Net Zero Water Strategy:

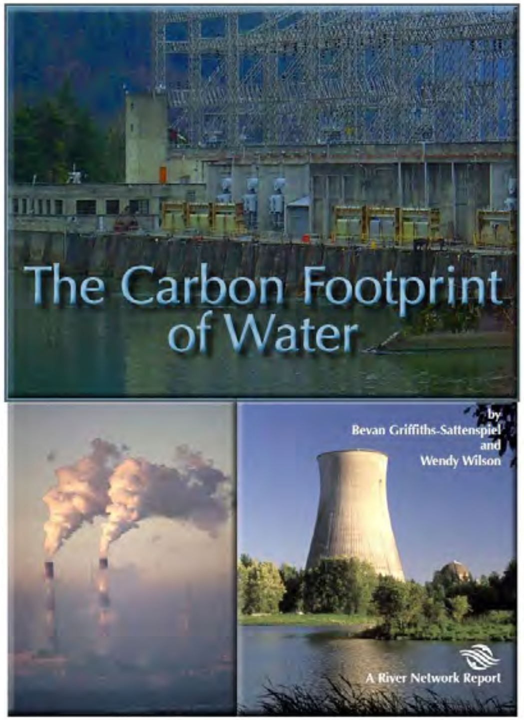
Saving Water and Energy for the Army

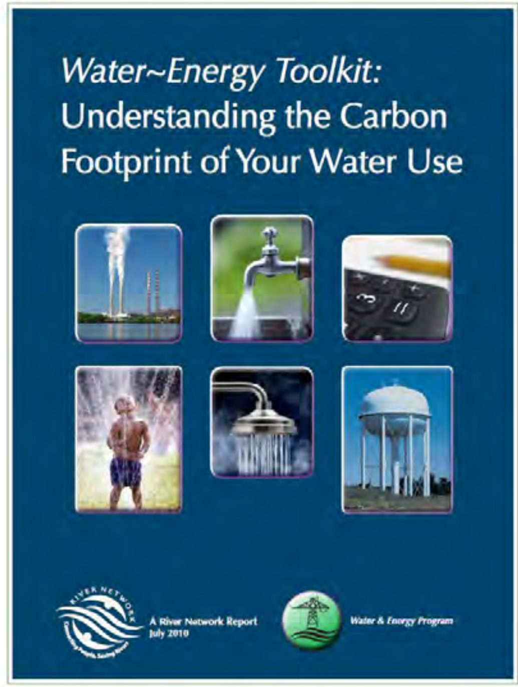
ERDC/CERL, Champaign, IL

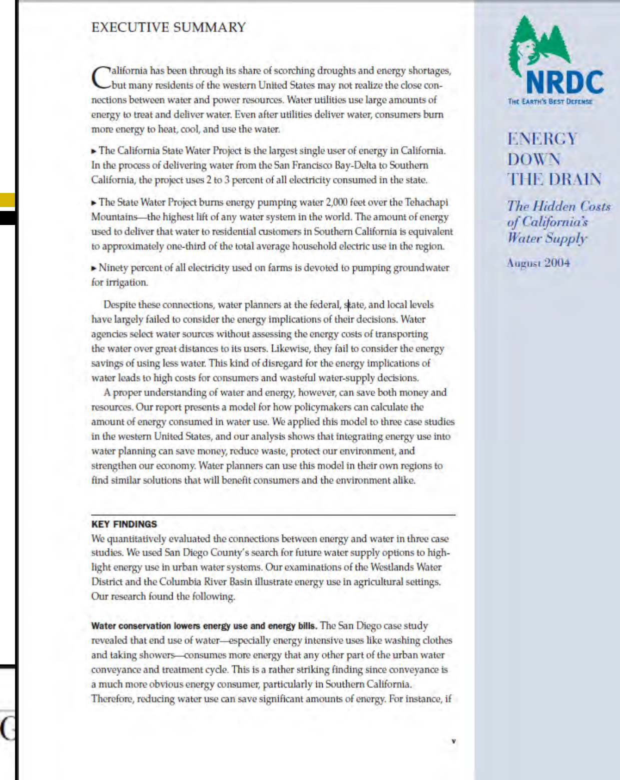
Elisabeth Jenicek

Army Net Zero Installation Workshop

18-20 Jan 2012







EXECUTIVE SUMMARY

California has been through its share of scorching droughts and energy shortages, but many residents of the western United States may not realize the close connections between water and power resources. Water utilities use large amounts of energy to treat and deliver water. Even after utilities deliver water, consumers burn more energy to heat, cool, and use the water.

- The California State Water Project is the largest single user of energy in California. In the process of delivering water from the San Francisco Bay-Delta to Southern California, the project uses 2 to 3 percent of all electricity consumed in the state.
- The State Water Project burns energy pumping water 2,000 feet over the Tehachapi Mountains—the highest lift of any water system in the world. The amount of energy used to deliver that water to residential customers in Southern California is equivalent to approximately one-third of the total average household electric use in the region.
- Ninety percent of all electricity used on farms is devoted to pumping groundwater for irrigation.

