International Energy Conservation Code (IECC) standards, which is assigned a HERS Index Score of 100. The homes efficiency improvement = 100 - HERS score. (For example: House with a HERS score of 75 is 25% more efficient than the benchmark 2006 IECC house of the same size.)

**Benchmark:** HERS = 100

### Home Energy Score (HEScore)

**Range:** 1-10 (higher score represents higher efficiency)

**Represents:** A score of 10 indicates that the home has excellent energy performance.

A score of 1 indicates the home needs extensive energy improvements.

## Home Certifications

### Earth Advantage® Homes & Remodel

**New Homes certification levels:** Silver, Gold, Platinum

**Remodel certification levels:** Silver, Gold, Platinum or Pillar - Energy, Health, Land, Materials, Water

**Focus of certification:** Energy efficiency, healthy indoor air quality, resource efficiency, environmental responsibility, structural durability and water conservation

### Earth Advantage® Zero Energy & Zero Energy Ready

**Certification levels:** Certified

**Focus of certification:** Energy efficiency, onsite energy production, healthy indoor air quality, resource efficiency, environmental responsibility, structural durability and water conservation

### ENERGY STAR® New Homes

**Certification levels:** Certified

**Focus of certification:** Energy efficiency

### LEED® for Homes

**Certification levels:** Certified, Silver, Gold, Platinum

**Focus of certification:** Energy efficiency, healthy indoor air quality, resource efficiency, environmental responsibility, structural durability and water conservation

### PHIUS (Passive House Institute U.S.)

**Certification levels:** Certified

**Focus of certification:** Energy efficiency, healthy indoor air quality and structural durability

## **High Performance Features**

### **Durability Strategies**

#### ***Plywood (versus OSB)***

Install plywood sheathing as part of the wall or roof structure.

#### ***Rainscreen Wall System with 3/8" Air Space***

A rainscreen wall is a moisture-management system incorporating exterior cladding, a 3/8-inch air cavity, flashings, and a drainage plane (building paper or housewrap). The cavity is open at the top and bottom for drainage of liquid water and ventilation of water vapor.

#### ***Window and Door Sill Pan Flashing System***

Install windows and doors with sill pans or flexible flashing (peel and stick) materials at sills, side flashing that extends over sill flashing, and top flashing that extends over side flashing and integrate with the weather barrier.

#### ***40-Year Roofing Materials***

Install a durable roof with a 40 or longer year warranty or roof with a tested and documented comparable performance of the product.

### **Wall Framing and Insulation**

#### ***Exterior Rigid Wall Insulation***

Install continuous rigid exterior wall insulation. Common types include foam and mineral wool.

#### ***Structural Insulated Panel System (SIPS)***

Build with SIPS panels on the walls and/or roof. Structural Insulated Panels (SIPs) typically consist of expanded polystyrene panels, faced on each side with oriented strand board (OSB). Other types of rigid foam or sheathing may be used.

#### ***Insulated Concrete Forms System (ICF)***

Build foundation walls or above grade walls with ICF. Insulating concrete forms are typically made from EPS (expanded polystyrene) foam insulation with cavities for placing concrete. The forms remain in place to serve as insulation for the walls.

#### ***Ceiling Insulation – Upgraded***

Install ceiling insulation to levels higher than required by local building code. This may consist of higher levels of insulation and/or the installation of modified raised heel roof trusses to facilitate the required space to install higher levels of insulation at the roof wall intersections

#### ***Blown-in Fibrous Wall cavity Insulation versus cost of batt insulation***

Install blown-in fibrous insulation (Blown-in Cellulose / Blown-in Fiberglass) in wall cavities.

#### ***Spray Foam Insulation***

Install spray foam (high density or low density) insulation in attic, walls, floor or foundation.

### **Heating and Cooling Systems**

#### ***Air Conditioning*** | Efficiency rating: SEER or EER

Install Air Conditioning System with an efficiency rating higher than required by local building/mechanical code.

#### ***Furnace*** | Efficiency rating: AFUE

Install Furnace with an efficiency rating higher than required by local building/mechanical code.

#### ***Heat Pump*** | Efficiency rating: HSPF

Install a Heat Pump with an efficiency rating higher than required by local building/mechanical code.

#### ***Ductless Heat Pump System*** | Efficiency rating: HSPF

Install a Ductless Heat Pump with an efficiency rating higher than required by local building/mechanical code.

**Heat Pump: Geothermal or Water Source** | Efficiency rating: COP EER

Install a Geothermal or Water Source Heat Pump with an efficiency rating higher than required by local building/mechanical code.

**Integrated Space/Water Heating System: Turbonic/Hydronic**

Install a Integrated Space/Water Heating System with an efficiency rating higher than required by local building/mechanical code. Integrated systems may be boilers, high performance water heaters, solar-assisted water heaters or variable-speed, air-source heat pumps.

**Sealed and Tested Ductwork**

Seal all joints and openings in the forced air heating system's ductwork with mastic paste. Testing is conducted by a certified duct performance tester such as ENERGY STAR® verifier, HERS rater, BPI certified professional, or similar.

**Heat or Energy Recovery Ventilators**

Install a Heat Recovery Ventilators (HRVs) or Energy Recovery Ventilators (ERV's) as a whole house fresh air ventilation system.

