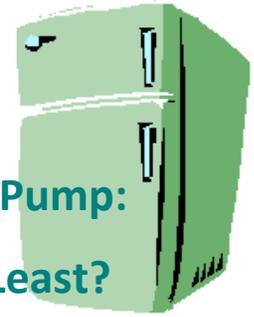


# Concord Light's Guide to Saving Energy for Households Heating with an Air Source Heat Pump: Which Actions Save the Most Money...and the Least?



## Priority Actions (Pretty Easy To Do)

Action	\$/yr Saved	Lbs CO <sub>2</sub> /yr
<b>Turn Off Electric Appliances vs. 24 x 7 Operation</b>		
- Furnace Fan if set ON all year, change to AUTO	\$450 - \$700	2800 - 4300
- Waterbed use quilted pad, turn off bed heater	\$120 - \$200	800 - 1300
- 2nd fridge get rid of / unplug	\$100 - \$300	500 - 2200
- Stand-Alone Freezer get rid of / unplug	\$70 - \$200	400 - 1300
- TV off when not used (vs. 24x7 background noise)	\$70 - \$170	400 - 1100
- Stereo off when not used (vs 24x7)	\$70 - \$140	400 - 900
- Computer off when not used vs. screen saver	\$30 - \$120	200 - 800
- Humidifier unplug – shouldn't be needed in tight home	\$10 - \$30	50 - 160
- Fans off when room is empty in summer (vs 24x7)	\$5 - \$20	20 - 100
<b>Setback Heat 8°F, 8 hrs/day*</b>	<b>\$70-\$130</b>	<b>400 – 900</b>

\*Air source heat pumps typically have an electrical resistance heating element in them that supplements the heat provided by the heat pump at very low outdoor temperatures. If the homeowner manually sets back the thermostat or uses a standard programmable thermostat for setback, the savings will be negated by the need for the resistance heating element to operate in order to recover to the non-setback temperature. A thermostat designed to help heat pumps recover from setback based on the compressor can result in setback savings, although the savings will be smaller than for other types of heating systems, because the setback won't be as deep or last as long. This saving estimate has been adjusted accordingly.

### Actions for the Motivated (Require Active Decision or Sacrifice)

Action	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Lower Heating Thermostat 2°F (24 x 7)	\$100 - \$200	550 - 1200
Clothesline for ½ of loads	\$30 - \$70	200 - 400
Fans, drapes, etc. instead of Air Conditioning	\$20 - \$170	100 - 1100
Laundry in Cold for ½ of hot loads	\$20 - \$70	100 - 450
Shorter/Fewer Showers reduce by 4 min/day	\$20 - \$30	200 - 400
Power Strip: Computer+	\$10 - \$30	40 - 200
Power Strip: TV+ digital cable & satellite boxes	\$5 - \$40	30 - 300
Turn off heat and close off unused rooms	\$0 - \$250	0 - 1600

### Low Priority Actions (They Work, but Small Impact)

Action	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Cook with lids on pots	\$3 - \$13	15 - 80
Use carafe instead of coffeemaker warmer 1 hr/day	\$5	30
Unplug cell phone charger	\$1	5

## Actions with Minimal or No Impact<sup>1</sup>

Action	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Close refrigerator door quickly	<\$1	≈ 0
Keep refrigerator full, add water bottles, etc.	<\$1	≈ 0
Change furnace filters monthly vs. annually	\$0 - \$20	0 - 110
Clean refrigerator coils	\$0 - \$10	0 - 50
Use ceiling fan in winter	≈ \$0	≈ 0

<sup>1</sup>In the vast majority of cases the savings are trivial or non-existent. However, in some cases an action could yield some energy savings. For example, if your refrigerator coils are really clogged and haven't been cleaned in 15 years then you might save something from cleaning them.