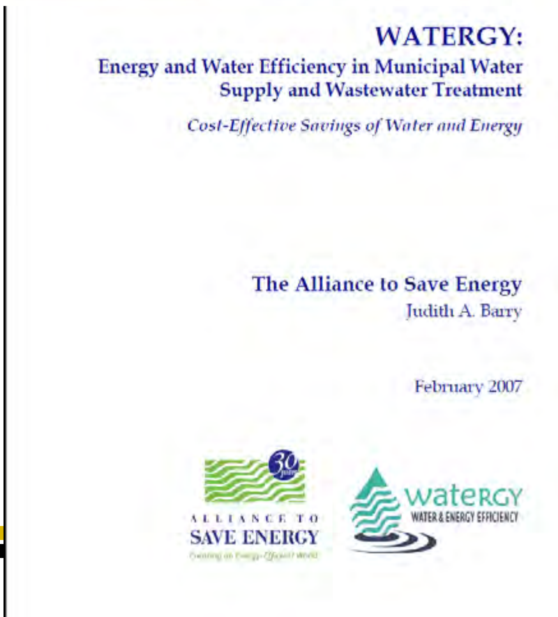
Despite these connections, water planners at the federal, state, and local levels have largely failed to consider the energy implications of their decisions. Water agencies select water sources without assessing the energy costs of transporting the water over great distances to its users. Likewise, they fail to consider the energy savings of using less water. This kind of disregard for the energy implications of water leads to high costs for consumers and wasteful water-supply decisions.

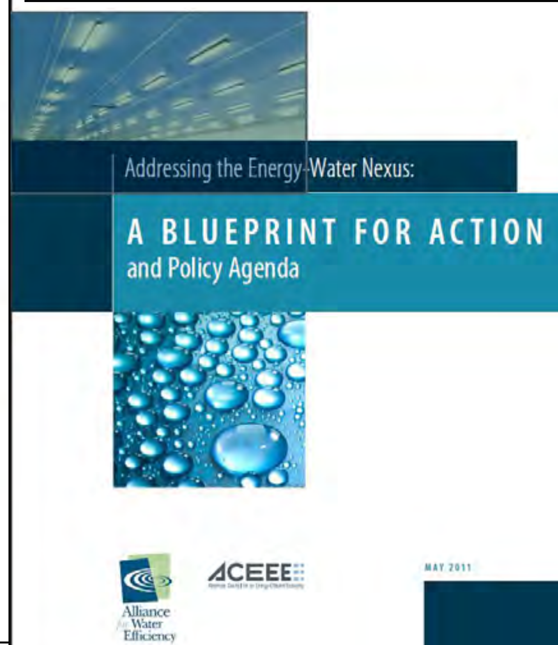
A proper understanding of water and energy, however, can save both money and resources. Our report presents a model for how policymakers can calculate the amount of energy consumed in water use. We applied this model to three case studies in the western United States, and our analysis shows that integrating energy use into water planning can save money, reduce waste, protect our environment, and strengthen our economy. Water planners can use this model in their own regions to find similar solutions that will benefit consumers and the environment alike.

KEY FINDINGS

We quantitatively evaluated the connections between energy and water in three case studies. We used San Diego County's search for future water supply options to highlight energy use in urban water systems. Our examinations of the Westlands Water District and the Columbia River Basin illustrate energy use in agricultural settings. Our research found the following.

Water conservation lowers energy use and energy bills. The San Diego case study revealed that end use of water—especially energy intensive uses like washing clothes and taking showers—consumes more energy that any other part of the urban water conveyance and treatment cycle. This is a rather striking finding since conveyance is a much more obvious energy consumer, particularly in Southern California. Therefore, reducing water use can save significant amounts of energy. For instance, if





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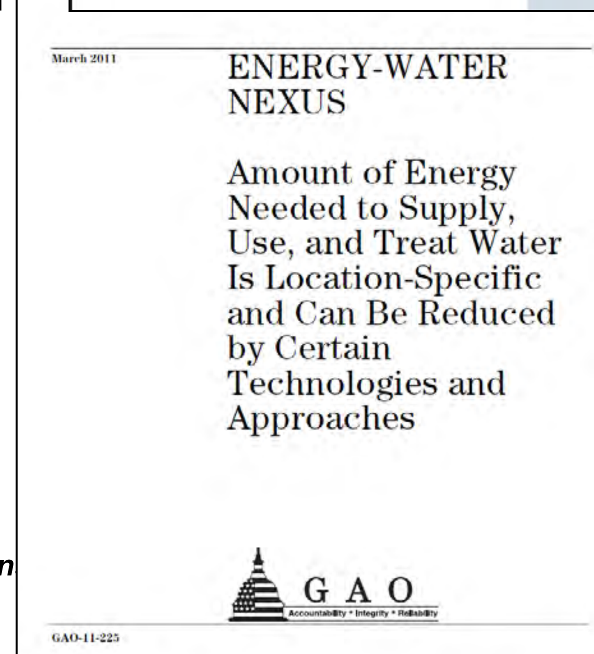
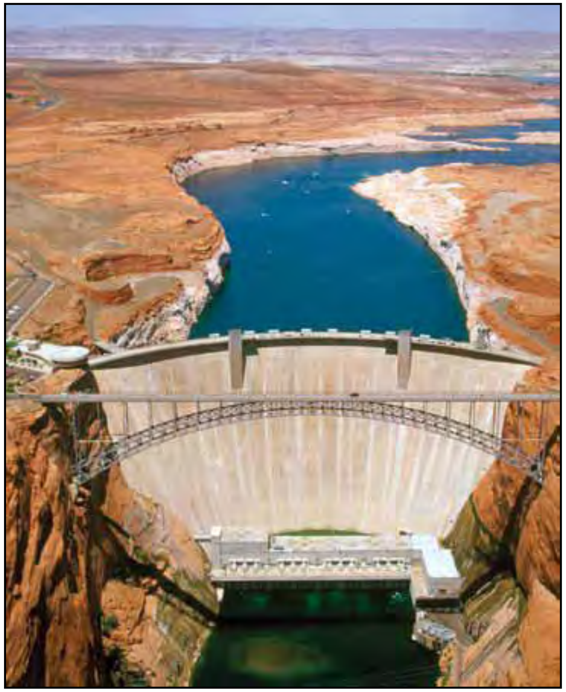


