

City of Las Cruces[®]

PEOPLE HELPING PEOPLE

Council Action and Executive Summary

Item # 19 Ordinance/Resolution# 11-077 Council District:

For Meeting of September 20, 2010
(Adoption Date)

TITLE: A RESOLUTION RESTRICTING THE USE OF MUNICIPAL FUNDS TO PURCHASE BOTTLED WATER AND TO PROMOTE THE CITY OF LAS CRUCES MUNICIPAL DRINKING WATER.

PURPOSE(S) OF ACTION: To request an approval or disapproval for the request to restrict the use of municipal funds to purchase bottled water and to promote the City of Las Cruces water supply.

Drafter and Staff Contact: Christine Y. Chavez		Department: Utilities		Phone: 528-3549	
Department	Signature	Phone	Department	Signature	Phone
Utilities Director		528-3524	Budget		541-2107
Sustainability		528-3604	Assistant City Manager		541-2271
Legal		541-2128	City Manager		541-2076

BACKGROUND / KEY ISSUES / CONTRIBUTING FACTORS: The Utilities Department staff received a request to advance the restriction of funds to purchase bottled water for City Facilities except in circumstances (1) where no other alternative is available or practical; (2) when necessary to address health requirements or emergencies; and (3) when such type water is needed for water quality analysis by the City's Water Quality Lab. In these circumstances the City of Las Cruces Municipal drinking water will be bottled and distributed for these purposes and be provided by the City of Las Cruces Utilities Department.

The City of Las Cruces has reliable and safe public water supplies and it should be the role of the City to support and encourage the use of such supplies.

In 2008, the US Conference of Mayors passed a resolution highlighting the contribution to Municipal water systems and called for a study on the contribution of bottled water to waste disposal. The evidence suggested that banning bottled water from government use decreases the impact of bottled water on municipal waste while highlighting the importance of municipal water. The resolution encouraged cities to phase out, except in cases of emergency, government use of bottled water and promote the use of municipal water.

The "Think Outside the Bottle" campaign raises awareness about the environmental and social impacts of bottled water and the importance of protecting and promoting

(Continue on additional sheets as required)

considering using this campaign to advance similar restrictions on the use of bottled water in their city facilities. Consideration on the state level from Governor Richardson on this issue is ongoing as well.

There are numerous studies that outline the impacts of bottled water and energy. One study from the Pacific Institute estimates that in 2006 producing bottled water required the equivalent of "17 million barrels of oil" not including that required for transportation. The production of more than "2.5 million tons of carbon dioxide" to bottle the water and the estimated "3 liters of water" required to produce one liter of bottled water are just some of the negative environmental impacts that are associated with bottled water. This action, if approved, would supplement the City's Sustainability Plan by being consistent with the overall goals of reducing energy consumption and solid waste generation.

SUPPORT INFORMATION:

1. Think Outside the Bottle City Guide.
2. 2008 US Conference of Mayors resolution supporting Municipal Water Systems.
3. Pacific Institute Fact Sheet on Bottled Water and Energy.

SOURCE OF FUNDING:

Is this action already budgeted? N/A	Yes	<input type="checkbox"/>	See fund summary below
	No	<input type="checkbox"/>	If No, then check one below:
	<i>Budget Adjustment Attached</i>	<input type="checkbox"/>	Expense reallocated from: _____
	<input type="checkbox"/>	Proposed funding is from a new revenue source (i.e. grant; see details below)	
	<input type="checkbox"/>	Proposed funding is from fund balance in the _____ Fund.	
Does this action create any revenue? N/A	Yes	<input type="checkbox"/>	Funds will be deposited into this fund: _____ in the amount of \$ _____.
	No	<input type="checkbox"/>	There is no new revenue generated by this action.

FUND SUMMARY:

Fund Name(s)	Account Number(s)	Expenditure Proposed	Available Budgeted Funds in Current FY	Remaining Funds	Purpose for Remaining Funds
N/A					

(Continue on additional sheets as required)

OPTIONS / ALTERNATIVES:

1. Approve the Resolution to restrict the use of bottled water at City Facilities that include avoidance of new and existing contractual commitments to purchase bottled water for city events and meetings and for use within City facilities.
2. Not approve the Resolution and not approve the restriction as stated above.

