City of Arlington
Public Works

April 27, 2015

RE: Jensen Water Improvements

Dear Resident:

The City of Arlington would like to inform you of an upcoming construction project in the vicinity of your home, as well as invite you to an informative open house to discuss the project and answer questions. The open house will be held on **Tuesday May 12** at **7 pm** at the following location:

City of Arlington Public Works
Stillaguamish Community Room
154 W Cox Ave
Arlington, WA 98223

The project will consist of replacing approximately 2,700 linear feet of water main along Jensen Street, Marion Street, Florence Street, and Hillcrest Drive. The purpose of the project is to replace aging water mains and to improve water service to the area. The project will also replace existing water meters and hydrants, as well as provide new asphalt pavement within the neighborhood's public roads.

A project flier is enclosed for your reference, and we encourage you to check out the project website for additional information. We have posted copies of the improvement plans to the City's website as a means to illustrate what work will be occurring near your home.

What should you expect once construction begins:

- In late May, the contractor will begin staging equipment in the area and begin performing preliminary investigation work.
- Once construction begins, the Contractor will trench along the roadways to install the water pipe and services.
- Most trenches will be backfilled by the end of the day. Trenches not backfilled will be covered with steel plates. Access to your driveway may be limited during the day when the contractor is working in your area.
- Noise levels will increase during construction, however, work will generally only be performed during the day between 7am and 5 pm – there may be a few nights when work goes to 7pm.
- Water service to your home will be interrupted for a short time when final crossover connections are made to the new water system. You will be notified in advance of the shutoff and provided a duration for the service outage.

154 W. Cox Avenue - Arlington, WA 98223 - 360-403-3526 - fax 360-435-7944 - www.arlingtonwa.gov

- The new water system may increase water pressure in the water distribution system. Most homes in this area have a Pressure Reducing Valve (PRV) located either in the house or in a vault outside. A PRV is part of your plumbing system and reduces the water pressure delivered to your to your home. It is strongly suggested that you inspect you PRV it to make sure it is still functioning properly before your water service is connected to the new water distribution system, adjustments may be needed.

  Attached to this letter is a brochure explaining what a PRV is and how it protects your plumbing fixtures. Failure to install a PRV or to inspect and adjust an existing PRV may cause damage to your plumbing fixtures. If you have any questions about this increase in water pressure, or about PRV issues, please feel free to call one of the below contact contacts:

Mr. Gus Tararan	Public Works Administration
Lead Water Distribution Specialist	360-403-3526
425-754-7438	

- Construction work will occur in the public right-of-way and utility easements, however reconnection of your individual water service may require trenching on your property. Any vegetation or landscape elements disturbed during construction will be restored to existing conditions.
- Jensen Street, Marion Street, Florence Street, Kona Drive, and Joanne Street will receive a pavement overlay in August, after the waterline work is complete.
- Private roadways at the west end of Marion Street and along Hillcrest Drive will receive pavement patching of the trench.

A representative from the City will be onsite and available to answer any questions/concerns you may have once construction has begun. Please look for the representative with the City of Arlington logo on the back of their safety jacket/vest. You may also contact the City Project Hotline at (360) 403-3544 or CityProjects@arlingtonwa.gov.

Best Regards,

Eric J. Scott, PE
City Engineer

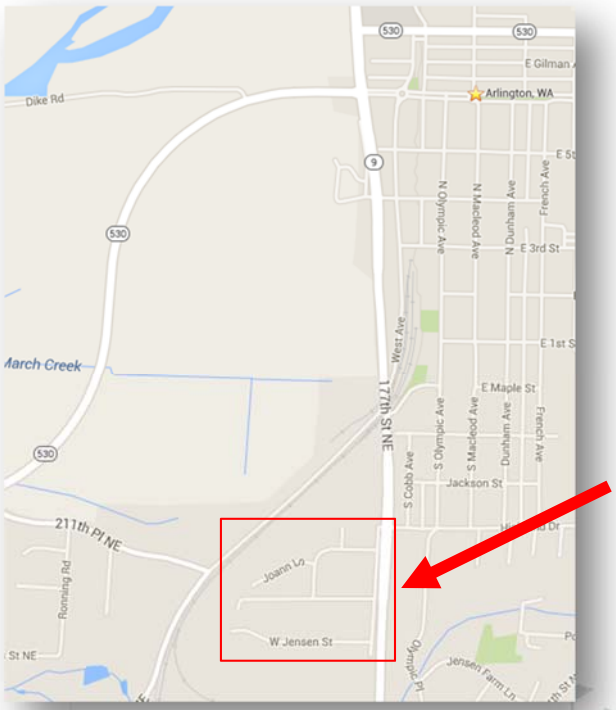
Jensen Water Improvements

Project Update April 2015

Project Description

Work under this Contract includes installing approximately 2,700 LF of new ductile iron water main, abandonment of aging water mains, and resurfacing of public roadways. Work will also include upgrading existing water service connections and associated meters.