## Appliances

**Water Heater – Tankless** | Efficiency rating: EF

Install a Tankless Water Heater with an efficiency rating higher than required by local building/mechanical code.

**Water Heater** | Efficiency rating: EF

Install a Water Heater with an efficiency rating higher than required by local building/mechanical code.

**Clothes Washer**

Install an ENERGY STAR® certified Clothes Washer

**Refrigerator**

Install an ENERGY STAR® certified Refrigerator

**Dishwasher**

Install an ENERGY STAR® certified Dishwasher

## Air Quality

**Air Filtration System**

Install an Air Filtration system as part of the heating or ventilation system. Filter used should have a MERV rating to determine the filter's effectiveness. Filtration systems should be capable of both cleaning particulates and distributing the filtered air to multiple locations within the home.

**Mechanical Ventilation**

Install a whole house ventilation system to provide air exchange from the outdoors to the indoor air. 24 hour programmable timer is installed and connected or is integrated within the ventilation system.

**Types:**

HRV – Heat Recovery Ventilator

ERV – Energy Recovery Ventilator

Supply - Duct or Duct/Fan combination which supplies fresh outdoor air to the living space.

(Typically, outdoor air is introduced into the return side of the forced air HVAC system.)

Exhaust – An exhaust fan centrally located, running continuously or connected to a 24-hour programmable timer

Balanced – Exhaust and supply systems connected to a 24 hour programmable timer.

**Green-Labeled Carpet and Pad**

Install carpet certified with one of the Carpet and Rug Institute's (CRI) Green Label certifications

**Central Vacuum**

Install a Central Vacuum. Central vacuum systems incorporate a motor and dust receptacle which is fixed with pipes installed within house structure (walls, floor or ceilings). It is typically installed in the garage, basement, or utility room to minimize occupant exposure to motor noise and emissions.

## Indoor Water

### **High-Efficiency Toilet** (1.28 gpf or dual flush)

Install a Water Sense qualified toilet (1.28 gallons per flush) or Water Sense qualified dual flush toilet.

### **On-Demand Hot Water**

Install a small pumping system to deliver hot water to the faucet quickly. A manual switch must be installed to activate the pump. This is not a typical hot water recirculation system in which a pump runs constantly to keep hot water immediately available to all fixtures.

## Irrigation

### **Low-Volume Irrigation System**

Install a low-volume irrigation that slowly applies water to a plant's root zone. It is a form of micro-irrigation that includes drip and low volume irrigation systems.

### **Rainwater Collection**

Large storage tanks (500 -1000 gallons capacity) are filled with rainwater, typically from roof surfaces. The collected rainwater is then used to water the landscape when required.

## Solar Thermal and Photovoltaic

### **Solar Photovoltaic (PV) (solar electric system installed)**

Solar Photovoltaic (PV) panels convert the sun's energy to electricity. PV systems can be connected to the utility distribution system or independent. The components for a residential, utility-tied system typically include panels (PV modules) and an inverter/controller. Off-grid systems will have storage batteries and charge control devices. PV panels are mounted on the roof or on the ground

**System Capacity (KW):** Killowatt. Note the system's rated capacity which is typically 1-8 kW for residential systems.

**Estimate Annual Production (KWh):** Killowatt hours. \_\_\_\_ KWh is the amount of electricity the system is estimated to produce. This number will typically be in the thousands of KWh.

### **Solar PV Ready (planning / infrastructure for future installation)**

Design and construct the house for the future installation of a photovoltaic system.

1. The house should be oriented with a clear roof slope that faces within 30 degrees of true south.
2. The south-facing roof slope should be free of all obstructions that would interfere with the placement of PV panels, including plumbing stacks, skylights, roof vents, etc.
3. Reserve 300 sq. feet or more in a rectangular shape on the roof.
4. Space should be available near the electric panel for mounting an inverter and for making electrical connections (48 inches of clear horizontal space should be enough.)
5. There should be one free space for an additional breaker in the service panel.
6. Install metal conduit for future installation of wires.
7. Place a sign on electrical panel indicating the house is "Photovoltaic Ready".

### **Solar Thermal (hot water system installed)**

A solar water heater consists of a solar panel facing south or within 30° of south. A collection fluid (water or anti-freeze) is heated in the collector and circulates to a storage tank. The pre-heated water from that tank flows into the main water heater, which allows the primary tank to use less energy to heat the water. The complete system consists of collectors, storage tank, heat exchanger, water pump, and controls.

**Solar Energy Factor (SEF):** Defined as the energy delivered by the system divided by the electrical or gas energy put into the system. The higher the number, the more energy efficient. Solar energy factors range from 1.0 to 11. Systems with solar energy factors of 2 or 3 are the most common.

### **Solar Thermal Ready (planning / infrastructure for future installation)**

Install water lines to serve a solar water heater so that a complete system can be installed later.

1. The roof must be oriented to the south and strong enough to support the weight of solar collectors.
2. Reserve 70 sq. feet of roof area for installation of system.
3. Space must be allowed to position a storage tank, heat exchanger, pump, and controls next to the standard water heater.
4. Pipes must be sized and located for the collectors and other equipment.
5. All plumbing lines must be pressure tested.
6. All plumbing lines must be insulated to R4.
7. Sensor wires shall run parallel to piping and attach securely to the outside of insulation.
8. Place a sign near the water heater indicating that the house is "Solar Ready".