Archival copy: for current recommendations see http://edis.ifas.ufl.edu or your local extension office.

UNIVERSITY OF FLORIDA
EXTENSION
Institute of Food and Agricultural Sciences

FCS3232

The Conservation Balancing Act: Part I. In the Home[1]

Virginia Peart[2]

The Situation

Conservation is everybody's business. The big questions are: When? How much? What do I have to give up? The answer may be to get into **The Conservation Balancing Act**. Learn what waste is and you may be able to conserve more water and the energy required to heat water than you think without sacrificing the benefits.

We couldn't live long in a world without a supply of pure, safe water. How many times a day does each of us turn on a tap for a drink, to wash our hands, to prepare food, to wash clothes or dishes, to bathe, to water plants? The list goes on and on. Don't tell us "the well is dry." We have to have water.

We don't want to live without energy either: gas and electricity. We want to be able to cool and heat our homes. Heating water for bathing, cleaning, laundering clothes is important to the way we want to live. And we can't do without electric light and all the work done by our appliances.

Here's news. It takes water to get energy to our homes. Steam-driven turbines powered by coal, gas or nuclear fission drive electrical generators. Water is used to remove excess heat that is a by-product of electricity generation. About 1 percent of a home electricity bill covers the cost of water used in the production of the energy we use. One percent is a small percentage, but it is a lot of water.

More news. It takes energy to provide the water we use. It is true. About 4 percent of our home water bill pays for energy to pump the water, treat and deliver it. About 17 percent of our waste water bill pays for energy to treat wastewater and reclaim it. Additionally, chemicals used to treat water and wastewater are energy intensive.

We hear about water shortages and water contamination. No wonder! Consider these impacts on water use in Florida:

- The population of Florida grew from half a million in 1900 to 13 million in 1990. Imagine, a 2600 percent population growth in 90 years! Additionally, Florida has more than 29 million visitors annually and many snowbirds who reside here every year for just part of the year. More people means more water and energy are needed.
- Though water use figures for the early part of the century are not available, the *Water Resources Atlas of Florida,* published in 1984 by Florida State University, indicates that water for all residential uses (including lawn watering)

1. This document is FCS 3232, one of a series of the Department of Family, Youth and Community Sciences, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: January 2001. First published: September 1994. Reviewed: January 2001. Please visit the EDIS Web site at **http://edis.ifas.ufl.edu**

2. Virginia Peart, former associate professor, Housing, reviewed by Nayda I. Torres, professor, Family and Consumer Economics, Department of Family, Youth and Community Sciences, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611

The Institute of Food and Agricultural Sciences is an equal opportunity/affirmative action employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap, or national origin. For information on obtaining other extension publications, contact your county Cooperative Extension Service office. Florida Cooperative Extension Service/Institute of Food and Agricultural Sciences/University of Florida/Christine Taylor Waddill, Dean.

Archival copy: for current recommendations see http://edis.ifas.ufl.edu or your local extension office.

was about 50 gallons/person/day in 1950 (350 gallons/person/week). This residential use of water grew to almost 100 gallons/person/day person by 1980 (700 gallons/person/week). In Florida, we doubled the per person water use in the 30 years from 1950 to 1980. Since the turn of the century, when water was used sparingly, the growth of water use has been even greater.

- We estimate that home water use has grown from as little as 100 gallons/person/week early in the century when there were 500,000 people living in Florida to over 700 gallons a week in 1990 with over 13 million Florida residents. For all Florida households home water use can be estimated to have grown from 50 million gallons per year in 1900 to 9.1 billion gallons per year in 1990. Statewide, home water use is 18,200 times as great as it was 90 years ago.

Energy also plays an important role in the lives of Floridians. How many times a day do you turn on a light, start a motor, draw hot water and activate the water heater, relax, work and play in a comfortable, temperature-controlled environment? Does your electric meter get much rest? And natural gas quietly does its job heating water and air in homes.

The use of energy is so basic to the way we live, we accept as normal the necessity of electric and gas bills -- griping only from time to time when these bills are higher than we would like. We know we can save money by using less energy in our homes, but our efforts are spotty. Often we question the effectiveness of those energy conservation techniques we know. But we can change.

Bear this important fact in mind: Florida can never be energy independent since there are no coal, oil, natural gas or nuclear reserves in Florida. The state will always be dependent on out-of-state sources for electricity production.

Cleanliness. Cleanliness is the primary function of water in Florida homes. Cleanliness is priceless and at the same time cleanliness is costly. Costs associated with clean water, energy and the resources required for cleanliness can eat into our pocket books. One of the largest uses of energy in a home is for heating water. More important, water, energy and other resources are limited; their uncontrolled use can cost our environment.

Water and Energy Facts

Water, energy, environment, cleanliness -- all are important to us. Can we conserve without sacrificing the cleanliness, the comfort we want in our homes? The answer is YES. And, the most important place to start is cutting the use of water and other resources where they are wasted -- where they are "used" without serving any real purpose.

ATTACK WASTE! Water and energy are too precious to waste. They are too costly in dollars and resources. Water in most Florida homes comes from municipal plants where every drop is carefully tested and treated to make it safe for drinking. That means we water our plants, water our lawns and wash our cars with drinking water! Energy is used to draw the water from wells, treat it and deliver it to our homes.

While a house is being planned and built water and energy conservation can be built-in. If our home is not as efficient as it could be, there are some things we can change, some we cannot. But there are habits we can change; practices we can adopt to avoid waste.

