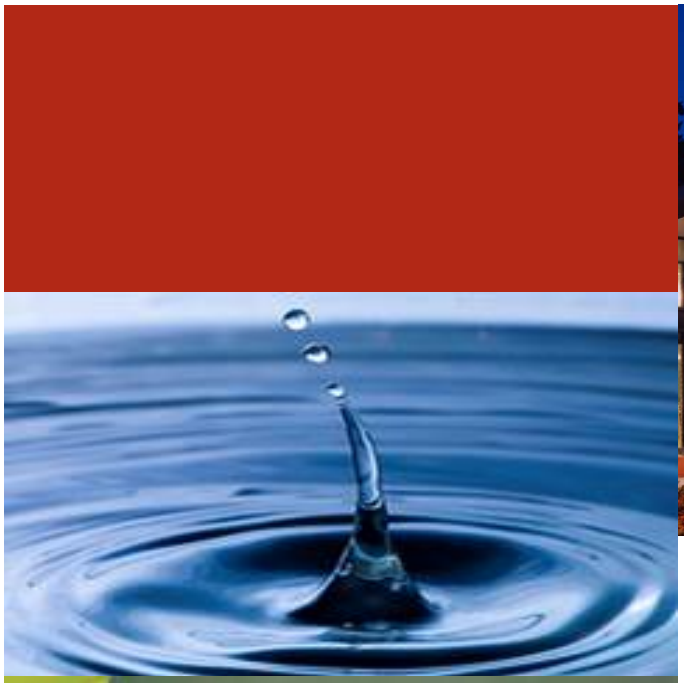


SUMMARY OF THE RATE ADVISORY COMMITTEE POLICY RECOMMENDATIONS

Tualatin Valley Water District

2017 Water Rate Study

June 30, 2017

June 30, 2017

Board of Commissioners
Tualatin Valley Water District
1850 SW 170th Avenue
Beaverton, Oregon 97003

Subject: Report of the Rate Advisory Committee's Policy Recommendations

Dear Commissioners:

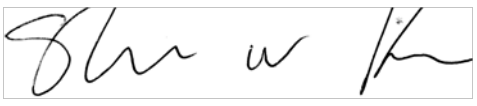
HDR Engineering, Inc. (HDR) was retained by the Tualatin Valley Water District (TVWD) to provide technical and professional services for the District's 2017 comprehensive rate study. As a part of this year's study, TVWD formed a Rate Advisory Committee (RAC) to review five specific rate-related policy issues. This report documents the RAC's activities and final policy recommendations.

We appreciate the time, effort, and careful consideration taken by the individual RAC members, and the RAC in this effort. In addition, we wish to thank TVWD's management team for its input and assistance before, during and after each of the RAC meetings. Finally, we would like to thank Commissioners Richard Burke and Jim Doane, P.E. for serving as non-voting RAC liaisons.

Assembling, coordinating, and effectively working with any advisory committee requires a major commitment on the part of the utility's governing body and leadership team. In this instance, the TVWD Commissioners and management team were fully committed to the advisory process and, as a result, HDR believes that the RAC policy recommendations contained herein will be invaluable to TVWD going forward.

Thank you for the opportunity to provide these services to TVWD.

Sincerely yours,
HDR Engineering, Inc.



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Overview of the Rate Advisory Committee Process and Policy Issues

Introduction

As part of the 2017 comprehensive rate study, the Tualatin Valley Water District (TVWD or the "District") formed a Rate Advisory Committee (RAC) to review specific rate-related policy issues and provide recommendations to the District's Board of Commissioners (Board). This report provides background on the policy issues that the RAC was asked to review and provide recommendations upon.

Overview of the Rate Advisory Committee

The RAC is a special committee, of limited duration, appointed by the District's Board of Commissioners. The RAC consisted of 13 individuals, representing a cross-section of the District's stakeholders. The RAC members were appointed by the TVWD Board, with consideration of a wide variety of representation from residential, business, industry, social services, non-profit, government and institutional customers. The Board also assigned two Board members (Commissioners Richard Burke and Jim Doane, P.E.) to serve as non-voting RAC liaisons.

The RAC had no chairperson, but was facilitated by a professional facilitator from HDR. The facilitator's role was to structure and guide the discussion during each RAC meeting and assist the RAC in developing a final set of policy recommendations.

Committee Charge

In July 2016, the Board adopted a charter for the RAC that tasked it with reviewing and providing recommendations on the following topics:

1. **Affordability and Rate Design** – The RAC considered the following questions regarding water rate design and affordability:
   a. Should the District address affordability within its water rate structure?
   b. If the District addresses affordability within its water rate structure, what are the options for doing so?
   c. What are the other policy considerations (e.g., who will qualify individuals for affordability programs, how will lost revenue be recovered) that should be considered?
2. **Common Service Consolidation** – The District charges non-single-family residential customers for water using the District's excess-use rate structure where a higher block rate is charged for water exceeding 140% of the 12-month rolling average of consumption for each account. An institutional customer proposed the aggregation of consumption for its multiple accounts when determining the 12-month rolling average of consumption. This aggregation would lower the customer's total water bill.
3. **Duplex Billing** – Currently, the District follows the definition of 'residential customers' within the American Water Works Association (AWWA) M1 Manual that considers

duplexes to be residential customers. As such, the District bills duplex customers using a block rate structure with two fixed blocks, which is the same methodology used for single-family customers. The RAC considered the option to bill duplex customers with a shared meter in the same manner as the District does with multifamily residential customers, using a two-block excess-use rate structure in which the first block is based on the customer's rolling 12-month average use.

4. **Hydrant Meter Calculations** – The RAC reviewed and recommended ways in which the District can meter and recover costs for temporary, non-emergency use of water through a fire hydrant. This included a review of the associated deposits, fees, and flow charges.
5. **Multi-Year Rates** – In anticipation of the District's future revenue requirements, which includes near-term ongoing rate increases, the RAC discussed whether the Board should adopt multiple year rate adjustments at one time (i.e., adopt rates for budget years 2018 and 2019 at the same time) to align with the District's biennial budget process.

The RAC, based on its review of the above issues, was charged with providing a comprehensive set of recommendations to the Board on each of the topics.

RAC Meetings and General Process Used to Review Key Issues

The RAC reviewed each of the five policy issues over the course of late summer and fall 2016. The RAC met for five consecutive months to review the consultant's work and discuss the issues in more detail. Each meeting was organized with an agenda and a list of specific topics/issues to be reviewed. The topics/issues reviewed at each of the RAC meetings were as follows:

- **Meeting 1 (August 10th, 2016)**
  - ✓ Objectives/Goals of the Rate Advisory Committee
  - ✓ Overview of TVWD and Key RAC Issues
  - ✓ Overview of the RAC Charter
  - ✓ Review of the Five Key Policy Issues
- **Meeting 2 (September 14th, 2016)**
  - ✓ Review of TVWD Partnerships with Other Organizations
  - ✓ Review of the Issue of Sharing of Future Costs
  - ✓ Initial Discussion of Affordability and Types of Affordability Programs
- **Meeting 3 (October 5th, 2016)**
  - ✓ Customer Affordability Observations (District Customer Service Perspective)
  - ✓ Review of Specific Affordability Programs
  - ✓ Introduction of Next Topics (Hydrant Fees, Multi-Year Rate Adjustments, Common Service Consolidation).
- **Meeting 4 (November 2nd, 2016)**
  - ✓ Discussion of the District's Current Customer Communications
  - ✓ RAC Charter Review
  - ✓ Detailed Discussion of the Hydrant Meter Program
  - ✓ Review of Multi-Year Rate Adjustments
  - ✓ Overview of the Issue of Consolidated Services (Billing)
  - ✓ Review of Affordability Survey #1 and Continuation of the Affordability Discussion

- ✓ Introduction to the Issue of Duplex Billing

- **Meeting 5 (December 7th, 2016)**
  - ✓ Review (Reminder) of RAC Charter and Issues
  - ✓ Review of the Survey #2 Results
  - ✓ Development of Final RAC Recommendations on Affordability
  - ✓ Development of Final Recommendation on Consolidated Billing
  - ✓ Development of Final RAC Recommendation on Duplex Billing
  - ✓ RAC Nominations for Board Presentation

RAC meetings were structured to first introduce a topic and the key policy issue(s) to be addressed by the RAC. In advance of each meeting, a detailed issue paper was provided to the RAC. Each paper presented an overview of the next topic/issue for consideration, along with a discussion of various alternatives available to the District to address the issue.

Next, HDR provided a detailed presentation of the topic to help RAC members understand the various technical aspects of the issue and allow for clarification of any questions. Finally, RAC members were encouraged and provided with the opportunity to discuss each topic and share their perspectives, views, observations and concerns. Each issue gained closure by having the RAC provide its recommendation.

To help guide the discussions, HDR surveyed the RAC members. On two occasions, internet-based surveys were conducted with RAC members between meetings to gain an understanding of the RAC's interest in pursuing various policy choices. These surveys were very helpful in the development of the recommendations to the Board, but they were not necessarily predictive of the RAC's final recommendations.

Development of Issue Papers

As a part of the RAC process, HDR developed detailed issue papers for each of the five key policy issues. Each paper provided an overview of the topic/issue, along with a discussion of various policy alternatives available to the District to address the issue. Electronic copies of the issue papers were provided to the RAC members in advance of each RAC meeting. In summary form, the issue papers developed as a part of the RAC process were as follows:

- Issue Paper 1a – Review of the Issue of Water Rate Affordability and TVWD
- Issue Paper 1b – Review of Specific Affordability Programs
- Issue Paper 2 – Review of the Issue of Multi-Year Rate Adoption
- Issue Paper 3 – Review of the Hydrant Permit Program for TVWD
- Issue Paper 4 – Consolidated Consumption Billing
- Issue Paper 5 – Review of Multi-Family Billing Practices: Billing Duplex Customers

Review of the Issue of Water Rate Affordability

Affordability is a complex topic and to help the RAC better understand this issue, Issue Paper 1a discussed affordability in general terms and how the water utility industry currently addresses the issue. A starting point for this topic was simply defining "affordability". In the water utility

industry, there is no single definition of affordability or an "unaffordable" bill. Rather, a range of definitions can be used to guide the discussion of this issue.[1]

Five types of programs were identified to aid customers with affordability issues:

- **Bill Discounts** – a discount on a qualifying customer's utility bill; a direct approach to "shrink the bill".
- **Flexible Terms** – help customers afford services and pay bills through bill timing adjustments, levelized billings, and/or arrearage forgiveness
- **Lifeline Rate** – a subsidized rate for a fixed amount of water that is expected to meet a customer's basic (essential) needs
- **Temporary Assistance** – provides short-term or one-time assistance to customers to prevent disconnection of services or to restore service after disconnection for households facing an unexpected hardship
- **Water Efficiency** (to lower use/lower bill) – customer assistance programs that subsidize water efficiency measures by providing financial assistance for leak repairs and offering rebates for WaterSense™ certified fixtures, toilets, and appliances.

Issue Paper 1a provided the RAC with a general discussion of these programs, and the specific program measures available under each type. This information was supplemented with national survey information regarding the implementation of these programs by other national and local utilities. The issue paper also contained an analysis of TVWD and the median household incomes of customers within its service area. While not precise due to data constraints, the analysis did indicate that there likely is a portion of TVWD's customers which may have affordability issues either now or in the near future. Potential reasons for these customers' affordability issues include crisis (job loss, medical emergency, family issue), money management issues, older homes with inefficient plumbing, and/or elderly or disabled customer limitations. From the analysis and subsequent RAC discussion, the RAC concluded that there are customers within TVWD's service area with affordability concerns/issues.

From this general overview of affordability programs, HDR developed Issue Paper 1b that described the potential for implementing the various program measures at TVWD. For each measure, HDR provided a brief overview, the presumed advantages and disadvantages, any administrative considerations, an estimated program cost, and the target group of customers. Organized by the program type, the following affordability measures were discussed in detail with the RAC.

- Bill Discount Program
  - ✓ Low-Income Rate
- Flexible Terms
  - ✓ Monthly Billing
  - ✓ Levelized Billing
  - ✓ Arrearage Forgiveness
  - ✓ Penalty Forgiveness

[1] Median household income (MHI) is a very common approach used to define and identify affordability issues.

- Lifeline Rate
  - ✓ Lifeline Rate Structure
- Temporary Assistance
  - ✓ Temporary Assistance (similar to TVWD's current Customer Emergency Assistance Program)
- Water Efficiency (to lower use/lower bill)
  - ✓ Fixture Retrofit

After the 3rd RAC meeting and the presentation of the above material, HDR surveyed the RAC to gauge its interest in the above program options. The survey also provided HDR with information and perspective related to the potential implementation of a low-income rate. There are several policy considerations associated with the potential implementation of a low-income rate and the survey began the process of shaping a final RAC recommendation on those policy issues.

During the 4th RAC meeting, the survey results were reviewed and where possible, specific program options were removed from further consideration by the RAC. The remaining affordability program measures that were discussed in more detail include the following:

1. Monthly billing
2. Levelized billing
3. Temporary/emergency assistance
4. Penalty forgiveness
5. Low-income rate

Prior to the 5th and final RAC meeting, a second survey was administered to help confirm prior RAC positions and transition them into more formal RAC recommendations. Where a clear policy recommendation was not evident, affordability measures were explored in more detail and respondents were asked to select between various competing policy alternatives (e.g., who should screen low-income customers? TVWD or an outside agency?).

During the final RAC meeting, the results of the second survey were presented and discussed. The survey questions were ordered in a sequential manner to help the RAC develop its final policy recommendations. Based on all the information from the affordability issue papers and the RAC meetings, the RAC provided the Board with the following recommendations as they relate to affordability.

✓ Monthly Billing

Recommendation: For all customers, the District should change its billing schedule from bi-monthly to monthly.

Analysis: Changing the current bi-monthly billing cycle to a monthly billing cycle will not "reduce" a customer's overall cost, but it may provide a benefit to customers in their ability to manage the bill from month-to-month. There are increased meter reading and billing costs

associated with this recommendation and this change in the District's billing practice may be dependent on the District's new Customer Information System (CIS).[2]

✓ Levelized Billing

Recommendation: TVWD should offer levelized billing (i.e., like NW Natural Gas or Portland General Electric) as a billing option for residential customers. The RAC also recommended that TVWD work with customers that opt for levelized billing so that they understand TVWD's conservation practices and the impacts that levelized billing may have on customer consumption patterns.

Analysis: This program would be offered to residential customers only, and the customer would need to "opt-in" to receive a levelized bill. There is no "screening" of customers required for this program, but there may be some additional administrative costs to manage it. While providing this recommendation, the RAC was concerned that the offering of levelized billing should not remove TVWD's focus on conservation and efficient use. Similar to the monthly billing program measure, levelized billing may be dependent on the District's new CIS.

✓ Temporary/Emergency Assistance

Recommendation: TVWD should continue to provide a Customer Emergency Assistance Program (CEAP). The RAC also recommended that the District provide additional customer outreach and education about this program's availability for at-risk customers. Finally, the RAC recommended that all customers should have the awareness and opportunity to contribute to this program.

Analysis: The RAC was asked whether the existing CEAP should be expanded, but it recommended that the current program be maintained. Providing additional outreach and education should help customers understand that assistance is available if they need it, and let all other District customers know that an assistance program is in place to aid customers in financial need.

✓ Penalty Forgiveness

Recommendation: TVWD should develop a policy to allow for the reduction, or waiver, of rate-related fees such as shut-off and turn-on fees.

Analysis: The intent of the RAC in making this recommendation is to help lift the financial burden of a customer already in financial distress. Given that, the policy for penalty forgiveness may be linked directly to, or limited to, a customer's request and acceptance for assistance through the CEAP. This change would need to be included in the District's budget and may be dependent on the District's new CIS.

[2] Implementation of the new CIS will be under way in the 2017-2019 biennium with an estimated completion sometime in the 2019-2021 biennium.

✓ Low-Income Rate

Recommendation: Generally, RAC members supported a low-income rate. However, not all members were in favor of the idea and the RAC did not provide a specific rate recommendation.

Analysis: One of the main discussion points on this issue was equity among customer classes and the level of subsidy to support a low-income rate that would be paid by other customers and customer classes. Although the RAC was not able to recommend a specific rate design to the Board, the RAC concluded that the District management and Board should continue to review this issue to make a policy decision.

For the District's consideration, the RAC provided additional policy guidance on qualification, rate structure, discount level, and revenue recovery:

i. To qualify customers for the low-income rate, TVWD should use an existing qualification criteria (e.g., Low Income Home Energy Assistance Program, Oregon Energy Assistance Program).

ii. To screen and qualify customers, TVWD should use an outside organization, particularly if income levels must be verified.

iii. Only low-income customers should qualify for the low-income rate.

iv. The low-income rate should be a separate and distinct TVWD rate structure (i.e., rate schedule).

v. The Board should determine the best approach for discounting the rate (fixed component, variable component, or both) which best aligns with the intent of the program and the revenue/cost constraints of providing this discounted rate.

vi. The level of the discount should be based on either an amount of discount to be provided or a target for the District's funding limits. The RAC recommended that the Board should establish a target for funding and work within those constraints.

vii. The RAC recommended that the District's management and Board determine the best approach to recover the revenues to fund the low-income rate.

The key areas of RAC discussion related to low-income rates were the level of the discount to be provided, the cost associated with the program and who would pay for it (v. through vii. above). The RAC understood that, at this point, it is impossible to know the number of customers that would apply and qualify for a low-income rate. The analysis developed by HDR assumed approximately 5% of the District's customers (about 2,900) may qualify for this program and the total of the discounts provided may be approximately $220,000/year. As a point of reference, this cost would equate to approximately a $0.30/month increase in the fixed meter charge for all customers (if the costs were recovered from the meter charge and paid by all customers).

Review of the Issue of Common Service Consolidation

Currently, the District bills non-residential customers based on an excess-use rate design where a higher block rate is charged for water exceeding 140% of the 12-month rolling average

consumption for an account. If a customer has multiple accounts, the 12-month rolling average of consumption is calculated for each account separately and billed accordingly.

Common service consolidation refers to the suggestion of aggregating, or consolidating consumption, for the purpose of billing multiple accounts under a non-residential master account as if they were a single, consolidated account. In most situations where a customer has multiple accounts, consolidating consumption would lower the customer's total water bill. Based on a customer's proposal and subsequent review of this issue, the RAC provided the following policy recommendation.

✓ Common Service Consolidation

Recommendation: The RAC concluded that it could not provide a final policy recommendation on this issue, but the District should continue to explore this topic, specifically with Tualatin Hills Park & Recreation District (THPRD), as needed.

Analysis: In discussing this issue, several concerns were raised. First was the issue of the location of the multiple-meters (i.e., adjoining/common property vs. properties spread across the service area). The RAC was also concerned about the commonality of purpose and whether that type of customer would qualify (e.g., a single management firm with multiple businesses). The RAC requested that the District continue to work with THPRD and attempt to resolve its unique situation. However, the concerns noted above have certain cost-of-service implications as to how capacity costs are equitably assigned and shared, and may have broad policy implications.

Review of the Issue of Duplex Billing

Currently, TVWD follows the definition within the American Water Works Association (AWWA) M-1 manual that includes duplexes as residential customers. Single-family residential customers and duplexes are billed using a block rate system with two fixed blocks. Based on a duplex owner's proposal, the RAC reviewed whether duplex customers with a shared meter should be classified as multifamily customers and billed accordingly (i.e., with an excess-use rate structure), or whether duplexes should continue to be billed as residential.

✓ Duplex Billing Policy Recommendation

Recommendation: TVWD should change its customer classification for duplexes with a shared meter and classify these customers as multifamily customers.

Analysis: In reviewing this issue, and in providing this recommendation, the RAC asked whether this billing approach was consistent with other multi-family customers and whether this was a cost-based proposal. The answer to both of those questions is "yes". The RAC did recognize that the benefit of this proposal is reaped by the landlord, but the RAC believed, on balance, that it was fair and appropriate.

Review of the Issue of Hydrant Meter Calculations

Hydrants are primarily used for fire protection, but they also provide an easy access point for temporary connection for construction activity, temporary landscaping, or filling water trucks or

tanks. Water haulers fill their trucks at specific points in the system such as hydrants or other locations designated by the District. Water taken from the hydrant may be metered via a hydrant meter, or estimated in the case of water haulers.

The RAC was asked to review and recommend ways in which the District can better recover costs for temporary, non-emergency use of water through hydrants. For TVWD, there is a relatively minor amount of revenue associated with this program, but there is a public perception that water is being wasted via leaking, poorly maintained filling equipment, etc. After reviewing this issue, the RAC provided the following recommendation on the hydrant meter program.

