

**AUTHORIZATION TO PROCEED:  
RWAU ENERGY EFFICIENCY EQUIPMENT PURCHASE PROPOSAL  
PRESENTED TO THE DRINKING WATER BOARD  
February 26, 2015**

The Division of Drinking Water (the Division) is in the process of implementing an energy efficiency initiative aimed at drinking water systems throughout the state. A number of water systems have identified energy efficiency improvement opportunities in both operations and infrastructure. Annual savings resulting from these improvements have ranged from \$42,000 to over \$300,000. The Division is encouraging all drinking water systems to investigate energy efficiency options to identify if cost savings are possible. The small and very small drinking water systems in the State are often unable to take full advantage of such initiatives due to lack of knowledge, lack of money, and/or lack of proper equipment.

The Division and the Rural Water Association of Utah (RWAU) have worked to resolve this issue for these small and very small systems. The Division, with concurrence from EPA Region 8 personnel, has determined that a portion of the State's set aside funds can be used to contract with RWAU to purchase special equipment that will then be made available to these drinking water systems to help them identify areas of potential improvement.

The proposed equipment includes leak detectors, a pipeline camera, and an infrared camera. This equipment, coupled with knowledgeable and experienced RWAU personnel to work with drinking water system staff, will allow the small and very small drinking water systems to identify and then repair water leaks which will ultimately save energy and its associated costs and improve system efficiency. The estimated cost to purchase this equipment is less than \$50,000 and the expected useful life is up to ten years.

**STAFF RECOMMENDATION:**

**Staff recommends the Drinking Water Board:**

- 1 –Authorize the allocation of up to \$50,000 from federal SRF program set-aside funds to finance the proposed purchase contract,**
- 2 – Authorize staff to prepare a draft proposal and contract and submit it to Finance for review and comment, and**
- 3 – Upon approval of the contract by Finance, authorize the Executive Secretary to enact the contract.**

## ENERGY EFFICIENCY EQUIPMENT PURCHASE PROPOSAL

While working on-site with water systems, our field technicians have discovered that there can be a significant energy efficiency gain simply by elimination water loss or “unaccounted for” water in the day-to-day operations of a system. In order to accomplish this, there are several pieces of equipment that would help operators find and eliminate these problems:

- Leak Detector
- Leak Correlator
- Correlator Headphones
- Infrared Camera
- Pipeline Camera

While it would be cost prohibitive for each small system to purchase this equipment, a more effective way to access this equipment would be for the Rural Water Field Staff to have this equipment and help systems use it as needed. This way many of the rural systems would have access to achieving more efficiencies at their systems.

It is proposed that the Rural Water Association of Utah obtain this equipment through their contract with Utah Division of Drinking Water to make this equipment available.

### **Leak Detector**

Pollard Water LD-12 Leak Detector - \$3114.05

Estimated Life – 6-7 Years (Before Repairs)

Just like the title indicates, a leak detector is used to find water leaks. It uses magnetic sensors and microphones to locate water lines and water leaks. Which allows an operator to more accurately dig down to the leak with less time and expense looking for the problem.

Systems will be able to schedule an appointment with RWAU field staff to do an on-site assessment when a leak is suspected. This will be no cost to the system enabling them to solve the problem more quickly. It is anticipated that this equipment would be used 5-10 times per month all around the state of Utah.

The energy benefit comes in two ways, first by more efficiently finding the leak saving time and resources in locating the problem. Then in the reduced water production because the water is no longer being processed and then lost to the ground.

This would be available to all Utah systems, with an expected 40-50 systems per year receiving benefits.

## **Infrared Camera**

Infrared Camera - \$1000

Estimated Life 5-8 Years (Before Repairs)

Unlike regular cameras that capture images of visible light reflected by objects, thermal cameras create pictures of heat, essentially measuring infrared energy emitted from objects and then converting the data into corresponding images of temperature. In a "radiometric" imager, each pixel of color on screen represents an individual temperature.

Infrared cameras are used for measuring temperature which is one of the important parameters to tell the condition of internal process, material and even quality of the desired output. A qualitative but accurate conclusion can be drawn by observing the temperature profile of any surface. On the other hand higher temperature also indicates obvious loss of energy in the form of heat. Therefore temperature monitoring would give ample indication of the condition of the material, process quality and explore the possibility of energy conservation avenues.

The camera also will be used in the water and waste water industry to determine the loss of energy and equipment malfunctions which include but are not limited to:

Electrical Components, Pumps, Blowers, Tank Levels, Underground Leaks, Building Heat Loss, Main Power Distribution Lines, Piping Blockages, All Process Equipment

Energy efficiencies will be gained in situations where mechanical problems are not visible from the outside so pumps and other such equipment run at less than peak efficiencies. This camera will allow an operator to find non-visible inefficiencies well before they completely break down and allow them to replace or repair the equipment.

It can be used as a regular preventative maintenance tool as well as a specific problem troubleshooting and solving tool. All Utah systems will benefit from this equipment with an expected 20-30 systems utilizing it annually.

