

Accelerating the Implementation of Secondary Water Metering in Utah



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Executive Summary

Utah is one of the fastest-growing states in the US,ⁱ and among the most arid. Water conservation has been identified by the state and many local communities as a key strategy for managing water supplies under these conditions.ⁱⁱ

Metering of secondary water delivered to municipal customers stands out as a very promising, and largely untapped, conservation measure. Secondary water is untreated “raw” water, usually sourced from a lake or stream, and used seasonally on outdoor landscapes (e.g. residential lawns, parks, etc.) in many municipalities. Currently, the majority of secondary water systems are unmetered,ⁱⁱⁱ but the water savings that can result from metering these deliveries are very significant. Weber Basin Water Conservancy District saw reductions of 22% - 40% per customer in secondary water use, as a result of metering and communications with their customers about their lawn’s actual water needs compared with what the customer had been applying.^{iv} Saratoga Springs saw reduction of 27% per customer in secondary water use, as a result of metering and implementing a tiered rate structure.^v While the water savings potential is great, the vast majority of secondary water providers do not currently meter their secondary water deliveries.

This white paper presents three recommended pathways for accelerating secondary water metering in Utah, to achieve water savings. The recommendations were developed in a one-day workshop by a group of lead users in the fields of secondary metering, finance and communications. See Appendix A for more on the workshop and lead user method.

The three, complementary pathways to accelerate secondary water metering are:

- 1) Legislation to require the metering of all (or additional) secondary water connections,
- 2) The creation of a forum for secondary water providers to learn about and share their experiences with metering, including topics such as costs, financing, and lessons learned, and
- 3) A public information campaign to educate customers across the state about the benefits of, and need for, metering.

This three-pronged approach would go a long way toward overcoming the major barriers to secondary water metering and advancing this practice more quickly throughout the state.

Introduction

There are nearly 300 secondary water providers in Utah^{vi} – including irrigation companies, municipal utilities, non-profit shareholder companies, and conservancy districts – but only a handful have implemented secondary metering programs. Some of those utilities include Weber Basin Water Conservancy District, WaterPro, Saratoga Springs, Spanish Fork, Wolf Creek and Monticello, and only the last four of those providers have fully metered their deliveries.^{vii}

One of the leaders in secondary water metering is Weber Basin Water Conservancy District (WBWCD), a large wholesale water district with some retail services, north of Salt Lake City. They began their metering project in 2010, and over the years worked with different meter brands, gathered data, and eventually delivered water use reports to their metered customers. Without even changing the rates they charge for secondary water, the District has seen water reductions of 40% with typical customers, and 22% overall when all customers are included.^{viii} By spring of 2018, they anticipate about 25% of their 18,000 connections will be metered.

While utilities report numerous benefits of metering, the vast majority of providers have not metered their deliveries. Reported benefits include significant water savings, better data which results in better management of water supplies, increased fairness to customers (i.e. each pays for their actual usage, rather than assumed usage), and the stabilization of water rates in the long term (because new, more expensive water supplies are no longer needed). However, the two primary barriers, identified through interviews conducted prior to this workshop as well as discussions that took place in the workshop, are 1) cost and 2) acceptance among customers.

The cost of installing a meter – including parts and labor – can be about \$1,500 - \$1,800 per customer. In contrast, the current price of secondary water is comparatively very inexpensive, in some communities only about \$100 per customer per year. In addition, secondary water customers are used to receiving unlimited amounts of water for a flat fee, and are often resistant to being metered, being charged more, and being subject to more oversight by a utility.

The purpose of this lead user workshop was to develop pathways to overcome these barriers, so that more providers would take on metering projects more quickly. The pathways that were developed by the lead users are described below.

Pathways to Accelerating Secondary Water Metering

The lead users engaged in dialogue and thought exercises throughout a day workshop, focusing on trends in secondary water metering, challenges and barriers, and pathways that would enable the acceleration of metering programs across Utah.

The group felt that mandatory metering through legislation was necessary to most effectively accelerate the implementation of secondary water metering. The group

also identified a way to help overcome the cost barrier, through the creation of a forum for water providers to discuss financing options and implementation methods. Lastly, the group identified a way to overcome the public acceptance barrier through the development of a public education campaign. These two pathways are complementary to any legislative effort that may or may not come to pass. The following is a summary of these three pathways.

1. Mandate Metering through Legislation

Rationale

Legislation is the most effective path for accelerating secondary water metering because without it there will always be a degree of recalcitrance among providers if they are not required to meter. Mandatory legislation will be the most effective way of breaking through that resistance.