✓ Hydrant Meter Policy

Recommendation: TVWD should maintain its current approach to hydrant meters, but the District should provide enhanced outreach and education to bulk water customers regarding efficient use. The District should also review the cost of providing this service and adjust the charges to recover the cost of serving these customers.

Analysis: The RAC understood the issues and perceptions surrounding this policy issue. However, building facilities to address the perceived inefficiencies would not be cost-effective or prudent.

Review of the Issue of Multi-Year Rate Adjustments

Historically, TVWD's rates have been reviewed and adopted on an annual basis. TVWD requested that the RAC review the issue of using a multi-year rate setting approach. The issue paper on this topic noted that TVWD uses a biennial (2-year) budgeting process, yet adopts rates for a one-year period. Given that, the RAC discussed alternative approaches and provided the following policy recommendation on multi-year rate adjustments.

✓ Multi-Year Rate Adjustment Policy

Recommendation: TVWD should revise its rate setting process to adopt two years of rate adjustments consistent with the District's biennial budgeting process. The District also should provide expanded customer outreach during the rate adoption process to explain the two-year rate setting period.

Analysis: This policy recommendation was not difficult for the RAC to reach. It provides consistency and linkage between the District's adopted budget and the rates needed to support that adopted budget.

Summary

This discussion has provided a summary of the various RAC policy recommendations and level of information and data reviewed by the RAC as a part of overall process. Attached to this summary are copies of the five issue papers that HDR developed as part of this process.

Issue Paper 1a – Review of the Issue of Water Rate Affordability

Issue Paper 1a: Review of the Issue of Water Rate Affordability and the Tualatin Valley Water District

Introduction

The water utility industry is faced with increasing costs which are being driven by a number of factors, ranging from regulatory requirements, aging infrastructure, climate change, and the need to expand capacity to accommodate customer growth. While the reasons for increasing utility costs are varied, the impacts to utility rates and customer bills are very similar. That is, water rates are often increasing at a level which is out-pacing general inflationary levels. As a result of this, the issue of water affordability has come to the forefront at many utilities. At any utility, regardless of the overall affluence of the community, there typically is a segment of customers which have affordability issues.

Tualatin Valley Water District (TVWD or the "District") is not immune from the issue of affordability and currently has in place a customer emergency assistance program (CEAP) to provide emergency assistance to customers in need. While the existing program provides a significant benefit to the community, and has served TVWD's customers well in the past, looking ahead, TVWD's assistance to customers may need to be modified or enhanced. Currently, TVWD anticipates that its water rates and resulting customer bills will continue to increase over the next nine years as a result of planned major capital investments related to securing a resilient long-term water supply resource and replacing other aging infrastructure. Rather than be reactive, TVWD desires to be proactive on this particular issue and has determined that it is appropriate, at this time, to review the range of alternatives for addressing affordability issues. The key question is whether TVWD should augment its current CEAP to better address the issue of affordability.

The key question is whether TVWD should augment its current customer emergency assistance program to better address the issue of affordability.

This issue paper is intended to provide an overview of TVWD and its customer base, along with a review of the issue of affordability and the various approaches or alternatives available to help TVWD address this issue. It is important to understand that this is a policy issue (decision) for TVWD's Board. The Board's decision to review the issue of affordability is not driven by any legal or statutory obligation, or any regulatory requirement.

Objectives of the Affordability Issue Paper

As noted above, increasing water rates and affordability are issues impacting many utilities across the U.S. However, the more relevant perspective is related to the current and projected future conditions of TVWD. To understand the issue of affordability, one needs context as to TVWD's current and projected rates, along with the current and projected typical residential bills. While that perspective does not provide the full picture as it relates to the issue of affordability, one can begin to understand whether affordability may be an issue and to what extent.

One of the challenges in discussing affordability is simply defining what may be "affordable" and "unaffordable". Given the complexity of this issue, one may expect that there is a universally accepted definition of "affordable" rates. Unfortunately, that is not the case. There certainly is extensive industry literature and research on defining affordability. This issue paper will discuss the various approaches that may be used to define affordability and then apply them to the local circumstances of TVWD to gain an understanding of the potential extent of affordability issues with TVWD's customers.

One of the challenges in discussing affordability is simply defining what may be "affordable" and "unaffordable".

This issue paper will discuss and provide an estimate of the range of TVWD customers that may be impacted by affordability challenges, today and into the future. Given that understanding, this issue paper will discuss the range of programs and alternatives that utilities often implement to address affordability issues within their communities. The intent is to provide a balanced discussion of the various affordability programs and approaches typically seen within the industry, while providing a side-by-side comparison of their strengths and weaknesses.

As this issue paper will discuss, there is no single program or solution to the issue of water affordability. Affordability of water, and all other goods in society[1], is a complex social issue. There are differing views and opinions on how to best address the issue, if at all.

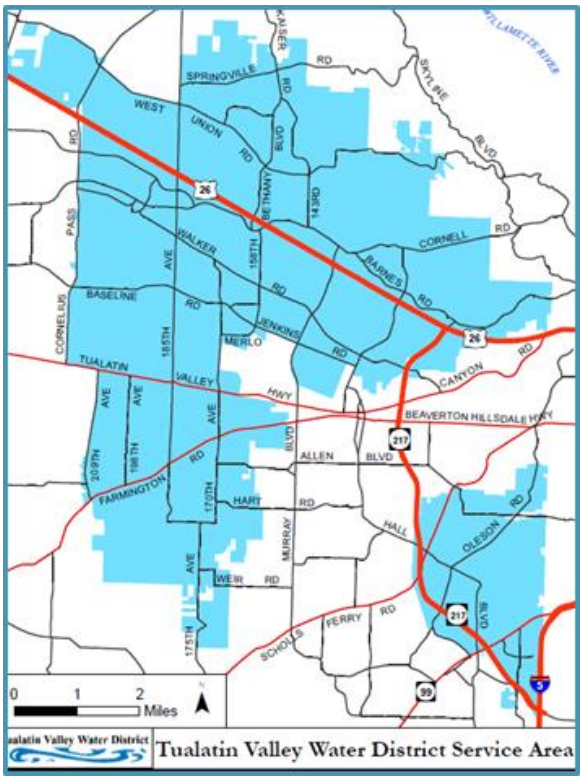
. . . there is no single program or solution to the issue of water affordability. Affordability of water, and all other goods in society, is a complex social issue. There are differing views and opinions on how to best address the issue, if at all.

The intent of this issue paper is to provide the TVWD Rate Advisory Committee (RAC) with a balanced discussion of the issue of water affordability and the potential programs and alternatives available to address it. This should enable the RAC to have an informed discussion about this issue and provide a clear set of recommendations to the TVWD Board of Commissioners.

[1] For example, affordability of housing is an issue when it requires a greater proportion of a customer's budget, thus placing greater pressure on the affordability of water.

Overview of Tualatin Valley Water District

TVWD provides domestic water supply to unincorporated urban areas of Washington County and portions of the cities of Beaverton, Hillsboro, and Tigard. The District serves approximately 62,000 customers or an estimated population of approximately 220,000.



Over the last ten years, population growth in the District's service area has been approximately 1.1% per year. While located near Portland, and considered a suburban area of Portland, the area has developed its own economic base which is largely based on high technology, retail trade, and distribution.

Currently, the District has two primary sources of water supply; the City of Portland and the Joint Water Commission (JWC). The District purchases approximately 60% of its water supply from the City of Portland and obtains 40% from its partnership in the JWC.

All water suppliers, including TVWD, must continuously plan for and construct facilities to meet future water demands. In 2013, following an extensive public process and evaluation, the District's Board selected the Willamette Water Supply System (WWSS) as its preferred future water supply. The WWSS provides the District with the opportunity to construct and own a seismically hardened water supply system that will meet the projected long-term demands of its customers.

To develop the WWSS, the District and its partners formed the Willamette Water Supply Program (WWSP). The District serves as the managing agency of the WWSP, with an objective of delivering the WWSS by 2026. To accomplish this goal, the WWSP will need to plan, design, construct, and commission the necessary facilities. Implementation of the WWSS will dominate the District's future capital expenditure plans, with the largest investments occurring outside of the current 2015 – 2017 biennium budget cycle. The costs of the WWSS are currently shared between the District and the City of Hillsboro with approximately 60% paid by the District and 40% by Hillsboro. Other partners may be added and the District is currently in seven-party talks to expand partnership in the WWSS.

As the WWSP continues to move forward, the District will need to increase its rates to support the design and construction of WWSS facilities. Currently, the District's typical residential

monthly water bill is $35.58.[2] The District projects that over the next ten years, the typical residential monthly water bill may increase to $110.16 per month. For this reason, TVWD is carefully considering the issue of customer bill impacts and affordability.

The above discussion and overview of TVWD is necessarily abbreviated. A more detailed paper on TVWD was developed and also distributed to the RAC. That paper provides greater background and discussion of the general characteristics of the District, its Board of Commissioners, management team leadership, organizational structure, customer usage profiles, and financial status. Where appropriate, this paper will expand on certain areas or topics related to TVWD and the issue of affordability.

National Perspective on Affordability

Before progressing to the specifics of TVWD and the issue of local water affordability, it may be helpful to gain an understanding of the national perspective related to affordability. According to the U.S. Census Bureau, 46.7 million people (14.8% of the U.S. population) lived in poverty in 2014.[3] Furthermore, utilities often find approximately 1% of their customers are unable to pay at any particular time.[4] While that may imply a rather small problem, the Water Research Foundation noted the following:

> *"Whereas a 1% level of collectibles implies a small problem, statistics show that nationally about 15% of residential water customers are low-income households that are constantly at risk of payment problems. . . . So, although only 1% may be in arrears at any given time, a much larger proportion of the customer base may come into contact with the utility's collections process over the course of time."*[5]

Affordability is not a new or recent issue for the utility industry. The utility industry recognized the financial impacts of certain regulatory requirements in the mid-1990s. Prior to that, regulatory requirements were limited and rates were exceptionally low. Legislation such as the Clean Water Act (CWA)[6] in the early 1970's ushered in a new era of more stringent regulatory requirements and the need for significant investments in utility infrastructure. During this time, changes in 1987 phased out the construction grants program and replaced it with a low-interest loan program. This placed greater stress on the local utility to provide funding for its projects (i.e., financial capability to finance capital infrastructure), but also to consider the affordability of the utility's rates. At a very simplistic level, affordability may be defined as the ability of individual customers to pay their utility bills without "undue hardship".

According to the U.S. Census Bureau, 46.7 million people (14.8% of the U.S. population) lived in poverty in 2014.

[2] Most of the District's customers are billed bi-monthly, but typical monthly bills are presented to be consistent with how customers pay most other bills.

[3] U.S. Environmental Protection Agency, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016, p.1.

[4] Ibid., p. 3

[5] Water Research Foundation / EPA, *Best Practices in Customer Assistance Programs*, 2010, p. xxi.

[6] The Federal Water Pollution Control Act of 1948 was the first major U.S. law to address water pollution. Growing public awareness and concern for controlling water pollution led to sweeping amendments in 1972. As amended in 1972, the law became commonly known as the Clean Water Act (CWA).

In 1997, the U.S. Environmental Protection Agency (EPA) developed financial capability tests for utilities. The financial capability test calculated average utility costs per household as a percentage of the local median household income (MHI).[7] Under this test, an average cost per household which exceeded 2% of local MHI was considered unaffordable on a community-wide basis. While this financial capability test focused on wastewater utilities, for many years its approach and methodology was also applied to water utilities. It should be noted, in the late 1990's and early 2000's wastewater customer bills at many utilities were beginning to exceed customer bills for water.

More recently, greater emphasis has been placed on aging infrastructure. The need to adequately fund the renewal and replacement of aging infrastructure has placed additional financial pressure on water and wastewater utilities. To provide some sense of the magnitude of the issue, the estimated national funding needs for drinking water projects were estimated in 2011 to total $385 billion through 2031.[8]

When taken together, utilities have recognized the need to address the issue of affordability and provide customer assistance. In doing so, a number of benefits result to the customer and the utility. Among these are the following:

- A reduction in negative customer interactions
- Reduced water turnoffs and/or penalties
- Positive impact on delinquent payments
- Socially responsible in desiring to provide an essential service to all members of the community

As noted above, the industry has attempted to define financial capability and affordability. However, as will be discussed later in this paper, the original financial capability/affordability test has a number of identified weaknesses. In the last few years, there has been much discussion about how to better define "affordability" and create appropriate programs and services for those customers in need.

There are differing viewpoints about the role of utilities in addressing affordability issues. Like all issues, there are two ends to the spectrum of arguments that can be made about addressing affordability and the appropriateness of doing so.

There are differing viewpoints about the role of utilities in addressing affordability issues. Like all issues, there are two ends to the spectrum of arguments that can be made about addressing affordability and the appropriateness of doing so. On one end of the spectrum is the perspective that utilities are not social agencies and, as such, are inefficient at dealing with social issues such as low income and ability to pay. This perspective assumes that the utility simply provides water to the customer and other outside agencies and social organizations are better able to address low-

[7] U.S. Environmental Protection Agency, Office of Water, Office of Wastewater Management, *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development*, EPA 832-B-97-004, February 1997, http://www.epa.gov/npdes/pubs/csofc.pdf.

[8] U.S. Environmental Protection Agency, *Drinking Water Infrastructure Needs Survey and Assessment*, EPA-816-R-13-006, April 2013, http://water.epa.gov/infastructure/drinkingwater/dwns/index.cfm

income issues. In contrast, some utilities view water as an "essential" need and it is imperative that customers be provided with water at an affordable price (i.e., absent undue financial hardship). If the utility is to address affordability and provide customer assistance programs, then the business case must be made for doing so. The Water Research Foundation notes the following:

> *"An important question is whether the utility should be striving to simply resolve instances of nonpayment, or trying to help solve the endemic problem of nonpayment by incorporation of strategies and practices that address, or are sensitive to, underlying causes of nonpayment. While utilities are not in the social services business, a proactive approach is ultimately a more effective business strategy than simply waiting for accounts to appear as past due. One of the greatest challenges in providing social services is simply identifying and reaching families in need. The most obvious strategy is to integrate the utility's activities more closely with those of the actual social service providers in the community. . . . Other solution oriented strategies available to utilities involve provision of direct assistance to customers in various forms (crisis assistance, bill discounts, debt forgiveness, etc.) constituting a cross-subsidy, where one group of customers bears cost on behalf of another."*[9]

There isn't a national survey that definitively provides the number or proportion of utilities that address affordability issues or provide some level of customer assistance. However, our experience suggests that utilities which address affordability issues are not uniformly similar. For example, many utilities in large urban areas tend to have programs or services related to low income and disabled customers. Many municipal utilities and special service districts such as TVWD tend to have programs or services to address affordability challenges. Smaller rural utilities typically do not have affordability programs or provide customer assistance services. A recent survey conducted by EPA, and summarized below in Table 1, tends to bear out these generalized observations.

Table 1
Customer Assistance Programs Offered by
U.S. Drinking Water and Wastewater Utilities[1]

Type of Utility Reviewed	Number of Utilities Reviewed	Number of Utilities Found to Have One or More Programs
Large Utilities (> 100,000 people)	620	190 (30.6%)
Medium Utilities (10,000 to 100,000 people)	175	38 (21.7%)

[1] – Source: U.S. Environmental Protection Agency, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016, p.2.

As can be seen in the above table, larger utilities tend to provide customer assistance programs. In this particular EPA survey, of the 795 utilities reviewed, 228 utilities (29%) offered a total of

[9] Water Research Foundation / EPA, *Best Practices in Customer Assistance Programs*, 2010, p. xxi and xxii.

365 customer assistance programs. It is important to note that a utility can provide more than one type of customer assistance program.

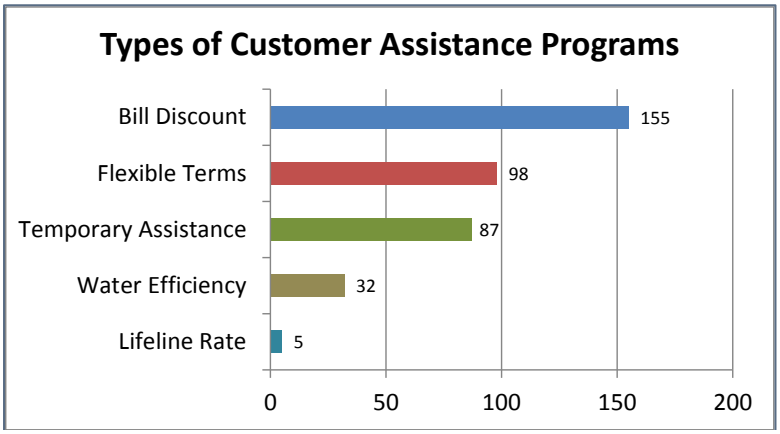
The above survey by EPA also grouped customer assistance programs into five main areas. These five groupings were as follows:

- ***"Bill Discount** - Utilities reduce a customer's bill, usually long-term. Can be applied to nearly any type of rate structure or aspect of the bill (e.g., variable rate structure, fixed service charge, and volumetric charge).*
- ***Flexible Terms** – Utilities help customers afford services and pay bills through arrearage forgiveness (e.g., rewarding timely bill payments by partially forgiving old debt and establishing a payment plan for future payments), bill timing adjustment (e.g., moving from quarterly or bi-monthly to monthly billing cycles), or levelized billing (e.g. dividing total anticipated annual water and sewer bill by 12 to create a predictable monthly bill amount). Common categories of different program types include payment plans, connection loans, managing arrears, levelized billing, bill timing.*
- ***Lifeline Rate** - customers pay a subsidized rate for a fixed amount of water, which is expected to cover the customer's basic water needs. When water use exceeds the initial fixed amount of water (i.e., the lifeline block), the rates increase. Also known as minimum bill, low income rate structure, single tariff, water budget.*
- ***Temporary Assistance** - utilities help customers on a short-term or one-time basis to prevent disconnection of service or restore service after disconnection for households facing an unexpected hardship (e.g., death, job loss, divorce, domestic violence). Also known as emergency assistance, crisis assistance, grant, one-time reduction.*
- ***Water Efficiency** - utilities subsidize water efficiency measures by providing financial assistance for leak repairs and offering rebates for WaterSense-certified fixtures, toilets, and appliances. Also known as water conservation."*[10]

Each of these customer assistance programs have different goals and objectives and different insertion points of use. For example, bill discounts, lifeline rates and water efficiency are more preventative and used to manage the amount of the bill. In contrast, flexible terms and temporary assistance are used to provide assistance after-the-fact. While the above general definitions of assistance programs do not provide specific details about types of programs in each category, it is interesting to note the extent of the application or use within each major category.

As noted, of the 795 utilities surveyed by EPA, 228 utilities offer a total of 365 customer assistance programs. Several programs fit under more than one program type.

[10] U.S. Environmental Protection Agency, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016, p.7.



Source: U.S. EPA, Drinking Water and Wastewater Utility Customer Assistance Programs, p. 7

The decision to provide affordability programs and customer assistance services is typically a policy decision on the part of a utility's governing body (e.g., City Council, Board of Commissioners.)[11] While it may appear to be a simple policy decision of whether or not to provide affordability programs, there are at least two key challenges in establishing an affordability program. These are the administrative challenges of establishing a program and the cost of the program. Depending on the type of affordability or customer assistance program, the administrative challenges can be daunting but not insurmountable. For example, affordability programs which require income eligibility screening can be both administratively time-consuming and difficult. The screening of customers raises certain privacy and security issues. At the same time, the other key issue is the cost of the program. Not only is there an additional administrative cost typically associated with these types of programs, but subsidies provided to one customer group must be recovered from the other remaining customers. Depending on how the costs are recovered, this may raise certain questions about the equity and fairness in the rate setting process.

The policy decision of whether or not to provide affordability programs is complex with key challenges.

With respect to the first issue of the administration of the program, utilities have the ability to manage and control the cost of the administration of the program(s). Some utilities minimize the overall costs of administration by having very limited programs, programs which do not require large administrative procedures, or the utility shares costs with another joint utility service (e.g. water/sewer/electricity). In 2010, a Water Research Foundation survey found that approximately 65% of the utilities surveyed spent less than $25,000 per year on administrative costs.[12] In other cases, utilities have spent millions of dollars on the administration of customer assistance programs.

The second issue of cost is again dependent on the type of customer assistance programs implemented. Costs include administration, lost revenue from assistance provided, lost revenue from reduced usage/efficiency, and financial resources to pay for water efficiency services and devices. Typical funding sources for customer assistance programs include the following:

[11] In limited instances, a utility may be required by a public utility commission (PUC) to provide certain customer assistance programs or offer low-income/disabled rate programs. In other cases, there may be certain legal limitations to offering low-income/disable rate programs. California, under the requirements of Proposition 218 limits the ability of utilities to offer rates which subsidize one group of customers over another.