Project Area Map



Project Benefits

- Improved water service
- Reduced maintenance callouts
- Improved road surface

Project Funding

- Estimated Construction Cost $470,000
- Funded by 2015 Capital Improvement funds
- Pavement restoration funded by Arlington Transportation Benefit District (TBD)

Schedule

Begin Construction May 2015
Complete Construction July 2015

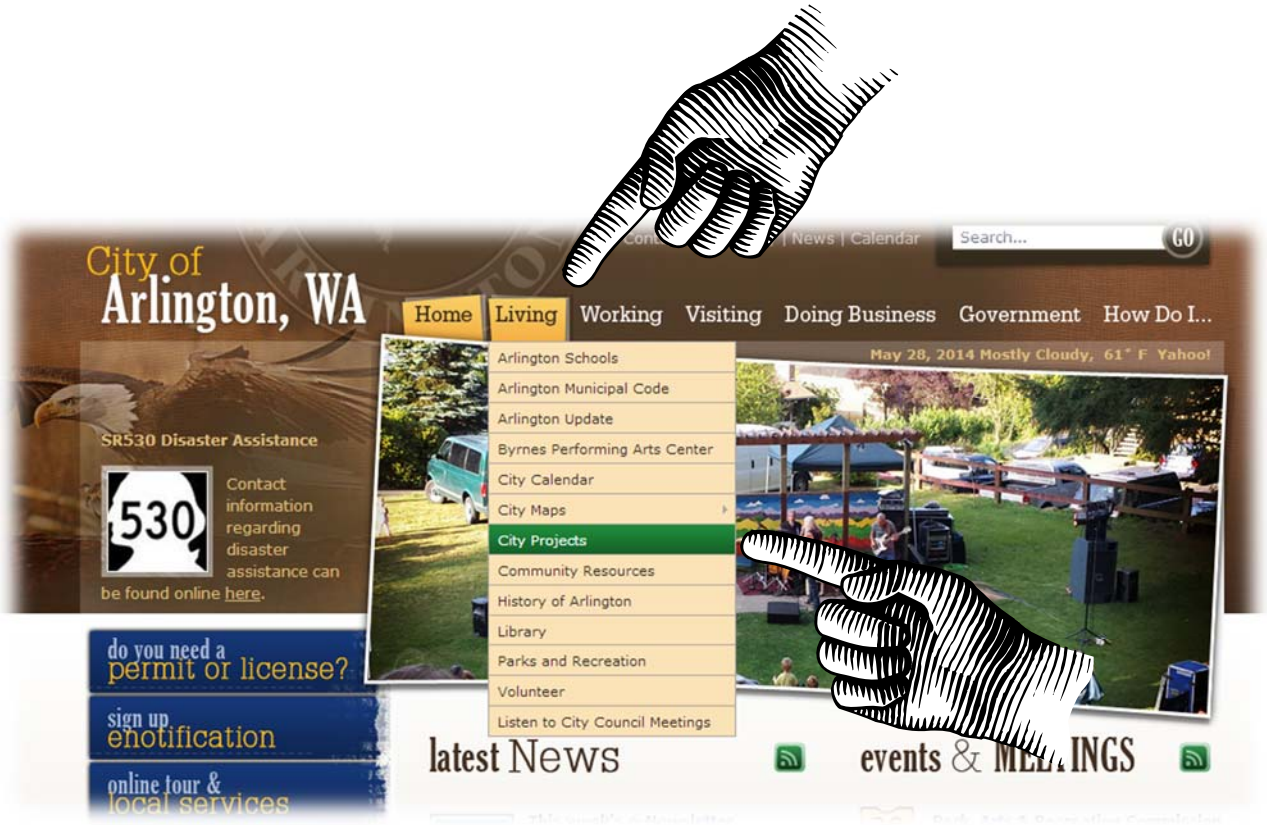
Questions?

If you have questions or comments on the project, please contact the City through the City Project Hotline at (360) 403-3544 or CityProjects@arlingtonwa.gov.

Want to stay current on project updates?

Check out the project website…

www.ArlingtonWA.gov



F-23QA

23 Questions and Answers about

Water Pressure Reducing Valves

HOW THEY

- Save WATER
- Save ENERGY
- Save WASTEWATER
- Save MAINTENANCE
- Save MONEY

Conserve Both "Automatically"

with Water Pressure Reducing Valves

This booklet was prepared by
WATTS REGULATOR COMPANY
North Andover, Massachusetts

The following information will familiarize you with water pressure reducing valves, also typically called regulators. It will emphasize that regulators are not only water pressure controls but are actually "primary conservation controls" which automatically conserve water and energy when used in high pressure areas.