Metering, and specifically secondary water metering, is strongly supported at the state level as a water conservation strategy. Secondary water metering is recognized several times throughout the 2017 **Governor's Water Strategy Advisory Team** report *Recommended State Water Strategy*^{ix} as a valuable water conservation program.

Barriers it would address

State legislation that requires all connections to be metered (by a certain date, for example) would remove the "blame" that utility boards might encounter from public backlash. Some water boards have promised their customers they will not meter. And more commonly, boards are obligated to provide the lowest rates possible, which make it challenging to adopt costly projects like metering.

While the costs and financing may be challenging for some (if not all) utilities, there are several financing options available to utilities of all sizes. Legislation would make secondary water providers to look into these options and select their preferred one.

How to do it

A few legislative ideas were identified:

- Require that all new construction is metered. Some communities, but not all, already require metering during new construction. Metering new construction is much less costly (roughly \$500) and more easily implemented than metering existing connections. In new construction, developers initially pay the cost but ultimately pass the cost on to the buyer during the sale of the new home or building. This legislation would impose relatively low costs, and therefore be less controversial.
- Require secondary metering to be installed when any water system repairs in the vicinity are taking place. Water supply lines, or other infrastructure, that are in

need of repair or replacement sometimes take place in the direct vicinity of secondary water customers. This presents an opportunity to install secondary water meters at lower cost than if the secondary metering was the sole project.

- Require universal metering by 20XX. This proposal would require all water connections – including all secondary water connections – to be metered by a specific date. This would be the most effective way to accelerate metering, but comes with a significant financial cost and would be the most controversial.

As of the time of this writing (2/21/18), there is a bill ([SB 204](#)) sponsored by Senator Anderegg entitled “Secondary Water Metering requirements” that encompasses the first and third options described above. On March 1, 2018 the bill passed the Senate Business and Labor Committee, 4 to 1. At the time of the workshop this bill had not yet been introduced, and details were not publicly available.

Additional ideas discussed:

- **Water utilities’ capital improvement funds** – which are funds for large projects, and important to lenders when evaluating fiscal health – are often under-funded and can prevent a utility from undertaking a metering project. A requirement that utilities bolster their capital improvement funds could enable more utilities to fund this type of project more readily, and could be connected to the metering legislation.
- Diverse voices on the economic benefits of metering are needed to help pass legislation. These voices could include:
 - Large and small utilities who can attest to the infrastructure benefits
 - Developers
 - Prepare 60
 - Rep. Tim Hawkes, Tage Flint (WBWCD), Warren Petersen, Richard Bay (JWCD)
 - NGOs: TNC, Audubon Society, Utah Rivers Council, WRA
 - Bear River project opponents
 - The **Governor’s Water Strategy Advisory Team**
- An effort to educate legislators who are likely to be supportive (like Senator Margaret Dayton) is needed.

The costs of state-wide secondary water metering

With respect to legislation, the cost of the proposal is a major consideration. The following “back-of-the-envelope” calculation was made about the costs of statewide metering.

- There are an estimated 200,000 secondary meters yet to be installed. Assuming the high-end cost is \$1,800 per meter to install (parts and labor):

- This implies a \$400 million cost statewide, which includes a 10% contingency (and is rounded up).
- In order to help finance this, the state could provide an annual \$28 - \$30 million revolving loan fund over the course of 20 years. This figure assumes a 3.5% interest rate.
- This would result in an increase of \$8.30 per bill per month over a 20-year period.

2. Create a Forum for Secondary Water Providers

Rationale/Need

The challenges of designing, financing and implementing a secondary metering program are substantial, but a handful of utilities in Utah are already leading the way. There is a lot of education needed among water providers, and a forum would create an opportunity to learn from one another and to learn from other professionals in the metering, financing and communications fields.

Barriers it would address

Lack of education about the costs and financing options is a barrier among water providers. Many water providers do not know where to begin when it comes to financing these projects. And, the way in which metering is rolled out in a community – which includes communications with customers before, during and after implementation – is key to a successful implementation. Education on these important topics, as told by peer utilities and others, could go a long way in reducing resistance to, and even gaining support for, these programs.

How to do it

- The [Rural Water Association of Utah](#) could be a venue for hosting this forum
 - David Gardner (WaterPro) might be able to coordinate a group.
 - There is an annual conference at which a forum could have a role.
 - The forum could become a committee of the Association.
- [Utah Water Users Association](#) could also be a venue for hosting this forum
 - They have an annual workshop, and topics on metering could be presented.
- Meter vendors often deliver educational workshops about their products, so there could be an opportunity to integrate efforts here as well.
- Any presentations made through this forum should ideally include a video recording so that it can be shared more broadly statewide.
- Videos could also be targeted at public officials, to help them better understand benefits, needs and financial gains.