[12] U.S. Environmental Protection Agency, *Drinking Water and Wastewater Utility Customer Assistance Programs*, April 2016, p. 27.

- Building the cost into the rate structure
- Voluntary contributions from customers and employees
- Donations from outside partners, including charities and other assistance programs and agencies
- Use of general tax revenues
- Using innovative and new revenue streams (e.g., providing services to neighboring utilities)

Funding for customer assistance programs is often provided by nonprofits, utility budgets/rates, and customers' voluntary contributions.[13]

While some utilities may approach customer assistance programs with reluctance, viewing it as primarily a social issue outside of their core mission and area of expertise, the reality is that cost recovery and the cost of collections is an essential business function and objective. Utility shutoffs are the utility's last resort when all other collection activities and practices fail. Maintaining the integrity of utility collections while doing so in a positive and responsible manner creates a favorable image within the community. The objective of any customer assistance or affordability program is to provide the right services and assistance to the right people.

Utility shutoffs are the utility's last resort when all other collection activities and practices fail. Maintaining the integrity of utility collections while doing so in a positive and responsible manner creates a favorable image within the community.

Finally, while this discussion has focused on past and current utility industry perspectives on this issue, perspectives and positions can change over time. Individuals on governing bodies change over time and utilities may certainly reconsider past decisions about providing affordability programs and customer assistance program services. Revisiting past policy decisions is a prudent and reasonable practice for any utility.

Understanding the Root Causes and Perspectives of Affordability Issues

The most obvious perspective concerning the root cause of an individual customer's affordability issue is that the customer is low-income. While that may be true in many cases, in actuality, the root causes for affordability issues are far more complex. There are typically at least four different causes for affordability issues. These are as follows:

- Crisis (e.g., illness, job loss, family issues)
- Affordability or money management problems
- Older housing with inefficient plumbing
- Elderly or disabled customer limitations

As can be seen, there are different reasons or causes for affordability issues. Interestingly, many people would assume that affordability and customer assistance is only provided after-the-fact (i.e., after the customer receives the bill). The utility industry now recognizes that there are

[13] Ibid, p. 28.

different approaches and programs that may be provided, along with the timing for customer intervention/assistance. These include the following:

- Prevention before-the-fact
- Intervention after-the-fact
- Crisis assistance programs
- Deferred payment plans
- Programs to minimize recurrences

Prevention before-the-fact is primarily about "shrinking" the bill. This can be accomplished through conservation, education and assistance, alternate billing practices, bill discounts and alternative rate structures[14]. Intervention after the fact can address issues such as imposition of late fees, identification of payment causes, identifying needs for special services, etc. Crisis assistance programs like the District's CEAP are a form of intervention after-the-fact in which customers are provided direct financial assistance. A deferred payment plan is an approach to receive full payment through installments. Finally, some utilities develop programs to minimize recurrences. These may include requirements for in-home conservation audits, educating customers on outside organizations and providing contact information, etc.

Provided below in Table 2 is a summary overview of the affordability issue and the type of assistance programs that are often provided, along with the point of assistance (before or after-the-fact assistance).

[14] This will be one of the primary areas of focus for the review and discussion by the TVWD Rate Advisory Committee

Table 2 Causes of Nonpayment and Customer Assistance Programs [1]					
		Crisis (e.g., illness, job loss, family issues)	**Affordability or money management problems**	**Older housing with bad plumbing**	**Elderly or disabled customer limitations**
Prevention Before the Fact	**1. Analysis of customer data and other databases**		Identify low-income accounts with recurring patterns	Identify low-income accounts with high water use	Identify low-income elderly and disabled customer accounts
	2. Communication efforts	Promote awareness of crisis assistance programs	Promote social assistance programs and encourage customers to call for help	Promote awareness of conservation programs	Promote social assistance programs and encourage customers to call for help
	3. Customer service training	First point of contact readiness	First point of contact readiness	First point of contact readiness	First point of contact readiness
	4. Prevention before- the-fact		Referral to other social assistance programs and or financial counseling		Promote elderly and disabled programs for referral to other social assistance programs
Shrink the Bills	**5. Conservation programs**			Audits and retrofits to reduce use	
	6. Billing practices		Bill timing or averaging		
	7. Bill discounts		Eligibility & discount formulas to improve affordability		Eligibility and discount formulas to improve affordability
	8. Alternative restructures			Mitigate negative impacts of conservation rates	Conservation or lifeline rates may be helpful
After-the-Fact Assistance and Recurrences	**9. Effective intervention after-the-fact**	Notices or outbound calls with information about crisis assistance	Outbound calls to promote self-cure, encourage customers to call for help, and offer easy payment methods		Outbound calls with information about the elderly and disabled programs and provision of easy payment methods
	10. Crisis assistance program	Provision of financial assistance and for payment deferral			
	11. Deferred payment plans	Customized payment plans	Customized payment plans	Require audits and retrofits as part of the payment plans	Customized payment plans
	12. Minimizing recurrences		Referral to other social assistance programs and/or financial counseling	Audits and retrofits to reduce use	Referral to other social assistance programs and/or financial counseling

[1] – Adapted from Table 6.1, Water Research Foundation, Best Practices in Customer Payment Assistance Programs

As shown in Table 2, the potential causes for affordability challenges are varied. The most obvious cause for affordability challenges and nonpayment is simply a customer with a low income. Understandably, customers in this category may have difficulty paying their bill from month-to-month and as a result, assistance programs must be tailored to recognize this fact. Simply assisting the customer with payment of their bill in a particular month does not resolve that issue in the following months, or over the long term. This is a customer with a reoccurring problem of paying their water bill. In contrast to the low income customer, a customer may have a short-term or long-term financial crisis, such as an illness, high medical bills, job loss, divorce/family issues, etc. In this case, the customer may have sufficient income and no history of payment or affordability issues, but an immediate financial crisis or problem has beset the customer. For this situation, customer assistance programs are an effective approach to addressing a customer's needs. Next, while the focus is often on a lack of income, the other root cause for affordability challenges may be high water use and resulting high bills. Many older homes may have inefficient water using devices (e.g., showerheads, toilets) and appliances. In this case, assistance can be provided to help customers manage their usage and resulting bills. Finally, elderly or disabled customers may have limited income. Traditional low income rate assistance programs often targeted low-income, elderly, and disabled customers. These customers are often on a fixed income or are low-income customers. Given that situation, assistance is often provided through the use of alternative rate restructures (i.e., low-income rates) which attempt to minimize bills, or provide a discount, to these customers.

While this discussion paper is focused on ability to pay, there is a group of customers that have the ability to pay but not the willingness to pay. In other words, there may be some customers that "won't pay" because they do not want to spend their money.[15] One industry perspective concerning this phenomenon is that the threat of disconnection is the only sure way to force a large proportion of the "won't pay" group to pay their bills. "The steady pressure to pay is widely endorsed as the most effective means of preventing freeloaders gaming the system or of allowing the accumulation of large past-due amounts in arrears."[16] However, there is a countervailing perspective of these customers and that is the "won't pay" customers are better characterized as "unable to pay when due" customers. When facing financial hardships with a limited income there will be budget trade-offs and surveys over the years have indicated that most disconnected customers state that they want to pay their bill on time, if it is at all possible for them to do so.

As Table 2 illustrates, each potential cause may suggest different approaches or programs to address the root cause. Affordability and customer assistance can be provided in different ways and offered at different times. These can include preventative or before the fact measures (i.e., shrinking the bill). It can also include effective intervention after-the-fact and crisis assistance programs. Most importantly, it should include an attempt to prevent recurrence.

While this issue paper has identified different root causes for affordability issues, it does not imply that TVWD needs to have a customer assistance program in place to address every root cause or potential customer situation. That would be expensive and not as effective as a more targeted and specific program. At the same time, TVWD may implement programs in a

[15] WaterRF/EPA, *Best Practices in Customer Assistance Programs*, 2010, p. 35
[16] Ibid. p. 35

transitional and programmatic manner to effectively address the greatest need(s) first, followed by other prioritized needs.

Later in this issue paper, we will explore the range of alternatives that TVWD may consider to address affordability and customer assistance. The range of alternatives consider prevention, effective intervention to crisis assistance, with an emphasis on minimizing recurrences.

Defining "Affordability"

One of the more interesting aspects concerning the discussion of affordability and water rates is simply defining an "unaffordable" rate or bill. One may reasonably assume that there is a simple measure or guideline which clearly delineates an "affordable" bill from an "unaffordable" bill. Unfortunately, that isn't the case and the utility industry (water and wastewater) has struggled to establish a clear and accepted definition. In recent years, the utility industry has attempted to refine and clarify the issue of affordability.

The original attempt at defining affordability was based upon a "community-wide" approach. That is, if an average customer of the system could "afford" the utility rate, then the rates were considered "affordable." This was essentially the approach initially proposed and used by the U.S. EPA. In 1995, EPA published its first set of affordability related guidelines: *The Interim Economic Guidance for Water Quality Standards*. This publication discussed the analyses that should be undertaken to evaluate the economic impact of complying with water quality standards under the Clean Water Act (CWA). In 1997, EPA published *Guidance for Financial Capability Assessment and Schedule Development*. This assessment for wastewater utilities had a two-part test associated with it. The first portion of the test or the "preliminary screen" examined affordability by considering the average per household cost of wastewater bills relative to median household income (MHI) in the service area. While EPA did not use the term "unaffordable" it did state that an average bill greater than 2.0% of MHI was considered to be a "large economic impact" on residents. There was a secondary screening portion to the approach which looked at Financial Capability Indicators (FCI). This included six economic indicators which included the community's bond rating, its net debt, its MHI, the local unemployment rate, the service area's property tax burden, and its property tax collection rate. Each indicator was assigned a score of 1 to 3 based on EPA established benchmarks. Lower FCI scores implied weaker economic conditions and thus a greater economic impact to the community

While these guidelines were developed for the wastewater utility industry, EPA also establish guidelines for drinking water utilities. However, EPA limited their affordability for potable water supply to small communities (those with populations under 10,000). EPA used an approach similar to the "preliminary screening" used for wastewater and developed a standard that household drinking water bill in excess of 2.5% of the national average MHI in such communities would be deemed an economic burden. Interestingly, EPA has never really used this approach, and EPA's current stated view on potable water is that water rates are affordable if it costs less than 2.5% of the small community's MHI.

Unfortunately, this EPA guidance has been interpreted, adapted and often misinterpreted by utilities, organizations and consultants over the years. While the original program guidelines

were focused on small communities, larger water utilities have used similar measures and approaches. As shown below, different organizations and sources of information on the topic suggest the range for affordability may be 1.5% to 3.0%.

Table 3
Measures of Affordability as a Percentage of Median Household Income[1]

Organization	Affordability Threshold (% of MHI)
California Department of Public Health	1.5%
U.S. Environmental Protection Agency	2.0 – 2.5%
United Nations Development Program	3.0%

[1] – Source: Pacific Institute, Water Rates: Water Affordability, www.pacinst.org

As shown in Table 3, there is not agreement on a community-wide threshold for affordability. However, the more problematic issue is simply that the use of a community-wide measure may actually be a poor indicator of individual customer economic distress within the community. As utility rates have continued to rise nationwide, a number of groups and organizations have begun to raise concerns about the use of EPA's preliminary screening approach (i.e., % of MHI) to measure affordability. Among the criticisms[17] are the following:

- Median household income (MHI) is a poor indicator of economic distress and bears little relationship to poverty or other measures of economic need within a community. There is no discernible relationship between median household income and the incidence of poverty within a community. In other words, a community may pass the community-wide test, but it is likely that there are still individuals within the community that need financial assistance.
- Median household income does not capture impacts across diverse populations. Within the community, incomes may be clustered around the median or widely spread away from the median. The MHI test fails to capture the level of income distribution within the community.
- The MHI test is a "snapshot" that does not account for historical and future trends of the community's economic, demographic, and/or social conditions. This can be particularly relevant in an area facing economic declines or population losses.
- MHI does not capture impacts to landlords and public housing agencies. Many renters do not receive water bills because water and wastewater services are included within the cost of the rent. The water utility industry refers to these customers as "hard-to-reach" customers.
- The MHI test does not fully capture household economic burdens. There may be significant differences between local communities and the cost of basic necessities. For example, a community where the cost of food or housing is very high places a different economic burden on customers compared to a community where the cost of food or housing is relatively low.

Utilities and the regulatory community have come to recognize that simply using MHI as an affordability measure or test, particularly on a community-wide basis, has limitations. Given this, different ideas or approaches to address these shortcomings have been suggested and discussed

[17] Summarized from the AWWA and Water Environment Federation report, Affordability Assessment Tool for Federal Water Mandates, 2013, p. 4 and 5.

within the utility industry. Among the ideas or approaches to better identify financial distress within a community have been the following:[18]

- Assess affordability across the community's income distribution, and especially at the lower end, rather than the median.
- Assess across household types (e.g., renters, elderly household).
- Assess across neighborhoods or similar geographic units such as census tracts.
- Use other indicators of economic need such as:
  - ✓ Unemployment rate
  - ✓ Percentage of households receiving public assistance (e.g., food stamps) or living below the poverty level
  - ✓ Percentage of households meeting Home Energy Assistance Program requirements
  - ✓ Percentage of customers eligible for water affordability programs
  - ✓ Percentage of households paying high housing costs (e.g., in excess of 35% of income)
  - ✓ Other household cost burdens such as non-discretionary spending as a percentage of household income

The potential challenges in using any of these alternatives are the availability of data and information to assess the local community, along with the level of effort and cost to produce the data. For example, data on a community's income distribution is typically available, but in situations where a service area spans several communities (e.g., TVWD), the income data is not service area specific; it may be related to one municipal area only (e.g. City of Beaverton). Income data for these surveys are typically collected and summarized by municipal boundaries, not by water utility service areas. That does not imply that income distribution methods are invalid for purposes of reviewing affordability. Rather, there must be some recognition of the inexact nature of the data and analysis. Additionally, a community's income data may be somewhat dated. Census data on population is collected every 10 years by the U.S. Census Bureau.[19] Economic data is collected every 5 years as a part of the economic census.

The above alternative approaches provide a utility with additional methods or means to better understand the demographics of the local service area and those customers that may have difficulty paying their water utility bill. However, they do not identify specific customers and still provide information at a macro level.

The other aspect of defining affordability is the relationship between a utility's rates and its bond ratings. When a utility issues long-term debt (e.g., a revenue bond), a bond rating agency will review the utility and provide a bond rating. There are three major bond rating agencies; Fitch Ratings, Standard and Poor's, and Moody's. Each of these agencies use rating guidelines or criteria to provide a bond rating for the specific utility being reviewed. Addressing affordability is one of the criteria typically included within the review process. For example, Fitch includes as one of its Water and Sewer Best Management Practices the finance related practice of using "rate

[18] Ibid. Summarized and paraphrased, p. 4.

[19] The U.S. Census Bureau also provides the American Community Survey (ACS) which provides the survey of very detailed information about U.S. households.

affordability guidelines that consider absolute levels of rates in their affordability relative to income levels".[20] Fitch goes on to note the following:

> ***"Charges and Rate Affordability***
>
> *. . . utilities should consider the impact of operational and capital programs on rate affordability. While Fitch believes credit is due to those systems that consistently raise rates to preserve financial strength, these activities will be more sustainable when rate affordability is a focus of policymakers and cost containment is regularly employed. Fitch believes that not only should the level of rates for particular customers be considered in these reviews, but also the affordability of the rates relative to the income, particularly for residences, which tend to generate the most user charge revenues of retail systems. In this regard, Fitch generally considers rates for service higher than 1% of MHI for an individual water, sewer and stormwater utility to be financially burdensome.*
>
> *. . . In evaluating user charges, Fitch considers how a utility generates its revenues. Most utilities bill customers based on a fixed amount (that is, a readiness-to-serve charge) and a volumetric rate relative to actual usage. Because systems with greater percentages of fixed charges have less volatility in their revenue stream than systems that rely extensively or completely on volumetric charges, utilities whose fixed-charge components generate a significant amount (greater than 30%) of their revenue streams are considered stronger."*[21]

Annually, Fitch provides information on a variety of financial metrics for water and sewer utilities. Provided below in Table 4 is a summary of the Fitch medians for 2016 as they relate to charges and affordability.

Table 4
Fitch Medians - Charges and Rate Affordability [1]

Organization	Rating Category			
	"AAA"	"AA"	"A"	All Credit
Individual Water/Sewer Utility Average Monthly Residential Bill ($)	$26	$45	$50	$43
Individual Water/Sewer Utility Average Annual Bill as % MHI	0.5%	0.9%	0.9%	0.8%

[1] – Source: Fitch 2016 Water and Sewer Medians, p. 8.

It is interesting to note that Fitch recognizes and acknowledges the issue of affordability of utility rates. However, Fitch is most concerned with the full repayment of any long-term bonds issued to a particular utility. Thus, Fitch uses a more conservative measure for affordability on a community-wide basis and avoids addressing the segment of the population within a community that may have difficulty paying bills. Fitch does note that utilities should consider the issue of rate affordability, particularly for residential customers since they often generate the largest portion of a utility's revenue. Again, Fitch's concern is not of the social nature of affordability,

[20] Fitch Ratings, U.S. Water and Sewer Revenue Bond Rating Criteria, September 2015, p. 5
[21] Ibid, p. 5

but of the negative financial impacts and risks of unaffordable rates. While Fitch and other bond rating agencies may have a narrow perspective on affordability, utilities need to understand that how this issue is addressed at their local level may impact their bond ratings when bonds (i.e., new long-term debt) are issued for major capital projects. A lower bond rating can result in higher interest costs and greater costs to finance the project. Given that, it may be prudent for utilities to address affordability issues at the local level, particularly in situations where many customers appear to have affordability issues.

In summary, the water and sewer industry has not established a clear and definitive definition of an "affordable" or "unaffordable" utility bill. The EPA approach of using median household income provided a community-wide measure of affordability. Utilities still utilize this approach but now recognize its shortcomings and acknowledge that there may be segments of their customer base that have affordability issues, even though on a community-wide basis the utility's rates may appear to be "affordable" using the EPA MHI test. Examining the income distribution across the community helps to identify potential segments of customers having affordability issues. However, even that approach of reviewing the community's income distribution has its own shortcomings in that it does not specifically identify individual customers, nor are all low-income customers water utility customers (i.e., directly billed for water service).

". . . the RAC does not need to agree upon or define "affordable" or "affordability" in order to consider whether to provide customer assistance programs."

For the purposes of the Rate Advisory Committee and this study, the RAC does not need to agree upon or define "affordable" or "affordability" in order to consider whether to provide customer assistance programs. Defining "affordability" is an impossible task to ask the RAC to review and agree upon. Rather, the RAC should use this discussion of the different perspectives and definitions of affordability in the context of the local data and information to help form opinions, conclusions, and recommendations about the potential need for TVWD-specific affordability and customer assistance programs.

TVWD and Affordability

Given an understanding of the issue of affordability and how it is viewed from a national perspective, the focus of this discussion turns to the issue of affordability within the District's service area. To better understand the issue of affordability within the District's service area, HDR reviewed readily available income level information and data.

There are limitations to the available data, both in terms of its timeliness and level of detail. Most studies of this nature rely on U.S. census data and other data collected by the federal government. A complete census is conducted every ten years and the Census Bureau's American Community Survey (ACS) is an on-going survey which provides additional insight into communities. City-Data also provides information compiled from government sources. These are common data sources used for reviews of affordability within the utility industry.

To better understand the issue of affordability within the District's service area, HDR reviewed readily available information and data.

In using these data sources, it is important to understand that TVWD's service area does not correspond directly to a municipal boundary (i.e., contained solely within a city boundary). Therefore, HDR used reasonable surrogates or estimates for the purpose of this analysis. The intent of this exercise is to gain a better understanding of whether affordability issues exist within TVWD's service area, and potentially, to what extent.

The first item researched was the availability of data and information related to Washington County, Oregon. TVWD's service area resides within the borders of Washington County, but does not cover the entire county. As is shown below in Figure 1, TVWD's service area is a relatively small portion of the entire county.