INTRODUCTION

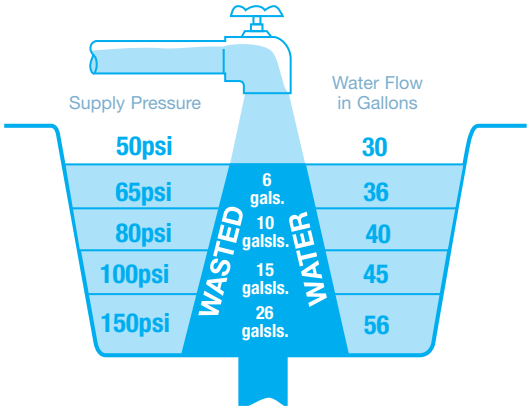
The supply of water and energy is one of our most critical national problems. If we cannot increase our supply, then it is imperative to reduce our consumption. Fortunately it's been proven that we can conserve dramatically and in a manner which will not seriously affect the lifestyles we have become used to.

Water and energy conservation are so intimately intertwined that they are practically synonymous. Any reduction in the usage of water will automatically result in a reduction of the use of energy. What this means, therefore, is that our whole philosophy on the use of water is changing and we are finally recognizing that we have been "water rich" over the years and it is now time to get back to reality by adjusting to our actual needs and to practice good conservation principles.

The purpose of this brochure is to acquaint you with a simple way to conserve water and energy. The hub of the program is the use of water pressure reducing valves (regulators), an automatic control which is installed at the water meter in homes and other buildings to reduce the city main's pressure to a lower, more functional pressure (for most purposes 50 psi water pressure is adequate.) Regulators are simple inexpensive products that have a pay-back period of anywhere from 6 months to 12 months. As you will see on the following pages, they can save between 30,000 and 40,000-gallons of water per year in the average home alone. If these savings were applied to 1,000,000 typical homes throughout the country, consider the tremendous impact this would have on our national conservation goals. Thus, water and energy conservation, through the use of water pressure reducing valves (regulators), is not only in the national interest but provides a significant benefit to the homeowner, the local water purveyor and energy utility as well.

As shown below, the higher the water pressure, the greater the amount of water that is wasted. (See question 5 for detailed explanation.)

Faucet with 10 minutes running time



1 What is a Water Pressure Regulator?

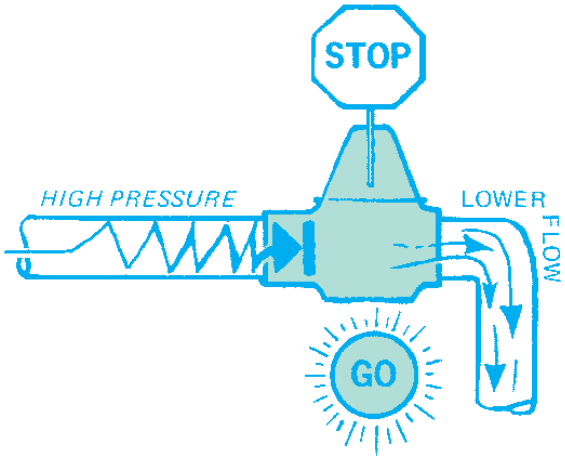
Also called water pressure reducing valves, they are compact, inexpensive devices that perform two functions: (1) they automatically reduce the high incoming water pressure from the city mains to provide a lower, more functional pressure for distribution in the home; (2) they "regulate" by maintaining a set pressure in the home usually 50 psi -- thereby insuring that the home piping and appliances operate under a safe, more moderate, but satisfactory pressure.

2 What is water pressure?

When a fixture in a home is opened and water flows from it, it is because the water is "pushed." This "push" is pressure. The speed at which water flows from the opened outlet depends on the amount of "push" or pressure which exists at that time in the system. In short, the higher the pressure, the stronger the "push" behind the water.

3 What is wrong with high water pressure?

High water pressure, which is generally considered anything above 60 lbs., has some advantage, such as in firefighting systems. However, in the home plumbing system, it can be damaging because water, with a strong "push" behind it, can erode or wear away many materials and cause water heaters to leak, banging water pipes, dripping faucets, excessive dishwasher and clothes washer noise and breakdown, and leaking water pipes. Therefore, water flowing at a rate in excess of that necessary to satisfy normal fixture or appliance demands becomes damaging, wasteful and reduces the life expectancy of equipment in the system. But, most important to the average homeowner is that high water pressure can add to the cost of **water, energy** and **waste water** bills.



