



Everyday Environmental Stewardship

Shower Length

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Key Issue: Conserving resources

Stewardship Opportunities: Take a shorter shower

While some environmental stewardship opportunities involve changes in mechanical and/or electrical equipment, most involve changes in behavior. Stewardship is what we do. Cost is the consequence of our actions. Cost is counted in both \$s and pollution. Most behavior changes involve everyday things. This is really evident in the length of showers one takes.

Stewardship Opportunity #1 - Shorten Your Shower

It is reported that the average length of a shower is 10 minutes. What is the “cost” involved, in \$s and in CO₂ emissions? Using the *Shower Cost Calculator* (available at MIP&L’s web site) answers that question. Cost will depend on (1) the fuel and (2) the equipment used to heat your domestic hot water (“DHW”). Here is the cost in \$s and CO₂ emissions as of November 2007:

Fuel	Equipment	\$s/year	CO ₂ /year
Gas	High efficiency	\$70.80	721
Gas	On-Demand	\$77.55	790
Gas	Tank	\$100.21	1,020
Oil	High efficiency	\$112.70	646
Oil	Tank	\$128.30	736
Electricity	On-Demand	\$203.58	1,712
Electricity	Tank	\$203.58	1,712

The details are on the next page, including how much you can save by cutting in half your 10-minute shower. Then spend the \$s you save by the 50% drop by buying GreenE to help offset the your remaining carbon footprint.

Stewardship Opportunity #2 - Get a Low-Flow Showerhead

Showerheads are improving in terms of both quality and efficiency. The current U.S. standard of 2.5 gpm represents a dramatic water savings improvement over the fixtures that were sold in the 1970s. Some of those delivered up to 10 gpm; they averaged 4 to 6 gpm. A good location for buying all kinds of energy-saving products is the IPL-sponsored

<http://www.energyfederation.org/ipl/default.php>.

MIP&L members and congregants get 10% discount!!! Enter the *discount* code **shopipl**

Here are two low-flow showerhead options



<<<< 2 gpm (\$5±) Variable spray

1.5 gpm (\$26±) Design pressure 20>100 psi >>>>



And get low-flow aerators for faucets (0.5 gpm; \$2)

How Much Does Your "Typical" 10 Minute Shower COST

November 2007 prices

- #1 Fill in the > Yellow Box with how long you take in a shower ...
- #2 Fill in the > Pink Box with how much you pay for your fuel type for heating hot water...
- #3 Go to the > Green Box that matches how domestic hot water is generated in your home for your cost in \$ and CO2
- #4 Go to the > Green Box for how much you can save by a 50% reduction in length of your current length of shower

How many minutes do you spend in the shower? 10

How much do you pay for ...

Gas	\$1.65	\$/therm
Oil	\$2.93	\$/gallon
Electricity	\$0.176	\$/kWh

Then reduce the minutes and you'll see how much you will reduce cost and pollution

GAS	GAS	GAS
<i>High efficiency boiler & in-direct fired tank</i>	<i>On-Demand (no tank)</i>	<i>Direct fired tank</i>
BTU/Therm = 100,000	BTU/Therm = 100,000	BTU/Therm = 100,000
Efficiency = 92%	Efficiency = 84%	Efficiency = 65%
Therms for one shower = 0.1176	Therms for one shower = 0.1288	Therms for one shower = 0.1664
\$ cost for one shower = \$0.19 \$0.10 50% savings	\$ cost for one shower = \$0.21 \$0.11 50% savings	\$ cost for one shower = \$0.27 \$0.14 50% savings
CO2 per shower = 1.98 0.99	CO2 per shower = 2.16 1.08	CO2 per shower = 2.80 1.40
CO2 per year = 721 360.5	CO2 per year = 790 394.8	CO2 per year = 1,020 510.2
\$ cost for a year of showers = \$70.80 \$35.40	\$ cost for a year of showers = \$77.55 \$38.77	\$ cost for a year of showers = \$100.21 \$50.11

OIL	OIL
<i>High efficiency boiler & in-direct fired tank</i>	<i>Direct fired tank</i>
BTU/gallon = 138,700	BTU/gallon = 138,700
Efficiency = 74%	Efficiency = 65%
Oil gallons for one shower = 0.1054	Therms for one shower = 0.1200
\$ cost for one shower = \$0.31 \$0.15 50% savings	\$ cost for one shower = \$0.35 \$0.18 50% savings
CO2 per shower = 1.77 0.89	CO2 per shower = 2.02 1.01
CO2 per year = 646 323.1	CO2 per year = 736 367.8
\$ cost for a year of showers = \$112.70 \$56.35	\$ cost for a year of showers = \$128.30 \$64.15

ELECTRICITY	ELECTRICITY
<i>On-Demand (no tank)</i>	<i>Direct fired tank</i>
BTU/kWh = 3,413	BTU/kWh = 3,413
Efficiency = 100%	Efficiency = 100%
kWh for one shower = 3.1691	kWh for one shower = 3.1691
\$ cost for one shower = \$0.56 \$0.28 50% savings	\$ cost for one shower = \$0.56 \$0.28 50% savings
CO2 per shower = 4.69 2.35	CO2 per shower = 4.69 2.35
CO2 per year = 1,712 856.0	CO2 per year = 1,712 856.0
\$ cost for a year of showers = \$203.58 \$101.79	\$ cost for a year of showers = \$203.58 \$101.79

Use your 50% Savings for Renewable Energy.
Go to <http://www.newenglandwind.org/wind/home.php>

Assumption	Value	Units
Mixed Shower Temp =	105.00	Deg F
CW Temp =	53.00	Deg F
Heat Capacity of Water =	1.00	BTU/Lb-Deg F
Density of Water =	8.32	Lb/Gallon
Flow rate of Shower Head =	2.50	GpM

It takes about
7 NE trees
to offset
100 lbs of CO2

Use the MIP&L EES Briefs on

- ✓ Showering
- ✓ Domestic Hot Water
- ✓ GreenE

for more ways to reduce your carbon footprint