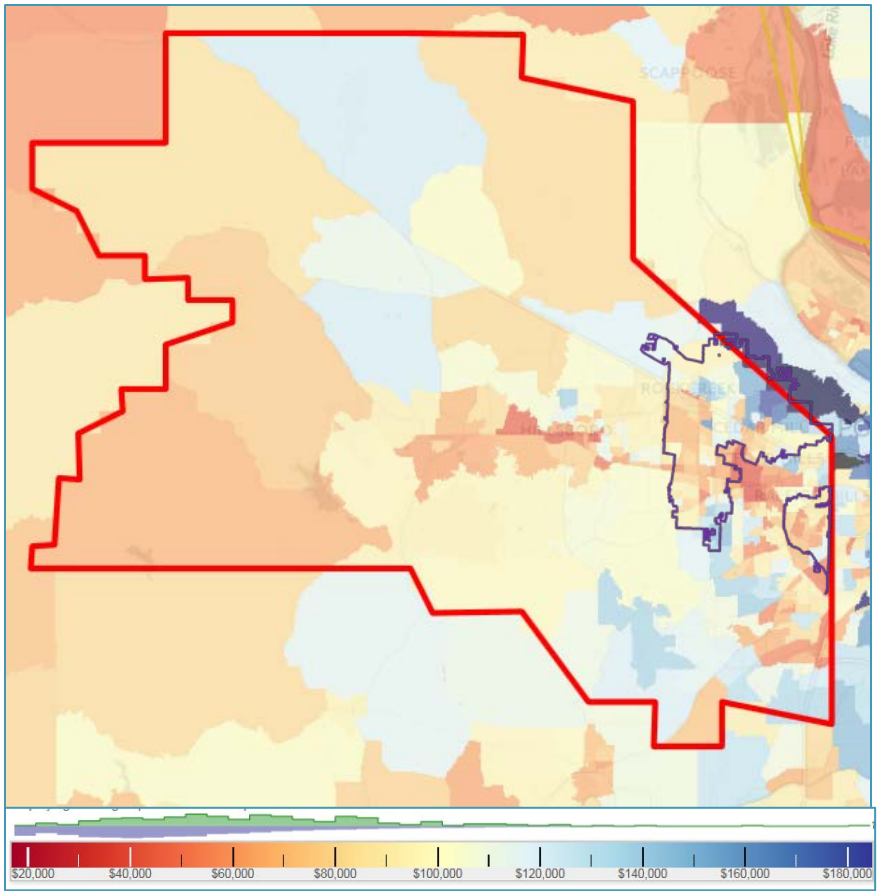


Figure 1 –Washington County (red border) and TVWD (purple border) with Median Household Income by measured area

Figure 1 provides a map of the boundaries for Washington County, along with the boundaries for TVWD's service area. The map shows Washington County in red and TVWD in purple.[22] The District's boundaries have been over-laid against the median household incomes[23] of the county. The key for the median household income by measurable geographic area is shown below the map. The darker red areas are lower income areas and the darker blue areas are higher income areas. At this point, it is not important to fully understand the median household income within the District's service area. Rather, it is important to understand that median household income varies by geographic area.

To better understand median household income within the District, HDR looked at a second map more specific to the District's service area. The map (Figure 2) provides a reasonable reflection of the median household income by geographic area within the District. It should be noted that there may be minor variations between the boundaries shown in Figure 2 and the District's actual boundaries.

[22] The boundaries on the map are not precise, but do reflect reasonable approximations of the actual boundaries for these jurisdictions.

[23] Median household income is the income level in the middle of a list of ranked incomes. For an area that has five households with incomes of $10,000, $35,000, $40,000, $47,000 and $250,000, the median income is $40,000.

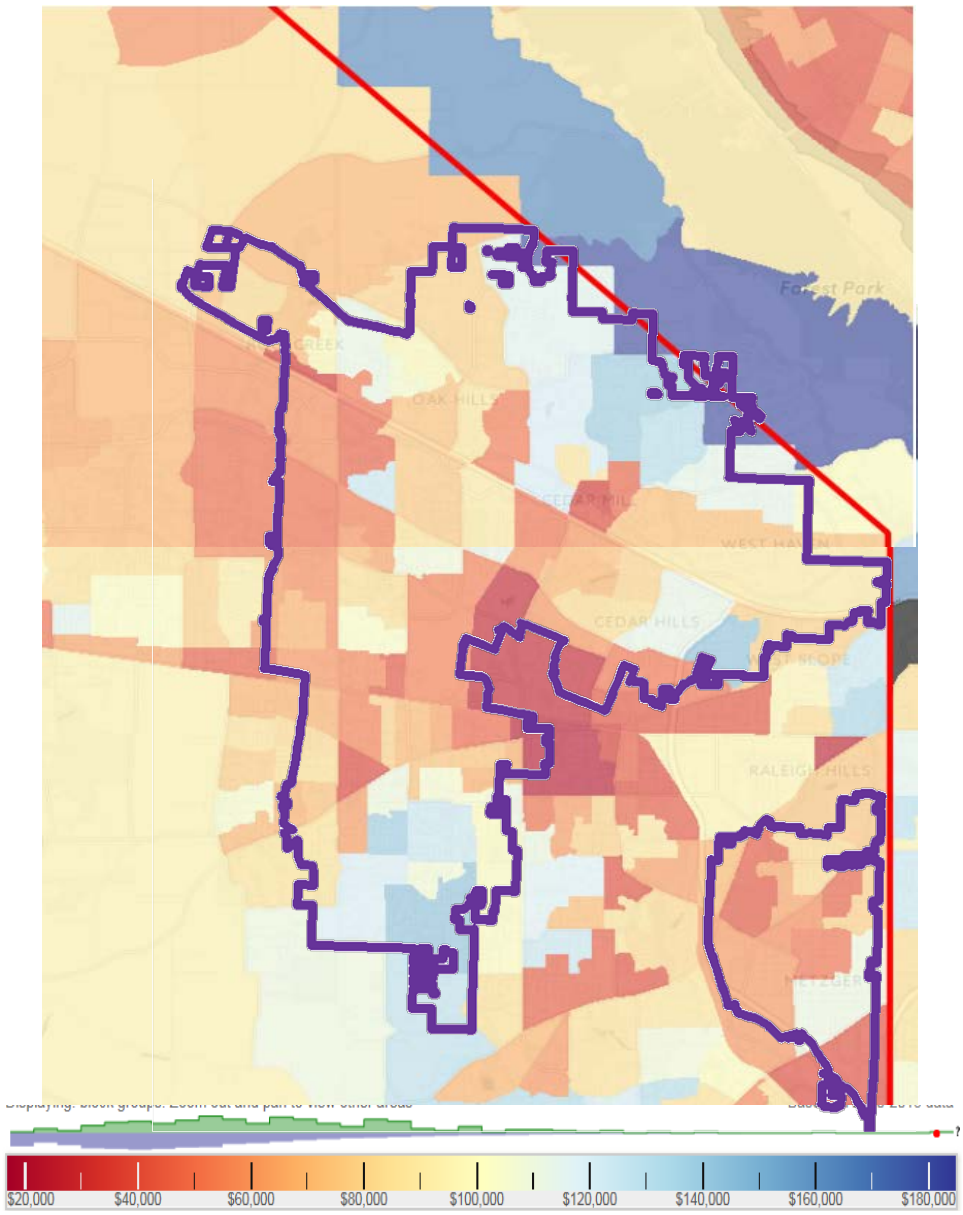


Figure 2 – Overview of the TVWD Service Area (Purple Border) and Median Household Income.

Figure 2 is similar to Figure 1, but provides a more detailed view of the District. As shown, portions of TVWD's service area may be considered lower income (shades of red), but those areas do not appear to be at poverty levels. At the same time, there appears to be areas within TVWD's service area that may be considered affluent based on this map of median household incomes.

While this map provides a greater understanding of the range of median household incomes within the District, it may not provide a good level of understanding of the extent of the District's customers that have difficulty paying their water bills. Again, a median household income does not indicate the range of incomes within the area.

The traditional EPA approach to screening for affordability issues uses median household income to establish a level of affordability on a community-wide basis. Table 5 provides an overview of this initial screening for affordability within the TVWD service area using the simple measure of median household income.

Table 5
EPA Test for Affordability Using Median Household Income

Area	MHI	Range of Affordability - $/Month		
		1.5%	2.0%	2.5%
Beaverton	$57,068	$71.34	$95.11	$118.89
Aloha	62,988	78.74	104.98	131.23
Tigard	60,849	76.06	101.42	126.77
Hillsboro	66,668	83.34	111.11	138.89
Cedar Hills	65,396	81.75	108.99	136.24
Cedar Mill	96,361	120.45	160.60	200.75
Washington County	65,272	81.59	108.79	135.98

Source: MHI City-Data.com

The initial portion of the analysis uses the median household income of the community and then uses that information to establish a level of affordability based on a percentage of the median household income. As noted previously, the affordability range can be from 1.5% to 3.0%. EPA has traditionally used 2.0% to 2.5% as its range for affordability testing. In this case, HDR determined the median household income for various local communities and then the range of affordability was developed on a dollar per month basis. As shown in Table 5, Beaverton has the lowest median household income of the communities reviewed. Using the most conservative percentage (i.e., 1.5%) water rates would be considered unaffordable on a community-wide basis if the average residential bill exceeded $71.34 per month. Using an affordability criterion of 2.5% and the Beaverton MHI, the level of the average residential bill would need to exceed $118.89 to be considered unaffordable on a community-wide basis.

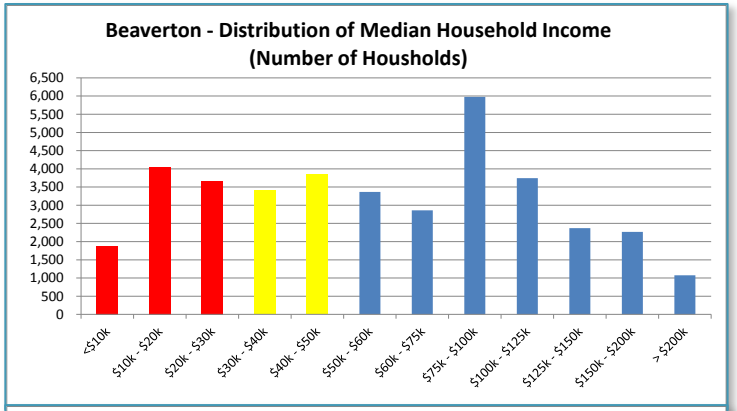
Table 6
Projected TVWD
Typical Monthly Water Bills

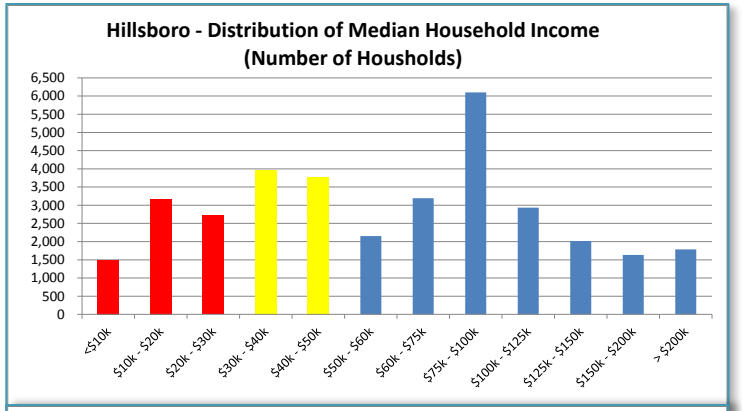
Year	$/Month
2017	$40.71
2018	46.10
2019	52.21
2020	59.13
2021	66.97
2022	75.84
2023	85.89
2024	97.27
2025	110.16

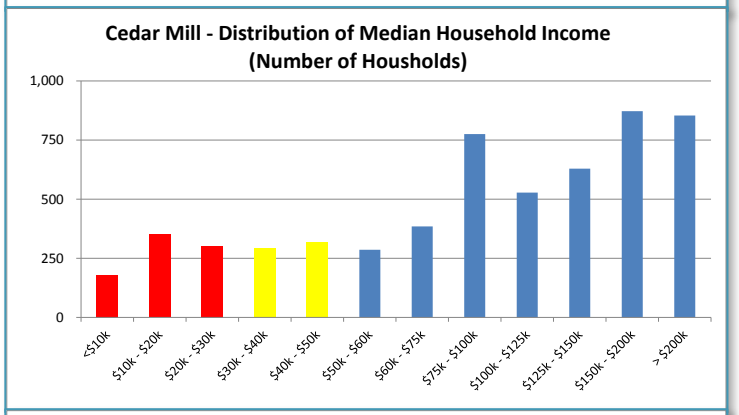
To better understand affordability on a District-wide basis, TVWD's projected monthly bills can be compared to the values in Table 5. Using even the most conservative measure of 1.5% and the lowest median household income for the City of Beaverton, TVWD's projected rates appear to be affordable on a community-wide basis through 2021. Using a more moderate affordability criterion of 2.0%, along with Beaverton's median household income, TVWD's rates would be considered affordable on a community-wide basis until approximately 2024 when the projected bill exceeds the affordability criteria of $95.11. Finally, using the 2.5% affordability criterion, and Beaverton's median household income, TVWD's rates would not be considered unaffordable on a community-wide basis, even in 2025.

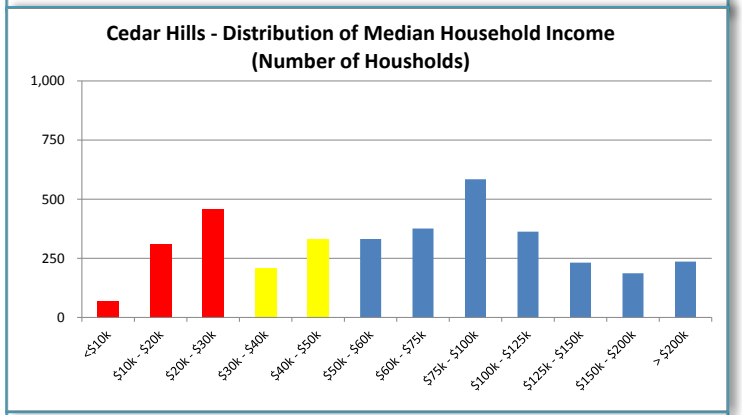
The above comparison illustrates the challenges of reviewing affordability for a particular utility. First, the data set used to test affordability is not perfect, but it is reasonable. Next, the EPA initial screening test views affordability on a community-wide basis but fails to recognize or

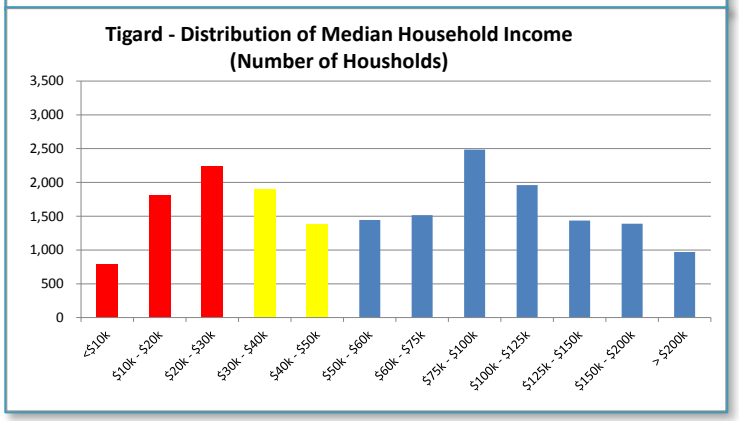
acknowledge that there may be a range of incomes within the community, and the range can be relatively narrow or exceptionally wide. As noted previously, median household income reflects a mid-point value and is not reflective of the range of incomes within an area. For example, an area may have a median household income of $40,000, but may have a range of incomes from $10,000 to $200,000, or alternatively, a range of incomes from $30,000 to $60,000. To better understand the District's potential range of incomes within each municipal area, HDR reviewed different municipal areas and their income levels. Provided on the following page is an overview of the range of incomes by selected municipal boundaries.


Beaverton - Distribution of Median Household Income
(Number of Housholds)
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
$50k - $60k
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k


Hillsboro - Distribution of Median Household Income
(Number of Housholds)
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
$50k - $60k
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k


Cedar Mill - Distribution of Median Household Income
(Number of Housholds)
1,000
750
500
250
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
$50k - $60k
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k


Cedar Hills - Distribution of Median Household Income
(Number of Housholds)
1,000
750
500
250
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
$50k - $60k
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k


Tigard - Distribution of Median Household Income
(Number of Housholds)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
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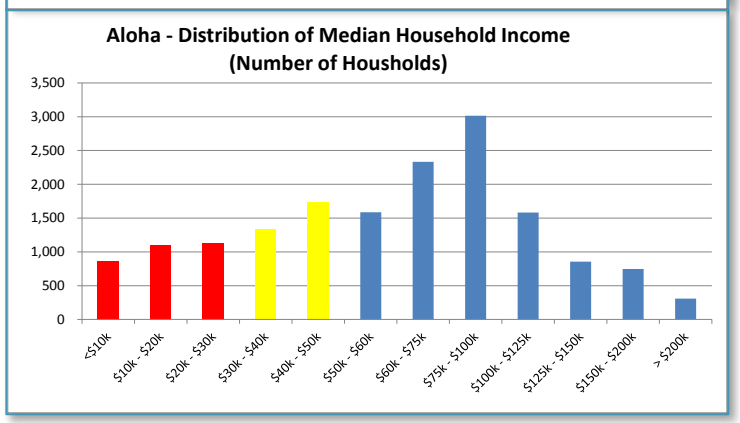
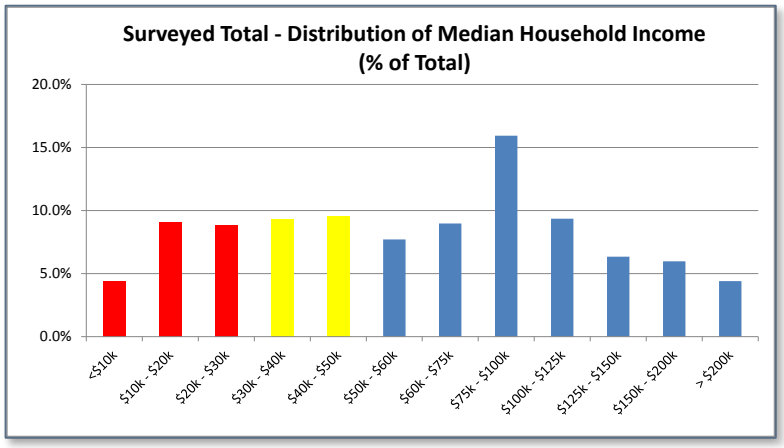
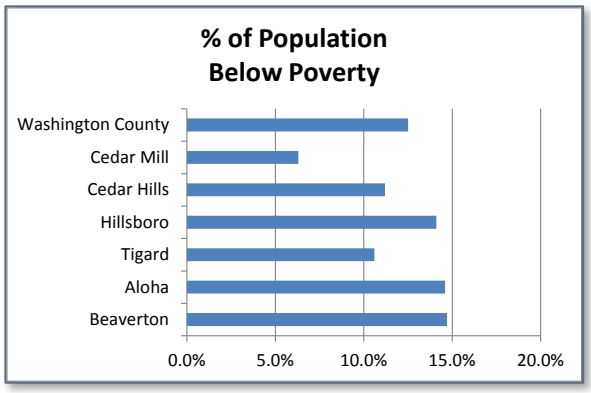
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k


Aloha - Distribution of Median Household Income
(Number of Housholds)
3,500
3,000
2,500
2,000
1,500
1,000
500
0
<$10k
$10k - $20k
$20k - $30k
$30k - $40k
$40k - $50k
$50k - $60k
$60k - $75k
$75k - $100k
$100k - $125k
$125k - $150k
$150k - $200k
> $200k

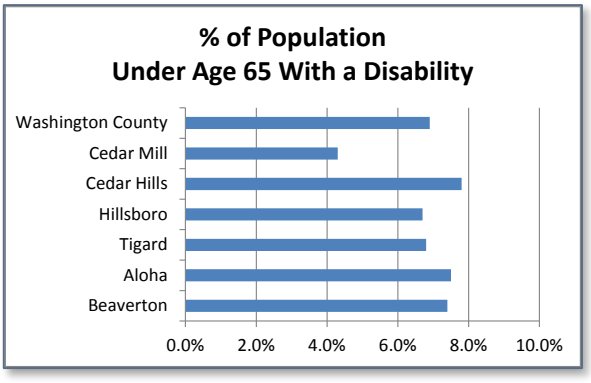
In reviewing these various municipal areas, it is important to understand that not all customers within these communities are served by TVWD. The City of Beaverton is a good example in which TVWD serves a small portion of the city and Beaverton has its own water utility that provides service within the majority of its municipal boundaries. Given that, one needs to be careful about any conclusions regarding the extent of the affordability issue since there is a significant level of overlap between these community boundaries in the customers that TVWD serves.





To better understand the potential extent of the affordability issue, the surveyed municipal areas were summarized into a set of percentages within each income range. Based upon the data, there may be up to 22% of the households within this area that has difficulty with affordability (red bars). This is likely on the high side in terms of TVWD's service area and customer base, since the survey data is weighted by the number of customers within each area, and Beaverton and Hillsboro are a large proportion of the sample data. Regardless of how one views the data, it is clear that irrespective of location or median household income within a certain area, there appears to be customers with limited income and potential problems with affordability.

