Investing in Water Reliability

Sample Communication and Guidance

Introduction

This document is intended to provide guidance related to communicating the need for investing in new water supply, and articulating the benefits of indirect potable reuse, or water supply replenishment.

The sample communications are an example of messages that will increase clarity and create confidence. They are not a final work product and do not represent the different ways that the messages can be delivered. Videos, PowerPoint presentations, graphs, and other forms can be used. The key to success is the message that is conveyed, and the perceptions that stick with audiences. Each sample is paired with guidance information designed to help readers appreciate the reasoning behind the sample.

In order for it to be more meaningful, the sample communications use the City of Phoenix as a real world example. Although generally based on water conditions and issues in Phoenix, the magnitude of the specific needs and other numerical references are not accurate. The conditions in the community, the available options, and the analysis are evolving. In some cases, we deviated from known reality in order to make a specific messaging point.

Terminology Guidelines

How we use words is extremely important when describing something that is unfamiliar. We can use the same word in a variety of ways, which can be confusing if this is done within the same document or context. When dealing with technical ideas, we may not have developed terminology that is meaningful to the average person. This is why it is best to follow a set of terminology conventions. Here are some important words or phrases with some conventions on how they are used.

Water Rights – A water right refers to an organization's or person's legal right to use a specific amount of water from a specific water source. A water right is not the same as a water supply. A community may already have a water right, but still need to invest in development of the new water supply.

A Water Supply – A water right or water source becomes a water supply when the community has developed the infrastructure to purify the water to the necessary standards, and deliver it to customers. A water supply is also typically available on a yearly basis, although amounts may vary from year to year due to climate variations. Typical water supplies originate from snow pack, local precipitation, rivers, water imported from outside the region, reclaimed or recycled water, and ocean water.

Drought Proof Supplies – Drought proof supplies are not impacted by climate variations. Typical examples are reclaimed or recycled water, and ocean water desalination. Recycled water is by definition drought proof because the water already exists within the water system, and desalination is a drought proof supply because the climate does not affect the amount of available water in the ocean.

Drought Response Supplies – In this case, the use of the word "supply" can be confusing, but is necessary. This is because a drought response supply is fed from a finite amount of stored water, which can be delivered at a certain rate for a given period time during a drought. It cannot be delivered forever because it is not based on a continuously available supply. The stored water must be replenished using excess water from traditional water sources. Water in a reservoir or groundwater aquifers can act as drought response supplies.

Emergency Supplies – These are similar to drought response supplies except they are designed to provide water during emergencies, for example, when an earthquake damages regional delivery infrastructure. They typically draw on smaller amounts of stored water that is very local to the need. Groundwater can be an excellent drought response supply and emergency supply. In some cases, communities have built local reservoirs for the express purpose of providing emergency supply.

Seasonal Demand Supplies – This is similar to the drought response supply concept except that the stored water is used to meet peak demands, typically in summer months when irrigation needs are greater. A seasonal supply may rely on stored water for a short period of time.

It is noteworthy that groundwater is not mentioned as a water supply, except in specific roles as a drought response supply or an emergency supply. Groundwater is actually stored water that is fed or replenished by other supplies such as rain, snowmelt, rivers, or recycled water.

General Communication Guidelines

Emphasize the Utility's Commitment to Reliability – Often, utilities get branded as being committed to a pet project or committed to the development of recycled water. This can translate into perceptions that utility managers are narrowed minded. The utility's job is to create value for the community. The messages that should stick with audiences are the utility's commitment to reliability, and securing appropriate investment in reliability. Specific methods are only important in how they create water reliability and water quality benefits, and how much they cost to implement.

Lead with Important Issues and Conclusions – Always start communication with the important issues, conclusions, and recommendations. Follow up with data or technical information as necessary to demonstrate credibility and to answer questions. Leading with technical details amounts to leading with information that has no context of value. This will confuse the audience, and reduce trust in the utility.

Investing in Water Reliability

Sample Communication and Guidance

Planning for Water Reliability

Running Out of Water?

You might overhear someone say, "Are we going to run out of water?" Most people intuitively understand that water is critical to the economy and quality of life. What they may not understand is the planning and investment required to ensure water reliability. Simply stated, water supply reliability comes from sound planning by local and regional water utilities, and appropriate investment by the communities they serve. Running out of water is very unlikely if communities plan well and make investments well ahead of the need. Water reliability does not have to depend on the whims of nature.