(Continue on additional sheets as required)

RESOLUTION NO. 11-077**A RESOLUTION RESTRICTING THE USE OF MUNICIPAL FUNDS TO PURCHASE BOTTLED WATER AND TO PROMOTE THE CITY OF LAS CRUCES MUNICIPAL DRINKING WATER.**

The City Council is informed that:

WHEREAS, the Utilities Department has received a request to restrict the use of bottled water at City Facilities and to promote the City of Las Cruces water supply; and

WHEREAS, the City of Las Cruces has reliable public water supplies, and it should be the role of the City to support and encourage the use of such supplies; and

WHEREAS, the use of bottled water can cost more than that of tap water and the production and sale requires the expenditure of energy in its manufacture, transport, chilling and storage, which also results in the emission of greenhouse gases, the generation of additional Municipal waste, and the improper disposal can negatively impact the environment; and

WHEREAS, undertaking responsible sustainability measures can conserve both natural resources and fiscal resources; and

WHEREAS, the US Conference of Mayors encourages cities to phase out, where feasible, government use of bottled water and promote the use of municipal water.

NOW, THEREFORE, be it resolved by the governing body of the City of Las Cruces:

(I)

THAT, the City Council approves this request to restrict the use of municipal funds to purchase bottled water for City events, meetings, use within City Facilities and to promote the City of Las Cruces water supply.

(II)

THAT, the reasonable use of bottled water may be provided for in the following circumstances; a) when no other alternative is available or practical; b) when necessary to address health requirements and emergencies; and c) when such type water is needed for water quality analysis (sample blanks, biological oxygen demand testing, supplement to reverse osmosis and distilled water reserves). In these circumstances City of Las Cruces Municipal drinking water will be bottled and distributed for these purposes and be provided by the City of Las Cruces Utilities Department.

(III)

THAT, City staff is hereby authorized to do all deeds necessary in the accomplishment of the herein above.

DONE AND APPROVED on this __ day of _____, 2010.

APPROVED:

Mayor

VOTE:

Mayor Miyagishima: _____
Councillor Silva: _____
Councillor Connor: _____
Councillor Pedroza : _____
Councillor Small: _____
Councillor Sorg: _____
Councillor Thomas: _____

ATTEST:

City Clerk
(SEAL)

Moved by: _____

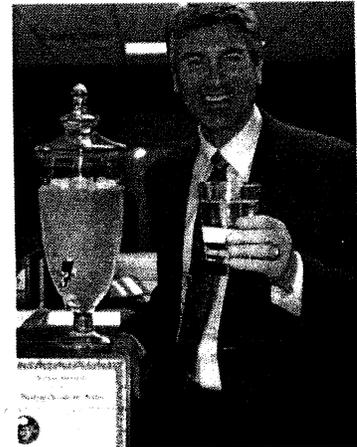
Seconded by: _____

APPROVED AS TO FORM:

Asst 

City Attorney

THINK OUTSIDE THE BOTTLE CITY GUIDE



**CORPORATE
ACCOUNTABILITY
INTERNATIONAL**
CHALLENGING ABUSE, PROTECTING PEOPLE

46 Plympton Street
Boston, MA 02118 USA
(800) 688-8797
www.StopCorporateAbuse.org
www.ThinkOutsideTheBottle.org



Dear City Officials,

Thank you for your interest in Corporate Accountability International's Think Outside the Bottle campaign. As a public official, you are in a unique position to help raise awareness about the environmental and social impacts of bottled water and the importance of protecting our strong public water systems.

Misleading marketing plays a significant role in driving the growth of bottled water sales. Every year, bottled water corporations like Coke, Nestlé, and Pepsi spend millions of dollars on clever marketing that portrays bottled water as safer or more pure than tap water. People across the country are losing confidence in their public tap water, even though bottled water is less regulated than tap water. For example, a 2007 University of Arkansas poll found that, on average, young people buy bottled water more often than older people because they perceive it to be somehow better than tap water. Given that there is a \$22 billion annual funding gap between what U.S. cities need to spend on water infrastructure and the money available to them, we need to ensure that the political will exists to promote, protect and ensure public funding for our public water systems.