As previously discussed, the community data is collected at a macro level and is often difficult to understand the full reason or extent of the income/affordability issue. For example, in each of the graphs there are there are a number of customers that appear to be at poverty level (i.e., less than $10,000 of income). What is unclear from the data is whether these are people actually living at a poverty level or whether these are retirees with significant assets but limited income. To better understand this issue, an additional graphic was developed of the percent of population under the age of 65 and with a disability. Again, the data indicates that there could be up to 6% of the population within the service area that is disabled. It is unclear from the data if these customers are also low-income.



In summary, it does appear that TVWD has a segment of customers which may have affordability issues now and in the future. The extent of the number of customers with affordability issues cannot be precisely determined, but it would appear to be in the range of 5% to 10% of TVWD's customer base. With approximately 58,000 residential accounts, this implies that 2,900 to 5,800 customers may have affordability issues at some point in time. This compares to the District's Customer Emergency Assistant Program[24] which aided approximately 170 customers over the last twelve months. This indicates that there is clearly a need within the community, but whether it is very limited as the current assistance levels indicate is unclear.

Overview of Customer Assistance Programs

As previously discussed, there are different types of assistance programs that utilities implement. These include:

- Bill Discount
- Flexible Terms
- Lifeline Rates
- Temporary Assistance
- Water Efficiency

The programs can also serve different segments of the customer population (e.g., low-income, permanent disability, temporary hardship). Provided within this section of the discussion paper is a high level review of the types of customer assistance programs provided by utilities. The intent of this overview is to provide the reader with a more detailed understanding of the different approaches and the opportunities, challenges and considerations in establishing such programs.

Provided below in Table 5 is a summary overview of the survey that was conducted as a part of a manual developed by the U.S. EPA on the issue of customer assistance programs for water and wastewater utilities. Table 5 is a summary of selected utilities included within the original survey. For purposes of this table, all of the Oregon utilities included in the original survey are included, along with other selected utilities of comparable size to TVWD. Also included are utilities of a stature which provides some relative understanding and reference points for the national perspective on customer assistance programs and approaches.

[24] Care to Share has a cooperative working relationship with the District on their customer emergency assistance program. Care to Share provides screening/qualifying services for the District.

Table 5 Rate Assistance Programs at Selected Oregon and Other Water and Wastewater Utilities						
Utility Name	**Population Served**	**Bill Discount**	**Flexible Terms**	**Lifeline Rate**	**Temporary Assistance**	**Water Efficiency**
State of Oregon						
Tualatin Valley Water District	217,000				●	
Astoria Public Works Dept.	9,516	●				
Clackamas Co. Water Envir. Svcs.	134,591	●				
Eugene Water & Elec. Board	178,100	●	●		●	
City of Gresham	117,538	●			●	
Clean Water Services	342,641		●			
City of Medford	135,520	●	●			
Portland Water Bureau	564,600	●	●		●	●
Salem Public Works	189,000	●			●	
Other Utilities						
Calif. Water Serv. Bakersfield	246,371	●				
Glendale (CA) Water & Power	201,893	●				
City of Aurora (CO)	351,200					●
Dist. of Columbia W&S Auth.	617,996		●	●	●	
City of Henderson (NV)	275,000	●				
Las Vegas Valley Water Dist.	1,347,550				●	
Granger-Hunter Impr. Dist (UT)	106,000	●	●			
Alderwood W&S District (WA)	171,500	●				
Seattle Public Utilities	1,400,000	●			●	
City of Spokane (WA)	200,000				●	
Tacoma Public Utilities (WA)	318,403	●	●			
City of Vancouver (WA)	231,000	●			●	

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix A, Quick Find Matrix, April 2016

As can be seen in the table, the most prevalent customer assistance is provided in the area of bill discounts. The next most prevalent approach is temporary assistance, followed by flexible terms. Interestingly, this closely follows the summary of the national survey (See graphic on page 8), with the exception of flexible terms being more prevalent than temporary assistance.

The categories of types of customer assistance programs shown in Table 5 are made up of an array of different and specific programs. For example, there are a number of different approaches or programs that can be provided to customers which achieve the overall objective of a "bill discount". Provided below is an overview of these various programs and examples of the types of programs. This information is summarized and extracted from the EPA manual on Drinking Water and Wastewater Utility Customer Assistance Programs.

1. Bill Discounts

Bill discounts are, as the name implies, a discount on a qualifying customer's utility bill. Qualification is generally based upon income levels. Bill discounts are typically of an on-going nature and a method used to "shrink the bill". A more detailed overview and discussion of bill discounts is provided below.

Bill Discounts	
Reduces bills on an on-going basis usually by a percentage or dollar amount. This broad category encompasses a diverse array of programs	
Opportunities – • Targets households that have difficulty paying water and/sewer bills. • Offers flexibility to structure in a variety of ways, including a sliding scale; can apply to any type of rate structure. **Challenges –** • Revenue impact may be greater because programs are generally designed to provide assistance long-term. • Can be confusing to customers if program-related outreach and education isn't provided.	**Considerations –** • Administrative burden is low if utility can partner with an existing social service program for eligibility determination and enrollment; the administrative burden can be higher if a partnering opportunity is not available. • A percentage discount can give households using more water a larger subsidy, creating concerns of equity and providing a disincentive to use water efficiently. • Does not take into account other factors that might be causing long-term high water usage, such as older appliances and fixtures.

Source: EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, April 2016, p. 9.

In general, the category of bill discounts is focused on low-income customers. Participants in bill discount assistance programs often also include disabled and senior citizens. There are different ways in which the discounts can be structured and provided to customers. For example, a separate and discounted rate can be provided to qualifying customers. In other cases, certain portions of the rate or charge may be discounted or waived (e.g., monthly fixed fee). The amount of the discount is a policy decision that varies from utility to utility.

One of the major challenges of programs in this category is the administration of the program. Generally, customers need to be screened and qualified to be eligible for the program. Eligibility criteria must be established and screening can be provided by utility personnel or by an outside agency. Some programs use screening qualifications from other utilities (e.g., electric utility) to establish a qualifying customer.

Provided below in Table 6 is an overview of the surveyed utilities which indicated they provided some form of bill discount rate assistance.

Table 6
Bill Discount Rate Assistance Programs

Utility Name	Bill Discount	Description	Summary Overview of Bill Discount
State of Oregon			
Tualatin Valley Water District	N/A		
Astoria Public Works Dept.	♦	Low-Income	Financial assistance for current bill – low-income qualification.
Clackamas Co. Water Envir. Svcs.	♦	Low-Income	Offers reduction off bill – low income qualification
Eugene Water & Elec. Board	♦	Military Assist.	Provides assistance for military personnel called to active duty
City of Gresham	♦	Low-Income	Low-income discount on stormwater fees
City of Medford	♦	Payment Discount	Offers a 3.5% discount if 12 months of estimated utility fees are paid up front.
Portland Water Bureau	♦	Low-Income	Discounts on utility bills for qualifying low-income customers
Salem Public Works	♦	Low-Income	Offers wastewater discounts for qualifying low-income seniors and low-income disabled
Other Utilities			
Calif. Water Serv. Bakersfield	♦	Low-Income	Up to 50% discount on meter charge for qualifying low-income customer
Glendale (CA) Water & Power	♦	Low-Income	Qualified customers exempt from City tax
City of Henderson (NV)	♦	Low-Income	Waive monthly service charge for qualifying seniors
Granger-Hunter Impr. Dist (UT)	♦	Military Assist.	Provides a discount for qualifying service men and women serving in full-time active duty
Alderwood W&S District (WA)	♦	Low Income	Low-Income disabled discount
Seattle Public Utilities	♦	Low-Income	Up to 50% discount for qualifying low-income customers; must not receive a Section 8 housing voucher or live in subsidized housing
Tacoma Public Utilities (WA)	♦	Low-Income	30% discount for qualifying low-income seniors, low-income disabled persons
City of Vancouver (WA)	♦	Low-Income	Waiver for low-income seniors to minimum sewer flow rate

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix B, Utility Snapshots

Table 6 shows that the vast majority of the programs are related to low income and disabled customers. There are two utilities which have programs for active-duty military personnel.

It appears that bill discount rate assistance can be provided in a number of different ways or forms. These include:

- Specific rate discounts for qualifying customers (i.e., a low-income rate schedule)
- Waiver of or discount on portions of the rates
- Direct financial assistance for payment of a bill
- Discount for early payment or prepayment

Currently, TVWD does not have in place any customer assistance programs which provide bill discount rate assistance, as broadly defined within this category.

2. Flexible Terms

Flexible terms help customers afford services and pay bills through arrearage forgiveness, bill timing adjustments or levelized billings. These programs are often referred to as payment plans, connection loans, managing arrears, levelized billing, and bill timing. This is also a form of a program that can be considered a "shrink the bill" approach. A more detailed overview and discussion of flexible terms customer assistance programs is provided below.

Flexible Terms	
Helps customers stay current with bills by waiving penalties, fees, interest, and/or changing how they are billed over time	
Opportunities – • Highly effective and popular for gas and electric utilities. • Few legal or policy barriers make implementation relatively low-cost and easy. • Can reduce administrative costs for utility. **Challenges –** • Can diminish the effectiveness of water conservation pricing. • Can reduce revenue for the utility.	**Considerations –** • Increasing billing frequency does not require the utility to change the frequency of meter reading; however, some utilities may find it necessary. • Monthly billing allows for predictability in planning. Levelized billing works well when it is voluntary or other utility bills are also levelized. • Some measures, like levelized billing and bill timing, are revenue neutral. Other tools, such as forgiving arrears and interest free payment plans, lower (potential) revenue. Reduced fee programs can improve collectability of revenue. • New technology, such as prepaid meters and smart meters, give utilities more options for designing flexible terms that customers can use to help remain current on their bills.

Source: EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, April 2016, p. 10.

In general, flexible terms customer assistance programs focus on providing the customer with greater flexibility in the payment of their bills. This can be approached in a number of different ways and flexible terms rate assistance programs and approaches typically include the following:

- Levelized (budget) billing
- Movement to more frequent billing periods (e.g. from bi-monthly to monthly)
- Arrearage payment agreements (i.e. more flexible to work with the customer's financial constraints)
- Less onerous penalties and fees

- No interest repair loans for customers in imminent danger of disconnection because of broken/leaking water service lines

Provided below in Table 7 is an overview of the surveyed utilities which indicated that they provide some form of flexible terms rate assistance.

Table 7
Flexible Terms Rate Assistance Programs

Utility Name	Flexible Terms	Description	Summary Overview of Flexible Terms
State of Oregon			
Tualatin Valley Water District	N/A		
Eugene Water & Elec. Board	♦	Budget Billing	Receive monthly bill equal to the average bill for the prior 12-month period – all residential customers are eligible.
Clean Water Services	♦	Payment Plan	Targets financial hardship households and creates a payment plan.
City of Medford	♦	Payment Plan	Customers may pre-pay for 12 months to receive a 3.5% discount.
Portland Water Bureau	♦	Payment Plan	Offers ability to arrange payments to be extended up to 30 days if billed monthly.
Other Utilities			
Dist. of Columbia W&S Auth.	♦	Budget Billing	Qualifying customers receive monthly bill equal to the average bill for the prior 12-month period.
Granger-Hunter Impr. Dist (UT)	♦	Budget Billing	Receive monthly bill equal to the average bill for the prior 12-month period – all residential customers are eligible; sign up during January & February.
Tacoma Public Utilities (WA)	♦	Budget Billing	Qualifying customers receive monthly bill equal to the average bill for the prior 12-month period.

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix B, Utility Snapshots

Levelized or budget billing is an approach which takes the estimated annual bill and divides it into equal payments. Typically a customer is required to have 12 full months of billing history with the utility to establish the estimated annual bill. Once the budget bill is established, at the end of the 12-month budget billing period, there is a "true up" for the variance between the actual use and the estimated/billed use. Levelized billing is offered extensively at electric and natural gas utilities where the bills are much higher than a typical water bill.

Movement to more frequent billing periods is simply billing the customer for the same amount, but increasing the number of billing periods. For example, a utility which bills on a bi-monthly basis (i.e., every other month or 6 times per year) would simply move to a monthly billing period (i.e., every month or 12 times per year). Essentially, this "reduces" the size of the bill in a peak

period (e.g., summer time). Receiving a monthly bill aids the customer in budgeting on a monthly basis. There are some additional billing costs associated with this alternative.

Arrearage payment agreements simply provide the customer with greater flexibility to repay their bill over time. A customer in financial distress often desires to repay the bill, but often lacks the opportunity and flexibility to work with the utility to arrange a repayment schedule that fits within their budget constraints.

Typically, the utility will have various fees and penalties in place to encourage certain positive behaviors or to discourage negative behaviors. For example, typically there are payment penalties for late payments and disconnections (i.e., turn-ons and turn-offs). While having these fees and penalties are important tools to encourage prompt payment, for a customer in distress, they simply add a financial burden to a situation which is already burdensome. Many utilities have less onerous fees and penalties or policies which allow for the waiving of the fees or penalties if certain conditions are met (e.g., prompt payment of the bill or arrangement of a payment agreement). This can also create a more positive goodwill for the utility in that it acknowledges that the utility is flexible in its policies and willing to work with the customer.

In some instances, utilities are willing to make up no interest loans to a customer to repair a leaking or broken service line when the customer has limited financial means. A leaking or broken service line, which continues to leak will simply create large and unaffordable bills. This approach has its challenges and the program must be structured in such a manner that it protects the utility if the customer fails to make repayment.

Presently, TVWD bills its customers on a bi-monthly basis and does not offer levelized (budget) billing.

3. Lifeline Rates

A lifeline rate is a subsidized rate for a fixed amount of water, which is expected to meet the customer's basic (essential) needs. When water use exceeds the initial fixed amount of water (i.e., the lifeline block) the rates charged for all additional usage increases. A lifeline rate structure is a form of an increasing (tiered) block rate structure. This is another form of a "shrink the bill" approach to customer assistance. A more detailed overview and discussion of lifeline rates is provided below.

Lifeline Rates	
Reduces bill for a set quantity of water on an ongoing basis to allow essential usage	
Opportunities – • Can be targeted to specific eligible households, resulting in lower costs (bills). • Can promote water conservation. **Challenges –** • Targeting only eligible households makes implementation more difficult. • Eligible households may be more likely to use more water for basic needs.	**Considerations –** • Consider adjusting the size of the lifeline block to take into account the number of people in the household. • Some ratepayers will be subsidizing (through higher rates) the ratepayers who qualify for the lifeline program.

Source: EPA manual on Drinking Water and Wastewater Utility Customer Assistance Programs, April 2016, p. 11.

A traditional lifeline rate is a form of an increasing block or tiered rate structure which has an initial first block of water that is priced below cost. The amount of water included within the first block is generally sized for "essential needs". The remaining blocks are priced slightly above cost to recapture the lost revenue from the first block. If provided to all residential customers, regardless of need or financial status, a key advantage of a lifeline rate structure is that it does not require a screening or qualification of customers.

Provided below in Table 8 is an overview of the surveyed utilities which indicated that they provided some form of lifeline rate assistance.

Table 8
Lifeline Rate Assistance Programs

Utility Name	Lifeline Rate	Description	Summary Overview of Lifeline Rates
State of Oregon			
Tualatin Valley Water District	N/A		
Other Utilities			
Dist. of Columbia W&S Auth.	💧	Lifeline	Discount of up to 400 c.f. of sewer services per month. Must be eligible to qualify.

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix B, Utility Snapshots

As can be seen, there was a limited number of utilities utilizing a lifeline rate approach. In actuality, the description provided by the District of Columbia Water and Sewer Authority appears to be a bill discount approach as opposed to a "traditional" lifeline rate approach.

However, it does have the element of a component related to essential needs (i.e., 400 cubic feet).[25]

TVWD's current rate structure is an increasing block rate structure, but the initial or first block is not based upon the concept of "essential needs" and the block price is not "below cost".

4. Temporary Assistance

Temporary assistance provides short-term or one-time assistance to customers to prevent disconnection of services or to restore service after disconnection for households facing an unexpected hardship. This may also be referred to as emergency assistance, crisis assistance, etc. Temporary assistance is a form of "after the fact assistance" to the customer. A more detailed overview and discussion of temporary assistance programs is provided below.

Temporary Assistance	
Reduces bill one time or on a short-term basis to help customers deal with urgent, unexpected hardship	
Opportunities – • Targeted assistance helps customers during their time of greatest need. • One time nature can make the program relatively inexpensive. • Partnering with other agencies and organizations can lessen administrative burden. **Challenges –** • Can become long-term assistance unless limits are implemented. • Might be insufficient to prevent service disconnection. • Can have relatively high administrative costs.	**Considerations –** • Water and sewer utilities often partner with other organizations (e.g., a public assistance agency or local charity) to administer the program. • Resources for this type of program often come from outside government agencies, social service agencies, or voluntary contributions from other ratepayers.

Source: EPA manual on Drinking Water and Wastewater Utility Customer Assistance Programs, April 2016, p. 12.

Temporary assistance is not a long-term solution to the issue of affordability. It is a solution to short-term payment issues. Temporary assistance programs are often more complicated from a social perspective. Given that, utilities often use outside organizations or social service agencies to screen, qualify, and administer the program. The utility does have a responsibility to direct its customers in need to these resources. Funding for this type of the program can come from different resources, including voluntary contributions, direct contributions from the utility and/or other social agencies. Funding is often "capped" or limited when the utility provides direct contributions.

Provided below in Table 9 is an overview of the surveyed utilities which indicated that they provided some form of temporary assistance.

[25] 400 cubic feet = 2,992 gallons. This equates to approximately 100 gallons per day.

Table 9 Temporary Assistant Rate Assistance Programs			
Utility Name	**Temporary Assistance**	**Description**	**Summary Overview of Temporary Assistance**
State of Oregon			
Tualatin Valley Water District	💧	Emergency Relief	Provides emergency assistance. Funded by voluntary donations. Administered in partnership with Care to Share.
Eugene Water & Elec. Board	💧	Low / Limited Income Assistance	Financial aid, up to $200/year to qualifying limited income customers. Aid credited directly to their account. Funded from rates/contributions. Administered by Lane County Human Services Div.
City of Gresham	💧	Emergency Relief	Provides limited emergency funds for customers experiencing financial hardship. Income at or below 150% of the federal poverty guidelines. Funded from contributions from residents, businesses and employees
Portland Water Bureau	💧	Crisis Vouchers	Low-income vouchers for up to $150 in assistance every 12 months. Customer must be enrolled in the City's low-income assistance program and pay a portion of the bill to receive assistance.
Salem Public Works	💧	Low Income Assistance	Helps customers experiencing short-term need for payment assistance. Customer may only receive assistance for one bill during a 12-month period. Administered by the Salvation Army and St. Vincent de Paul (who determines eligibility).
Other Utilities			
Dist. of Columbia W&S Auth.	💧	Financial Hardship	Serving People by Lending a Supporting Hand (SPLASH) provides help in times of financial emergencies. Fully funded from contributions from customers and the community.
Las Vegas Valley Water Dist.	💧	Emergency Relief	Provides help to customers who are having difficulty paying bill. Utility determines eligibility.
Seattle Public Utilities	💧	Emergency Relief	Provides a 50% credit for a customer's delinquent bill, up to $371 for the 2016 program. Customers may only receive one credit per 12-month period. Customer must have received an Urgent Notice or Final Shut-off notice or water has been shut off.
City of Spokane (WA)	💧	Emergency Relief	UHelp provides low-income customers with one-time emergency financial assistance. Administered by the Salvation Army (who determines eligibility).
City of Vancouver (WA)	💧	Emergency Relief	Provides help to customers who are having difficulty paying bills due to crisis situations.

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix A, Quick Find Matrix

As can be seen, there are a variety of ways in which temporary assistance is provided. Typically, there is a limitation on the amount of assistance provided and the extent or number of times that assistance is provided during the year.

TVWD has a program in place which is funded by voluntary contributions. It is administered by an outside agency which provides screening and administration of the program. In 2015, the approximate cost of the program to TVWD was $3,500.

5. Water Efficiency

Water efficiency customer assistance programs subsidize water efficiency measures by providing financial assistance for leak repairs and offering rebates for WaterSense certified fixtures, toilets, and appliances. While this may be considered an "after the fact assistance" program, it certainly has benefits of an on-going nature and may also be considered as a way to "shrink the bill." A more detailed overview and discussion of water efficiency customer assistance programs is provided below.