How Do We Ensure Highly Reliable Water Supplies?

Adequate Yearly Supplies - On average, we need to have yearly supplies that match or exceed our yearly demands. Yearly supplies typically come from yearly snow pack and rainfall, rivers, water transferred from outside the region, recycled water, and sometimes ocean water. Many yearly supplies are affected by climate variations or even long-term drought.

Drought Resiliency - We want to have a water supply system that can withstand periods of drought. Drought resiliency is achieved by having:

- ***Water Storage*** - Stored water is critical for maintaining full water service during periods of drought or emergency, and provides water for seasonal/peak demands. A common misconception is that groundwater is a water supply. Groundwater is actually a natural reservoir that is replenished by water *supplies* such as run-off and rainfall. Groundwater, or any stored water, can act as a "drought response supply" when normal water supplies are lower than normal. This makes reservoirs and groundwater basins critical water reliability assets.
- ***Multiple Supplies, Diverse Portfolio*** - Having multiple water supplies, or a diverse portfolio of supplies, reduces the risk that drought, or disasters will cause water shortages.
- ***Drought-Proof Supplies*** - Drought proof supplies are ones that are not impacted by variations in climate, and are therefore very predictable. Examples of drought proof supplies are recycled water (the water is already in the system) and ocean water desalination. Having drought proof supplies reduces the risk of water shortages due to drought, which can make them worth extra investment.
- ***Conservation*** - Properly implemented, water use efficiency programs help utilities deliver the same value and service while using less water. In this sense, conservation should be evaluated against the benefits and costs of other water supply investments.

Disaster Contingencies - A water supply system is not highly reliable if it does not have protections against natural disasters, such as earthquakes or other emergencies. A diverse portfolio of water supplies, adequate amounts of locally stored water, and the flexibility to deliver water through alternative pipes, provide contingencies during a disaster.

Guidance

Setting the Context - This first paragraph establishes planning and investment as the keys to water reliability. This is important because the average person is not likely to appreciate this basic concept, which conveys the fundamental roles and value of the water utility, and the truth of ensuring water reliability. This first paragraph is also empowering because it contends that water reliability is in our hands, not nature's.

Communicating the Basics – Some might call this discussion of ensuring a reliable water supply "educating the public." "Education" can and has been perceived by audiences as condescending. Thinking we are educating leads to perceptions by our audiences that we think they are un-educated. It also does not encourage communications that are focused on value and investment. In fact, our audiences and communities need to be *informed* about the issues that are relevant to the utility's investment proposals.

Reliability and Value – The discussion of water supplies and storage are presented within the context of ensuring water reliability. This means that the focus of the information is on value and return on investment, which amounts to treating our audience like investors, not students.

Comparing Costs - The discussion of drought proof supplies is important. The idea that drought-proof supplies might be "worth more investment," addresses the fact that not all supplies are equal in terms of their value to a *specific* community. Comparing only costs won't yield the best investment decision.

Conservation – Messages about conservation can be muddled and confusing, and sometimes driven by a vague conservation ethic. Conservation, or water use efficiency, is best viewed as a water supply investment option that is being compared to other investment options. Again, this is treating our audiences like investors. Saving money on your water bill is a fairly weak driver for conservation, since the required effort often outweighs the perceived benefits.

Investing in Water Reliability

Sample Communication and Guidance

Phoenix Area Water Supply Assets

In order to appreciate Phoenix's water reliability standards and investment needs, it is important to understand the area's water supply issues and assets.

Salt River Project (SRP) – The City of Phoenix receives about 55% of its water from the Salt River Project, which is fed from the snow pack in the mountains of northern Arizona (Salt River and Verde River Watershed). This run-off varies from year to year, and can be affected by multi-year droughts. The Roosevelt Dam, constructed in the early 1900's, helps to smooth out yearly variations and increase Phoenix's drought resiliency. This asset is so important that the SRP increased its capacity by 20% in 1995. Unfortunately, in times of heavy snow or rain, the reservoir still cannot capture all of the run-off. This means that precious water is lost. It is important to note that this watershed is fairly small, which means that regional climate changes can cause major changes in the amount of available water.