The bottled water industry not only undermines confidence in our government's ability to provide basic public services, but also contributes to increased waste disposal costs for municipalities. The impacts of bottled water on the environment and municipal waste are staggering. Producing bottles to meet Americans' demand for bottled water required the equivalent of 17 million barrels of oil last year—enough fuel for more than 1 million U.S. cars for a year—and generated more than 2.5 million tons of carbon dioxide. Each year more than 4 billion pounds of PET plastic bottles end up in landfills or as roadside litter.

Disposing of this waste can cost cities more than \$70 million in tipping fee disposal costs alone, not including collection costs. This is \$70 million not available to help strengthen water infrastructure or address other pressing municipal needs like teachers, parks, and public safety.

Thankfully, our nation's mayors and city officials are showing leadership on this critical issue. The U.S. Conference of Mayors passed a resolution at its 2007 Annual Meeting calling for a study on the importance of municipal water and a review of the impacts of bottled water on city waste. Elected officials in cities such as San Francisco, Ann Arbor, Los Angeles, and Salt Lake City have already stopped spending tax dollars on private bottled water brands.

Cities are at the forefront when it comes to our public water systems. Through the Think Outside the Bottle campaign, leading public officials are making a commitment to take action to support strong public water systems in their communities and are calling on their cities to opt for tap over bottled water as a way of reducing spending and packaging waste and showing support for the local public water system.

Tens of thousands of individuals are pledging to opt for tap over bottled water and they are calling on governments, businesses, religious organizations, and schools to do the same.

What motivates all of these people to take action? For many it is the belief that water is a human right and not a commodity to be bought and sold for profit. This is a struggle that will be won or lost in our cities and towns because municipalities are our primary providers of drinking water.

Cities across the country have taken important steps toward protecting local public tap water and more needs to happen. Will you join us in promoting and protecting your city's public water?

You are in a unique position to take a strong stance and invest in the future of our public water systems. Please use this guide as a tool to get your city thinking outside the bottle. For up to date information about what other municipalities are doing, visit www.ThinkOutsidetheBottle.org.

We look forward to working with you on this important issue.

Sincerely,



Gigi Kellett
Think Outside the Bottle Campaign Director

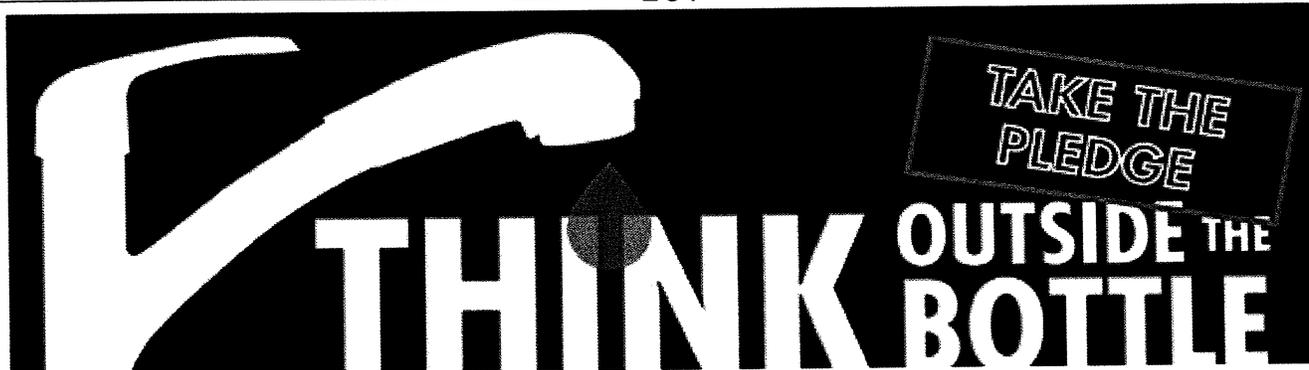


"Considering that an equal amount of municipal water costs hundreds, or even thousands of times less than bottled water, it's a very foolish expenditure."