Water Efficiency	
Reduces bill by directly implementing water saving measures, such as repairing or replacing leaking or outdated pipes and/or fixtures.	
Opportunities – • Disadvantaged customers are more likely to have old fixtures and/or poor plumbing. • Can be a long-term solution for lowering bills that empower homeowners. • Can use outreach materials and partnerships with other utilities through WaterSense. **Challenges –** • Can impact a utility's revenue. • Rebates for new devices and appliances may be less likely to help low income households.	**Considerations –** • Coupling water efficiency programs with increasing block pricing can be very effective. • Programs can be designed and structured in numerous ways, from rebates to service contracts with local providers. • Low income customers are more likely to take advantage of programs that provide in-house services as opposed to programs that require them to buy their own equipment or services.

Source: EPA manual on Drinking Water and Wastewater Utility Customer Assistance Programs, April 2016, p. 13.

Interestingly, low-income customers are not necessarily low use customers. Older housing stock with older or poor plumbing fixtures often have higher use. This type of program is particularly effective in areas which have highly constrained water supply resources. While the program helps to address affordability issues with a segment of the utility's customers, it can also effectively address conservation needs in a segment of customers that would normally not participate and install efficient fixtures within their homes. One of the limitations of this program, not identified in the above table, is that many low income housing units are also rental units. Renters may have limited opportunity or ability to modify or change out fixtures.

Provided below in Table 10 is an overview of the surveyed utilities which indicated that they provided some form of water efficiency rate assistance.

Table 10 Water Efficiency Rate Assistance Programs			
Utility Name	**Water Efficiency**	**Description**	**Summary Overview of Water Efficiency**
State of Oregon			
Tualatin Valley Water District	N/A		
Portland Water Bureau	💧	Low Income	Provides financial assistance for the repair of leaky toilets, faucets, plumbing and underground leaks to eligible customers who own and occupy their homes. To qualify, the customer must be enrolled in the City's low income assistance program.
Other Utilities			
City of Aurora (CO)	💧	Low-Income	Qualifying customers can receive replacement of old fixtures with new high-efficiency fixtures. Can replace up to two toilets, two showerheads, and three faucet aerators with water saving devices.

Source: Information extracted from the EPA manual, Drinking Water and Wastewater Utility Customer Assistance Programs, Appendix A, Quick Find Matrix

Similar to lifeline rates, of the surveyed utilities there was a limited number of utilities using this approach. It is interesting to note that at the City of Aurora this program is also partnered with the Mile High Youth Corps who perform the work in the residences. Households must meet income guidelines to qualify. Households that are qualified to receive low-income benefits for electricity are automatically qualified for this program.

At TVWD, there is no water efficiency rate assistance program. That statement is not intended to imply that the District does not have a conservation rebate program, because it does. For example, a customer installing a qualifying WaterSense high efficiency toilet can receive a $75 rebate for that fixture. While that is obviously an attractive offer and incentive for most homeowners, it is not the same as the City of Aurora's program which essentially provides replacement of the fixture at no cost, while using an outside group to install the fixtures.

Summary

This paper provides an overview of the issue of affordability and water rates. It is intended to provide an understanding of the different approaches and programs currently being used across the United States to address this issue. From this information the Rate Advisory Committee can begin to consider the issue of affordability and whether and how TVWD should effectively provide assistance.

Issue Paper 1b – Review of Specific Affordability Programs

Issue Paper 1b: Review of the Issue of Water Rate Affordability and the Tualatin Valley Water District

Review of Specific Affordability Programs

Introduction

The review of water rate affordability programs identified five types of affordability assistance programs. The objective of this portion of the affordability review is to provide a more detailed review of the specific affordability programs which may be available[1] to the Tualatin Valley Water District (TVWD or the "District"). This is intended to help the Rate Advisory Committee (RAC) better understand the range of potential programs available to the District, and more importantly, some of the important considerations in implementing a particular affordability assistance program (e.g., targeted assistance group, administrative issues/cost, level of subsidy provided). At the same time, it is important to examine TVWD's current program which provides affordability assistance.

Overview of TVWD's Current Affordability Assistance Program

The District's existing Customer Emergency Assistance Program (CEAP) is designed to provide financial relief to qualified customers in need. The relief comes in the form of a credit applied directly to the customer's bill. The funding for the assistance has historically come from the following sources:

- TVWD online customer donations
- Miscellaneous contributions from TVWD commissioners and staff
- District budgeted funds
- Clean Water Services (CWS) employee donations
- Interest earnings on cash balances within the CEAP fund

Before a bill credit is granted, the process begins with a customer's inquiry about the program. Customers may learn about the program through the District's website[2], the District's Water Words newsletter, the District's customer service representatives, or from their neighbors.

When a customer is experiencing financial strain and has trouble paying the water bill (or combined water/wastewater bill), the customer may ask TVWD what they can do to alleviate some of the financial pressure. TVWD's customer service representatives will refer the customer to Care To Share[3] for the background qualification and intake process.

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[1] Certain programs may not be currently available for various reasons (e.g. limitations of the District's billing system).

[2] CEAP web page: https://www.tvwd.org/customer-services/customer-emergency-assistance-program.aspx.

[3] Care To Share is a 501(c)3 charity supported by local churches, community organizations, businesses and community and private grants. It was founded in 1985 to coordinate assistance to those seeking emergency food and other basic needs. Its goal is to help people through crisis situations and to connect them with other services they need. Care To Share serves more than 16,000 families a year in the Beaverton/ Aloha/ Portland area. More information is available at: http://www.caretosharehelp.org/.

In order for a customer to qualify for CEAP assistance, the customer must meet the following criteria:

- Been a TVWD customer for at least 6 months
- Face an impending shut-off
- Make a partial payment (if outstanding balance is greater than $100)
- Not have received an emergency assistance bill credit within the last year

If all criteria are met, financial assistance will be granted in the form of a bill credit. Financial assistance is distributed based on funding source. The maximum assistance amount is $100. A typical distribution is $65 to the TVWD portion of the bill and $35 to the CWS portion, but this varies depending on the source.

The District's CEAP provided assistance to approximately 170 customers over the last 12 months.

Review of Specific Affordability Assistance Programs for TVWD

There are five types of affordability assistance:

1. Bill Discounts
2. Flexible Terms
3. Lifeline Rates
4. Temporary Assistance
5. Water Efficiency

Within each type of assistance, different programs may be available. There also may be key policy decisions associated with a particular program (e.g., level of subsidy to be provided, how the cost of the program and/or subsidy is to be funded/shared). Provided below is a detailed discussion of various potential programs under each type.

In providing the following review, it is important to understand that the first objective is to lay each program side-by-side to better understand them in the context of the various approaches and options. The RAC may recommend one or more programs. The RAC may also recommend that certain programs be implemented now, while other programs get phased-in depending on need or level of assistance. Note that the implementation of any single program by TVWD will require significant time, resources and funding to successfully accomplish the implementation and the program objectives.

. . . implementation of any single program by TVWD will require significant time, resources and funding to successfully accomplish the implementation and the program objectives.

Provided below is a detailed discussion of the various specific affordability programs, by types of assistance and how they may be applied at TVWD.

1. Bill Discount Programs

Bill discounts are, as the name implies, a discount on a qualifying customer's utility bill. Qualification is generally based on income levels, but may also consider other qualifying

attributes (e.g., disability). Bill discounts are typically of an on-going nature and a method used to "shrink the bill".

For many utilities, a bill discount is related to a separate and distinct rate schedule for the qualifying customers (i.e., a low-income rate). The discounted rate schedule is typically structured the same as the residential rate and a discount is provided on a particular component or all components of the rate structure. Provided below is an overview of the bill discount program using a low-income rate structure and how it may be used by TVWD.

Bill Discount – Low-Income Rate	
Discounted rate for a qualifying customer.	
TVWD Specific – *TVWD would establish a separate and distinct rate for a low-income qualifying customer. A criteria and mechanism to qualify customers would need to be determined and established.*	
Opportunities – • "Shrinks the bill" on a continuous basis. • Creates a "true" discounted and more affordable bill. **Challenges –** • Administering and qualifying customers. • Cost of the program.	**Considerations –** • Need to determine qualification criteria and method to screen and qualify applicants. • Level of discount to be provided (rate components and level of discount). • Billing system issues should be minimal.
Administrative Considerations • Qualification screening can be provided internally or externally; use an existing qualification standard (e.g. show proof of low-income rate qualification from another utility). • Addition of a new rate schedule.	
Estimated Program Cost • Administration (if internal qualification) – Estimated at $10/customer or $30,000 • Subsidy/Discount – Estimated annual cost ≅ $220,000; $0.30/month impact to all District customers [1]	
Targeted Group • Qualifying low-income customers (estimated – 5% of residential customers ≅ 2,900 customers) • Other? Disabled – Estimated number of qualifying customers is unknown, but likely minimal.	
Other Considerations • Provides direct assistance to low-income customers, but all qualified customers may not apply for assistance.	

[1] – Amounts developed below in this section labeled "1. Bill Discount Programs"

A discounted bill approach is a direct approach to "shrink the bill" for qualifying customers. In considering this approach, a number of items must be considered, primarily the administration and cost of the program. To better understand this affordability program alternative, a more detailed discussion of the key issues is provided below.

- **Qualification Criteria –** There are two major issues associated with qualification; the qualification criteria and who conducts the screening for applicants. In regard to the qualification criteria, TVWD can establish its own specific criteria. Qualification criteria are generally based on income levels and the number of occupants of a household. Establishing

this type of criteria is obviously challenging and, given that, many utilities use qualification criteria which are already established by an existing local program (e.g., a local electric utility). In the case of TVWD, one source for the qualification criteria could be the use of Portland General Electric's (PGE) qualifying criteria. In summary form, Table 1 presents PGE's current qualification criteria which varies by income level and family size:

Table 1
PGE 2016 Income Guidelines for LIHEAP[1] and OEAP[2] (eff., October 1, 2015)

Size of Family Unit	Gross Annual Income	Gross Monthly Income
1	$21,933	$1,827.75
2	28,681	2,390.08
3	35,429	2,952.42
4	42,177	3,514.75
5	48,926	4,077.17
6	55,674	4,639.50
7	56,939	4,744.92
8	58,205	4,850.42
9	59,470	4,955.83
10	60,735	5,061.25
11	62,001	5,166.75
12	63,266	5,272.17
Each Add'l Member	1,265	105.44

[1] – LIHEAP = Low-Income Home Energy Assistance Program
[2] – OEAP = Oregon Energy Assistance Program

HDR's Preferred Approach for Qualification Criteria for a Low-Income Rate: Utilize an existing qualification criteria (e.g. PGE – LIHEAP/OEAP) as the screening criteria to qualify customers for a TVWD low-income rate.

- **Administration** – Administration of the program may depend on the issue of qualification criteria. Should TVWD require proof of income or other detailed information, it may be best to use an outside social agency to screen and qualify customers. In contrast, if TVWD accepts the screening and qualification from another agency/utility, then TVWD customer service personnel should be able to quickly verify qualification by simply reviewing the applicant's most recent electric utility bill or associated document demonstrating participation in another low-income program. While this is a simple and straight-forward approach, it is not perfect. There may be applicants that do pay the electric bill but not the water bill (e.g., rental home), but this should be a very small number of customers and they can be reviewed on an individual basis; either internally or by an outside organization.

  HDR's Preferred Approach for Administering a Low-Income Rate: If an existing qualifying criteria is utilized (e.g., PGE LIHEAP) and proof from another utility is utilized to determine qualification, then TVWD should administer the program in-house. If a TVWD qualifying criteria is utilized and income verification is required, utilize an outside agency to review and qualify customers.

- **Other Qualified Customers** – While the focus of a low-income rate is on low-income customers, many programs also qualify other customer groups. Most commonly, disabled customers are also included within the discounted rate program. Senior citizens are sometimes included in the qualification criteria, but simply being a senior citizen does not imply or indicate income or affordability issues. For TVWD to administratively qualify a disabled customer the customer would simply need to show their disabled parking placard.

  HDR's Preferred Approach for Other Qualified Customers for a Low-Income Rate: TVWD should include disabled customers in their qualification criteria making the bill discount a low-income/disabled discounted rate. A senior citizen (i.e., over a specified age) is not a sufficient qualifying criteria for inclusion within the discounted rate.

- **Rate Structure** – As noted previously, a low-income/disabled rate is often a separate and distinct rate schedule. In other cases, it may maintain the existing residential rate structure but provide a discount on a specific component of the rate (e.g., a discounted meter charge, discounted first block of consumption charge), or on the entire bill (e.g. a 10% discount on the bill). There are certain advantages to establishing a separate rate schedule in that it clearly identifies that TVWD offers a low-income/disabled rate discount affordability program, and at the same time, it provides TVWD with greater flexibility in how the rate may be structured or the discount provided. Alternatively, TVWD could maintain the existing rate schedule and simply provide a fixed or percentage bill discount to qualifying customers.

  HDR's Preferred Approach for the Low-Income/Disabled Rate Structure: TVWD should establish a separate and distinct rate schedule (structure) to clearly communicate that TVWD does have a low-income/disabled rate, but to also provide the District with greater flexibility to discount different components of the rate. It is recommended that the rate structure be the same as the existing residential rate structure, with a fixed charge that varies by meter size and a two-block usage charge.[4] The usage portion of the rate structure should have the same block sizes as all other residential customers.

- **Level of the Discount** – The method used to discount the rate, along with the level of the discount, is a matter of policy. Given the above recommendation to establish a separate rate schedule but utilize the same rate structure as the existing residential rate, it would appear that a number of different alternatives could be used. These may include, but not be limited to:

  - Discounted meter (fixed) charge
  - Discounted consumption charge – first price block only
  - Discounted consumption charge – first and second price block
  - Discount all components of the rate structure

  When poorly designed, there are two possible criticisms associated with low-income/disabled rate structures. First, a poorly developed rate structure may actually discourage conservation and efficient use. The other criticism is somewhat interrelated to the first criticism, but a poorly designed low income/disabled rate structure may provide different levels of benefit to different customers depending upon usage. Simply stated, a

[4] At TVWD, water consumption is billed by hundred cubic feet (CCF). One CCF of water = 748 gallons.

customer with excessive or wasteful usage should not be "rewarded" with greater discounts than a customer that uses water efficiently or wisely.

It is primarily for these reasons that a discounted fixed charge is suggested for TVWD. All qualifying customers on the discounted rate would receive the same level of benefit (discount) on a dollar basis. Discounting of the usage charge is often used, but typically only the first price block is discounted in order to maintain some form of a conservation price incentive. Finally, some utilities simply discount all components of the rate by some fixed percentage (e.g. 25%). This approach provides differing levels of dollar benefits to customers based upon the customer's level of usage and eliminates much of the conservation incentive.

TVWD's projected typical residential bill for 2017 is $40.71/month. Table 2 provides an overview of the different approaches and their impact upon the District's projected typical monthly residential bill in 2017.

Table 2
Comparison of Different Methods for Providing Discounted Rates

Discount Approach	Amount of Discount	Revised Typical Monthly Bill	% Bill Discount
Discount of Fixed Charge [1]			
0%	$0.00/Month	$40.71	0%
50%	6.15/Month	34.56	15%
100%	12.29/Month	28.42	30%
Discount 1st Pricing Block [2]			
20%	$0.81/CCF = $5.67/month	$35.04	14%
30%	1.22/CCF = $8.54/month	32.17	21%
40%	1.62/CCF = $11.34/month	29.37	28%
Discount Both Pricing Blocks [2]			
20%	$0.81/CCF = $5.67/month	$35.04	14%
30%	1.22/CCF = $8.54/month	32.17	21%
40%	1.62/CCF = $11.34/month	29.37	28%
Fixed % Discount on Bill			
10%	$4.07/month	$36.64	10%
20%	8.14/month	32.57	20%
30%	12.21/month	28.50	30%

[1] – Assumes a 5/8" meter; 2017 bi-monthly rate of $24.58/bi-month or $12.29/month
[2] – Calculation of savings on a typical monthly bill assumes a 5/8" meter and 7 CCF/month of usage

Table 2 shows that each discounting method provides relatively comparable results (i.e., discounted bills), but they accomplish it in different ways. As discussed previously, discounting the fixed charge provides a fixed discount and the discount does not vary based upon customer usage. Thus, that approach maintains an incentive to conserve while still providing a discounted rate.

The second approach provides only a discount on the first pricing block. This approach maintains the revenue stability provided by the fixed charges, but offers a discounted rate on assumed "indoor" usage. Any second block usage is still priced at the regular residential rate.

The third alternative discounts both the first and second block pricing. This comparison is somewhat deceptive in that the typical monthly bill does not go into the second pricing block. In the summer, with outdoor usage, a customer is more likely to enter the second block and receive the benefit of the discounted second block. The argument against this approach is that water used in the second block is typically more discretionary in nature.

Finally, the fixed discount approach simply discounts all components of the bill or uses the existing residential rate structure and provides a calculated discount on the bill. A customer that uses more water will receive a larger dollar discount compared to a lower user.

In reviewing the level or amount of the discount, it certainly is a policy decision of the District's Commissioners. However, selecting what "simply feels right" likely lacks the rational basis desired by the District or its customers. To consider the level of the discount to be provided, an analysis was developed of the impact of a typical three-person household at the low-income threshold (See Table 1). A three-person household has an income threshold of $35,429. Using that income level, various measures of affordability were explored using the MHI measures of 1.0% to 2.0%. This analysis is shown below in Table 3.

Table 3
Analysis of Affordability Thresholds ($/Month)

Income Level	1.0%	1.5%	2.0%
Annual Income = $35,429	$29.53	$44.29	$59.05

Using the median household income approach, a bill which is greater than $44.29/month would be considered unaffordable at the 1.5% MHI criteria. A more conservative measure would be 1.0%. As may be recalled from the review of the Fitch medians, the median for an "AA" rated utility is a monthly bill which is at or just below 1.0% of MHI. This would imply that the any proposed discount should attempt to place the District's typical monthly bill slightly below $30, or approximately a 27% discount.

The use of 1.0% is conservative and the mid-point between the 1.0% and 1.5% is a bill of $36.91. This mid-point bill would be a discount of approximately 9% off the current typical monthly bill for residential customers. That level of discount may be a good starting point to begin this program and as rates continue to rise, the Commission can review the level of discount to determine its appropriateness.

HDR's Preferred Approach for Establishing the Level of the Discount: Of the four approaches reviewed, discounting of the fixed charge portion of the rate structure seems most appropriate. It has the benefit of providing a fixed discount amount to each customer, yet still maintains a price incentive to use water efficiently and conserve. In other words,

qualifying low-income and disabled customers will still have the ability to lower their bill via reduced consumption. The use of an initial 50% discount on the fixed charge would also seems to be a reasonable starting point for this program, if it is implemented.

- **Administrative and Subsidy Costs** – There are two areas associated with this program; administrative costs and the discounted rate (subsidy). Each of these is addressed separately.

  The estimated administrative costs include the cost of program setup, screening of applicants and any billing system costs. While difficult to estimate with any precision, it is estimated that the administrative costs would be approximately $10 per customer. Assuming approximately 3,000 applicants, this would be an administrative cost of $30,000.

  The second type of cost is the level of subsidy provided. In order to meet the total revenue requirements of the District, any subsidy must be recovered from other rate payers, or funding obtained outside of the utility via voluntary contributions or grants. For purposes of this discussion it is presumed that funding will be recovered via other rate payers. If a discount of $6.15/month is provided to 3,000 qualifying customers (≅ 5% residential customers), then the impact would be approximately $220,000 per year. If this were to be collected from fixed meter charges, the existing meter charges would need to increase approximately $0.30/month, which would seem to be reasonable and manageable.

As can be seen, while there are administrative hurdles, a discounted bill program, such as a low-income/disabled rate, seems financially feasible from a cost perspective.

2. Flexible Terms

Flexible terms help customers afford services and pay bills through bill timing adjustments, levelized billings or arrearage forgiveness. This type of program can also be considered a "shrink the bill" approach, though technically it is not a "discount" program. A more detailed discussion of these types of programs is provided below.

2a. Flexible Terms – Monthly Billing

The District currently bills the majority of its customers on a bi-monthly basis. Changing to monthly billing would not change the rates that customers pay but in comparison to a bi-monthly billing cycle, it may potentially help customers who have difficulty managing their money from month-to-month.

