

## Home Energy Mini-Audit Checklist

Date:

<u>Utility Usage Overview</u>	Electricity		Gas		Water	
	\$	kWh	\$	therms	\$	ccf
Peak mid-winter monthly utility charge						
Peak mid-summer monthly utility charge						
Peak seasonal differential (peak season less baseload)						

- Does your home have wall insulation?  Yes  No  Do Not Know
  - Insulate the Walls.** If the home does not have wall insulation, it can be retrofitted into existing walls. To do so, holes must be drilled in the walls, either on the interior or exterior, so you should assume you will need to repaint as part of the wall insulation project.
- Panel Grit: Do you have photovoltaic panels producing electricity or a solar hot water heating system? \_\_
 

When was the last time the panels were washed? \_\_\_\_\_

  - Wash Panels.** Wash your solar panels twice each year to improve performance.
- Do you use a timer, power strip, or other method to routinely turn off the power to your audio-visual equipment? \_\_ Computer peripherals? \_\_
  - Turn off peripherals and AV system when not in use.** Many computer peripherals and audio-visual system components draw power even when you have them turned off. A readily-accessible power-strip can be used to manually turn off the electricity to these devices when you are not using them. If this would be inconvenient, consider placing a readily-accessible timer on the power-strip, turning off the electricity to the system during the night time or other times when you anticipate they will not be in use.

### Heating and Cooling

- Thermostat type:
  - Programmable
  - Non-programmable
  - Change Thermostat Settings.** Try setting your thermostat to no more than 68° F in the winter when you are at home and awake, and 55° F in the winter when you are away or asleep. But if your furnace cannot recover quickly enough from a deep set-back, it is better to reduce the set-back than to increase furnace size.

Thermostat schedule	Weekdays							
	Morning		Mid-day		Evening		Night	
	°F	time	°F	time	°F	time	°F	time
Heating								
Cooling								
Thermostat schedule	Weekends							
	Heating							
	Cooling							

**Pre-Chill During Summer.** During the summer, set air conditioner to 82° F when you are away and 78° F when you are home. On cool summer mornings and evenings, open windows to pre-cool the home. Close shades on sunny sides of home to avoid solar heat gain.

○ Filters:

When was the filter on your heater last replaced or cleaned? \_\_\_\_

**Replace or clean your furnace and air conditioner filters every 3-6 months.** Use a pleated filter, but not a “high-performance” filter, as it will add too much static pressure to your air-handling system, reducing its efficiency. For instance, if you use Filtrete filters, use the “air cleaning filter” in the red packaging, not the “high performance filter” in the purple packaging.



○ Maintenance

○ When was your heater/AC last inspected or serviced? \_\_\_\_

**Tune up your furnace and air conditioner.** Hire an HVAC service to inspect, clean, and tune your furnace and air conditioner every year or two, to assure they are operating efficiently.

○ Heating Ducts:

○ Type of duct sealing:  None  Duct tape  Mastic

○ Level of HVAC duct insulation: \_\_\_\_\_

**Seal and Insulated Your Ducts.** Hire an HVAC contractor to use mastic to seal your heat ducts, air handlers, register boots, and connections between the boots and the floor or wall, and to insulate the entire duct system as well. Insulate to R-6 or R-8.

Kitchen

○ How many refrigerators do you have? \_\_ How many stand-alone freezers do you have? \_\_

**Eliminate Extra Refrigerators and Freezers.** The cost of cooling a spare refrigerator or freezer is often substantial, especially if the appliance is more than 10 years old.

○ When were the coils on your refrigerator(s) last cleaned? \_\_\_\_

**Clean the coils on your refrigerator.** If they are accessible, the coils on your refrigerator should be cleaned off annually to improve the appliance’s efficiency.

○ Refrigerator and Freezer settings

**Freezer temperature** should be set to between 0-10° F.

**Refrigerator temperature** should be set to between 38-42° F.

○ Refrigerator humidity control:  O.K. – Is turned off already or not applicable

Should be **turned off**, as it is unnecessary in this climate.