- Neva Goodwin, co-director of the Global Development and Environment Institute at Tufts University

Top 10 Reasons to Think Outside the Bottle

1. **TO SAVE TAXPAYER DOLLARS.** Cutting spending on bottled water will save money and support local tap water.
2. **TO BUILD CIVIC PRIDE.** Our cities have some of the best drinking water in the world. Misleading marketing by the bottled water industry changes the way people think about water, convincing people the only place to get clean, safe water is from a bottle.
3. **TO STRENGTHEN OUR PUBLIC WATER SYSTEMS.** Bottled water isn't a long-term, sustainable solution to water quality or scarcity problems; only strong public water systems can ensure stable and equitable access to water into the future.
4. **TO PROTECT CONSUMERS.** Bottled water is, in fact, less regulated than tap water.
5. **TO REALLOCATE PUBLIC RESOURCES AND ENSURE LOCAL, DEMOCRATIC CONTROL.** Bottled water is a misallocation of resources. There is a \$22 billion annual funding gap between what cities need to spend on water infrastructure and the money available to them. Public money should be spent on public systems, not on bottled water contracts.
6. **TO PROTECT OUR ENVIRONMENT.** The extraction of bottled water can take a significant toll on the environment.
7. **TO LESSEN OUR CITIES' CARBON FOOTPRINTS.** Plastics used to make water bottles create pollution from beginning to end.
 - Use of fossil fuels to make bottles contributes to global warming
 - Distribution of water hundreds or thousands of miles via trucks, planes and boats unnecessarily contributes to global warming. Public water systems are generally a more energy-efficient way of ensuring people's access to water.
 - The disposal of plastic water bottles into the waste stream fuels further pollution. Nearly 8 out of 10 of these bottles wind up burnt or tossed into landfills, which pollutes the air, clogs up overfull landfills sites and contributes to water pollution.
8. **TO PREVENT CORPORATE CONTROL.** Bottled water undermines support for public water systems and helps pave the way for corporate control of local water resources.
9. **TO PRESERVE LOCAL CONTROL.** Water bottlers like Nestlé have a track record of running roughshod over communities' concerns and damaging the environment when they extract water and build bottling plants to take local spring and groundwater.
10. **IT JUST MAKES SENSE.** Alternatives to bottled water, namely the tap, are cheaper and more sustainable.



Actions for Cities and Towns to Think Outside the Bottle

- Take the Think Outside the Bottle Pledge**, included in this guide and found at www.ThinkOutsidetheBottle.org. Join mayors and other city officials in making a commitment to support public water systems over bottled water as a way to reduce spending and packaging waste and show support for the local water system.
- Cancel bottled water contracts or reduce city spending on bottled water.** Cities are spending millions of taxpayer dollars every year to buy bottled water and to dispose of the plastic waste. By cancelling its bottled water contract, San Francisco is saving half a million dollars a year, essential funding that can be used to strengthen public water infrastructure. One of the first steps cities can take is to conduct an audit of their current annual spending on bottled water for city meetings and events.
- Promote your city or town's tap water.** Cities like New York, Minneapolis and Chicago are promoting the city's tap water through public education initiatives.
- Increase the number of well-maintained water fountains** in public parks, schools and buildings. Many of us remember growing up drinking from water fountains in public places. Today, kids are growing up on bottled water. Well-maintained water fountains are a great way to serve the public, and to promote tap water.
- Support public water infrastructure.** In the face of declining water infrastructure, some mayors are calling for increased public funding for water infrastructure at all levels of government. At the same time, cities like Minneapolis are renewing their commitment to support public water systems by allocating millions of dollars for infrastructure improvements that will ensure citizens' safe and affordable access to water for years to come.
- For sample materials and more information** visit the website www.ThinkOutsidetheBottle.org.