Flexible Terms – Monthly Billing	
Helps TVWD customers stay current with bills by changing the frequency of billing.	
TVWD Specific – *TVWD would move from bi-monthly billing (i.e., every two months) to monthly billing.*	
Opportunities – • Bills may be more "manageable" for customers when billed monthly. • Ability for customer to understand usage on a more frequent basis. • Ability for TVWD to intervene sooner when customers have payment issues. **Challenges –** • Potential for increased customer service interactions – doubling the amount of bills sent out. • Combined billing with wastewater.	**Considerations –** • Increased meter reading costs to move to monthly billing, or TVWD will need to estimate usage between billings. • Increased costs to process and send out bills. • Revenue neutral – no change in the customer's bill, just the frequency of billing. • Approximately 67% of surveyed utilities[1] across the U.S. bill residential customers on a monthly basis. • Billing system issues should be minimal. • Need for coordination with Clean Water Services.
Administrative Considerations • No qualification or screening of customers • No changes in rates, rate structures or billing procedures	
Estimated Program Cost • Additional costs for billing and postage; potential additional costs if meters are read monthly.	
Targeted Group • All customers, residential in particular	
Other Considerations • None	

[1] – Source: AWWA 2012 Water and Wastewater Rate Survey

A change to monthly billing does not involve the complicated policy decisions associated with discounted or low-income rates. There would be some internal administrative/billing issues, but these should be relatively manageable. One key issue is the combined billing with Clean Water Services and coordination with their billing. Before this moves forward, the District would need to work through these issues. There should be no billing system issues, but the question of whether meters should be read monthly or estimated between bi-monthly reads would need to be answered.

HDR's Preferred Approach for Monthly Billing: Even with the potential adoption and implementation of a discounted rate, HDR believes that monthly billing is a relatively low-cost alternative that would help all customers manage their utility payments. As the District's rates continue to rise, monthly billing would become even more beneficial to customers.

2b. Flexible Terms – Levelized Billing

Levelized billing is an optional billing method which takes a customer's annual bill and establishes twelve equal payments over the year. The advantage for customers is that they have surety in the amount of their bill each month. However, at the end of the year, the total bill is "trued up" against actual usage. This billing option is common for electric and natural gas utilities, but not commonly used for water utilities given their relatively low bills. An overview of this program is noted below.

<table>
<tr><th colspan="2">Flexible Terms – Budget (Levelized) Billing</th></tr>
<tr><td colspan="2">Helps TVWD customer's budget for their bills by establishing a levelized bill.</td></tr>
<tr><td colspan="2">TVWD Specific – TVWD would create individualized levelized billing for a customer requesting this billing option.</td></tr>
<tr><td>Opportunities –
Bills may be more "manageable" for customers when they can expect the same bill.
Bills may be more "manageable" when summer peak billings are levelized out.
Challenges –
Higher winter (low-use) period bills.</td><td>Considerations –
Billing system modifications needed?
Outreach needed to have customers opt-into the program
Revenue neutral – no change in the customer's total annual bill; only the amount of the monthly bill is levelized.
Customers' bills need to be "trued-up" at the end of the year.
Reduces the price signal for conservation.
Absent a price signal, will customers manage their usage during the year?</td></tr>
<tr><td colspan="2">Administrative Considerations
No qualification or screening of customers
No changes in rates, rate structures or billing procedures
Customers will need to "opt-in" and have one year of consumption history
Meters still read on a routine basis; annual true-up required</td></tr>
<tr><td colspan="2">Estimated Program Cost
Potential additional costs for changing the District's billing system</td></tr>
<tr><td colspan="2">Targeted Group
All residential customers</td></tr>
<tr><td colspan="2">Other Considerations
Not well targeted to provide assistance to low-income customers</td></tr>
</table>

Levelized billing offers limited benefits to customers, and seems to be more of a convenience of equal billings. In addition, it is unclear as to the potential level of participation in this program. It would likely have a little impact upon the targeted customer group needing assistance.

HDR's Preferred Approach for Levelized Billing: This program would have limited value to TVWD and the customer group(s) needing the most assistance. For that reason, HDR has concluded that this program should not be pursued at this time.

2c. Flexible Terms – Arrearage Forgiveness

For a customer that is behind on water/utility bills, attempting to catch up on late payments or non-payments is difficult. Arrearage forgiveness is forgiveness of a debt (past due bill). An overview of this program is noted below.

<table>
<tr><th colspan="2">Flexible Terms – Arrearage Forgiveness</th></tr>
<tr><td colspan="2">Forgives all or a portion of past due payments for low-income/qualifying customers.</td></tr>
<tr><td colspan="2">TVWD Specific – TVWD would need to create a policy criteria and approach for past due payment forgiveness.</td></tr>
<tr><td>Opportunities –
Help customers resolve past due bills.
Challenges –
Who qualifies and how much financial aid is provided?</td><td>Considerations –
Must be a past due bill – not a current bill.
Will customers not pay their bill, presuming they will receive arrearage forgiveness at some point?
Not a “comfortable” role/decision for the District or its staff.</td></tr>
<tr><td colspan="2">Administrative Considerations
Customers receiving arrearage forgiveness must be screened for qualification</td></tr>
<tr><td colspan="2">Estimated Program Cost
Unknown, absent screening criteria or level of potential forgiveness</td></tr>
<tr><td colspan="2">Targeted Group
Low-income residential customers only</td></tr>
<tr><td colspan="2">Other Considerations
TVWD currently has crisis assistance available; customers can use this avenue to address past due bills</td></tr>
</table>

In the context of the other assistance programs being reviewed, it would seem appropriate that arrearage forgiveness should not be pursued by the District if other assistance programs are implemented and the District’s current temporary assistance program is maintained or expanded.

HDR’s Preferred Approach for Arrearage Forgiveness: This program is administratively challenging given the requirement to determine who should be provided with arrearage forgiveness. For that reason, HDR has concluded that this program should not be pursued at this time, particularly if other assistance programs are pursued by TVWD.

2d. Flexible Terms – Penalty Forgiveness

Under certain conditions, customers may incur penalties as a result of their lack of payment or late payment (e.g., late payment penalties, turn-on/turn-off fees). For a customer that is behind on a water/utility bill, adding penalties and additional costs only adds to the financial burden. The District, as part of Resolution 10-16, established a set of fees and charges. Included within Resolution 10-16 were the following fees and penalties.

2. Water Service on and off for non-payment	
a. Service on and off, during office hours, Monday through Friday	$65.00
b. After hours or weekend service on and off (an additional)	$55.00
c. Broken promise turn off	$65.00
3. Additional Charges, if necessary, to enforce payment of bill or charges	
a. Removal of Meter	$115.00
b. Reinstallation of Meter	N/C
c. Installation or removal of locking device – first occurrence	$65.00
d. Installation or removal of locking device – second occurrence	$75.00
e. Installation or removal of locking device – third occurrence	$150 & meter pulled
f. Repair of breakage/damage to locking mechanism (curb stops, etc.)	Parts and Labor
g. Service off water at main or reinstating service	Parts and Labor
h. Check return by bank for non-payment (NSF)	$25.00
i. Meter tampering and/or using water without authority	$60.00
j. Penalty for incorrect financial institution account information First two times no charge. Charge per incident, third time and above	$25.00
Carrying Charges Bills issued by TVWD which remain unpaid for over thirty (30) days may be subject to a carrying charge at a rate of 9% per year on the unpaid balance	

TVWD's Resolution 10-16 notes the following:

> *"**Fee Waivers***
>
> *The Chief Executive Officer (CEO) or designee may waive all or a portion of the Other Service Charges & Penalties in Exhibit A if the CEO or designee determines that it is in the equitable and best interest of the District considering the particular circumstances involved in each case."*

It would appear that the District already has a policy in place which gives the CEO or designee the authority to waive all or a portion of these penalties/fees, depending upon the particular circumstances of the customer. What is unclear is what those particular "circumstances" are. What would suggest that it is in the best interest of the District to waive all or a portion of the fee(s) in question?

HDR's Preferred Approach for Penalty Forgiveness: The District currently has the ability to waive all or a part of any penalties. The District should develop more specific guidelines outlining the types of circumstances which would suggest or allow for a waiver. Establishing these guidelines would aid the District's CEO or designee in consistently applying any waiver of a penalty.

3. Lifeline Rates

A lifeline rate is a subsidized rate for a fixed amount of water that is expected to meet a customer's basic (essential) needs. When water use exceeds the initial fixed amount of water (i.e. the lifeline block) the rates charged for all additional usage increases. A lifeline rate structure is a form of an increasing block rate structure, and another form of a "shrink the bill" approach to customer assistance. A more detailed overview of lifeline rates is provided below.

Lifeline Rates	
Reduces bill for a set quantity of water on an ongoing basis to allow essential usage.	
Opportunities – • Provide a below cost block of water for "essential needs" for all residential customers – broader benefit than just low-income customers. **Challenges –** • Provides a benefit across all residential customers which can increase the overall cost of the program. • Defining "essential needs". • Funding the program without adversely impacting other customers.	**Considerations –** • District's pricing blocks would need to be segregated between residential and non-residential to allow for an "essential need" block of water for residential customers. • Should all customers, or only residential customers, share in the on-going costs of the program?
Administrative Considerations • No need to "qualify" eligible customers • Need to modify the billing system to handle a lifeline rate	
Estimated Program Cost • Minimal program implementation and administrative costs • Estimated level of subsidy = $3.5 million; Revenue neutral, collected from other customer via higher block prices for remaining usage.	
Targeted Group • All residential customers	
Other Considerations • Customer's income or level of need is not considered; trade-off of administration/qualifying of a low-income discounted rate versus a rate structure where all residential customers receive the benefit.	

In order to make a policy decision about this particular rate form, one must define the amount of water that relates to "essential needs" and the appropriate price of the water. Each of these elements of the lifeline rate structure is discussed below.

Defining "Essential Needs" Block Size – For residential customers, the District's current first block threshold is equal to 28 CCF on a bi-monthly basis or 14 CCF on a monthly basis. Placing this amount of water into the context of gallons, 14 CCF is equal to approximately 10,470 gallons. For an assumed family of three, this is the equivalent of approximately 116 gallons of water per day, per person. There are differing opinions about what defines "essential needs" and the volume of water that it represents on a per day, per person basis. One example is the use of 50 liters per person, per day[5] or the equivalent of approximately 13.2 gallons per person, per day. Using 15 gallons per person, per day for an assumed family of three, this would equate to a block size of approximately 1,350 gallons. Compared to many lifeline block sizes, this is a very conservative

[5] Basic Water Requirements for Human Activities: Meeting Basic Needs, Peter H. Gleick, Pacific Institute for Studies in Development, Environment and Security,

amount. Most lifeline rate structures have blocks sizes in the range of 3,000 gallons (4 CCF) to 5,000 gallons (6.7 CCF) per month. Provided below is a simple table of potential block sizes for the "essential needs" block of a lifeline rate structure.

Table 4
Analysis of Essential Needs Block Sizes (Per Month)

Essential Need Gallons Per Capita Per Day	Gallons Per Month (Family of 3)[1]	Volume in CCF	Block Size for Lifeline Rate (per Month)
15 gpcd	1,350 gallons	1.8 CCF	2 CCF
25 gpcd	2,250 gallons	3.0 CCF	3 CCF
35 gpcd	3,150 gallons	4.2 CCF	4 CCF
45 gpcd	4,050 gallons	5.4 CCF	5 CCF
50 gpcd	4,500 gallons	6.0 CCF	6 CCF

[1] – Assumes a family of three and a 30-day time period

As can be seen, the range of essential needs is varied. For the purposes of this discussion, an initial block size of 5 CCF will be utilized for the example moving forward. The establishment of the "essential needs" block size is not intended to cover all consumptive needs, but rather a reasonable level for "essential needs". Five (5) CCF is approximately three times greater than the amount used by the Pacific Institute to define essential needs. It is not uncommon for a utility to establish a block threshold greater than the minimal amount assumed for essential needs. At the same time, it is administratively unreasonable to consider a lifeline rate where the size of the "essential needs" block is adjusted for the number of persons in the household. Thus, using a slightly higher threshold should reasonably capture the vast majority of residential customer's "essential needs" regardless of household size.

In summary form, the revised block sizes for the residential rate structure would appear as follows:

"Essential Needs" Block	0 – 10 CCF (Bi-Monthly)	$x.xx/CCF
Remaining 1st Block	10.1 – 28 CCF	$x.xx/CCF
Tail Block	All Usage Over 28 CCF	$x.xx/CCF

Level of the Lifeline Rate Discount – Many lifeline rate structures use some form of a fixed discount percentage for the initial block. While that is a reasonable approach that can consistently be applied over time, an alternative approach was used to review this issue.

In the section on discounted low-income rate structures, it was determined that a discount of approximately $6.15/month would be reasonable. Assuming a customer's essential needs are 5 CCF/month, an essential needs rate discounted by $1.23/CCF would potentially produce a total bill for a typical residential customer relatively comparable to the discounted rate approach. It is important to remember that the key difference between the low-income rate discount program and the lifeline rate program is that the rate discount program is only provided to qualifying customers while a lifeline rate would be applied to all residential customers.

It is this last point that may be problematic for the lifeline rate. A discount of approximately $1.23/CCF applied to all residential customers first five CCF translates to a cost of approximately $4.2 million in foregone revenue. With total rate revenues of approximately $45 million, TVWD's rates would need to increase approximately 9% in order to provide this level of benefit. It is presumed that the need to increase all other rates to support this program would not be an acceptable solution when more direct and cost-effective alternatives are available.

HDR's Preferred Approach for Lifeline Rates: While this program has the benefit of reduced administrative procedures, it is difficult to develop a rate which provides a meaningful benefit and savings, yet doesn't negatively impact the rates of other residential and/or non-residential customers. Given that approximately 93% of the District's accounts are residential, and a threshold of 5 CCF for the residential "essential needs" is about 2/3 of the typical monthly residential consumption, providing a meaningful discounted rate to all residential customers for essential needs simply places too large of a financial/rate impact on the remaining customers and consumption. For that reason, HDR would not recommend the use of a lifeline rate approach at this time. This approach may be more feasible if the block threshold or price is reduced, but in doing so, the key objective of the program is dampened.

4. Temporary Assistance

Temporary assistance provides short-term or one-time assistance to customers to prevent disconnection of services or to restore service after disconnection for households facing an unexpected hardship. As discussed previously, TVWD currently has a Customer Emergency Assistance Program in place that provides temporary assistance. Provided below is a more detailed overview and discussion of temporary assistance programs as they may relate to TVWD.

Temporary Assistance	
Reduces bill one time or on a short-term basis to help customers deal with urgent, unexpected hardship.	
Opportunities – • Targeted assistance helps customers during their time of greatest need. • Partnering with other agencies and organizations can lessen administrative burden. **Challenges –** • TVWD needs a consistent, long-term source of funding. • Can have relatively high administrative costs.	**Considerations –** • TVWD should partner with an outside organization to screen and qualify recipients of assistance. • Build off of, and enhance, existing TVWD assistance program. • Even with other forms of assistance, TVWD may want to retain this program.
Administrative Considerations • Need for screening of customers	
Estimated Program Cost • To provide consistent funding inclusion of up to $220,000/year for funding = $0.30/month impact to all District customers	
Targeted Group • Low-income residential customers in short or long-term financial distress	
Other Considerations • TVWD currently has crisis assistance available; customers can use this avenue to address past due bills.	

Temporary assistance is not a long-term solution to the affordability issue. It is a solution to short-term payment issues. In the District's case, funding has been on a voluntary basis. The District may want to consider funding this program within its revenue requirements on an annual basis. Interestingly, the cost of the low-income rate discount was estimated at $220,000 per year, or an impact to the District's customers of approximately $0.30/month. A similar amount of funds could be directed on an annual basis to the temporary assistance program to provide consistent and long-term funding for this program. While this may be the estimated cost of the program, the net benefit of the program may make the overall cost somewhat less. When a customer is unable to pay their bill, the District may end up writing off the bad-debt. While the cost of the program appears to be an expense, ultimately the vast majority of the dollars (i.e., the cost) are returned as billed revenue (the difference being administrative costs).

TVWD's program, or any temporary assistance program, does not provide assistance to all low-income customers. Rather, it provides assistance to only those customers which apply for the program. In that sense, the benefits of a temporary assistance program may not be as wide-spread as those of a rate discount program. However, it would seem that the District should not abandon the current program. It may instead choose to enhance the existing program, particularly as it relates to consistency of funding.

HDR's Preferred Approach for Temporary Assistance: The District's current temporary assistance program appears to be effective and beneficial to customers needing temporary

assistance. For that reason, HDR has concluded that this program should be maintained and a more consistent funding source provided.

5. Water Efficiency

Water efficiency customer assistance programs subsidize water efficiency measures by providing financial assistance for leak repairs and offering rebates for WaterSense™ certified fixtures, toilets, and appliances. While this may be considered an "after the fact assistance" program it certainly has benefits of an on-going nature and may also be considered as a way to "shrink the bill." A more detailed overview and discussion of water efficiency customer assistance programs is provided below.

<table>
<tr><th colspan="2">Water Efficiency</th></tr>
<tr><td colspan="2">Reduces bill by directly implementing water saving measures, such as installing updated low-flow fixtures.</td></tr>
<tr><td>Opportunities –
Opportunity to directly lower consumptive use.
Can be a long-term solution for lowering bills by reducing consumption use.
Opportunity for TVWD to partner with local business community (vendors and installers).
Challenges –
Need to review individual households to determine need and best use of limited funding.
Need to establish limitation of amount of financial aid provided per household.
May require professional installation of certain water saving devices (e.g. toilets).</td><td>Considerations –
TVWD currently has a conservation rebate program.
Need to define basis for qualification for financial assistance.
High capital investment with limited impact to the targeted group.
Relatively inefficient means of providing financial assistance.
Available only to low-income homeowners or also available to low-income renters?</td></tr>
<tr><td colspan="2">Administrative Considerations
Need screening for qualification and level of assistance;
Screen for income qualification or any other criteria, and
Audit to review the household needs.</td></tr>
<tr><td colspan="2">Estimated Program Cost
Unknown depends upon level of participation
✓ Administrative Cost estimated at $100/retrofit; screening and audit
✓ Estimated cost for two toilet retrofits - $500 (2 toilets @ $200 each) + $100 contractor installation cost</td></tr>
<tr><td colspan="2">Targeted Group
Low-income residential homeowners</td></tr>
<tr><td colspan="2">Other Considerations
TVWD currently has a rebate program; this program would be in addition to the rebate program.
Relatively high cost with limited impact to the targeted group (i.e., does not provide help to the greatest number of customers).</td></tr>
</table>

This type of program is targeted at providing assistance to low-income homeowners who currently have inefficient water using devices in their home. For an individual homeowner, this can be an effective program at saving water on a daily basis and thereby lowering the overall water bill. Absent this program it is unlikely that a low-income customer would make the capital investment in an expensive low-flow device (e.g. a low-flow toilet) with a long payback period.

In the Portland area, the Regional Water Providers Consortium is made up of 20 water providers and regional government Metro. TVWD is a member of the Consortium. The Consortium has a conservation focused website and Conserveh2o provides information on the assumed usage patterns of a typical household. It notes that more than 47% of the water used in an American home occurs in the bathroom, with nearly 24% being used for toilets. For TVWD, a typical residential customer is assumed to use 7 CCF in a month. If 24% of that amount of water is used for flushing toilets, then that means that approximately 1.7 CCF of water per month is used for toilets. The Consortium's conservation website also notes that an older style toilet may use 3.5, 5, or up to 7 gallons of water per flush. A newer low-flow toilet uses no more than 1.28 gallons per flush. Using a comparison to a 5 gallon per flush toilet, replacement of the toilet with a low-flow toilet would provide nearly 75% savings. If a customer is currently using 1.7 CCF/month for toilet flushing, then the potential savings would be approximately 1.3 CCF per month. At the District's adopted 1st block rate for 2017, this would equate to a potential savings of $5.28/month, or roughly the level of discount provided by the low-income rate program.

The administration of this program could certainly be substantial. First, there is the issue of the customer's home and whether it could benefit from the program. In order to determine this, the District could provide a quick audit of the household and the water using devices in the home. From that audit, the District could determine the most cost-effective solutions (i.e. devices) to achieve a targeted level of savings per household. It is presumed that the program would be designed to place a limit or cap on the amount of funds the District is willing to invest within a single household. This program does provide the District with an opportunity to partner with local suppliers and installers. The cost estimates developed as a part of this issue paper have also presumed that most customers would require professional installation of most devices, such as a toilet.

While this program can be targeted for low-income homeowners, it could also be provided to low-income renters who are individually metered and pay water bills to the District in their own name (as opposed to the landlord's name). However, the difficulty in providing financial assistance to renters is that the financial assistance on the water saving device is actually being provided to the landlord, who presumably has sufficient financial resources to easily make the same level of capital investment that the District would be providing to their property in the form of a grant. The landlord also has the opportunity to make the capital investment in the water efficient device and receive a rebate through the District's current conservation program. In that sense, providing water efficiency program assistance to renters of homes would seem to be imprudent.

HDR's Preferred Approach for Water Efficiency: This program is capital intensive and would provide assistance to a limited number of low-income customers. At the same time, there is fairly high administrative cost associated with this program. Given the array of other available

programs, and the costs and efficiency of those programs in relation to this program, HDR would conclude that this program should not be pursued at this time.