Table 1, **"Avoiding Home Water and Energy Waste," can help you see the importance of avoiding waste. These examples are similar to what can happen in any home. We can learn from them.**

Consider Leaks

Note that a "little" leak of one drop a second wastes seven gallons of water per day -- over 2,500 gallons a year. In the example shown, water costs only $2.56. Not enough to worry about? Look again. Wastewater treatment costs $4.85. The total goes up to $7.41.

Not convinced? What about a steady stream -- like one that happens in a leaking toilet? Twenty gallons a day means 7,300 gallons a year: a total of over $21.17. Want to do something about the leak yet?

Archival copy: for current recommendations see http://edis.ifas.ufl.edu or your local extension office.

If it's hot water, there's a BIG difference. Heating the water for that little drip adds $3.75 if you have a gas water heater and a whopping $28.38 with an electric water heater. The total leak "bill" (water, wastewater, gas or electricity) goes up to $11.16 (with a gas heater) or $35.79 with an electric water heater. The total stream "bill?" That's $31.89 (gas water heating) and $102.25 (electric water heating). It's your choice.

Running Water

Also consider the times you turn on a faucet and leave it running while you do something else. Maybe you only do this for half a minute two or three times a day. Maybe everyone in the family does the same thing. In Table 1 you can see what happens to your water bill for just 5 minutes (or three minutes) a day. By working with your family to change their water use habits, you may be able to cut your bills for water and wastewater alone by $15.88 to $26.47 a year. For hot water your savings might be as high as $39.87 with a gas heater or $127.82 with an electric water heater.

Your Conservation Balancing Act

How can you avoid wasting water and energy?

Plan carefully when you build a house.

When building a new home, see to it that the water heater is located near the places where warm or hot water is needed (bathrooms, laundry and kitchen sink) to save both water and the energy to heat it.

Your water heater.

Buy your water heater wisely. Water heaters store water so heated water is ready for use when you want it. Buy the gallon-size that meets your family's peak hourly needs. (The gallon-size corresponds to the first-hour rating: takes into account how quickly cold water can be heated in that size tank. A *70-gallon first-hour rating* calls for a 65-gallon electric water heater or a 40-gallon gas water heater.) Also get water heater efficiency by checking the energy efficiency label right on the appliance.

Lower your water heater thermostat from 140° to 120°F. This saves energy and protects young children and the elderly from scalds. It also takes longer to heat your water. And, if you have a dishwasher you may find your dishes don't get clean at 120°. Then set the water heater up to 130° or 140° again.

Protect your water heater. Locate the valve on the bottom of the heater and drain a few gallons from the water heater twice yearly. The water you drain contains mineral deposits and sediment that collect in the tank and reduces the amount of heat transferred from the heating element to the water. Draining reduces energy waste and increases the life of both the element and the water heater.

Consider installing a water-heater timer that "tells" the water to heat only during the times of the day when hot water is needed.

New water heaters are more efficient and better insulated than those made 10 or more years ago. If your water heater is an older model, you can buy and install an insulation kit. Follow directions carefully.

If you're planning a trip and won't need water for three days or more, turn your water heater off. If your heater is gas turn your controls to pilot. This will avoid having to relight when your come home. (If you have an electronic starter on your gas water heater, it can reignite the water heater when you turn it back on.)

Avoid water waste -- especially hot water waste.

A most important approach to true conservation is to **BE AWARE**. Train your family to be aware of leaks, of waste. Teach children to turn off water faucets tightly after each use.

Install low-volume flow-control devices and faucets in the bath and kitchen. Aerator faucets splash less and use less water per minute.

Stop all leaks and drips.

Once water is heated, don't waste it.

Collect rain water from a downspout or condensate from an air conditioner for watering house plants. This water is better for plants than well

Archival copy: for current recommendations see http://edis.ifas.ufl.edu or your local extension office.

water which contains minerals that can build up in flower pots and inhibit the growth of plants.

Although not addressed specifically in this publication, we encourage you to take your new water ways with you everywhere. Spread the word: Encourage others to conserve water outside, as well as inside, the home.

> *Remember: When you save water, you are saving the energy to produce that water. When you save energy, you are saving the water required to produce that energy.*

THINK EFFICIENCY -- Say YES to the benefits of water and energy, but say NO to waste. You will save money, too

Archival copy: for current recommendations see http://edis.ifas.ufl.edu or your local extension office.

Table 1.

Avoiding Home Water Energy Waste						
	For One Person		Family of Four		Cost Per Year -- $	
	Times Per Day	Gallons Per Year	Water	Waste Water	Energy w/ Elec. Water Heater	Energy w/ Gas Water Heater
Leaks -- Cold Water						
1 drop/sec Steady Stream	7 20	2,555 7,300	$2.56 $7.30	$ 4.85 $13.87		
Leaks -- Hot Water						
1 drop/sec Steady Stream	7 20	2,555 7,300	$2.56 $7.30	$ 4.85 $13.87	$28.38 $81.08	$ 3.75 $10.72
Running Water -- Cold Water						
Faucet on Full for 5 Min 5 Gal/Min	25	9,125	$9.13	$17.34		
Faucet on Half for 5 Min 3 Gal/Min	15	5,475	$5.48	$10.40		
Running Water -- Hot Water						
Faucet on Full for 5 Min 5 Gal/Min	25	9,125	$9.23	$17.34	$101.35	$13.40
Faucet on Half for 5 Min 3 Gal/Min	15	5,475	$5.48	$10.40	$60.81	$8.04