

City of Salida
Public Works Department
(719) 539-6257

FROZEN METER DISCUSSION
6/16/08

As Council is aware, the City has experienced a large volume of frozen meters over the last two years. We have averaged approximately 10 – 20 frozen meters each year since the meter pits went in. During the last two years, the number of frozen meters has jumped into the hundreds of meters.

Last year I thought that the frozen meters were more of a one-time problem but with it happening again this year I started looking at solutions. Unfortunately, I have not found a cheap or easy fix. I have looked at a whole range of ideas that included deepening our water lines, excavating out the meter pit locations, moving the meters into the houses/businesses and changing our standards to allow different products. Each of the ideas has good and bad aspects and unfortunately none are a quick or easy fix and most are beyond our budget abilities. I also called several other communities to find out what they are doing and if they have had similar problems with frozen meters. Below is a list of communities that I spoke with:

Craig—meters are in utility rooms and crawl spaces, new subdivisions and mobile homes are required to install meter pits/vaults. Have some frozen meters each year.

Idaho Springs—meters are in houses, radio read, schedule appointments to enter people's homes- very few freeze ups

Sterling—meters are in pits. Some freeze ups.

Kremling—Meters are placed in homes and crawl spaces, schedules appointments to enter homes—some freeze ups.

Lamar—meters are in pits—some freeze ups.

Mancos—meters are in pits—some freeze ups

Olathe—meters are in pits—some freeze ups

Canon City—meters are in pits, radio reads- some freeze ups, City will thaw twice then they charge the property owner.

Trinidad—meters are in pits—had lots of freeze ups, but then started making contractors over excavate pit location and fill with rock. Seems to have solved their problem.

Buena Vista—meters are mostly in homes, also experienced large amounts of freeze ups this year. In fact they borrowed our thawing machine until they could purchase one.

From all of my calls I found that every community has experienced some degree of frozen meters on an annual basis. Most of the communities line depths are very similar to ours around four (4) feet. Most communities will thaw a frozen meter once or twice but then will charge property owners. None except Buena Vista offered any type of

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rebate for making people run their water. Buena Vista originally was not going to offer a rebate. It is an expectation to run water during the coldest periods in most communities.

Trinidad offered the best solution up to this point, the over excavation of every meter pit. They even went so far as to purchase a "Vac truck" to help with the project. Took several years and hundreds of thousands dollars to complete.

I then called the manufacturer of our meter pit and was told they are designed not to freeze. I, of course, informed him that they do freeze. We then got into a large discussion on how pits work. They are designed to take the thermals from the earth and keep the air space around the actual meter at above freezing temperatures and should be done without any type of insulation. Unfortunately this doesn't work, we had pits without insulation freeze as fast as pits with insulation. We have also tried other types of insulation other than fiberglass. None work any better and some are worse when they get wet such as PeriLite.

I then had a meeting with Paul Crabtree on a new subdivision and they proposed to use a meter pit called the "Thermal-Coil Meter Box". The idea with this product is that the meter is kept below the frost line except for when it needs to be worked on and then the entire assembly comes out of the box and then can be pushed back below the frost line. Our design actually places the meter at or above the frost line. I decided to allow them to use the Thermal-Coil Meter Pit in their subdivision as a test area. If it works out well then we will add it to our specifications.

Now the question is what to do with our existing problem. So I started to look for a common denominator. The only two that I could find was the people were gone for a period of time so there was no water usage or are low water consumers; or in the areas in which entire blocks were freezing that we have shallow mains. On Sackett Avenue we actually had a main freeze and rupture. It will be deepened this year. There are two other areas that may have shallow mains one being on Second Street and the other on Dodge. Dodge Street actually is a dead end line and we are planning a project to correct that problem in 2009.

If the problem is from a lack of water use then as our population changes from primary residences to more second homeowners then it is a safe bet that the problem will escalate. The issues with shallow or dead end lines can be taken care over the next couple of years through Capital projects. Now we need to decide how and what is the best solution to our existing problem. Of the different ideas we came up with most are not financially feasible such as deepening all of our existing water lines. We can change our specifications for future development but existing infrastructure could not be done without a huge added expense. Changing from meter pits to in home metering is also extremely expensive and causes other problems such as scheduling appointments to work on the meters. All of the communities with in home metering stated that this is a huge problem. Most reported that there is less than a 40% success rate for first time appointments. Which means that we would need to keep rescheduling and hope that the property owner would make the appointment. Time is already an issue for this

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department and I don't think it wise to make things worse. So that leaves two choices: over excavate the pits or try the thermal coil pits.

Over excavation of the pits would be expensive and time consuming and could make us buy another piece of specialty equipment. Trinidad started out using a backhoe to dig up the pits and deepen them and then fill with rock, which helps to add thermal temperatures to the pit. Due to expense and time they then purchased a "Vac truck" and started using that. A "Vac truck" is a large vacuum with a water jetter that breaks up the material and then vacuums it out of the hole. This way the pit and lines can stay in place, so the overall expense is less and it is much less time consuming. A "Vac truck" can also be used for sewer issues, drainage (cleaning culverts), cleaning valve boxes and several other types of jobs. They also come in trailer versions and can be purchased for approximately \$35,000.

Thermal-coil meter boxes advertise that they are ideal for cold weather climates. There are three communities that use them in Colorado: Cripple Creek water, Carbondale, and Gypsum. From initial conversations they all seem to like the product and have not had any problems with them. They cost approximately \$365 complete ready for installation. We are currently spending approximately \$228 for our current meter pit, frost dome, and yoke. Which equals a difference in cost of about \$137.00. The added expense would be covered the first time an existing meter assembly froze.

I have come up with as many possible solutions to the problem as I could think of and at this point I would ask for Council for any input that they might have or suggestions about other ideas I haven't thought of and should research. My idea right now is to try the Thermal-Coil Meter Boxes on a few of the meters that have frozen both years and see if that fixes the problem. If they do then we could replace the ones that are continually freezing over the next couple of years. We could also look at a future purchase of a "Vac trailer" to over excavate meter pits. This option is far more expensive.

The action I am looking from Council tonight is any other suggestions and if there are none then I would like permission to meet with the finance committee to try and work on funding for a test project using the Thermal-Coil Meter Box.