Leaking water heater

Banging water pipes

Dripping faucets

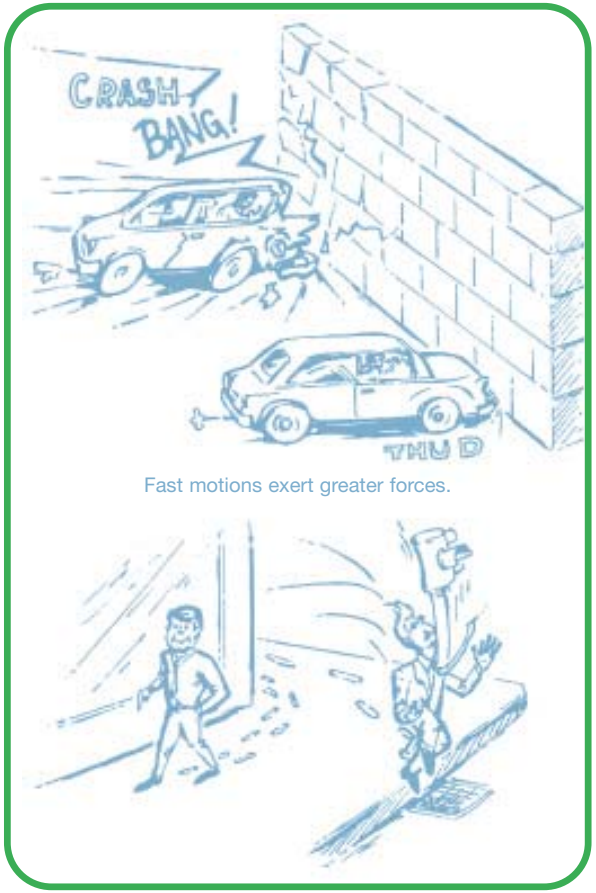
Dishwasher breakdown

4 Does high water pressure cause "water hammer"?

Yes. Water hammer is simply the noise generated by the shocks of high-speed water flowing in a pipe when a fixture is suddenly closed. This abrupt stoppage causes a "bounceback" of the water and is called water hammer, causing banging pipes, noisy systems and damage to appliances. It might be compared to driving your car at slow speed into a wall where the effect is negligible. However, if you drove the car at a much higher speed, the impact would be greater and, consequently, so would the bounceback or shock. Another description of the water hammer effect of high water pressure can be easily demonstrated. First, walk around a sharp corner and then run around the same corner. We can equate walking around the corner to a lower, more functional, controlled water pressure. However, when you run around the corner, the momentum forces your body to swing in a wider, uncontrolled arc. This principles based on the fact that moving objects, and this includes water, tend to move in a straight line. They resist changes in direction. Therefore, in a home where the piping has many changes in direction, water hammer shock can be limited by reducing the water pressure.

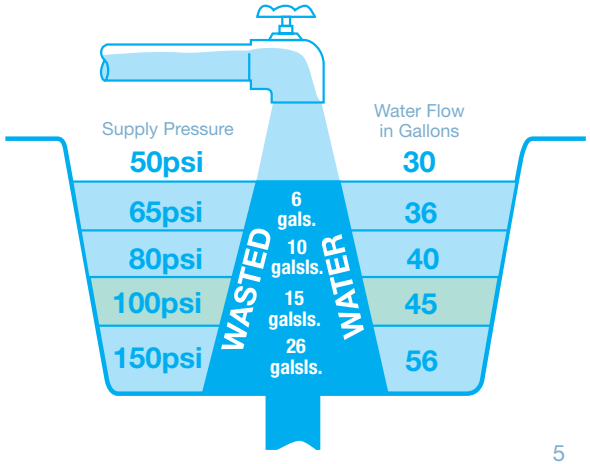
5 What is the difference in water flow from a fixture when the pressure is at 100 psi vs. a pressure of 50 psi?

Reducing the pressure from 100 psi to 50 psi will result in a saving of approximately 1/3 because 1/3 less water flows at this lower pressure. Remember, there is more "push" behind the water at 100 psi than at 50 psi and most of this water is wasted. Note the illustration where almost twice as much water flows at 150 psi than 50 psi, most of which is wasted. A moderate savings would result if your supply pressure was reduced to 65 psi However, even at this lower pressure, savings with a regulator would be 20%.



Fast motions exert greater forces.

Faucet with 10 minutes running time.