Topics to address in the Forum

Costs and Financing

- Education about the various sources of funding for these projects such as rates/fees, bonds, loans, and private financing, and what's required in the process.
 - E.g. Utah State Revolving Funds are available but currently under-utilized, and promotion may increase usage. This loan provide a 25% cost share at a 1% interest rate. These funds can be used in conjunction with any other funds, including US Bureau of Reclamation Water Smart grants.
- Education about the need and methods for building up funds to put into a Capital Improvement Plan and Fund. Boards can be unwilling to build their financial reserves because they are wary of charging customers *now* for a future project. They desire to keep costs as low as possible at all times for their customers. But, financiers and lenders need to see healthy reserves to be willing to lend. The problem with not building reserves is that it can result in sudden and large rate increases when a project is needed, rather than multiple small rate increases year after year.
- Panel presentations from utilities who have financed metering projects.
- Calculating the cost of water: How to consider future infrastructure needs into the current cost of water.
- Explaining the cost-benefit-time component of infrastructure, which some providers are unfamiliar with. The costs of materials and labor will go up – likely substantially – over time. So there is a need to educate utility managers and decision makers on the cost of delaying these projects, and the risk associated with delay.
- How to balance other infrastructure needs with metering needs.
- Comparing the cost of future infrastructure projects with cost of water conservation today.
- The need for utilities to replace their culinary water infrastructure, which could coincide with simultaneous secondary metering efforts, and be cheaper.
- How low culinary water rates effectively “cap” the rates that can be charged for secondary water (i.e. secondary rates must be cheaper because it's untreated). If culinary rates increase to support infrastructure repair and replacement, then there is more room to raise secondary water rates.

Communicating the Benefits of Metering

- Benefits to utilities include:
 - Better data
 - Better water management
 - Cost savings
 - Equity within and between cities
 - Equity between customers
 - Long-term and short-term sustainability

- Conservation is often the cheapest “next” source of water, compared with new water supply projects.
- Water savings from metering projects are often greater than water savings from other conservation programs.
- The benefits of better data are numerous, and valuable to engineers, utility managers, and even end users as many of them have a desire to know and manage their water usage. Improved data might also help utility managers see greater value in metering as compared with other capital projects.

Acknowledging the Challenges that Utilities Face

- Irrigation companies feel very responsible to be fair to their customers and keep prices low. Metering could result in significant increases in their bills. The effect on bills will vary widely, and while some individuals may see no change, others may see a 50% - 300% increase.
- Many utilities do not want to start charging for metered water until the entire system is metered. This is not a legal issue, but one of fairness to customers. While this is an option, it would delay in the impact that a rate structure might have on customers' water use.
- To approve a rate increase to pay for metering:
 - Some utilities with boards would require board approval for any rate increases. The board of directors – especially of small utilities – may have close relationships with their customers and feel reluctant to increase rates.
 - Some utilities would need approval from the Public Utilities Commission (PUC) and/or other decision-making body in order to raise rates.
 - Some utilities would need to go through a public hearing process if they want to change the property tax measure that pays for water.

3. Develop a Public Education Campaign

Rationale

There are several benefits customers may realize from metering projects: lower costs over the long term, fairness between customers (i.e. each paying for what they use), and a greater ability to manage their own water use. However, the value of these benefits is usually outweighed in customers' minds by the fear of change and temporary inconvenience that can accompany metering installation. So, an education campaign is needed to balance the discussion and build support for metering from customers and the general public.

Barriers it would address

Customer backlash against secondary water metering has been a significant problem for some utilities. Metering existing connections often requires access to customers' backyards or front yards, and digging up the ground or landscape on their property. This can cause customers to be very resistant to the disruption. Plus, customers fear that they will be paying more (which may or may not be true), and there is often a general resistance to government or official overreach. Overcoming these obstacles is key to a smooth rollout. In addition, good information delivered to customers about their actual water use compared with their **landscape's actual** water need is instrumental in ensuring water savings.

How to do it

- A unified messaging platform that is applicable statewide needs to be developed. It could then be used/adopted by any local utility or municipality. The Division of Water Resources expressed interest in taking on this task.
 - Digital files – logos etc. – will be a part of the education campaign.
 - Past experience has shown that creating a personal connection among customers to the infrastructure needs can help build support for a project.
 - The benefits to customers include:
 - The cost of conserving water today is usually far less than the cost of new supply projects.
 - Residents can feel that metering results in fairness, especially within shareholder water orgs.
 - Better data means **a greater ability to manage one's own water and water bill.**
 - Metered data in itself is an educational tool, and people will think **more about the water they're using.**

Summary of Recommendations

The benefits and the challenges of secondary water metering are real, but the three-pronged approach that the lead users outlined is a promising path forward. The first approach – legislatively mandated metering – is arguably both the most effective at accelerating metering, and perhaps the most challenging to enact. However, the three tiers of legislation proposed – focusing on new construction, existing infrastructure projects, or universal metering – offer a few ways to make progress in the legislative arena.