Water Use by Sector

Sector	Daily Water Use (MGD)	Annual Water Use (MG)	% of Total
Public Supply	43,300	15,804,500	11.00%
Self-Supply Domestic	3,590	1,310,350	<1%
Industrial	19,700	7,190,500	5.00%
Mining	3,490	1,273,850	<1%
Irrigation	137,000	50,005,000	34.00%
Livestock	1,760	642,400	<1%
Aquaculture	3,700	1,350,500	<1%
Thermoelectric	195,000	71,175,000	48.00%
US Total	407,540	148,752,100	100.00%

Source: USGS, Water Use in the U.S.

Why Should You Care?



Source: Pacific Institute, Water for Energy: Future Water Needs for Electricity in the Intermountain West & USACE.

Water Used for Energy

"embedded water"

- Thermoelectric Power Generation
  - Cooling water
- Central Plants/Systems
  - Cooling towers
  - Circulating water and steam
- Renewable Energy Generation
  - Concentrating solar power
  - Photovoltaic (cleaning water)
  - Biofuels
- Fuel extraction, transport, refining, etc.

Energy-Related Water in the U.S.

- 48% of U.S. water withdrawals are used for thermoelectric power production.
- Withdrawal, consumption, and quality
- Some concentrating solar power plants consume more water per unit of electricity than the average coal plant.
- Carbon capture technologies could increase a coal plant's water consumption by 30-100%.

Source: River Network, "The Carbon Footprint of Water," 2009; Energy and Water in a Warming World, "Freshwater Use by Power Plants," 2011.

Energy Used for Water

"embedded energy"

- Conveyance of Water
  - Water source
  - Pumping inefficiencies
  - Water loss
- Water and Waste Water Treatment
  - Type of equipment
  - Size of plant
  - End quality requirements
- End Uses
  - Heating

Water-Related Energy in the U.S.

- 13% of U.S. energy is water-related
- 521 million MWh per year
- Moving, treating & heating water produces 290 million metric tons of carbon per year
- Equivalent to emissions of over 62 coal fired power plants

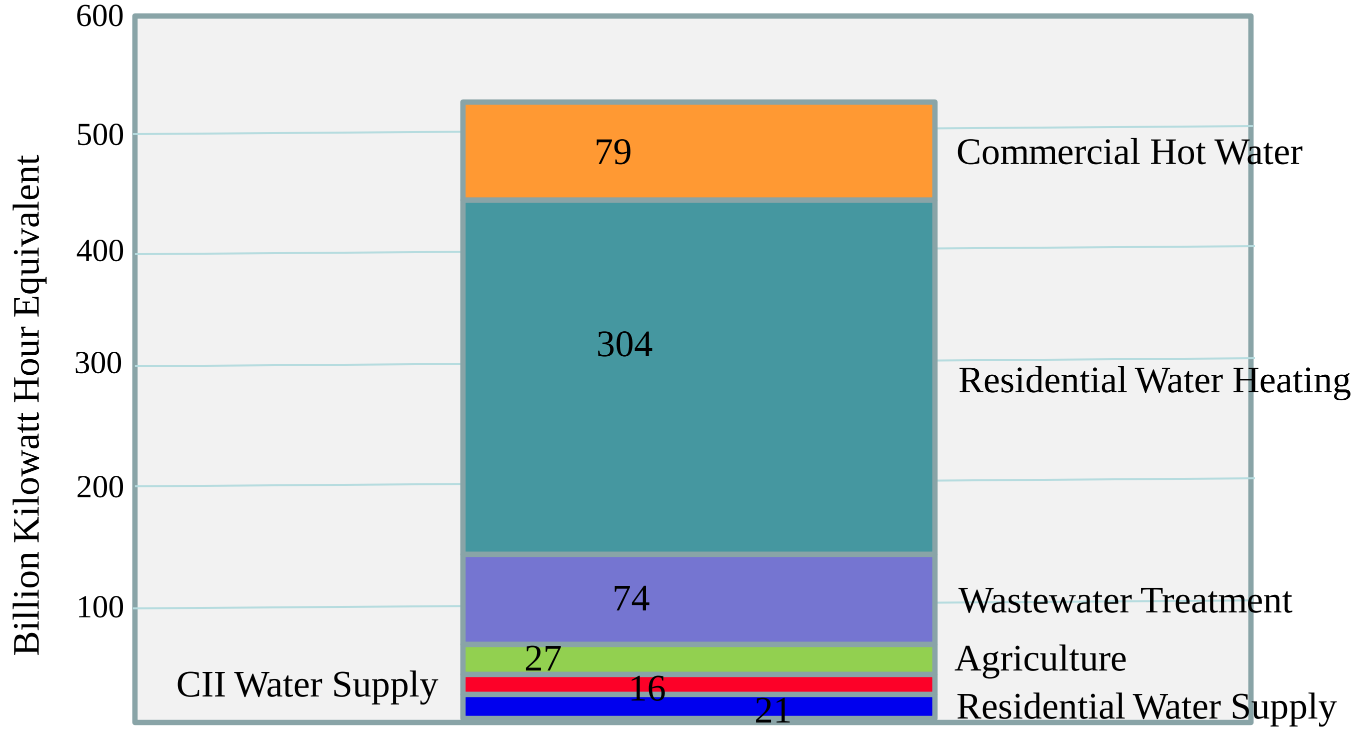
. . . and it is likely to grow!