6 Are there any studies to support this savings figure?

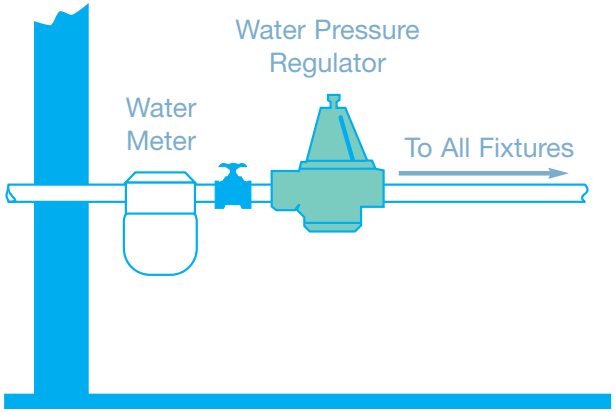
Yes. In 1971 the Washington Suburban Sanitary Commission conducted a test program in 2,400 dwelling units that has attracted widespread interest from more than 40 states and various foreign countries. One of the devices used in their conservation study was a water pressure regulator. It is interesting to note that their report concluded that in test locations using regulators, there was a water consumption reduction of 30% in October and November and 37% in December.

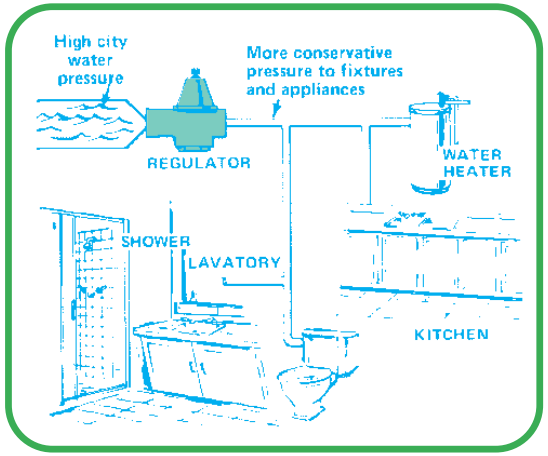
7 Where are Water Pressure Regulators most commonly used?

Water pressure regulators are commonly installed at the meter in residential, commercial and industrial buildings. This location is desirable because it then controls the water pressure flowing to all appliances and outlets within the building and provides an inexpensive means of supplying lower, more functional water pressure to outlets and appliances.

8 Why do we now call Regulators "Primary Conservation Controls"?

Most people have considered regulators as pressure controls because, as described in the foregoing, they are used to protect appliances and piping from the effects of high water pressure. However, because of water and energy shortage and cost problems, regulators have become increasingly more important because they automatically provide the advantage of conserving water and energy.





9 How do Regulators save water?

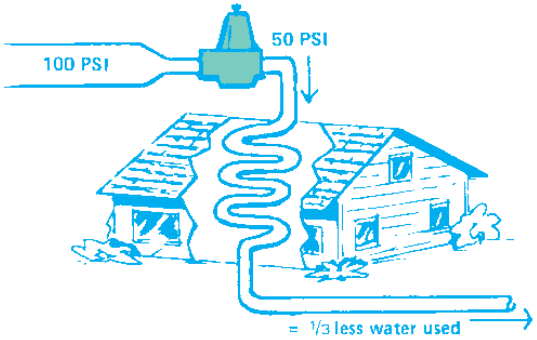
As mentioned before, 1/3 less water flows at 50 psi than at 100 psi Therefore, when you reduce the city main pressure to a more moderate pressure of 50 psi, you can look forward to conserving up to 1/3, or more, of the water previously consumed. This will be reflected on your water bills.

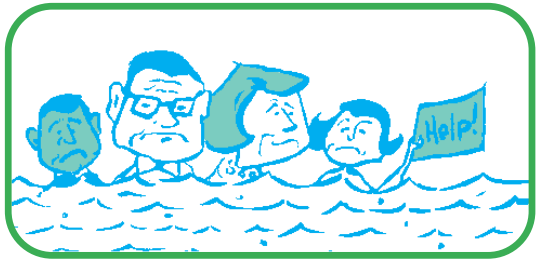
10 How much does a typical family of four use?

A typical family of four uses an average of 255 gallons of water each day. This is broken down by: dishwashing - 15 gallons; cooking/drinking - 12 gallons; utility sink - 5 gallons laundry - 35 gallons; bathing - 80 gallons; bathroom sink - 8 gallons; toilet - 100 gallons. When you multiply this by a year, typical family usage totals 93,000 gallons of water. Your family particularly if it includes teenagers, would undoubtedly use more than the above averages.