And, whether or not legislation is realized in the near future, the other two pathways will help overcome the primary barriers to secondary water metering. The forum for secondary water providers will enable idea exchange and education around the most challenging aspects like costs, financing, implementation and customer engagement. The third pathway is the development of a public education campaign around the importance, needs, and benefits of metering. The enactment of these pathways will require sustained involvement not only from the workshop participants, but also from a growing network of stakeholders around the state.

Appendix A: The Lead User Method

The recommendations made in this white paper are the result of a one-day workshop developed in the style of the Lead User Method. The Lead User Method is an innovation and research tool developed by Dr. Eric von Hippel of the Massachusetts Institute of Technology (MIT) in the 1980s. The process involves identifying lead practitioners (i.e. "users") in a field, and convening them in a workshop to collectively solve a problem. The Lead User process was originally developed as a way for companies, such as Fortune 500 companies, to find a better solution in less time than would be achieved by traditional research and development methods. While this method is most often used by companies, it has also been used by schools, hospitals, and non-profits, and by Western Resource Advocates (WRA) in a previous water policy investigation.

To address the problem of how to accelerate secondary water metering in Utah, WRA first identified lead users in the fields of secondary water metering, finance, and communications, as the latter two topics had been identified as key barriers to achieving more metering. WRA then convened a one-day workshop with eleven lead users on January 25, 2018 in Salt Lake City. The results of the workshop are presented in this white paper.

WRA would like to thank all of the lead users who participated in the workshop. Their expertise in metering, finance and communications, and their thoughtful suggestions, clarified a path forward to accelerate metering. We are grateful for their invaluable time and generous support.

LEAD USERS

- Carollo Engineers - Chris Cleveland, Vice President and Senior Project Manager
- Division of Water Resources - Joshua Palmer, Water Efficiency, Education & Engagement Section Manager
- Holman Capital - Frank Gill, Vice President
- Kennedy Modeste Communications - Sarah Modeste, Principal
- Mountainland Supply - Matt McAllister, Director of Technical Sales
- Saratoga Springs City - George Leatham, Assistant Public Works Director of Utilities
- Utah State University - Joanna Endter-Wada, Professor of Policy and Social Science
- WaterPro - David Gardner, Assistant General Manager
- WaterPro - Steve Cunningham, Office Manager/GIS Specialist
- Weber Basin Water Conservancy District - Darren Hess, Assistant General Manager
- Weber Basin Water Conservancy District - David Rice, Conservation Manager

PROJECT LEAD & FACILITATOR

- Western Resource Advocates – Amelia Nuding, Senior Water Resources Analyst

Western Resource Advocates is 501(c)(3) non-profit organization dedicated to protecting the West's land, air, and water to ensure that vibrant communities exist in balance with nature. We use law, science, and economics to craft innovative solutions to the most pressing conservation issues in the region.

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- ⁱ US Census. 2017. "Idaho is Nation's Fastest-Growing State, Census Bureau Reports" Accessed February 5, 2018. <https://www.census.gov/newsroom/press-releases/2017/estimates-idaho.html>
- ⁱⁱ Governor's Water Strategy Advisory Team. July 2017. *Recommended State Water Strategy*.
- ⁱⁱⁱ State of Utah Division of Water Resources. 2018. *State of Utah, Water Use Data Collection Program*. Prepared by Bowen, Collins & Associates and Hansen, Allen & Luce. https://water.utah.gov/WaterUseCollectionReportFINAL1_29.pdf
- ^{iv} Personal communication with David Rice, Conservation Manger, Weber Basin Water Conservancy District. 2017.
- ^v D. Johnson, City of Saratoga Springs. September 2017. *The Saratoga View, "Water Conservation and Future Sustainability."*
- ^{vi} Personal communications with Joshua Palmer, WE3 Section Manager, Division of Water Resources. January 2018. The Division of Water Resources has a list of 276 irrigation companies who provide secondary water, including irrigation companies, municipal providers, and shareholder companies. This list is the best available, but may not be entirely accurate.
- ^{vii} From discussion at Lead User Meeting, January 25, 2018. Salt Lake City, UT.
- ^{viii} Personal communication with David Rice, Conservation Manger, Weber Basin Water Conservancy District. July 2017.
- ^{ix} Governor's Water Strategy Advisory Team. July 2017. *Recommended State Water Strategy*.