

Overview

Bottled Water Alternatives, University Edition

October 29, 2009



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Outline

- ▶ Environmental costs
- ▶ Best practices
- ▶ Bottled water alternatives
- ▶ Concerns for universities

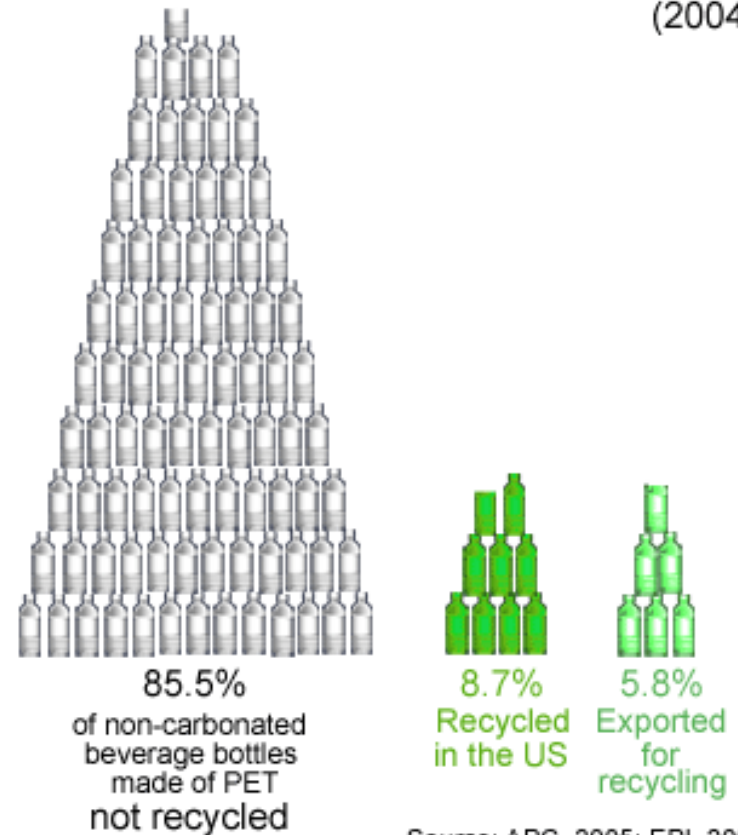
Environmental Costs

End of life Management:

- Low recycling rates
- “Down –cycling”



Figure 1: Percentage of Plastic Bottles Recycled (2004)



Source: APC, 2005; EPI, 2006

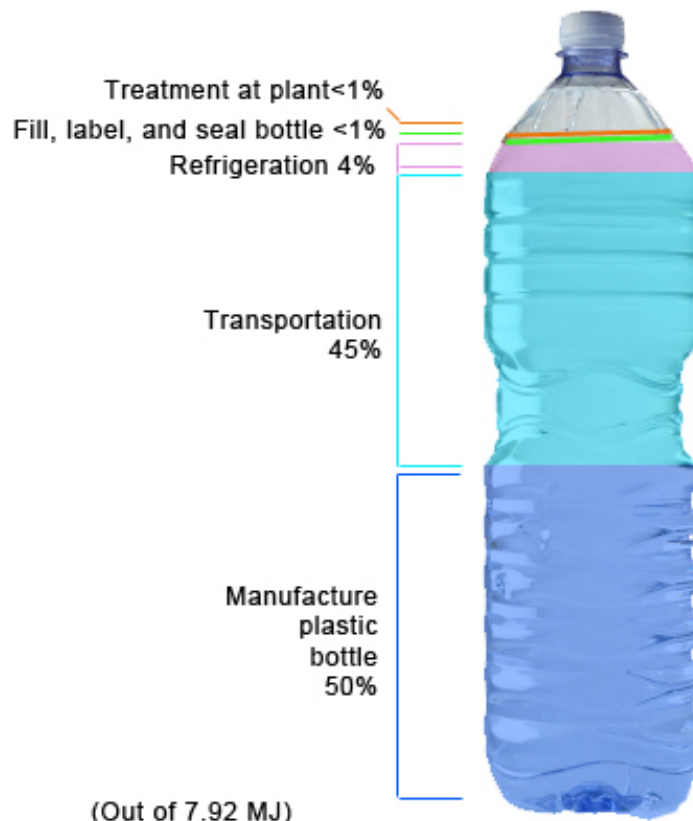
Environmental Costs

Waste:

- Energy & Transportation
- Water
- Petroleum



Figure 1:
Energy Required to Make Bottled Water



Pacific Institute, 2009

Figure 2:
For each gallon that goes into bottles, two additional gallons are used in the purification process.