11 How do Regulators affect the waste water system?

When we can save 1/3 of the water previously consumed, this also represents a similar saving of water which will not be going into the sewer system where it has to be treated. Water does not evaporate after we use it and it has to be piped to the wastewater system. Many sewer bill taxes or surcharges are based on the amount of water you use, with the assumption that this water is going into the wastewater system. This is billed to you as a sewer surcharge and, in many cases, the sewer tax can equal the water cost. Therefore, when pressure regulators save 1/3 of the metered water, they also contribute to saving up to 1/3 of the wastewater load and this is extremely important because it benefits both the user, by a lower sewer bill, and the community, as this is water they do not have to treat.



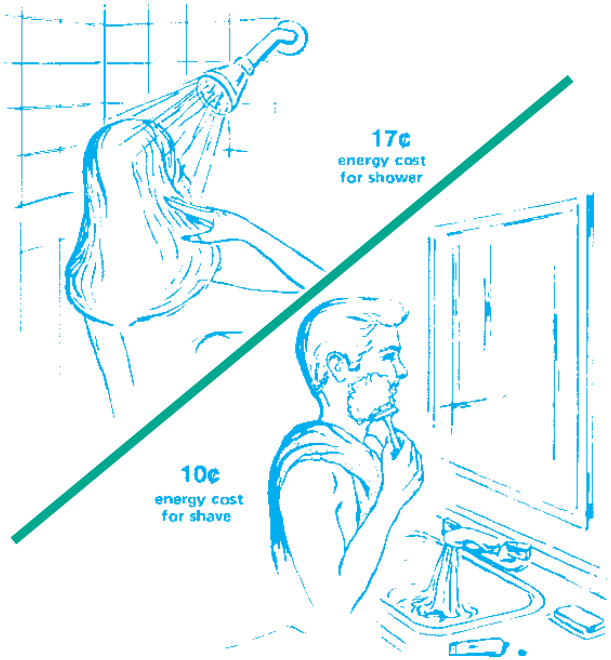


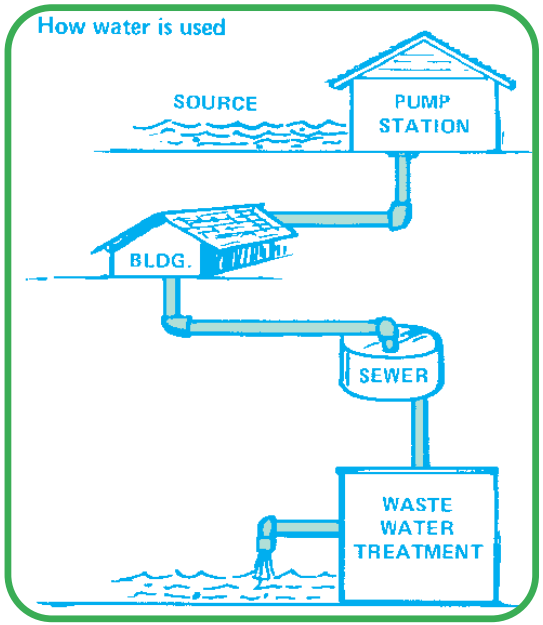
12 How do Water Pressure Regulators save on energy?

The Environmental Protection Agency estimates that 30% of the water used in households is heated. In order to heat this water, it takes energy. Logically, therefore, if a pressure regulator can reduce consumption by 1/3, we automatically cut down on the amount of hot water we're using in lavatories and showers and, therefore, it follows that we automatically reduce the amount of energy required to heat that load. Thus, it can be easily seen that water conservation has a direct relationship to energy conservation. An average shower, for example, costs approximately 17 cents in energy and a shave with the faucet running cost 10 cents in energy.

13 How do these savings benefit the water and energy utilities?

A high rise office building in Chicago was designed using water conservation products which resulted in savings of more than 3,000,000 gallons of water per year. This is significant in that the municipal water utility did not have to pump that extra gallonage, the water purification plant didn't have to treat it, the building itself saved on pumping of 3,000,000 gallons, and there must have been significant savings in energy by conserving hot water. Also, there were further savings by the fact that 3,000,000 gallons of water, or the normal portion thereof, did not have to be distributed to the wastewater system and consequently the water treatment plant did not have to retreat this water. The heating of water takes energy and it should also be remembered that "pumping" water from one place to another also requires a considerable amount of energy.





14 How do Regulators save on maintenance?

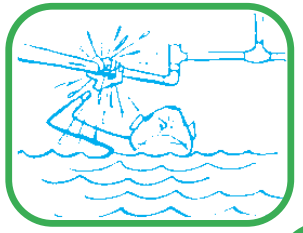
We have previously described the effects of high water pressure on piping and appliances. By having these appliances work under a lower pressure, their life expectancy will be much longer. Use of lower pressure will also cut down on service calls caused by problems with dish washers and clothes washers, leaky water heaters, leaking water pipes and the potential water damage which could result.