TAKE THE
PLEDGE

THINK OUTSIDE THE
BOTTLE

CHALLENGE

CORPORATE
CONTROL
OF WATER



PLEDGE TO THINK OUTSIDE THE BOTTLE

- Because city governments guarantee an essential public service by providing affordable access to safe drinking water;
- Because municipalities face great challenges due to our nation's aging water infrastructure;
- Because our city water systems face a crisis in public confidence as more and more people turn to bottled water for their drinking water needs, in place of public tap water;
- Because people's awareness of the importance of safe drinking water has grown over the years, and bottled water marketing plays upon people's concerns about water quality by portraying bottled water as somehow safer or more pure;
- Because bottled water is not any safer or more pure than tap water and public water systems are more highly regulated;
- Because up to 40% of bottled water on the market comes from municipal water systems;
- Because bottled water often travels many miles from the source, results in the burning of massive amounts of fossil fuels, and contributes to billions of plastic bottles winding up in our landfills;
- Because bottlers often ignore communities' concerns and the environmental impact of taking groundwater when they extract water and build bottling plants to get local spring and ground water;
- Because water is a human right and not a commodity to be bought and sold for profit;
- Because significant public investment and support is needed to ensure our public water systems can meet the challenges ahead and to secure equal access to water, a key ingredient for prosperity and health for all people; and
- Because government officials play a unique role as stewards of our public water systems.

PLEDGING TO THINK OUTSIDE THE BOTTLE MEANS:

- I will take action to support public water systems in my community and beyond;
- I will call on my local government to opt for tap over bottled water as a way of reducing spending and packaging waste and showing support for our local water system.

For more information, visit: www.ThinkOutsideTheBottle.org

I PLEDGE TO THINK OUTSIDE THE BOTTLE!

Name _____

Title or Position _____

Address _____

Phone _____

E-mail _____

City/Town _____

YES! I WANT TO GET MORE INVOLVED.

Please return pledge cards to Corporate Accountability International at 46 Plympton Street, Boston, MA 02118 • 800.688.8797

U.S. Conference of Mayors Adopts Bottled Water Resolution

In 2007, the US Conference of Mayors passed a resolution highlighting the importance of our cities' water systems and calling for a study on the impacts of bottled water on city waste.

The resolution was filed by Mayors Gavin Newsom (San Francisco) and R.T. Rybak (Minneapolis) along with former Mayor Ross "Rocky" Anderson (Salt Lake City).

The resolution addresses key issues related to drinking water in the U.S. Specifically, the resolution:

- 💧 Highlights the importance of municipal water systems
- 💧 Affirms the key role that mayors and municipalities play in maintaining those systems
- 💧 Expresses concern about the economic and environmental impacts of the booming bottled water market on cities, particularly on their waste stream
- 💧 Encourages the U.S. Conference of Mayors to compile information on the importance of municipal water and the impact of bottled water on municipal waste

How can mayors help support the resolution and the study?

- 💧 Convey your support for the resolution to the U.S. Conference of Mayors staff, the Environment Committee members and the Mayors' Water Council.
- 💧 Share information about steps taken in your city to support strong public water systems, reduce city spending on bottled water, and promote recycling of water bottles and other beverage containers in city operations and throughout your community. You can email us at info@ThinkOutsidetheBottle.org.
- 💧 Request to be included in any upcoming meetings related to the study and next steps on this issue.

CHALLENGING

CORPORATE CONTROL
OF WATER



30 years
**CORPORATE
ACCOUNTABILITY
INTERNATIONAL**
CHALLENGING ABUSE, PROTECTING PEOPLE

formerly **Infact**

Bottled Water Revenues

- ☛ In the U.S., bottled water revenues were \$15 billion in 2006 – over \$28,000 a minute – and 27.6 gallons of bottled water per person.ⁱ
- ☛ Seventy-four percent of Americans drink bottled water, and one in five drinks only bottled water, according to a 2002 survey sponsored by the EPA and conducted by the Gallup Organization.ⁱⁱ
- ☛ Worldwide, the bottled water market was estimated to be \$100 billion in 2005.ⁱⁱⁱ