Source: River Network, The Carbon Footprint of Water, 2009

U.S. Water-Related Energy Use

13% of energy

5% of CO^2



Source: River Network, The Carbon Footprint of Water, 2009

FEMP BMPs

- Distribution System Audits (#3)
- Faucets and Showerheads (#7)
- Boiler/Steam Systems (#8)
- Single-Pass Cooling Equipment (#9)
- Cooling Tower Management (#10)
- Commercial Kitchen Equipment (#11)
- Laboratory/Medical Equipment (#12)
- Alternate Water Sources (#14)

Investments in water conservation, efficiency, reuse and LID are among the largest and most cost-effective energy and carbon reduction strategies available.

Energy Inputs of a Typical Water Use Cycle

Source and conveyance → Treatment → Distribution → End use → Wastewater treatment

- Distribution leakage can result in significantly greater energy intensity
- Most systems range from 1,250 to 6,500 kWh/MG

Water Use Cycle Segments	Range of Energy Intensity (kWh/MG)	
	Low	High
Water Supply and Conveyance	0	14,000
Water Treatment	100	16,000
Water Distribution	250	1,200
Wastewater Collection/Treatment	700	4,600
Wastewater Discharge	0	400
Total:	**1,050**	**36,200**

Source: River Network, The Carbon Footprint of Water, 2009

Energy Intensity of Water Supply Types

- Groundwater is 30% more energy intensive than surface water
- Desal is 7X more energy intensive than groundwater

Source Types	Energy Intensity (kWh/MG)
Surface Water (Gravity Fed)	0
Groundwater	2000
Brackish Groundwater	3200
Desalinated Seawater	13800
Recycled Water	1100

Source: Pacific Institute's "Water to Air Model"; http://www.pacinst.org/resources/water_to_air_models/index.htm

Distribution

- Pumping inefficiencies
  - Oversizing pumps for growth is typical
  - VSDs can save up to 70% of full speed
- Water loss
  - Pressure management
    - A 10% reduction in system pressure reduces losses by 10% (rule of thumb)
  - Leak detection
    - 15% unaccounted for water (AWWA)

Energy Intensity of WW Treatment

- Pumps
- Leak Management
- Automated Controls
- Metering and Monitoring

Treatment Plant Size (MG/day)	Unit Electricity Consumption (kWh/million gallons)			
	Trickling Filter	Activated Sludge	Advanced Wastewater Treatment	Advanced WW Treatment w/Nitrification
1 MGD	1,811	2,236	2,596	2,951
5 MGD	978	1,369	1,573	1,926
10 MGD	852	1,203	1,408	1,791
20 MGD	750	1,114	1,303	1,676
50 MGD	687	1,051	1,216	1,588
100 MGD	673	1,028	1,188	1,558

Source: EPRI, Water and Sustainability: U.S. Electricity Consumption for Water Supply & Treatment—The Next Half Century, 2000.

Energy Embedded in Water at End Use

- Heating
  - Baths or showers, washing hands, dishes and clothes, industrial processes
- Additional pumping
  - Cooling towers, recirculation hot water loops, car washes or high pressure spraying, pressurization for high rise buildings, irrigation pressure or lifts
- Indirect
  - Energy used to run air conditioning compressors that are water cooled

Residential End Uses

Water Use Category	Hot Water	Energy Intensity (kWh/MG)
Bath	78.2%	159,215
Clothes Washer	27.8%	56,600
Dishwasher	100%	203,600
Faucet	72.7%	148,017
Leaks	26.8%	54,565
Shower	73.1%	148,832
Toilet	0%	0
Landscape Irrigation	0%	0

Source: William B. DeOreo & Peter W. Mayer, "The End Uses of Hot Water in Single Family Homes From Flow Trace Analysis; www.aquacraft.com/Download_Reports/DISAGGREGATED-HOT_WATER_USE.pdf.

Commercial End Uses

Water Use Category	Energy Intensity (kWh/MG)
Kitchen Dishwashers	83,500
Prerinse nozzles	21,000
Laundries	35,800
Water-cooled Chillers	207,800
Single Pass Cooling	0
Landscape Irrigation	0

Source: Gary Wolff, Ronnie Cohen, and Barry Nelson, "Energy Down the Drain: The Hidden Costs of California's Water Supply, August 2004; www.nrdc.org/water/conservation/edrain/contents.asp .

River Network's 'Simple Calculators'

- Showerhead comparison calculator
- Community Water-Energy Savings Calculator
- Toilet Comparison Calculator
- Water Heating Calculator
- New Source Impact Tool
- Also, the 'Simple' Method of Estimating the Energy Intensity of Your Water

Showerhead Comparison Calculator

- Compares water, energy and carbon costs
- Contains carbon intensity of state grid
- Input fuel type, existing flow, # and length of showers, efficient replacement flow
- Targeted at residential but could be used to estimate savings in barracks, fitness centers, etc.
- Can be used as educational tool for FH

Showerhead_Calculator-River_Network.xls [Compatibility Mode]

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Showerhead Comparison Calculator

Electric Water Heater

If you heat your water with natural gas, refer to the "Natural Gas" worksheet

Select your state: Illinois

2.5 — I. What is the flow rate (in gallons per minute) of your showerhead?

If you are unsure, select 4 gallons per minute (gpm). If you want to figure out your showerhead's flow rate, just collect the water from 15 seconds of a shower, measure it, then multiply by 4 to get the gpm flow rate.

3 — II. How many people are in your household?

7 — III. How many showers does each member of your household typically take per week?

7.9 — IV. On average, how long does each member of your household spend in the shower?