15 Do codes require Water Pressure Reducing Valves?

Yes. They are required by the Federal Housing Administration, the regional plumbing codes such as IAPMO, Southern Building Code, and BOCA, and numerous city and state codes. The requirement is that whenever the city main water pressure exceeds 80 psi, a regulator must be installed. However because of the recently acknowledged advantages of regulators conservation wise, regulators could be economically installed even where supply pressures are in the vicinity of 60 psi because of the water and energy saving benefits they can provide.

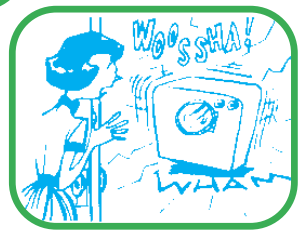
16 How long will a Regulator last?

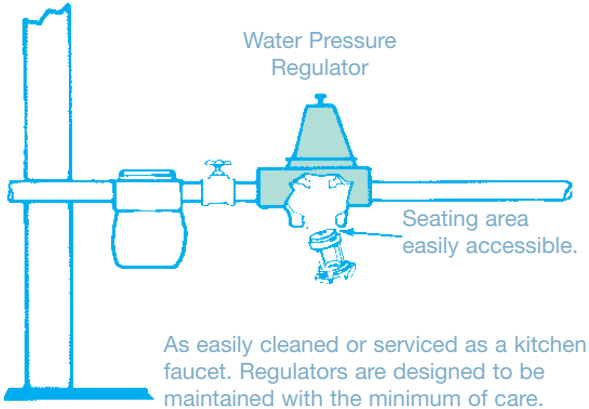
Regulators have been described as "life-of-mortgage" products, because historically a malfunctioning pressure regulator is not replaced but simply cleaned or repaired via an inexpensive service kit. Design wise, it is similar to the kitchen faucet in that dirt or foreign matter on the seating area can cause problems. Actually it is no more difficult to repair a regulator than it is to fix the kitchen faucet.



Leaking water pipes

Washing machine breakdown





As easily cleaned or serviced as a kitchen faucet. Regulators are designed to be maintained with the minimum of care.

17 If I install a Pressure Regulator, what savings can I expect?

An average savings would be from $50 to $150 per year, probably much higher.

A. Based on the fact that 1/3 less water flows at 50 psi than 100 psi, you can expect to save up to 1/3 of the water previously consumed. As a typical family of four uses 93,000 gallons per year, that would mean a savings of approximately 30,000 gallons of water. The higher the pressure, the higher the savings. Lower pressures result in less savings. (Your water Co. can provide the rate.)

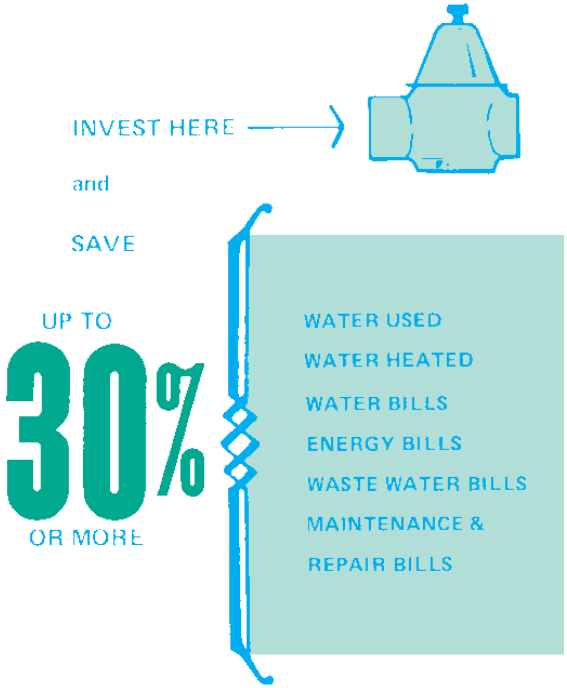
B. Remember also, however, that 1/3 of the water used in homes is heated; so 1/3 of the 30,000 gallons of water saved divided by 2 to reflect a cold water mixing factor would mean a savings in heating up to 5,000 gallons of hot water per year. If you figure 4 cents to heat a gallon of water, the savings would be $200.00.

C. You can also figure on a savings in your sewer surcharge bill, since most of the 30,000 gallons of water saved will not be going into the wastewater system. Therefore, you would not be assessed for that disposal. (Contact your local authority for any assessment charges.)

D. You would also have to figure the savings generated by not having to have appliances repaired or replaced more frequently. This is a nebulous figure but, based on your own experience over the past years, you could look for a reduction in the frequency of maintenance and certainly for an improved performance by these appliances.