Central Arizona Project (CAP) – The Central Arizona project delivers water from the Colorado River to thirsty Phoenix. Development of the CAP system has been the most significant water investment made by the city over the last 30 years, which has yielded significant benefits, including more total water supply, better water supply diversity and drought resiliency, and increased ability to retain more SRP water in storage. CAP provides about 35% of Phoenix's water. Another benefit of CAP is that the Colorado River system has several reservoirs that smooth out year-to year variations in water availability, and keep water from being lost in wet years. Despite this, the Colorado River watershed can and has experienced multi-year droughts.

Groundwater – Groundwater is simply the water that is stored in the ground due to thousand of years of infiltration from rain and snowmelt. In some regions, this stored water can range into the billions of gallons. Groundwater aquifers represent an extremely valuable asset in that they can store as much or more water than many man-made reservoirs. Building reservoirs is costly and can have major environmental impacts. The Phoenix area has significant amounts of groundwater and groundwater storage capability. Historically, the city of Phoenix relied heavily on groundwater, which caused overdraft of the aquifer. Due to addition of the CAP, groundwater represents only 3% of the current water supply. However, the groundwater basin will be an increasingly valuable storage asset in the future.

Recycled Water – Reclaimed, or recycled water, is already an important water supply, representing about 7% of the water used, not including the water used by the Palo Verde power plant. Reclaimed water is especially valuable because it is consistently available, drought or no drought.

Guidance

An Asset Value Perspective – The sample paragraphs are not just "where your water comes from" educational materials. They are specifically designed to set the context for subsequent discussions about the utility's water supply reliability standards and local investment needs.

Benefits and Weaknesses of the Assets – Each of the water supplies have strengths and weaknesses. The SRP is a yearly supply, so its weakness is that its yield will vary from year to year. This is mitigated by the storage capacity created by the Roosevelt Dan. A consistent theme in the sample communication is the tremendous value of storage assets. The last statement about SRP's vulnerability to climate change is an important idea that impacts planning and required investment in water supplies and storage.

The paragraphs on the CAP and groundwater supplies included similar focus on the value of storage, and issue like supply diversity and drought resiliency. We are also reminded that CAP water, although buffered by reservoirs, can and has experienced multi-year droughts. This information sets the stage for planning scenarios used by the utility.

Recycled Water – It is important for people to understand the high reliability of recycled or reclaimed water.

Investing in Water Reliability

Sample Communication and Guidance

Phoenix Water Services Department

A Commitment to Water Reliability

The Phoenix Water Services Department is committed to highly reliable water service, which requires reliable delivery systems and reliable water supplies. What do we mean by reliable water supplies? We mean that our customers should only experience water restrictions under *very extreme drought or shortage conditions*. For Phoenix, this means a combined drought of 10 or more years on both the Salt River/Verde and Colorado River Watersheds. Based on this scenario, and the City's proposed investments, Phoenix residents should experience water restrictions no more than once every 20 years. Providing greater reliability than this would significantly increase water rates, with comparably little increase in benefits.

Guidance

A Commitment to Reliability - This simple paragraph addresses several meaningful and important issues. First, it starts with a commitment to reliability from the Water Services Department, which establishes the basis for trusting the department and the city. People do not invest in people or organizations they do not trust.

A Meaningful Reliability Standard - Second, communication is worthless if it is not meaningful. People need to understand what they are getting for their investment dollars in terms they can understand. A common problem in the water industry is that communities get asked to invest in water projects without being told the standard of reliability they will receive.

The sample paragraph defines a drought planning scenario and the level of service during the scenario. It tells them that they are investing such that they will experience restrictions no more than once every 20 years. This is meaningful, and again makes the connection between reliability and investment. This clarity will make the dialogue with the community much easier, more productive, and will increase trust in the utility. Stating a frequency of restrictions is probably one of the simplest and more meaningful ways to express a reliability standard.

Balancing of Costs and Benefits - Finally, the paragraph concludes with the idea that the Water Services Department is balancing benefits and costs, and using common sense.