If unsure, average is 7.9 minutes

1.5 — V. Select the flow rate of the efficient showerhead you would like to compare.

Disclaimer:

River Network's Water/Energy Calculators are interactive tools designed to help you figure out how much how much energy and carbon emissions are embedded in the water you use. Results received from this calculator are designed for indication purposes only. River Network does not guarantee the accuracy of any information derived from this tool, and is not responsible for any errors, omissions, or misrepresentations.

Please send any questions or comments to bgriffiths@rivernetwork.org

This tool was designed by Bevan Griffiths Sattenspiel

Results:

With a traditional shower head, each year your household consumes:

21,567 gallons of water

3,210 kWh of direct electricity

71 kWh indirect electricity

...and emits

3,789 pounds of carbon dioxide

Using a more efficient showerhead consumes:

12,940 gallons of water

1,926 kWh of direct electricity

43 kWh indirect electricity

...and emits

2,273 pounds of carbon dioxide

Resulting in an annual savings of:

8,627 gallons of water per year

1,284 kWh of direct electricity per year

28 kWh indirect electricity

1,516 pounds of carbon dioxide emissions

$22.86

$130.96

$2.86

NOTE indirect electricity refers to the energy saved from not needing to pump and treat the water before it reaches the home and wastewater treatment after it enters the sewer system. These numbers are based on a national average and can vary substantially depending on your local water system.

Electric | Natural Gas | Assumptions

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Showerhead Comparison Calculator

Natural Gas Water Heater

If you heat your water with electricity, refer to the "Electric" worksheet

Input	Question
2.5	**I. What is the flow rate (in gallons per minute) of your showerhead?** *If you are unsure, select 4 gallons per minute (gpm). If you want to figure out your showerhead's flow rate, just collect the water from 15 seconds of a shower, measure it, then multiply by 4 to get the gpm flow rate.*
3	**II. How many people are in your household?**
7	**III. How many showers does each member of your household typically take per week?**
7.9	**IV. On average, how long does each member of your household spend in the shower?** *If unsure, average is 7.9 minutes*
1.5	**V. Select the flow rate of the efficient showerhead you would like to compare.**

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Results:

With a traditional shower head, each year your household consumes:

- 21,567 gallons of water
- 15,950 cubic feet of natural gas
- 71 kWh indirect electricity

...and emits

- 2009 pounds of carbon dioxide

Using a more efficient showerhead consumes:

- 12,940 gallons of water
- 9,570 cubic feet of natural gas
- 43 kWh indirect electricity

...and emits

- 1206 pounds of carbon dioxide

Resulting in an annual savings of:

- 8,627 gallons of water per year
- 6,380 cubic feet of natural gas
- 28 kWh indirect electricity
- 804 pounds of carbon dioxide emissions

$22.86
$91.23
$2.86

NOTE indirect electricity refers to the energy saved from not needing to pump and treat the water before it reaches the home and wastewater treatment after it enters the sewer system. These numbers are based on a national average and can vary substantially depending on your local water system.

Electric | Natural Gas | Assumptions

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Assumptions:

"Click on links for source data"

$	0.00265	National average cost of tap water per gallon
$	0.00307	National average cost of wastewater treatment per gallon
$	0.1024	National average cost of electricity per kWh
$	0.0143	National average cost of natural gas per cf
	1.34	lbs CO2 per kWh
	0.12	lbs CO2 per cf natural gas
	0.2036	kWh/gallon if heating water with electricity* (pg. 5-6)
	1.0117	cf/gallon if heating water with natural gas* (pg. 5-6)
	0.0015	kWh/gallon water delivered
	0.0018	kWh/gallon of wastewater treated
	73.10%	hot water for shower use
	7.9 minutes	average length of shower (pg. 61)

