

Save A Ton Carbon and Cost Calculation Assumptions:

The following data and assumptions were used in the carbon dioxide emissions and cost reductions.

Costs:

- Gasoline = \$3.50/gallon
- Electricity = \$0.10/kWh
- Natural Gas = \$1.25/therm

Light Bulbs:

- 60W incandescent = 13W CFL
- 75W incandescent = 18W CFL
- 100W incandescent = 23W CFL
- Lifetime = 7 year/7000 hr
- Electricity cost = \$0.10/kWh
- Electricity Carbon Intensity = 1.85 lbs CO₂/kWh

Automobile:

- Fuel Carbon Intensity = 20 lbs CO₂/gallon of gasoline (the CO₂ reduction is ~10% higher for diesel fuel). Gasoline cost = \$3.50

Weatherization:

- Carbon emission savings are based on an average energy reduction calculation by Oak Ridge National Lab for homes weatherized through the Weatherization Assistance Program. Cost savings are average weatherization values (<http://www1.eere.energy.gov/wip/wap.html>)

Appliances:

- Refrigerators are assumed to be about 10 years old with an average savings of at least 250 kWh/yr from the Appliance Standards Awareness Project.
- Dishwashers are assumed to save at least 75 kWh/yr based on EnergyStar energy values for 4 loads per week.
- Washing machines are assumed to save 225 kWh/yr based on the EnergyStar Savings calculator for 7 loads per week.
- In all appliance cases, a local carbon dioxide emission coefficient of 1.85 lbs/kWh and an electricity cost of \$0.10/kWh were used. Water rates were assumed to be \$3 per 1,000 gallons. Replacing an appliance more than 10 years old or buying a high efficiency appliance will reduce carbon dioxide and costs even more.

Space Heating and Cooling:

- Assume 3% energy savings for each 1 degree reduction (winter) or increase (summer) for 24 hour setback. (http://www.energysavers.gov/your_home/space_heating_cooling/index.cfm/mytopic=12720). Consumption averages from *EIA RESIDENTIAL ENERGY CONSUMPTION SURVEY 2005 CONSUMPTION AND EXPENDITURE DATA TABLES* (Tables SH7, AC5) for electric and natural gas furnaces for Climate Zone CDD < 2000 and 4000 < HDD < 5499.

Water Heating:

- Assume 3% energy savings for each 10 degree reduction in water setpoint temperature (http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=13090). Consumption averages from *EIA RESIDENTIAL ENERGY CONSUMPTION SURVEY 2005 CONSUMPTION AND EXPENDITURE DATA TABLES* (Table WH6) for electric and natural gas water heaters for Climate Zone CDD < 2000 and 4000 < HDD < 5499.

Residential Electricity Conservation:

- Assume 5% of average valley household residential electricity use from City of Roanoke and Roanoke County 2009 Carbon Footprint Analysis, \$0.10/kWh electricity cost, and electricity carbon emissions of 1.85 lbs CO₂/kWh.

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