Investing in Water Reliability

Sample Communication and Guidance

The Need for New Supplies in Phoenix

Despite the city of Phoenix's past investments, the challenge to invest appropriately continues. Phoenix must address the following important issues.

- **Drought** - Recent climate conditions and hydrological studies indicate that a concurrent and long term drought on both the Salt/Verde and the Colorado River watersheds is much more likely than previously thought. This means that the magnitude and duration of drought may be greater than what we have experienced since becoming a large city.
- **Continued Growth** - Based on analysis of our growth history, the city will grow from 1.5 million people today to 2.3 – 2.7 million people by 2030.
- **Supply Uncertainties** - In addition to drought, shortage-sharing agreements on Colorado River water and endangered species considerations can reduce the amount of water we get from the Central Arizona Project (CAP).

Fortunately, past investments leave us in a pretty good position for the next 10 years. However, due to the issues outlined above, new water supplies will need to be online by 2015 and into the future.

2015
50,000 Acre-Feet of New Water Supply (10% more than 2005)

2020
100,000 Acre-Feet of New Water Supply (20% more than 2005)

2025
150,000 Acre-Feet of New Water Supply (30% more than 2005)
100,000 Acre-Feet of Drought Response Supply (Access to additional stored water)

2030
175,000 Acre-Feet of New Water Supply (40% more than 2005)
125,000 Acre-Feet of Drought Response Supply (Access to additional stored water)

The planning has begun, and investments need to begin soon to ensure that we meet our water reliability standards in 2015, and beyond.

Note: Volumes and percentages due not necessarily reflect actual Phoenix conditions.

Guidance

Current Problems - The current problems or investment challenges define why more water supplies are needed. Problems typically relate to growth, newly defined water needs for the environment, changes in the planning scenarios or drought modeling, and other uncertainties in availability of supplies. The statement of the problem provides the context for all subsequent conversations about investment and acceptance of risks.

Projecting Specific Water Supply Needs - This is where the water utility really earns its money, and why sound planning and securing appropriate investment are primary functions of the utility. There is quite a bit of variability in both water supply availability and projections about future demand. Some of these uncertainties will need to be shared with the public and representative government. Despite this, the utility must boil things down and recommend that specific water supplies be developed within specific time frames. The more simple and clear this can be, the better.

The numbers at the left can be represented in graphical form and compared to existing demand and availability of supplies. The percentages are shown here to give more meaning to the acre-feet units. Translating acre-feet into the amount of water used by a family in a year is a good idea. However, communicating the percentage increases will be more meaningful to an investor.

Sharing Detailed Analysis - Sharing detailed analysis should be done carefully. The utility *does* want to communicate that their conclusions are based on diligent and sound analyses. However, do not allow data and analysis to mask the meaningful issues and conclusions. A good way to demonstrate credibility is to describe in meaningful terms the types of analyses that were performed and why they are a sound approach. If data needs to be shared, it should be done *to support* meaningful assumptions and conclusions that have already been presented. People, especially policy makers, are very busy. Don't make them wait for the important information and conclusions.

Investing in Water Reliability

Sample Communication and Guidance

More Water Means More Growth

Growth and Quality of Life - People who are frustrated with the impacts of poorly planned growth have been known to oppose water supply projects, hoping to limit growth. Certainly, no one wants increased traffic congestion. With proper investment in infrastructure, growth does not have to decrease quality of life. In fact, well planned development is more resource efficient and sustainable, can improve the economy, and increase the availability and diversity of employment. For some communities, growth is the natural course of things.

Our Roles and Commitment - It is not the role or responsibility of the Phoenix Water Services Department to control growth. It *is* our responsibility to ensure that the community has a highly reliable water supply. We take this role very seriously. To deliver future reliability, we must understand and plan for increases in demand, and recommend appropriate investment. Not planning, and not securing the necessary investment would be malpractice. As part of this commitment, the Water Services Department will share the demand forecasts it is using for planning, and the assumptions for developing these forecasts. We cannot guarantee that growth won't impact our lives, but we can make sure that we have highly reliable water service, even with growth.