- Do you use an air-dry or heat-dry setting on the dish washer?  
 \_\_\_ Air dry all year \_\_\_ Air dry in summer \_\_\_ Heat dry all year  
 \_\_\_ Other: \_\_\_\_\_  
 **Air Dry.** Use the air-dry function more frequently.  
 **Use Economy** (if available) or Regular instead of Pot Scrubber for better efficiency.
- Does the home have a hot water circulation pump? \_\_\_  
 If yes, is it demand (push button), timer controlled, or continuous? \_\_\_\_\_  
 **Convert continuous pump to demand-pump, or at least control it with a timer.**  
 Continuous hot water circulation pumps result in substantial energy being lost from hot water circulated throughout the home. Convert to a push-button on-demand hot water pump, or at least install a timer to limit the pump circulation to morning and evening times when hot water is most likely to be used.
- Hot **water temperature** at tap:  
 **Set water heater** so temperature at closest tap is 120° F or lower to save energy and avoid scalding.
- Faucet flow rate: \_\_\_ gallons per minute  
 O.K.: 2.5 gpm or less  
 **Flow is unnecessarily fast** – install flow restrictor of 2.5 gpm or less.
- Hot water lines insulated:  Yes  No. **Install insulation** around all hot water lines.
- Penetrations sealed, inc. exhaust vent:  
 Yes  No. **Seal openings** in walls and ceiling:\_\_\_\_\_.
- Energy Star appliances:  Yes  
 No. **Upgrade to Energy Star** efficient appliances now (or, less preferably, when appliances need to be replaced). See CEE1.org for more detailed appliance energy efficiency information.
- Bedroom Area
  - Carbon Monoxide detector:  
 Yes  No. **Install CO alarm** at least in area containing furnace, water heater, fireplace, range, and in bedroom area.
  - Smoke Alarm:  Yes  
 No. **Install smoke alarm** at least in area containing furnace, water heater, fireplace, range, and in bedroom area.
  - Passive loads: \_\_\_\_\_.

Bathrooms

	Master Bathroom	Hall Bathroom			
Faucet Flow (gpm)					
Recommend <b>Install Flow Restrictor</b> (1-2.5 gpm) if current flow is over 2.5 gpm					
Shower Flow (gpm)					
Recommend <b>Install Low-Flow Showerhead</b> (2.5 gpm or less) if currently is over 2.5 gpm					
Hot Water Lines Already Insulated					
Recommend <b>Insulate Hot Water Lines</b>					
Plumbing Penetrations Already Sealed					
Recommend <b>Sealing Plumbing Penetrations</b>					
Recommend <b>Toilet Replacement</b> or, less preferably, Tank Displacement Device if toilet is over 1.6 gallons per flush					
Water leaking from tank to bowl: repair					

Utility/Laundry/Hot Water

- Washer:  Front-Loading     Top-Loading
  - Upgrade to Energy Star.** When replacing washer, look for an Energy Star rated front-loading washer, to reduce water use and spin more water out of the laundry, reducing energy use by dryer. See CEE1.org for more detailed appliance energy efficiency information.
- What proportion of your laundry loads are washed/rinsed at the following temperatures:  
 \_\_\_ Hot/warm    \_\_\_ Hot/cold    \_\_\_ Warm/warm    \_\_\_ Warm/cold    \_\_\_ Cold/cold
  - Use Cold.** Wash more of your loads in cold water, and always rinse in cold.
- Dryer
  - Use Moisture Sensor.** Use moisture sensing settings to reduce over-drying of clothes.
  - Use "Solar Dryer".** In warm weather, air-dry clothes outdoors to reduce energy use.
- Hot water lines insulated:  Yes
  - No. **Install insulation** on all hot water lines and 3' of cold line closest to water heater.
- Water tank insulated:  Yes     No. **Install water heater insulation.**
- Vent & other penetrations sealed:  Yes
  - No. **Seal openings in walls and ceiling:**\_\_\_\_\_.

Exterior:

- Air conditioner condenser  
clearance:  OK  Need two feet of **clear space** around air conditioning unit  
coolant line insulation (on thicker of two lines):  OK  **Needed**
- Vent clearance:  OK  Need additional **clear space** around vents  
 **Secure crawl-space vents** to avoid wildlife intrusion
- Pool & Spa
  - Schedule regular check-ups for your pool heaters, pump, and motor.
  - Heating
    - Use pool cover to reduce heat loss and evaporation
    - Install solar pool heating system
    - Avoid running heating system at night
    - Routinely inspect thermostat settings
  - Filter/Pump
    - Filter the minimum number of hours required to maintain a clean pool. Try 4 hours per day during summer and 2-3 hours per day during winter. Time necessary depends on several variables.
    - When replacing equipment, focus on energy efficiency and reduction in resistance to the flow of water.
    - If pump is larger than  $\frac{3}{4}$  horsepower, standard efficiency, single speed pump, replace with multiple-speed pump.
    - Modify the pool pump timing monthly to account for usage.
    - Clean the filter when the pressure reaches 150% of start-up pressure, or 5 PSIG more than start-up pressure, whichever is less.
    - If on a time-of-use electricity rate schedule, pump off-peak unless a solar thermal heating system is used.
  - Spa/Hot Tub:
    - Heat only during use
    - Cover when not in use

Attic & Crawl Space

- Attic entryway insulated:  Yes  
 No. **Insulate Attic Hatch.** Use weather-stripping and insulation to insulate and air-seal your attic hatch.