Bottled Water Impacts on the Environment and Municipal Waste

- ☛ Growth in bottled water sales not only undermines public confidence in government's ability to provide basic public services, but the explosion of bottled water can actually increase municipal government's waste disposal costs.
- ☛ Each year more than 4 billion pounds of PET plastic bottles end up in landfills or as roadside litter.^{iv}
- ☛ Given that only three states have bottle-bill laws that extend to cover bottled water, the recycling rates for bottled water pale as compared to carbonated soft drinks.^v
- ☛ Assuming the average national tipping fee of \$35 per ton, these four billion pounds of plastic waste cost cities more than \$70 million in tipping fee disposal costs alone, not including the costs of collection, trucking and litter removal. This is \$70 million not available to strengthen water infrastructure and other pressing municipal needs, like teachers, park maintenance and public safety.^{vi}
- ☛ Making bottles to meet Americans' demand for bottled water required the equivalent of more than 17 million barrels of oil last year – enough fuel for more than 1 million U.S. cars for a year - and generated more than 2.5 million tons of carbon dioxide.^{vii}
- ☛ To put it another way, to visualize the entire energy costs of the lifecycle of a bottle of water, imagine filling up a quarter of each bottle with oil.^{viii}

Bottled Water Impacts on Public Water Systems

- ☛ Municipal water systems lack the political support to garner the full funding needed to maintain and improve public water systems so that they remain strong.
- ☛ The funding "gap" between municipal water capital needs and budget authority is presently \$22 billion a year and is increasing.^{ix}
- ☛ If municipal water systems cannot garner the political will to support increased water infrastructure investments, municipal water quality will deteriorate and people will increasingly be forced to turn to corporations for their water needs. People will have to rely on corporations to provide a long-valued public service that is better provided by government.
- ☛ Privatization of drinking water – through a reliance on bottled water – creates a haves vs. have-nots situation with our water supply. As underfunded municipal water systems deteriorate in quality, citizens who can afford to may shift their consumption to bottled water. Those who cannot, are left to rely on public water systems that do not have the political will necessary to ensure they are supported and well-maintained.

ⁱ Fishman, Charles. "Message in a Bottle," *Fast Company*, June 2007. "Bottled Water: More than just a story about sales growth," Press Release International Bottled Water Association, April 9, 2007, http://www.bottledwater.org/public/2007_releases/2007-04-09_bevmkt.htm. Accessed June 2007.

ⁱⁱ U.S. Environmental Protection Agency. "Analysis and Findings of The Gallup Organization's Drinking Water Customer Satisfaction Survey," August 6, 2003.

ⁱⁱⁱ Gleick, Peter H. *The World's Water 2004-2005: The Biennial Report on Freshwater Resources*. Island Press, 2004, p. 17.

^{iv} Gitlitz, Jennifer and Pat Franklin. "Water, Water Everywhere: The growth of non-carbonated beverage containers in the United States." *Container Recycling Institute*, February 2007.

^v Gitlitz, *Ibid*.

^{vi} Repa, Edward W. "NSWMA's 2005 Tip Fee Survey," *National Solid Waste Management Association Research Bulletin*, March 2005.

^{vii} Pacific Institute. Fact sheet - "Bottled Water and Energy".

www.pacinst.org/topics/water_and_sustainability/bottled_water/bottled_water_and_energy.pdf; Accessed 4 October 2007.

^{viii} Pacific Institute, *Ibid*.

^{ix} "The Clean Water and Drinking Water Gap Analysis." Office of Water, U.S. Environmental Protection Agency, Sept. 30, 2002. <http://www.epa.gov/safewater/gapreport.pdf>; Accessed 27 March 2008.