18 Should we consider using other water and energy conservation devices?

Certainly. The water pressure regulator we're talking about today is the hub of a conservation program; but you should also consider other flow control devices, low-flush toilets, improved water heating equipment and better disciplined usage habits. However, if none of these other devices were installed, the water pressure regulator would still serve to contribute important and significant savings in energy and water. This would provide an average savings of anywhere from $50 to $150 per year, or more depending on your local rates.



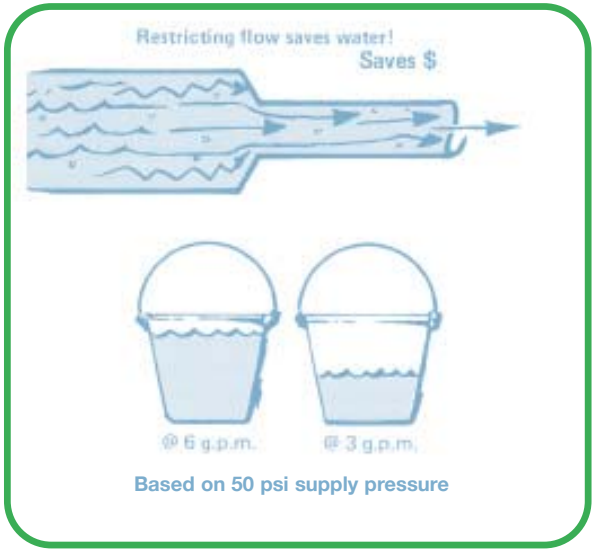
19 Do flow-restricting devices actually save water?

Yes, and they can effectively be installed on showerheads, fixtures and tankless heaters in boilers. Many showerheads, for example, supply water at a rate of 6 gpm. Applying a 3 gallon per minute flow restrictor will cut the flow in half providing savings in water and energy. It should be remembered however that their capacity is based on a "fixed" supply pressure like 50 psi and operating under a higher pressure will permit greater flow. That's why we say a water regulator is the "hub" of a program because it maintains a constant pressure throughout the home, thereby even improving the performance of flow-restricting devices.

20 What are some tips the user can employ to save water and energy?

1. Put a stopper in your sink or use a dishpan when you wash dishes. Washing with running water uses 30 gallons per meal.
2. Keep a bottle of drinking water in the refrigerator -- running the water from the faucet until cold will waste a gallon.
3. Wait until you have a full nine-pound wash before you run your washing machine. The average machine uses 50 gallons per load.
4. Turn the hot water off while you shave, and turn the cold water off while you brush your teeth. Shaving with a running faucet uses about 20 gallons.
5. Take showers instead of baths. The usual bath requires 36 gallons, the usual shower, only 25. Ten gallons is enough for a shower if you turn it off while you lather.
6. Don't use the toilet bowl to dispose of cigarette ashes, facial tissues, and other materials. A normal flush requires 5 - 8 gallons.
7. Use dishwasher only when completely full.
8. Fix dripping faucets promptly. Nearly two gallons can be wasted per day of dripping.
9. Running toilets can waste four gallons per hour. Keep them in good repair.
10. THINK before you turn on the tap.

NOTE: Tips provided through courtesy of Plumbing Manufactures Institute.



21 What does a Water Pressure Regulator cost?

There are, of course, different styles of regulators and various installation charges throughout the country. An estimate can be obtained from your local qualified plumbing contractor. To determine how much you, as an individual, would be saving, it would be necessary to consider the factors in question 17, in comparing with your current water and energy bills. See page 20 for examples.

22 How do I know if I have high water pressure?

A rule of thumb is: If you hear banging pipes in your home or observe water splashing in your sink, you probably have excessive pressure. However, for a precise reading, your local plumbing contractor or utility can test your pressure with a gauge.

23 How can I get a Water Pressure Regulator installed?

The easiest way would be to call your local qualified plumbing contractor who can provide you with an estimate and also advise of the various type regulators available and the one best suited for your home. Although regulators are fairly simple to install and could be a do-it-yourself project, there are some laws which provide that only a licensed plumbing contractor be permitted to work on the home potable drinking water system for health and safety purposes.

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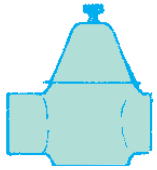
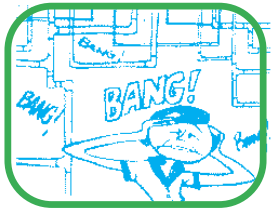
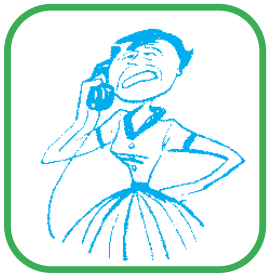


or this

Water splashes



Banging pipes



EASY!
Save all around just call your plumber.