Source: UCS, 2007

Health Concerns

Water quality:

- Bottled water – FDA, Tap water – EPA
- The FDA's authority to enforce quality is weaker (GAO, 2009)
- NRDC study found contaminants in 1/3 of bottled water brands (including E. coli and arsenic)
- Rebranded tap water

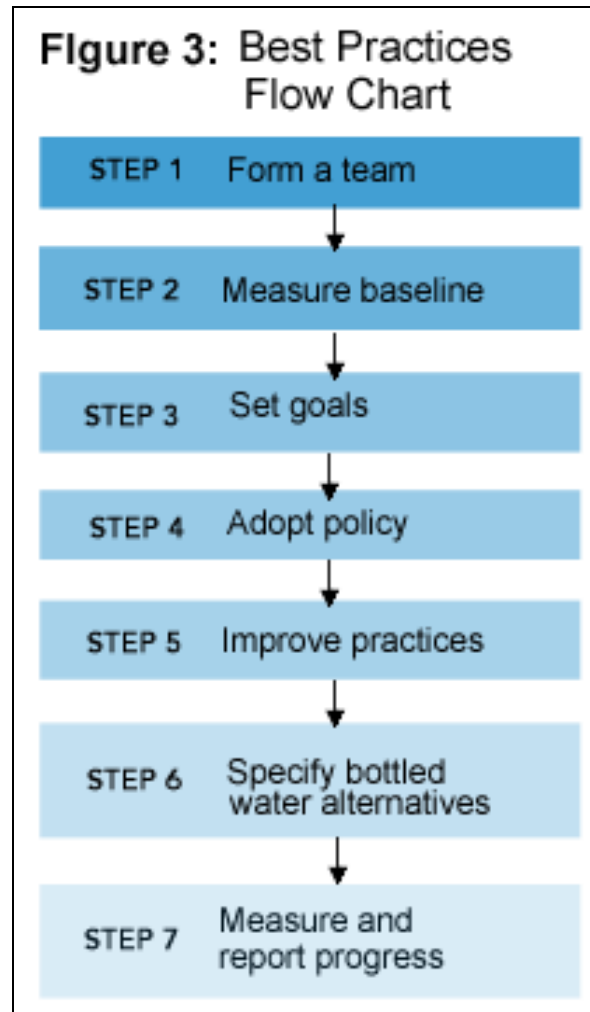


Plastics:

- Chemical leaching
- Bacteria



Best Practices

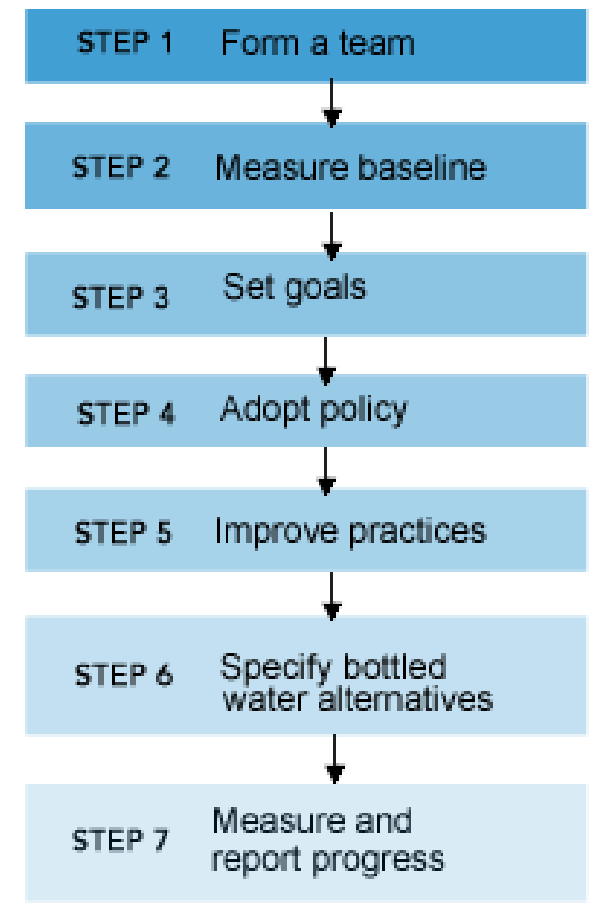


Best Practices

Bottled water team:

- Executives and Senior Administration
- Sustainability Committee
- Environmental Health and Safety
- Procurement
- Facilities Management
- Events & Conferences, Catering & Dining, Retail & Other University Stores
- Students & Faculty

Figure 3: Best Practices Flow Chart



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Bottled Water: Calculator

This Bottled Water Calculator, developed by RPN, compares the cost and environmental impacts of 16.9 oz. bottles of water with tap water. Results are expressed in gallons of water, mega joules of energy, gallons of oil, pounds of CO₂e, and dollars saved.

Edit the values below and click update.

How much water do you drink?

Enter the total number of 16.9 oz. bottles of water purchased by your organization in a year:

Cost of Tap Water per Gallon (\$ per gallon):

(If you know your local cost, please enter - otherwise leave the national average.)

Cost of 16.9 oz Bottle of Water (typical is \$1.50):

Impact

Total Water Drank:	1,563	gallons
Extra Water Required for Production and Purification:	3,125	gallons
Energy Required for Manufacturing:	1,006	megajoules
Oil Required to Produce the Plastic Bottle(s):	248	gallons
CO ₂ e to Manufacture Plastic Bottle(s):	1,875	pounds

Your Extra Cost for Bottled Water:

\$14,980.00

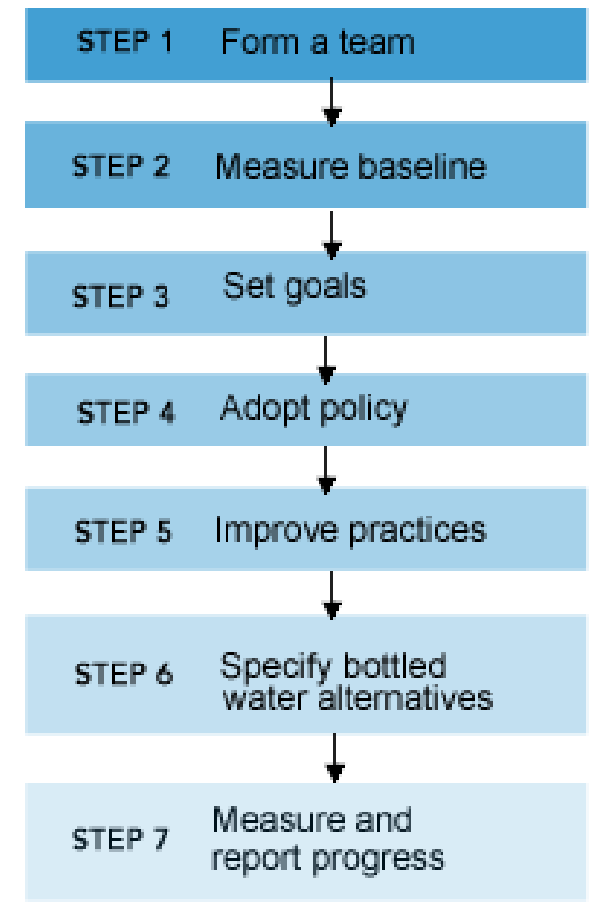


Best Practices

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Figure 3: Best Practices Flow Chart