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info@ThinkOutsidetheBottle.org
www.ThinkOutsidetheBottle.org

Cover Photos:
Left: Santa Barbara Mayor Marty Blum and National
Organizer Deborah Lapidus
Right: Minneapolis Mayor R.T. Rybak



The U.S. Conference of Mayors
76th Annual Meeting
June 20-24, 2008
Miami

2008 ADOPTED RESOLUTIONS

SUPPORTING MUNICIPAL WATER SYSTEMS

WHEREAS, the United States' municipal water systems are among the finest in the world; and

WHEREAS, high quality, safe drinking water is already available at most public locations; and

WHEREAS, mayors are responsible for delivering safe and affordable water to our citizens; and

WHEREAS, bottled water is regulated by the FDA and municipal tap water is regulated by the EPA and has more stringent requirements for testing; and

WHEREAS, local governments invest approximately \$82 billion a year to provide water and sewer services; and

WHEREAS, bottled water often costs more than an equivalent volume of gasoline, equivalent to 1,000 to 10,000 times more than tap water; and

WHEREAS, up to 40% of bottled water on the market comes from municipal water systems and the bottled water industry generated \$15 billion in revenues in 2006 from U.S. consumers; and

WHEREAS, bottled water often travels many miles from the source, resulting in the burning of massive amounts of fossil fuels, releasing CO₂ and other pollution into the atmosphere; and

WHEREAS, plastic water bottles are one of the fastest growing sources of municipal waste; and

WHEREAS, in the U.S. the production of plastic bottles for bottled water currently requires the energy equivalent of more than 17 million barrels of oil per year – enough to generate fuel for over a million cars for a year – and generates more than 2.5 million tons of carbon dioxide; and

WHEREAS, the National City Water Taste Test, which recognizes all of the great work municipal water systems do for its residents on a daily basis, year after year; and

WHEREAS, The US Conference of Mayors, per Resolution #90 adopted in June 2007, has compiled much information regarding the importance of municipal water and the impact of bottled water on municipal waste; and

WHEREAS, the evidence suggests that banning bottled water from government use

highlights the importance of municipal water and decreases the impact of bottled water on municipal waste; and

WHEREAS, The Conference of Mayors recognizes the importance of bottled water in times of emergency and times when municipal water is unavailable,

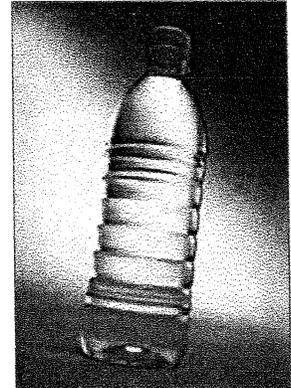
NOW, THEREFORE, BE IT RESOLVED, that The US Conference of Mayors encourages cities to phase out, where feasible, government use of bottled water and promote the importance of municipal water.

[Return to 2008 Adopted Resolutions page.](#)

BOTTLED WATER AND ENERGY

The Pacific Institute estimates that in 2006:

- Producing bottles for American consumption required the equivalent of more than **17 million barrels of oil**, not including energy for transportation.
- Bottling water produced more than **2.5 million tons of carbon dioxide**
- It took **3 liters of water** to produce 1 liter of bottled water



Energy Required to Make PET Plastic

According to the plastics manufacturing industry, it takes around 3.4 megajoules of energy to make a typical one-liter plastic bottle, cap, and packaging.² Making enough plastic to bottle 31.2 billion liters of water required more than 106 billion megajoules of energy. Because a barrel of oil contains around 6 thousand megajoules, the Pacific Institute estimates that the equivalent of **more than 17 million barrels of oil were needed to produce these plastic bottles.**

Carbon Dioxide Emissions from Consumption of Bottled Water

The manufacture of every ton of PET produces around 3 tons of carbon dioxide (CO_2). **Bottling water thus created more than 2.5 million tons of CO_2 in 2006.**³

Water Required to Make Bottled Water

In addition to the water sold in plastic bottles, the Pacific Institute estimates that twice as much water is used in the production process. Thus, **every liter sold represents three liters of water.**

Transporting and Recycling Bottled Water

More energy is needed to fill the bottles with water at the factory, move it by truck, train, ship, or air freight to the user, cool it in grocery stores or home refrigerators, and recover, recycle, or throw away the empty bottles. The Pacific Institute estimates that the total amount of energy required for every bottle is equivalent, on average, **to filling a plastic bottle $\frac{1}{4}$ full with oil.**