Guidance

Address the Realities of Growth - Those who say that growth can decrease quality of life have a valid point. In many communities, growth increases traffic congestion and commute times. However, this is due to poor planning or a political climate where local government is unwilling to invest in infrastructure in time to head off problems. These paragraphs address two important ideas: Growth = Reduced Quality of Life, or Appropriate Investment = Better Quality of Life. Communities are created by investing in infrastructure. The early stages of a community typically involve growth and improving quality of life. Who ever heard of a community that never built a road? Some may want to live there, but not many.

Point Out the Benefits of Well-Planned Growth - People can understand increased traffic congestion because they experience it, but they may not see other important aspects of growth. Many individuals do not understand or experience the positive impacts that growth can have on the economy and the availability of jobs.

Our communities should also know that it is very difficult to implement more sustainable or resource efficient practices in built-out communities. New development provides a great opportunity for implementing more energy efficient and water efficient homes and industry. In fact, without new development, advances in sustainability and sustainable communities would be much slower.

Seriously Committed to Reliability - Simply stated, the water utility's answer to the no-growth argument is not to get into an argument about growth. The utility should emphasize its responsibility and commitment to water reliability. This is why it is important to define a clear and meaningful standard of reliability, as described previously in this tool. Finally, the utility should be unapologetic about its commitment to responsible planning and reliability.

Note on Rapid Growth - Rapid growth, where developers appear to be in charge of local government, *can make it more difficult* to secure investment in water supplies and water supply replenishment.

Investing in Water Reliability

Sample Communication and Guidance

A History of Planning and Investment

Phoenix has a history of planning and making appropriate investments in new water supplies. The history goes back to early in the 20th century with the construction of the Roosevelt Dam, followed by investments in binging water from the Colorado River, water conservation, increasing the storage capacity of the Roosevelt Dam, and increasing the use of reclaimed water. These investments have literally brought life to the desert, and brought the desert to life. They have also allowed for highly reliable water service for Phoenix, despite growing from 50,000 to 1.5 million people over the last 50 years.

Guidance

Planning and Investment Reminder - It is always a good idea to remind the audience that today's reliability comes not from chance, but from past planning and investment. The current generation must plan and invest in the same way. Arguably, current generations have a bigger challenge because the "easy" or "inexpensive" water supplies have likely been developed. The future will require high water use efficiency, the most efficient use of reclaimed water, and increased implementation of ocean water desalination for coastal communities.

The last sentence of the paragraph reminds the audience that growth does not have to degrade water reliability if the community makes the appropriate investments and the appropriate times.

Investing in Water Reliability

Sample Communication and Guidance

Options for Investing in New Supply

Meeting the future water reliability needs of the City of Phoenix can be accomplished in a variety of ways, and will likely require investing in several different water supplies. Here are some of the options for Phoenix to increase its water supply.

Promote and Enhance Conservation
- Problem Solved: Reduces future demands and need for new supply
- Estimated Yield: 20,000 Acre-Feet/Year
- Cost: $300/AF Approximate Water Rate Impact: $1.00/Month
- Advantages: Cost, and the fact that the water is already available in the system
- Disadvantages: Predictability of return on investment, quality of life changes, and demand hardening of the system

Secure Additional CAP Water Rights from Indian Tribes
- Problem Solved: Provides new water supply
- Estimated Yield: 50,000 Acre-Feet/Year
- Cost: $400/AF Approximate Water Rate Impact: $2.50/Month
- Advantages: Brings additional water into the region - Inexpensive supply
- Disadvantages: Can be impacted by drought and other CAP uncertainties

Develop McMullen Valley Groundwater
- Problem Solved: Provides additional drought response supply
- Estimated Yield: 50,000 Acre-Feet
- Cost: $250/AF Approximate Water Rate Impact: $1.00/Month
- Advantages: Water is already available and inexpensive supply – Need to develop the infrastructure to bring it into the system
- Disadvantages: Replenishment of the water is very slow so it is not a continuous supply – Acts solely as a drought response supply or emergency supply

Selection of options for development will be based on costs (impact on rates or developer fees), reliability, community impacts, maintenance, and community feedback.

Note: Water volumes, costs, and rates do not necessarily reflect actual Phoenix conditions.

Guidance

The purpose of this sample is not to convey accurate yields, costs, or advantages and disadvantages related to the situation in Phoenix. It first addresses that their may be a variety of options for solving the stated water reliability problem. The community will expect that the utility communicate the options and the logic behind recommending a specific course of action. If the utility fails to share the options and their logic, they will likely be branded as committed to a "pet project" or be viewed as narrow minded.