Avg. Residential Electricity Cost, by State (April 2009)*		Carbon Intensity of Electricity, by State**		Water Intensity of Electricity, by State***		Flow Rates:	
State	USD$/kWh	State	lbs. CO2/kWh	State	gallons H2O/kWh	Conventional:	Efficient:
	0.1078		1.155		1.05		
U.S. Average	0.110	U.S. Average	1.360	U.S. Avera	2.00	2	1
Alabama	0.103	Alabama	1.299	Alabama	2.50	2.2	1.25
Alaska	0.173	Alaska	1.106	Alaska	0.27	2.5	1.5
Arizona	0.095	Arizona	1.219	Arizona	7.85	3	1.6
Arkansas	0.089	Arkansas	1.280	Arkansas	0.26	3.5	1.75
California	0.150	California	0.700	California	4.64	4	2
Colorado	0.093	Colorado	1.986	Colorado	1.20	4.5	2.5
Connecticut	0.195	Connecticut	0.754	Connectic	0.07	5	
Delaware	0.133	Delaware	1.804	Delaware	0.01	6	
District of Col	0.128	District of Columbia	3.614	District of	1.61	7	
Florida	0.124	Florida	1.348	Florida	0.14	9	
Georgia	0.094	Georgia	1.388	Georgia	1.65	10	
Hawaii	0.258	Hawaii	1.655	Hawaii	0.04	11	
Idaho	0.071	Idaho	0.144	Idaho	7.85	13	
Illinois	0.108	Illinois	1.155	Illinois	1.06		
Indiana	0.086	Indiana	2.098	Indiana	0.41		
Iowa	0.089	Iowa	1.943	Iowa	0.11		
Kansas	0.082	Kansas	1.871	Kansas	0.58		
Kentucky	0.081	Kentucky	2.051	Kentucky	5.32		
Louisiana	0.089	Louisiana	1.201	Louisiana	1.47		
Maine	0.160	Maine	0.772	Maine	0.12		
Maryland	0.144	Maryland	1.293	Maryland	0.21		
Massachusett	0.181	Massachusetts	1.226	Massachu	0.00		
Michigan	0.112	Michigan	1.413	Michigan	0.48		
Minnesota	0.096	Minnesota	1.588	Minnesota	0.41		
Mississippi	0.096	Mississippi	1.409	Mississipp	0.37		
Missouri	0.070	Missouri	1.881	Missouri	0.30		
Montana	0.084	Montana	1.573	Montana	16.74		
Nebraska	0.069	Nebraska	1.503	Nebraska	0.30		
Nevada	0.122	Nevada	1.573	Nevada	7.25		
New Hampshi	0.163	New Hampshire	0.779	New Hamp	0.10		
New Jersey	0.158	New Jersey	0.713	New Jerse	0.07		
New Mexico	0.095	New Mexico	1.992	New Mexic	1.13		
New York	0.175	New York	0.907	New York	1.62		
North Carolina	0.095	North Carolina	1.218	North Car	0.55		
North Dakota	0.066	North Dakota	2.386	North Dak	5.13		
Ohio	0.094	Ohio	1.779	Ohio	0.94		
Oklahoma	0.077	Oklahoma	1.726	Oklahoma	8.39		
Oregon	0.084	Oregon	0.456	Oregon	3.71		
Pennsylvania	0.108	Pennsylvania	1.216	Pennsylvan	0.53		
Rhode Island	0.172	Rhode Island	1.071	Rhode Isla	0.00		
South Carolina	0.098	South Carolina	0.915	South Car	0.25		
South Dakota	0.076	South Dakota	1.215	South Dak	72.64		
Tennessee	0.094	Tennessee	1.266	Tennessee	3.60		
Texas	0.128	Texas	1.472	Texas	0.43		
Utah	0.080	Utah	2.121	Utah	3.06		
Vermont	0.144	Vermont	0.007	Vermont	0.25		
Virginia	0.100	Virginia	1.211	Virginia	0.06		
Washington	0.077	Washington	0.360	Washingto	2.70		
West Virginia	0.074	West Virginia	1.988	West Virgi	0.58		
Wisconsin	0.124	Wisconsin	1.713	Wisconsin	0.46		
Wyoming	0.078	Wyoming	2.278	Wyoming	4.15		

*Energy Information Administration, Table 5.6.B, January 2009 <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>

**U.S. EPA's eGRID Version 2.1 <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>

***"Consumptive Water Use for U.S. Power Production." National Renewable Energy Laboratory, 2003 <http://www.nrel.gov/docs/fy04osti/33905.pdf>

Electric | Natural Gas | Assumptions

Community_Water-Energy_Savings_Calculator-River_Network.xls [Compatibility Mode]

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Community Water-Energy Savings Calculator

Select your state: [ ]

[ ] **I. What water-saving device would you like to promote?**

[ ] **II. How many people live in your community?**

[ ] **III. In kWh per million gallons, what is the energy intensity of your water supply?**
If unsure, national average is 1,500 kWh/MG

[ ] **IV. In kWh per million gallons, what is the energy intensity of your wastewater treatment?**
If unsure, national average is 1,800 kWh/MG

[ ] **V. What percentage of your community do you expect to install the device?**
Try different values to compare potential savings
(i.e. if 5% of your community replaced their showerheads vs. 25% replacement.)

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Please send any questions or comments to bgriffiths@rivernetwork.org
This tool was designed by Bevan Griffiths Sattenspiel

Results:

If 0% of your community installed this device, your community would annually save:

#N/A	gallons of water
#N/A	kWh of direct electricity*
#N/A	kWh indirect electricity**
#N/A	pounds of carbon dioxide emissions
#N/A	off water bills
#N/A	off electricity bills

*Refers to electricity used within the home for electric hot water heating
**Refers to electricity used to pump and treat water and wastewater

Start | Assumptions

Toilet_Calculator-River_Network.xls [Compatibility Mode]

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Toilet Comparison Calculator

Select your state: Illinois

Each year, your household's toilet use accounts for:

$50.78	19,163	gallons of water per year
$6.43	63	kilowatt hours of indirect electricity per year
	73	pounds of carbon dioxide emissions

Answer	Question
1980 to 1994	**I. How many gallons does your toilet use per flush?** *Pre-1980: 6 gallons/flush* *1980 to 1994: 3.5 gallons/flush* *Post-1994: 1.6 gallons/flush* *Dual Flush or WaterSense: 1.3 gallons per flush*
3	**II. How many people are in your household?**
5	**III. How often does each person flush the toilet on a typical day?** *If unsure, average is 5 times per person per day*
1500	**IV. What is the energy intensity (in kWh/million gallons) of your water supply system?** *If unsure, national average is 1,500 kWh/MG*
1800	**V. What is the energy intensity (in kWh/million gallons) of your wastewater system?** *If unsure, national average is 1,800 kWh/MG*

NOTE indirect electricity refers to the energy saved from not needing to pump and treat the water before it reaches the home and wastewater treatment after it enters the sewer system. These numbers are based on a national average and can vary substantially depending on your local water system.