## Priority Retrofit Measures

Retrofit Measure	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Insulate empty attic & seal air leakage paths, 1000ft <sup>2</sup>	\$450 - \$750	2800 - 4700
Insulate empty walls with dense pack cellulose, 1000 ft <sup>2</sup>	\$300 - \$500	1900 - 3200
Seal air leakage paths (use blower door to identify leaks → 600-2000 CFM50* reduction)	\$100 - \$320	600 - 2100
--- w/ strategic dense pack cellulose in tricky homes	\$130 - \$600	800 - 4000
Insulate attic (some existing insulation) & seal air leakage paths	\$100 - \$200	600 - 1300
Replace old (pre-'93) fridge	\$70 - \$200	400 - 1300
Replace 15 most used bulbs with CFLs or LEDs	\$70 - \$140	400 - 900
Security Lighting: motion detector	\$30 - \$140	200 - 900

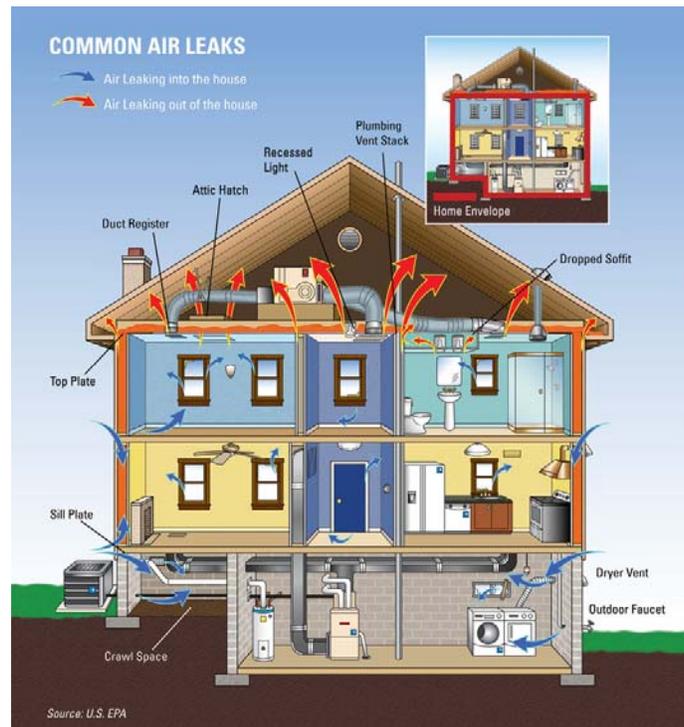
\*CFM50: This is the airflow (in Cubic Feet per Minute) needed to create a change in building pressure of 50 Pascals. CFM50 is the most commonly used measure of building airtightness.

## Priority Retrofit Measures (Con't)

Retrofit Measure	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Fix hot water leak	\$100 - \$350	500 - 2200
Replace old clothes washer 1 load/day (+\$100 due to H2O saved)	\$70 - \$170	400 - 100
Very low flow showerhead (<1.8gpm)	\$20 - \$70	100 - 400

## Air Leakage Paths

- Attics & basements usually account for 50 – 75% of air leakage
  - Plumbing stacks
  - Walls without top plates
  - Ceiling height changes
  - Chimneys
  - Soffits
  - Kneewalls
  - Recessed lights
  - Foundation walls
- Windows and doors typically account for just 10 – 15% of air leakage



## Lower Priority Retrofit Measures

Retrofit Measure	\$/yr Saved	Lbs CO <sub>2</sub> /yr
Replace 15 old windows	\$80 - \$200	500 - 1300
Insulate attic (some existing insulation) <b>WITHOUT</b> sealing air leakage paths <b>(NOTE: Insulating + sealing leaks saves <i>much</i> more!)</b>	\$40 - \$80	200 - 500
Replace old dishwasher	\$25 - \$35	50 - 120
Insulate basement ceiling 1000 ft <sup>2</sup>	\$10 - \$130	80 - 800
Caulk/Weatherstrip windows/doors	\$10 - \$50	80 - 300
Seal basement ducts	\$0 - \$100	0 - 600
Cool Roof (white roof coating on flat, reduces cooling needs)	\$0 - \$20	0 - 100

The estimated cost savings and CO<sub>2</sub> reductions in this handout are based upon the following assumptions:

- Boston-area weather
- Single family home
- Electric water heating, dryer and stove
- Electricity Price: \$0.17/kWh

Note: The vast majority of homes in which heat pumps were installed as the original heating system will be newer homes. Therefore, they will be more likely to have wall and attic insulation and may have fewer unsealed air leakage paths. So, the energy savings opportunities will tend to be smaller.

### Questions about saving energy in your home?

Contact Jan Aceti, Concord Light's Energy Conservation Coordinator at 978-318-3151 or [jaceti@concordma.gov](mailto:jaceti@concordma.gov).



Estimated cost savings and CO<sub>2</sub> reductions are based on energy savings information prepared by M. Blasnik & Associates, under contract to Concord Light. Unless otherwise indicated, the information on air leakage paths was also provided by M. Blasnik & Associates.

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