Format for Communicating the Options - The sample at the right does not go into great detail with respect to each of the options. Details can be shared in response to specific questions. However, it is important to recognize that the relevant features of the different options can be shared in terms that are simple and clear, even if they are a little more detailed than what is shown in this sample.

Expression of Costs and Financial Considerations - Total costs of projects and even costs expressed in $/Volume of water are not very meaningful, except in relative terms. What is meaningful to people, and especially policy makers, is the impact on rates or other fees. For example, a person might not support a given option because it is *twice the cost* of another option, even though the first option has clear advantages. However, if they see that the rate impact difference is only two dollars a month, they may choose the more expensive and valuable option. We do not want decisions to be made on *costs* that are not meaningful. Finally, rate or fee impacts should be stated even if they are estimates.

Although we used rates as a meaningful expression of the financial burden in this sample, the trend in Phoenix has been to fund investment through development fees.

Investing in Water Reliability

Sample Communication and Guidance

Options for Investing in New Supply (2)

Meeting the future water reliability needs of the City of Phoenix can be accomplished in a variety of ways, and will likely require investing in several different water supplies. Here are some of the options for Phoenix to increase its water supply.

Dry Year Fallowing of Farmland
- Problem Solved: Drought response supply
- Estimated Yield: 20,000 Acre-Feet/Year
- Cost: $500/AF Approximate Water Rate Impact: $1.00/Month
- Advantages: The water is already available and it's an inexpensive supply
- Disadvantages: Not a long term supply solution – Brings up the issue of continued support of agriculture in the region.

Store Reclaimed Water in the Groundwater
- Problem Solved: New supply, drought response supply, and meeting seasonal demands at specific locations
- Estimated Yield: 150,000 Acre-Feet
- Cost: $750/AF Approximate Water Rate Impact: $6.00/Month
- Advantages: Improves water quality, maximizes the value of storage assets, maximizes the productivity of the resource, and no third pipe delivery infrastructure is required.
- Disadvantages: Cost of water treatment and public perceptions of reclaimed water for potable uses.

Continue to Develop Non-Potable Reclaimed Water
- Problem Solved: New water supply
- Estimated Yield: 00,000 Acre-Feet/Year
- Cost: $750/AF Approximate Water Rate Impact: $6.00/Month
- Advantages: Drought proof supply that offsets use of "potable" water
- Disadvantages: Requires separate infrastructure, signing up customers, and typically the water cannot be stored when it is not needed. This limits the productivity and value of the resource

Selection of options for development will be based on costs (impact on rates or developer fees), reliability, community impacts, maintenance, and community feedback.

Note: Water volumes, costs, and rates do not necessarily reflect actual Phoenix conditions.

Guidance

Recommending a Course of Action - The community will expect the utility to recommend a course of action, which may include several investments. This is because people want to believe that utility personnel are the water experts. Making a recommendation demonstrates leadership and confidence. Making a recommendation does not mean that you are wed to that course of action. Remember, the utility is committed to reliability, so it can change course based on community input as long as water reliability is maintained. In this sample, we did not make a specific recommendation because it would not have been meaningful without accurate yields, rate impacts, and more detailed analysis.

The Benefits of Water Supply Replenishment - It is important to be very clear about the benefits of water supply replenishment or indirect potable reuse. Improving water quality, being able to put water back into storage even during a drought, not having to sign up new customers for a new product, not having to build new delivery infrastructure or manage the risk of cross connections, and being able to use the water over and over again are all pretty compelling benefits.

Who Pays? - We decided not address who is baring the burden of the investment in this sample communication. We know in some cases that new supply is funded by new development, in the form of new hookup fees. This is an issue that can create controversy if the utility is not careful. For example, part of the problem in Phoenix is that their models need to be changed to reflect longer term and more severe droughts. Is this solely a growth problem? Who should pay? The general rule is that those who benefit should make the investment.

Although we used rates as a meaningful expression of the financial burden in this sample, the trend in Phoenix has been to fund investment through development fees. Any representation of rates or fees will need to reflect state, federal, or other additional funding.