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Start | Assumptions

Water_Heating_Calculator-River_Network.xls [Compatibility Mode]

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Water Heating Calculator

Enter your Zipcode:

61821

You live in:

Champaign

IL

Your Average Inlet Temperature Is:

50

Temperature Setting of Water Heater

If unsure, enter 140 as a default

140 degrees F

Total Temperature Change

90 degrees F

Energy/CO2 Emissions per 1 gallon Hot Water:

Water Heater Type	Energy	CO2e Emissions (lb. CO2e/unit of energy)	
Natural Gas (cubic feet):	1.217	0.146	
Electric (kWh):	0.2444	0.289	(based on state electric grid)

Example percentages of hot water for different residential indoor end-uses

End-use	% hot water
Clothes Washer	27.8%
Dishwasher	100.0%
Faucet	72.7%
Showerhead	73.1%
Toilet	0.0%

From Aquacraft "*The End-Uses of Hot Water in Single Family Homes from Flow Trace Analysis*"

http://www.aquacraft.com/Download_Reports/DISAGGREGATED-HOT_WATER_USE.pdf

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Zipcode | Assumptions

New_Water_Source_Impact_Tool-River_Network.xls [Compatibility Mode]

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New Water Source Impact Tool

Start:

1) What state do you live in?

Illinois

2) What type of source is the new supply?

Groundwater

3) How much water (in MG/year) do expect to provide from this source?

365

4) How many feet in elevation will the water be lifted?

250

5) What is the energy intensity (in kWh/MG) of your distribution system?

If unsure, use 644 kWh/MG as a default value, or 0 if you would not like to factor in local distribution

644

6) What percentage of water is lost due to leaks in your water system?

If unsure, 10% is typical for U.S. water systems

15%

7) What is the average pumping efficiency?

70% is typically the optimal efficiency for a pumping system

65%

Please send any questions or comments to bgriffiths@rivernetwork.org

This tool was designed by Bevan Griffiths Sattenspiel

1 af = 325,851 gallons
1 MG = 3.069 af

Results:

Energy Consumption:

1,687,456	Kilowatt hours of electricity per year
4,623	Kilowatt hours of electricity per million gallons of water delivered

CO2 Emmissions:

1,948,596	Lbs. CO2 emissions per year
5,339	Lbs. CO2 emissions per million gallons of water delivered

Water Consumption (from electricity generation):

1,771,829	gallons of H2O per year
4,854	gallons of H2O per million gallons of water delivered

Energy Costs:

$ 181,908	Cost of electricity per year*
$ 498	Cost of electricity per million gallons of water delivered*

Disclaimer:

River Network's Water/Energy Calculators are interactive tools designed to help you figure out how much how much energy and carbon emissions are embedded in the water you use. Results received from this calculator are designed for indication purposes only. River Network does not guarantee the accuracy of any information derived from this tool, and is not responsible for any errors, omissions, or misrepresentations. For assumptions, see "Assumptions" tab.

*Based on residential retail rates. Water utitlities typically buy electricity at discounted rates, therefore actual electricity costs incured by the utility would likely be lower, however, residential rates are a better reflection of the "avoided costs" that would result if a new water supply is avoided. Avoided cost is the incremental cost to an electric utility for capacity or energy or both that, but for the acquisition of energy or capacity from another source, the utility would have to incur.

Start | Assumptions

More Water-Energy Tools

- Water to Air Model; Pacific Institute
- Personal Water-Energy-Climate Calculator (WECalc); Pacific Institute
- WaterSmart Scenario Builder Smart Path Water Analysis Tool; POLIS Water Sustainability Project
- Water Savings and Energy Calculator; EPA
- Water-Energy Sustainability Tool; UC Berkeley
- Water Conservation Tracking Tool; AWE

www.rivernetwork.org/more-water-energy-tools

Also . . .

- Energy Cost Calculator, faucets/showerheads and toilets; FEMP
- Water Energy Simulator (WeSIM); Pacific Institute
- Watergy Toolkit; Alliance to Save Energy
- Food Service Technology Center (FSTC) life-cycle and energy cost calculators – ‘fishnik’
- Energy Efficiency for Water and Wastewater Utilities; EPA
- Water Footprint Calculator

Saving Water Saving Energy Blog

Extreme Weather Map Bringing Climate Change Home

Author: Travis Leipzig
Post date: Jan 5 2012 - 5:27pm

The effects of climate change are vast. As are the means by which climate change adaptation can happen. Unfortunately, climate change can be a touchy, scary and even angering subject for some folks. So when communicating the issues around climate change adaptation, advocates must tailor their messaging to resonate with the specific audience they are targeting - or, "bring climate change home." One unarguably neat new resource that can help you literally bring the effects of climate change home is NRDC's new interactive Extreme Weather Event map. Click the title, image or here to view the full post.
Tags: Climate Change, extreme weather events, interactive map, messaging, NRDC, tools

Lighting Efficiency Standards Burnt Out In New Spending Deal

Author: Travis Leipzig
Post date: Dec 16 2011 - 5:48pm

Scheduled to go into effect this January, the Federal lighting efficiency standard that was signed into law by President Bush as a part of the Energy Independence and Security Act of 2007, has now effectively been shot dead in the water. Today, a Federal omnibus bill was passed that prohibits the Department of Energy from spending any money to enforce the efficiency standards. Click the title, image or here to view the entire post.
Tags: Congress, efficiency standards, Energy Efficiency, energy independence and security act of 2007, lighting efficiency, omnibus bill, spending deal

The Climate Post: Now All GOP Presidential Candidates Express Climate Skepticism

Author: Travis Leipzig
Post date: Dec 9 2011 - 4:37pm

Check out this week's re-posting of Duke University's The Climate Post to learn: Which GOP Presidential candidate was the last of the group to announce his climate skepticism (oficially making all GOP candidates skeptics...); Why there is little hope for an agreement coming out of the UN climate negotiations happening in South Africa; and, why the US companies are claiming they are being harmed by the massive growth in China's solar industry. Click the title, image or here to view the full post.
Tags: china, climate negotiations, climate news, Climate Post, climate skeptics, Duke University, Environmental Policy, GOP, nicholas institute, nuclear, solar industry, UN

About the Saving Water, Saving Energy blog

The *Saving Water, Saving Energy* blog provides the latest news, resources and analysis on water, energy, and climate change issues with an emphasis on the inextricable connections between water and energy, also know as the Water-Energy Nexus.