## **Pipeline Camera**

Metrotech vCam-5 Inspection system - \$12,000

Estimated Life 3-5 years (Before Repairs)

Culinary Water Pipe inspection camera. (ONLY WATER PIPES )

This camera will be used to inspect culinary water pipes, spring boxes and well pipes.

This will help identify obstructions in water mains, roots in spring boxes, leaks or breaks in main lines or laterals.

Systems will benefit from this camera if an obstruction can be identified and removed. Water is energy; the movement of water through an obstructed pipe requires more energy used by the pumps to overcome the obstruction. Removal of the obstruction will let the water flow freely and more energy efficient. The identification of leaks or breaks in water lines will help conserve water, eliminate possible contamination to the distribution systems. Right now systems that need this type of equipment to identify a problem, they have to hire a company that inspects sewer lines to come and check things out with a cable that has been (sanitized ) then sanitize their distribution system afterward's. This creates a very bad situation that can be alleviated with a new (dedicated culinary water only water line inspection camera).

Although It is hard to quantify how often this camera will be used or how many systems will benefit from this new line inspection camera,, there are several systems that have made a request for this very help with no options to help them. As systems come to know that this camera is available to assist them, the use and requests will grow dramatically in the future. The camera that we have picked has GPS capabilities and can assist Water Systems with not only pin pointing where the leak, break, of obstructions are,, it can also help systems Map water lines, find laterals that may not already be known. This could be a huge benefit to small rural water systems that lack good maps of their systems water lines.

This camera has many size camera heads that can be used. 1 1/2" up to 6". 200ft cable up to 400ft cable. It also has USB ports and SD card ports. The entire inspection will be videoed and the system will have it for future reference and archives.

### **Leak Correlator & Headphones**

Pollard Water LC2500 Leak Correlator - \$28,325.60

Estimated life 4-5 years (Before repairs)

Similar to the leak detector, this equipment is used to find water leaks. In situations where leak detectors are not as accurate for reasons such as type of pipe, depth of line etc. A leak correlator allow an operator to pinpoint the water leak.

A more sophisticated piece of equipment, most rural systems con not afford to purchase one and to pay a contractor is often equally cost-prohibitive.

With the Rural Water Field Staff having one available many more systems in Utah will have access to pinpoint locations of problems on their systems.

The energy efficiency gains would be similar but magnified to the ones described under the leak detector section.

This equipment would be used 5-10 times per month with an estimated 30-40 systems benefitting annually.

### **Small Trailer - \$2000**

Make and model yet to be determined, we need to purchase the actual equipment first to analyze the exact measurements required. The trailer will be used to house and transport the energy efficiency equipment so it will be protected from the elements as well as be less susceptible to damage during transit.



Michael Grange <mgrange@utah.gov>

---

## use of technical assistance set-aside funds for leak detection equipment

---

**Berig, Jennifer** <Berig.Jennifer@epa.gov>  
To: "Michael Grange (mgrange@utah.gov)" <mgrange@utah.gov>  
Cc: "Friel, Brian" <Friel.Brian@epa.gov>

Fri, Jan 16, 2015 at 2:48 PM

Hi Michael,

This is an acceptable use for set-aside funds although you will need to update the Set-Aside Workplan to include these costs. You can include the costs in whichever section you think is best. Once those changes are made, if you could please send me a copy of the updated Set-Aside Workplan for the EPA files.

Let me know if you have any other questions, and have a great weekend!

Jenn

---

Jennifer Berig, P.E.  
U.S. EPA Region 8 (8P-W-TF)  
1595 Wynkoop St

Denver, CO 80202  
Phone: 303-312-6262

---

**From:** Friel, Brian  
**Sent:** Thursday, January 15, 2015 5:26 PM  
**To:** Berig, Jennifer  
**Subject:** FW: use of technical assistance set-aside funds for leak detection equipment

**From:** Michael Grange [mailto:mgrange@utah.gov]  
**Sent:** Thursday, January 15, 2015 1:00 PM  
**To:** Friel, Brian  
**Subject:** use of technical assistance set-aside funds for leak detection equipment

Brian,

A few months ago we discussed a plan for Utah to use some of our federal SRF technical assistance set-aside money to contract with Rural Water Association of Utah to purchase, and make available to our medium and smaller-sized water systems, leak detection equipment to help minimize water loss, reduce pumping costs, and increase energy efficiency, among other benefits to the drinking water systems.

Utah DDW has received a written proposal and cost estimate from RWAU. The purchase price for the equipment RWAU is recommending is less than \$50,000.

I believe this qualifies as a legitimate and acceptable use of FSRF technical assistance set-aside funds and when we talked previously you were of the same opinion. Please let me know if this is still the case so we can proceed with this initiative.

Regards,

Michael

*Michael J. Grange, P.E.*

Construction Assistance Section Manager

Utah Division of Drinking Water

Phone: (801)536-0069

Fax: (801)536-4211

Web: [www.drinkingwater.utah.gov](http://www.drinkingwater.utah.gov)