



**EVERYDAY ENVIRONMENTAL STEWARDSHIP**



**Shower Length**

By Tom Nutt-Powell & Sergio Siani

**Key Issue**

Conserving resources

**Stewardship Opportunity**

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	CO2/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 page 3, 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/ipi/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 **Shower Cost?**

Download the Shower Cost Calculator from MIP&L website :

[http://www.mipandl.org/MIPL\\_resources/MIPL\\_ShowerCostCalculatorTemplate.xls](http://www.mipandl.org/MIPL_resources/MIPL_ShowerCostCalculatorTemplate.xls)

Do the calculations.

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

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# How Much Does Your "Typical" 10 Minute Shower COST

April 2011 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 \$1.50 \$/therm

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

Oil \$3.89 \$/gallon

**Reducing time in the shower to 5 minutes is a 50% savings.**

Electricity \$0.169 \$/kWh

### GAS

#### High efficiency boiler & in-direct fired tank

BTU/Therm =	100,000	
Efficiency =	92%	
Therms for one shower =	0.1176	50% savings
\$ cost for one shower =	\$0.18	\$0.09
CO2 per shower =	1.98	0.99
CO2 per year =	721	360.5
\$ cost for a year of showers =	\$64.37	\$32.18

### GAS

#### On-Demand (no tank)

BTU/Therm =	100,000	
Efficiency =	84%	
Therms for one shower =	0.1288	50% savings
\$ cost for one shower =	\$0.19	\$0.10
CO2 per shower =	2.16	1.08
CO2 per year =	790	394.8
\$ cost for a year of showers =	\$70.50	\$35.25

### GAS

#### Direct fired tank

BTU/Therm =	100,000	
Efficiency =	65%	
Therms for one shower =	0.1664	50% savings
\$ cost for one shower =	\$0.25	\$0.12
CO2 per shower =	2.80	1.40
CO2 per year =	1,020	510.2
\$ cost for a year of showers =	\$91.10	\$45.55

### OIL

#### High efficiency boiler & in-direct fired tank

BTU/gallon =	138,700	
Efficiency =	74%	
Oil gallons for one shower =	0.1054	50% savings
\$ cost for one shower =	\$0.41	\$0.20
CO2 per shower =	1.77	0.89
CO2 per year =	646	323.1
\$ cost for a year of showers =	\$149.62	\$74.81

### OIL

#### Direct fired tank

BTU/gallon =	138,700	
Efficiency =	65%	
Therms for one shower =	0.1200	50% savings
\$ cost for one shower =	\$0.47	\$0.23
CO2 per shower =	2.02	1.01
CO2 per year =	736	367.8
\$ cost for a year of showers =	\$170.34	\$85.17

### ELECTRICITY

#### On-Demand (no tank)

BTU/kWh =	3,413	
Efficiency =	100%	
kWh for one shower =	3.1691	50% savings
\$ cost for one shower =	\$0.54	\$0.27
CO2 per shower =	4.69	2.35
CO2 per year =	1,712	856.0
\$ cost for a year of showers =	\$195.48	\$97.74

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Use your 50% Savings for Renewable Energy.

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	Gallons Per Minute

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

Use the MIP&L EES Briefs on  
✓ Boilers & Furnaces  
✓ Domestic Hot Water  
✓ Appliances  
for more ways to reduce your carbon footprint

**NOTE: Changing to a 1.5 gpm showerhead reduces use by 40%!**

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