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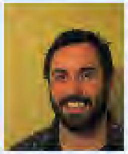

The SWSE blog is produced by Travis Leipzig, River Network's Rivers, Energy & Climate Program Coordinator.

Contact Travis directly with questions, comments or new information to share!

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Overview

Why Water And Energy Efficiency

What Watergy Involves

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Overview

We also offer an overview of the Watergy Program in Chinese

The term "Watergy™" was coined by the Alliance to Save Energy to describe the strong link between water and energy in municipal water distribution systems. The program helps cities realize significant energy, water and monetary savings through technical and managerial changes in water supply systems, providing consumers with quality water while using a minimum of water and energy. Currently all Watergy™ projects are in developing countries, where efficiency measures repay themselves quickly and the resulting savings in money and water reap many rewards: immediate improvements in water service, increased water delivery, reduced water and energy consumption, and more revenue for desperately needed system upgrades and new customer connections.

Watergy™ has been implemented in over 40 cities around the world and is currently active in six countries: India, Mexico, Brazil, Philippines, Sri Lanka, and South Africa. The Alliance custom designs every project to the needs and socioeconomic conditions of each country and locale, but at the core of all projects is the strategy of designing projects to build capacity locally so the benefits of any intervention continue long after the project has ended.

The Alliance developed a toolkit that provides a wealth of multi-media tools and resources to help users achieve concrete results: training videos (for example on conducting audits and detecting leaks), manuals, case studies, best practice guides, and resource documents. The kit also includes a Watergy™ training manual, available in PDF format in five languages: English, Spanish, Portuguese, Russian, and Bosnian (which due to linguistic similarities can also be used in Croatia, Serbia, Kosovo, Montenegro, Macedonia and Slovenia).

Established in 1977, the Alliance to Save Energy is a non-profit coalition of prominent business, government, environmental, and consumer leaders who promote the efficient and clean use of energy worldwide to benefit consumers, the environment and economic growth. The Alliance has been working internationally for more than a decade in over 30 developing and transition countries. Funding for Watergy™ is provided by the U.S. Agency for International Development (USAID), the Renewable Energy and Energy Efficiency Partnership (REEEP), the International Finance Corporation (IFC), the Coca-Cola Company, and others.

For more information, please contact Laura Van Wie McGrory – Director: 443-934-2279

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Energy Efficiency for Water and Wastewater Utilities

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Drinking water and wastewater systems account for approximately 3-4 percent of energy use in the United States, adding over 45 million tons of greenhouse gases annually. Further, drinking water and wastewater plants are typically the largest energy consumers of municipal governments, accounting for 30-40 percent of total energy consumed. Energy as a percent of operating costs for drinking water systems can also reach as high as 40 percent and is expected to increase 20 percent in the next 15 years due to population growth and tightening drinking water regulations.

The good news? Studies estimate potential savings of 15-30 percent that are "readily achievable" in water and wastewater plants, with substantial financial returns in the thousands of dollars and within payback periods of only a few months to a few years.

Determining Energy Usage—Provides tools and guidance for water industry professionals.

Cutting Energy Usage & Costs—Provides information on how to develop an overall energy management program based on EPA's Energy Management

Sustainable Infrastructure Quick Links
Needs & Funding Gap
Water & Energy Efficiency
Water Efficiency for Suppliers
Water Efficiency Strategies
Water Availability
Water Maps
Energy Efficiency for Utilities
Determining Energy Usage
Cutting Energy Usage & Costs
Renewable Energy Options
Financing & Pricing
Asset Management
Alternative Tech & Assessment
Resources

Just For You
Local Officials
Consumers

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Fix a Leak Week

It's time to remind homeowners to dig out their wrenches and pipe tape – Fix a Leak Week 2012 is just around the corner! For the fourth consecutive year, WaterSense® and their partners will raise awareness about the importance of eliminating household leaks during Fix a Leak Week, March 12 through 18, 2012.

To help make the weeklong event truly national in scale, EPA is encouraging WaterSense partners across the country to host community events that highlight the water-saving benefits of fixing household leaks. Step-by-step guides, inspirational ideas, case studies, and updated tools and resources are available for WaterSense partners.

EPA WaterSense plans to participate in several Fix a Leak Week partner events from the national level, providing media relations, spokespeople, planning assistance, or other relevant support. To be considered, email your event plans to watersense@epa.gov using the attached guidelines by January 11, 2012. Remember, guidelines and inspiration on pulling together a fun and engaging community event are available on the partner website!

WaterSense® 2012 Fix a Leak Week Community Event Guidelines

As we have for the past three years, WaterSense and our partners will raise awareness about the importance of eliminating household leaks during the fourth annual Fix a Leak Week, March 12 through 18, 2012. To help make the weeklong event truly national in scale, EPA is encouraging WaterSense partners across the country to host community events that highlight the water-saving benefits of fixing household leaks. We have updated a number of tools to help partners promote the campaign at the local level.

WaterSense plans to participate in several Fix a Leak Week events from the national level, providing media relations, spokespeople, planning assistance, or other relevant support. To be considered, share your event plans with us using the guidelines below by January 11, 2012.

Sample Event Ideas