- Holes between Attic and Conditioned Space?  No.

Yes     **Seal Between Attic and Conditioned Space.** Seal ceiling openings around plumbing, wiring, recessed lights, and fans; close off any openings to walls of the house, chimney chase, or dropped ceiling areas.

- Attic insulation: \_\_\_\_\_   $\geq$  R-30  
  $\leq$  R-30 **Insulate Attic.** Install insulation (preferably blown-in cellulose). New homes are required to have an insulation level of R-30 in their attic, but R-38 is recommended, and R-50 is great. If you have air ducts running through the attic, be sure to bury them in insulation. Insulation needs to come into contact with all 5 sides of the joist bay to work effectively, so make sure the insulation is not gapping or compressed.

- Insulation Installation:  No gaps.  
 Gaps: **Fix gaps** at sides of insulation batts, insulation not in contact with attic floor, and any missing insulation areas.

- Hot water pipes insulated:  Yes  
 No. **Install insulation** around all hot water lines.

- Crawl space hatch if from inside home: sealed and insulated:  Yes  
 No. **Insulate Attic Hatch.** Use weather-stripping and insulation to insulate and air-seal your attic hatch.

- Under-Floor insulation: \_\_\_\_\_  
 O.K.  
 **Seal and Insulate Under First Floor.** Seal openings around plumbing and wiring; close off any openings to walls of the house; install insulation under first floor, **Fix gaps** at sides of insulation batts, insulation not in contact with floor, and any missing insulation areas. To reduce moisture load in the home, apply 6 mil or thicker poly sheeting over dirt in crawl space.

**R-values of Various Insulation Types**

Insulation Type	R-value / inch (old insulation)	R-value / inch (new insulation)
<b>Flexible Batt</b>		
Fiberglass	2.6	3.2
Rockwool	3.1	3.6
<b>Loose-Fill</b>		
Redwood Bark	1.0	1.0
Cellulose	3.2	3.5
Fiberglass	2.0	2.4
Rockwool	2.4	2.9
Perlite	2.3	2.7
Vermiculite	2.0	2.4
<b>Rigid Foam Boards</b>		
Polystyrene, large curd, molded		4.0
Polystyrene, small curd, extruded		5.0
Polyurethane		6.0
Polyisocyanurate		8.0
<b>Foam-in-Place Insulation</b>		
Urethane		6.0
Foam Roofing		8.0

Water Conservation Opportunities:

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Notable Standby Loads:

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Lighting Efficiency Opportunities: Where do you have Incandescent lights that could be replaced with Fluorescent bulbs?

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Weatherization/Insulation Opportunities:

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Additional Notes:

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Resources noted in presentation:

City Programs: <http://www.cityofpaloalto.org/depts/utl/residential/default.asp>

Water-Wise House Call Program: (800) 548-1882  
<http://www.valleywater.org/Programs/WaterWiseHouseCallRequest.aspx>

Home Energy Kit: <http://www.cityofpaloalto.org/forms/utilities/home-energy-kit.lasso>

Residential Energy Assistance Program:  
(650) 329-2333 <http://www.cityofpaloalto.org/depts/utl/news/details.asp?NewsID=1142&TargetID=11>

Rebates: <http://www.cityofpaloalto.org/depts/utl/news/details.asp?NewsID=65&TargetID=12>

Solar Photovoltaic Incentives:  
<http://www.cityofpaloalto.org/depts/utl/news/details.asp?NewsID=622&TargetID=12>

Solar Thermal (Hot Water) Incentives:  
<http://www.cityofpaloalto.org/depts/utl/news/details.asp?NewsID=1032&TargetID=12>

Palo Alto Utility Account Representative: Andrea Hart (650) 329-2434

Acterra "Green@Home" HouseCalls: 650-962-9876 x316  
<http://www.acterra.org/programs/greenathome/index.html>

Home Energy Saver on-line audit: <http://hes.lbl.gov/consumer/>

Alliance to Save Energy Do-it-Yourself Energy Audit: <http://ase.org/resources/home-energy-audit>

Richard Heede, *Homemade Money*

*No-Regrets Remodeling: Creating a Comfortable, Healthy Home That Saves Energy*

Energy Star *Do-It-Yourself Guide to Sealing and Insulating*,  
[http://www.energystar.gov/index.cfm?c=diy.diy\\_index](http://www.energystar.gov/index.cfm?c=diy.diy_index)

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