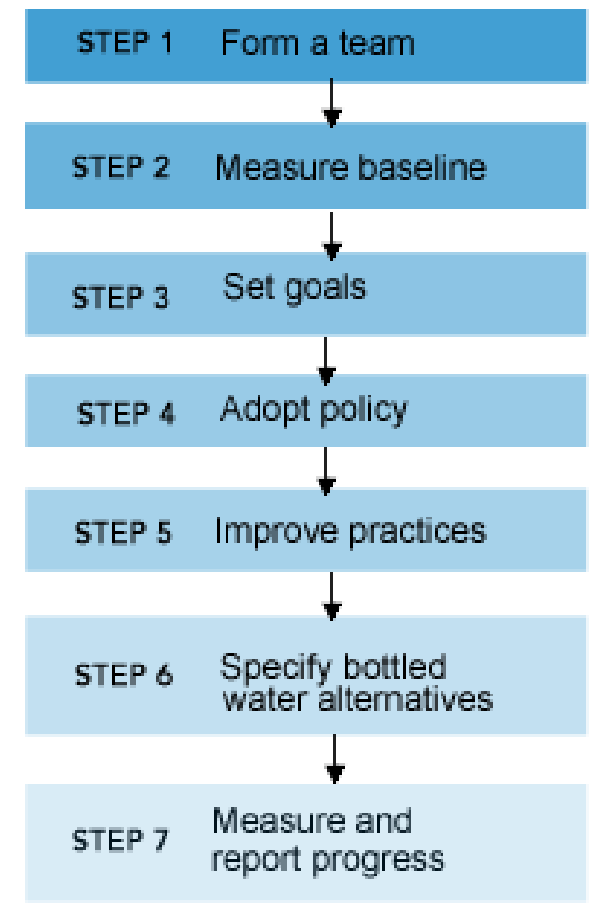


Best Practices

Improve Practices:

- Maintain/upgrade existing water infrastructure
- Replace bottled water at events and conferences
- Plan for emergency situations

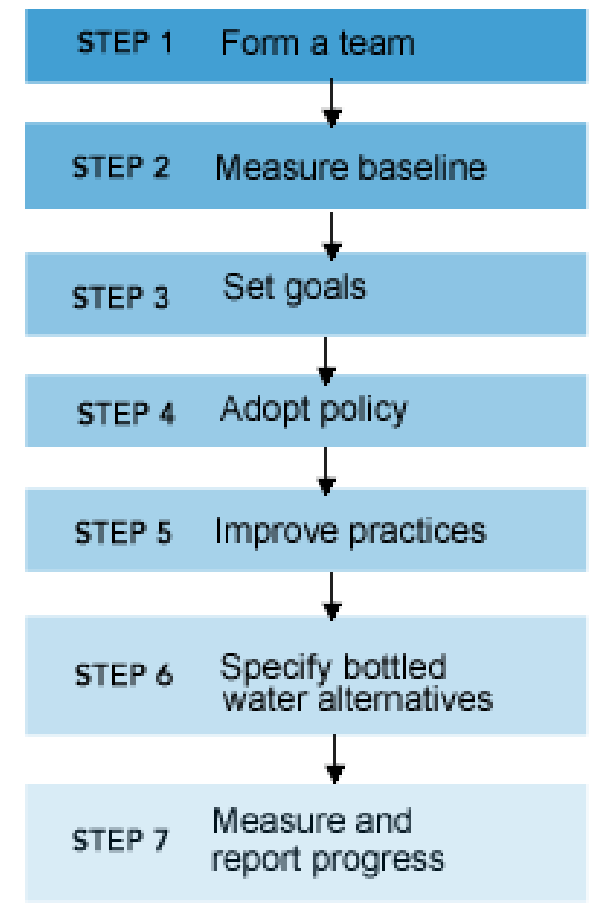
Figure 3: Best Practices Flow Chart



Alternatives

1. Filters
2. Fountains
3. Coolers
4. Reusable bottles

Figure 3: Best Practices Flow Chart



Alternatives

Filters

Pro:

- Low cost and wide availability
- Suitability to wide range of needs
- Removal of contaminants in water system

Con:

- Not 100% effective
- Sometimes costly
- Performance and aesthetics
- End of life management

For a searchable database of over 2,000 National Sanitation Foundation (NSF) certified filters, visit the

[RPN website](#)



Alternatives

Bottle-less coolers

Pro:

- Decreased maintenance and cleaning
- No plastic bottles
- No need to transport water
- Unlimited supply of cheap tap water
- Use less energy, save money

Con:

- Can be more difficult to maintain
- Many filters can not be recycled



Alternatives

Fountains

- Insulate piping
- Use a timer to turn off refrigeration (but for no more than eight hours)

Cost of Bottled Water	Cost of Drinking Fountains	Savings over 5 Years
\$655,755 (5 year contract)	\$419,000 - \$639,000 (Installation in year 1 and yearly maintenance costs for 4 years)	\$16,755 - \$236,755



Example of a water fountain at the University of Winnipeg that has been upgraded to include a spigot for use with reusable bottles.

Alternatives

Reusable bottles

Metal



- Cheap, durable, sometimes recyclable
- Can be bad for hot liquids

Plastic



- Very cheap, common, durable
- Chemical concerns (BPA)

Glass and Ceramic



- Cheap, can be reused.
- Fragile, not effective for institutions

Concerns

What about BPA in polycarbonate bottles?

- Endocrine disruptor
- Interferes with reproductive hormones
- “Increased prevalence of cardiovascular disease, diabetes and liver-enzyme disease (JAMA, 2008)
- Detected in about 90% of population



[The FDA insists] “products containing BPA currently on the market are safe and that exposure levels to BPA from food contact materials, including for infants and children, are below those that may cause health effects” (FDA, 2009).



Concerns

My college has a beverage exclusivity contract...

- Guaranteed exclusive market free of competitors
- Long term agreement (5, 10 years, etc.)
- Financial incentives such as scholarships or other contributions to the university
- Preferred pricing
- Minimum sales requirements
- Possible compensation if the university breaks its contract

But, it depends...

Concerns

Won't this cost money?

A

-

B

=

\$???

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • Bottled water giveaways (administrative use, catering, tours, concerts, etc.) • Power cost from bottled water only vending machines | <ul style="list-style-type: none"> • Bottled water sales (retails stores and vending machines, net profit) • Potential infrastructure upgrades and upkeep • Beverage exclusivity contracts* | <ul style="list-style-type: none"> • Offset loss with other sales (reusable bottles, alternative beverages, etc.) • Absorb loss |
|--|--|---|

Smith College:

Distributed reusable water bottles, resulting in 130,000 fewer bottles of water with a net savings of around \$30,000 from “to-go” packages.



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Thank You!

Membership and Consulting Available

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Consulting Services:

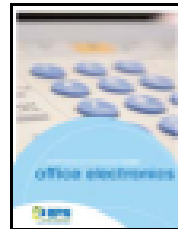
- ▶ **Custom green specifications**
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- ▶ **Green office audits**
- ▶ **Cost-saving green practices**



“RPN provided us with the data analysis demonstrating the long-term, positive environmental effects made by shifting to more responsibly made products.”

*Perry Plumart, Deputy Director, Green the Capitol Office,
U.S. House of Representatives. Office of Greening the Capitol*

RPN's series of Responsible Purchasing Guides includes best practices, policies, specs, standards, case studies, calculators, group contracts, and green product lists for:



- ▶ Carbon offsets
 - ▶ Cleaners
 - ▶ Computers
 - ▶ Drinking water
 - ▶ Faith organizations
 - ▶ Fleet vehicles
 - ▶ Fluorescent lighting
 - ▶ Food services
 - ▶ Graffiti remover
 - ▶ LED lighting
 - ▶ Office electronics
 - ▶ Office paper
 - ▶ Paint
 - ▶ Renewable energy
 - ▶ Tires & wheel weights
 - ▶ Toner cartridges
- ... and more coming soon

For membership inquiries & consulting rates,
please contact:

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