Summary Observations

This issue paper has extended and expanded the discussion of affordability for TVWD and has reviewed specific programs in five different areas. These programs were as follows:

1. Bill Discounts
   - Low-Income Rate
2. Flexible Terms
   - Monthly Billing
   - Budget (Levelized) Billing
   - Arrearage Forgiveness
   - Penalty Forgiveness
3. Lifeline Rates
   - Lifeline Rate Structure
4. Temporary Assistance
   - Temporary Assistance Program
5. Water Efficiency
   - Fixture Retrofit Program

Each of these programs has certain attributes, along with advantages and disadvantages. The prior discussion has attempted to highlight those attributes and the key policy decisions needed for each program. In the end, the selection of an affordability program(s) for TVWD will be based on how well the program meets the needs of the District's customers while also considering the potential cost and administrative effort associated with it. Provided below in Table 5 is a summary overview of each of the programs with a relative assessment of their applicability to TVWD.

Table 5 Summary Overview of Affordability Assistance Programs and Applicability to TVWD			
Program	**Level of Administration**	**Relative Level of Cost to Benefit**	**Other Considerations**
Most Beneficial			
Low-Income Rate	Medium to High	Low to Medium Cost/High Benefit	Specifically targets low-income customers.
Monthly Billing	Low	Low to Medium Cost/Medium Benefit	Benefits all customers, helps with customer money mgmt.
Temporary Assist. Program	Medium to High	Low to Med. Cost/Low to Med. Benefit	Specifically targets financially troubled customers. Does not benefit all low-income customers.
Less Beneficial			
Budget (Levelized) Billing	Low to Medium	Low to Med. Cost/ Low Benefit	Not targeted, may have limited benefit and customers opt-in.
Arrearage Forgiveness	Low to Medium	Medium Cost/Low Benefit	Temporary assistance program can provide similar benefit.
Penalty Forgiveness	Low to Medium	Low Cost/Low Benefit	Effective, but limited "after the fact" assistance.
Least Beneficial			
Lifeline Rate Structure	Low to Medium	High Cost/Low Benefit	Too costly as currently envisioned with limited benefit.
Fixture Retrofit Program	Medium to High	High Cost/Med. Benefit	Costly and effective, but limited in number of benefiting customers.

Policy Direction Requested from the Rate Advisory Committee

From the prior issue paper on affordability and this issue paper on specific programs available to TVWD to address affordability, the Rate Advisory Committee should have sufficient background information and detail about each program to provide the District's Commissioner's with a set of observations and recommendations on the issue of affordability. In summary form, the Commission would like the RAC's input on the following affordability issues/questions:

1. Does TVWD currently have, or potentially have in the future, customers within their service area that may experience or have affordability issues?
2. Should TVWD continue its current policy of addressing affordability (i.e., providing some form of assistance)?
3. In regard to TVWD's current Customer Emergency Assistance Program (CEAP), is it adequate or should it be modified/expanded?

4. Should TVWD augment its customer assistance program and rates to better address the issue of affordability? If so, which programs should the District explore further and possibly implement?
    - Low-Income Rate
    - Monthly Billing
    - Temporary Assistance Program
    - Budget (Levelized) Billing
    - Arrearage Forgiveness
    - Penalty Forgiveness
    - Lifeline Rate Structure
    - Fixture Retrofit Program

Issue Paper 2 – Review of the Issue of Multi-Year Rate Adoption

Issue Paper 2: Review of the Issue of Multi-Year Rate Adoption and the Tualatin Valley Water District

Introduction

For a variety of reasons, the adoption and implementation of rates across the United States varies from utility to utility. In some cases, this is driven by the governing body's preferences for setting rates over a specific period of time, the need and reason for the rate adjustments, utility policies, or political reasons. While the level of the rate adjustment is usually a significant discussion issue, the number of years adopted (e.g., one year versus multiple year rate adjustments) during a single rate hearing is also an important consideration. In most cases, the governing body has the ability to adjust rates at any time as long as procedural requirements are met (e.g., customer notification, public meeting). In most instances, utilities adopt rates for a short-term period (i.e., 1-5 years) as the ability to accurately predict costs and changes over a longer time period can be difficult. This issue paper is intended to discuss the advantages and disadvantages of adopting rates for a single year versus a multi-year time period.

Overview of the Issue

The water utility industry began as a relatively simple business which did not resemble the complexity of today's modern water system. Today, water utilities operate in a highly regulated environment requiring systems that provide safe drinking water and fire flow, and are often tasked with conserving the limited and precious resource. A small utility serving 5,000 customers may have tens of millions in asset value and dozens of employees.

Water rates have become an increasingly larger portion of household expenses and as a result, they have drawn more attention. Since 1998, water rates have grown at 5% per year on average, or twice the rate of inflation[1]. Water rates continue to increase to fund regulatory requirements, capital improvements, and system renewal and replacement needs. Historically perceived as a relatively inexpensive and plentiful resource, customers now have a better understanding of the challenges and costs associated with providing safe drinking water.

While the challenges of providing service to customers and meeting regulatory requirements have increased, the need for stable and consistent revenues have also increased. It is a prudent business practice for utilities to consistently review their rates to confirm their adequacy and equity. At the same time, customers typically prefer small annual adjustments to large one-time adjustments. When taken together, a utility must consider the transition of rate adjustments and how they can best be implemented.

To provide the cost-basis for its rates and any proposed rate adjustments, a water utility will generally conduct a comprehensive water rate study. This study includes the development of a multi-year projected financial plan that determines the appropriate level of rates to adequately

[1] Source: American Water Works Association and Raftelis Financial Consulting, Rate Trends in Survey Years, 2016.

support the utility's operating and capital costs over the planning period. In some cases, a utility will review rates annually and adopt rates for a one-year period. In other cases, a utility may adopt rates for a multi-year period (e.g., 2 to 5 years). Once adopted in a single resolution or ordinance, the rates automatically adjust each year to the adopted rates for a particular year.

TVWD's Current Approach

In 2012, Tualatin Valley Water District (TVWD or the "District") completed a comprehensive rate study that included a 30-year revenue requirements forecast and rate projection. District staff maintain and update the forecast model to develop rate projections based on projected operating costs and the District's capital improvement plan. For purposes of budgeting and rate setting, TVWD adopts a biennial (2-year) budget, while adopting rates on an annual basis.

Review of Best Management Practices

Industry groups such as the American Water Works Association (AWWA), Water Environment Federation (WEF), and the Government Finance Officers Association (GFOA), don't specifically address or have a best practice for rate adoption. However, there are principles and best management practices that address the issue of setting rates for a specific time period.

While AWWA does not have a best management practice that speaks specifically to rate adoption, the M1 Manual[2] does reference eleven objectives for developing cost based rates which were paraphrased from the book "Principles of Public Utility Rates".[3] Three of the objectives speak specifically to consistency in rates and the need to plan for the future. These are:

1. Effectiveness in yielding total revenue requirements (full cost recovery)
2. Revenue stability and predictability
3. Stability and predictability of the rates themselves from unexpected or adverse changes

Taken together the above principles call for rates that cover the utility's costs, provide stable and predictable revenue, and finally, from a customer's perspective, are stable and predictable in terms of changes from year to year. To meet these objectives, rates must be planned and adopted to avoid under-funding the utility in the short-term and preventing larger future rate increases. This can be accomplished through annual rate adjustments or through multi-year adjustments. How the proposed rate adjustments are implemented can have a direct impact upon the customer's perception of the stability and predictability of the rates and their water bill.

There are six GFOA Best Practices/Advisories which stress the importance of multi-year financial planning. These Best Practices are:

1. Recommended Budget Practices from the National Advisory Council on State and Local Budgeting, Approved January 1998
2. Establishment of Strategic Plans, Approved March 2005
3. Multi-Year Capital Planning, Approved February 2006

[2] Source: American Water Works Association, Principles of Water Rates, Fees and Charges, Sixth Edition, 2012.
[3] Source: Principles of Public Utility Rates, Bonbright, Danielsen and Kamerschen.

4. Long-Term Financial Planning, Approved February 2008
5. The Public Finance Officer's Role in Supporting Fiscal Sustainability, Approved February 2012
6. Financial Forecasting in the Budget Preparation Process, Approved February 2014

GFOA's Best Practices place an emphasis on multi-year planning to effectively and formally plan for the utility's future. The two main principles at issue in the above Best Practices are the need for both a long-range financial plan and strategic plan. Despite what these two plans might be named, most utilities routinely conduct comprehensive financial planning or rate studies which have all the hallmarks of a long-range financial plan. Utilities are also often required to conduct master plans which could be described as strategic plans. The most important part of developing a long-range plan is the implementation, or adoption of annual or multi-year rate adjustments.

One entity that specifically addresses multi-year rate adoption as being a financial practice is the Standard and Poor's Rating Services (S&P). In January 2016, S&P released an update detailing its new methodology for assigning credit ratings for waterworks, sanitary sewer and drainage utility systems. The methodology contains several factors categorized as either Enterprise Risk or Financial Risk. The factors that make up the enterprise and financial risks have various weightings to determine a utility's bond rating. The component that references rate adjustments is called Rate Setting Practices, which is a sub-factor within the larger Operational Risk Management Factor. This assessment has four levels: Strong, Good, Standard, and Vulnerable. For this sub-factor, S&P considers a utility to be "strong" if:

"When rate increases have been needed, the decision-making body has been supportive and timely, even to the extent that multiyear, preapproved rate increases are common, if not standard. Finance decisions are prudent, in our view, rather than simply politically expedient and that could possibly be to the detriment of the utilities near-term financial health. Periodic rate studies (internal or external) are common."[4]

Though not a best practice, this criteria being included as part of the utility rating process does show that S&P believes adopting several years of rates helps defuse some level of political influence on the level of rates ultimately adopted.

In much the same vein, Moody's ratings agency also notes in its review of a utility's financial health that multi-year rate adjustments are beneficial from a ratings perspective. Moody's states the following:

"We tend to give higher scores to utilities that set rate structures under which increases are automatic, and do not require annual approval for implementation."[5]

In the case of Moody's review, multi-year rate adjustments are preferred and utilities can receive a higher rating, which could result in a lower overall cost of borrowing.

[4] Source: Standard and Poor's Ratings Services McGraw Hill Financial *U.S. Public Finance Waterworks, Sanitary Sewer and Drainage Utility Systems: Rating Methodology and Assumptions* January 19, 2016, P. 21 Table 14.

[5] Moody's Ratings Agency, "Rating Methodology: US Municipal Utility Revenue Debt"December 15, 2014, P. 16.

As discussed above, while there are no specific industry guidelines on the approach to adopting utility rates for a specified time period, there are best practices in the financial community that can help maintain a financially healthy utility. The bond rating criteria provided by S&P and Moody's clearly indicates a potential financial benefit of adopting multi-year rate adjustments.

Review of Local Utility Rate Setting Approaches

Provided in Table 1 is a summary of recent examples of the adoption of utility rates for several local utilities and the number of year(s) the rates were adopted for.

Table 1
Number of Years Adopted by Local Utilities

Agency	# of Years Adopted
Astoria Public Works Department	1
Clackamas Co. Water Environment Svcs (Sewer Rates)	1
Eugene Water & Electric Board (Water Rates)	1
City of Gresham	3
Clean Water Services	1
Medford Water Commission	1
Portland Water Bureau	1
Salem Public Works	2

In many cases, the utility developed a rate study or long-term financial forecast that projected rates over a long-term period. However, as Table 1 shows, the rate implementation period varies from utility to utility.

There certainly are advantages and disadvantages to establishing rates in a single year or multi-year time period. Both can provide sufficient revenue, transparency, and predictability depending on how the rate adjustments are adopted and noticed to the utility's customers. However, the costs associated with conducting a comprehensive rate study each year are typically significant, and the adoption of a set of multi-year rates can provide greater surety to the District's customers and the outside financial community.

Provided in Table 2 is a summary of the advantages and disadvantages of single year rate adjustments and multi-year rate adjustments.

Table 2 Summary of Annual and Multi-Year Rate Adjustments	
Annual Rate Adjustments	**Multi-Year Rate Adjustments**
Advantages – • Rates reflect most recent expenses and cost projections. • Provides greater flexibility to adjust rates as needed to reflect changing conditions. • Allows customers to provide public input on the proposed rate adjustments annually. **Disadvantages –** • Cost of annual rate projections (rate study). • Need to establish a public process and rate adoption process on an annual basis. • Potentially introduces more politics to the rate setting process.	**Advantages –** • Transparency of future rate adjustments. • Provides customers with a clear indication of future rate impacts so they can plan accordingly. • Viewed favorably by rating agencies. • Can directly link to and reflect biennial budget process (e.g., adopt 2-year budget/2-year rates). **Disadvantages –** • Need to establish an accurate rate forecast, or maintain adequate reserves to handle any large variations in revenue/expenses. • Economic conditions may change after rate adjustments are adopted. • Public perception if rate changes are necessary after rate adoption.

As can be seen, there are trade-offs between a single-year and multi-year rate adjustment. The major trade-offs appear to be related to the following:

- Annual cost to ratepayers of conducting a comprehensive rate study and public hearing process
- Stability and predictability of the rates from both the utility and customer perspectives
- Positive perception by the outside financial community (rating agencies) of multi-year rate adjustments

Summary

Utilities expend a significant level of time and effort to conduct a rate study and establish rates. As this issue paper points out, utilities may adopt rates for a single-year or multi-year rate setting period. In doing so, there are certain advantages and disadvantages. TVWD maintains a long-range financial plan, but adopts a biennial budget and rates on an annual basis. A key question for TVWD is whether it should revise its current approach of adopting rates on an annual basis and consider adopting rates for a multi-year period (e.g., a two-year period to match its budget, or a longer period based on the results of the District's financial forecast model). Regardless of the District's approach to this matter, a key element of either approach is the public outreach and education of customers to provide transparency and customer understanding of the expected rate adjustments.

Issue Paper 3 – Review of the Hydrant Permit Program for TVWD

Issue Paper 3: Review of the Hydrant Permit Program for the Tualatin Valley Water District

Introduction

Tualatin Valley Water District (TVWD or the "District") retained HDR Engineering, Inc. (HDR) to provide an overview of TVWD's current hydrant permit program, along with a review of the various approaches utilities use for charging hydrant meter water users and bulk water users. TVWD wants to meter and recover costs for temporary use of water through a hydrant more accurately. A comprehensive hydrant permit program balances protection of the community's water supply and access to that water supply. Utilities will often limit the number of hydrants that are available for use and designate specific hydrant locations within their system for a variety of reasons, including hydraulic constraints of certain areas, limiting impacts to customers from potential sediment disturbances, safety concerns and overall, preventing water system damage or potential contamination events.

This issue paper provides the Rate Advisory Committee (RAC) with a review of current utility practices for hydrant permit programs and charges for construction or water hauler customers.

Defining Hydrant Charges

The primary purpose of hydrants is to provide public fire protection. However, hydrants also provide an easy access point for temporary connection for construction activity, temporary landscaping, or filling water trucks or tanks. Water haulers fill their trucks from specified points in the system such as hydrants or other locations designated by the utility. Customers using hydrants for construction purposes may physically connect to the system for short periods (i.e., seasonal project week) as needed. These customers are unique in that they lack a direct connection to the system and their usage characteristics vary. For example, depending on the need (total volume) for water, and the size (capacity) of the hauler, the timing and use of the system can vary significantly from one customer to another. This can also be further impacted by the need for water at various times of the year (e.g., construction season). As a result, these customers can place different impacts on the system, thus resulting in utilities taking different approaches in establishing rates for hydrant water customers.

One of the challenges in developing a hydrant meter program is that there is not a defined methodology from the American Water Works Association (AWWA) or other respected industry sources on hydrant water use. Hydrant fees typically fall under the category of miscellaneous charges. Frequently, miscellaneous charges or fees are set based on the cost associated with providing the service. For example, hydrant water rates should include the costs of managing the program, costs of supplies (e.g., meter/hydrant key), and other relevant costs.

TVWD Approach for Hydrant Permit Program

TVWD's present hydrant permit program includes a permit fee based on length of permit plus $4.06 per 100 cubic feet of usage. Currently, TVWD has 76 active hydrant permits as follows:

- 12 for 3 months
- 11 for 6 months
- 53 for 12 months

For construction sites, hydrant meters and backflow prevention assemblies[1] are provided in advance of the permanent meter when needed for site development. A deposit of $2,000 is required for large meters (3-inch) and $500 for small meters (1-inch). The customer's metered water usage is billed at the District's first block rate of $4.06 per CCF[2]. When the customer returns the hydrant meter, the deposit, less water usage charges, is returned to the permit holder.

For a truck hauler customer, District staff inspects the vehicle for the appropriate backflow protection (i.e., air gap) and proper equipment. The permit holder then receives a packet with a load card – used to track how many times a truck or tank is filled –and instructions for loading, along with approved hydrant locations. The permit holder is responsible for recording truck loads[3] and submitting a quarterly record with which TVWD invoices the permit holder. Provided below in Table 1 is a summary of TVWD's present hydrant meter and permit rates, and the current approach to charging these customers.

Table 1
TVWD Present Hydrant Permit Rates

Rate Component	Permit Fee ($)	Hydrant Meter Deposit 3-inch ($)	Water Unit Charge ($/per 100 cubic feet)
Hydrant Meter			
Three Month Permit	$65.00	$2,000.00	$4.06
Six Month Permit	$90.00	$2,000.00	$4.06
Twelve Month Permit	$140.00	$2,000.00	$4.06
Truck Hauler			
Three Month Permit	$65.00		$4.06
Six Month Permit	$90.00		$4.06
Twelve Month Permit	$140.00		$4.06

[1] Backflow prevention assemblies are designed to protect the water line from contamination.
[2] CCF = one hundred cubic feet or approximately 748 gallons of water
[3] A meter is not issued to the water hauler customer since the meter is large and somewhat awkward to have to install before each refill. In addition, a hydrant meter is a measuring device prone to damage if frequently installed, removed and placed in the truck between refills.

Overall, TVWD's hydrant permit program is simple and relatively effective, with the added benefit of being cost effective for customers; however, the program requires varying levels of staff involvement, notably during peak times when program work increases staff time significantly. In March 2016, at a TVWD Board Work Session, District staff presented an overview of the issues and concerns for TVWD's hydrant meter permit program. The main concerns voiced at the meeting were the public perception of leaking, poorly maintained filling equipment and the method used by TVWD to track the number of loads by the permit holder, and to a lesser degree the inspection process itself which staff have noted could be improved substantially through more automated processes (e.g., online payments and application forms).

Review of Hydrant Permit Programs

In reviewing utility hydrant programs around the region, two primary approaches were found. These are the use of a hydrant permit, similar to TVWD's current approach, or in the case of water haulers, the use of a designated water filling station.

The hydrant permit approach is the most common. In order to get a hydrant permit, applicants must include a deposit for the meter, pay a rental fee for the meter, and pay for water use.[4]

The second approach is the use of a water filling station or bulk water station. Access to the station is granted by application and purchase/deposit of an access key card. Water charges are assessed by water unit (e.g., CCF) or by the truck load. Table 2 is a summary of hydrant permit programs at selected Oregon and other Pacific Northwest utilities.

[4] TVWD's method differs slightly in that the District does not charge a rental fee for the meter.

Table 2 Hydrant Permit Programs at Selected Oregon and Other Pacific Northwest Utilities			
Name of Utility	**Hydrant Use (Metered)**	**Truck/Tank Lot (Unmetered)**	**Water Fill Station**
State of Oregon			
City of Albany	♦		
City of Beaverton	♦		
City of Bend	♦		
City of Corvallis			♦
Eugene Water and Electric Board			♦
Grant's Pass			♦
City of Hillsboro	♦		
City of Lake Oswego	♦		
City of Medford	♦		
Portland Water Bureau	♦	♦	
City of Redmond	♦		
City of Salem			♦
City of Tigard	♦		
City of Tualatin	♦	♦	
Tualatin Valley Water District	♦	♦	
Other Utilities			
City of Bellevue, WA	♦	♦	
City of Seattle, WA	♦		
City of Spokane, WA	♦		
City of Tacoma, WA	♦	♦	
City of Vancouver, WA	♦	♦	

As shown in Table 1, most hydrant programs are structured for a metered hydrant use.

Overview of Industry Approaches for Hydrant Permit Fees

Based on a review of other water utility rate schedules, HDR found that the method used to charge customers for hydrant water use can vary. However, HDR did not find any specific

analyses that outlined the cost basis for the hydrant rate, particularly if the rate was not tied to the existing rate schedule.

The fee structure for hydrant service can vary significantly given the wide range of facilities that can be used to provide the service, whether the service is metered or monitored, and the approach to managing the service. Based on HDR's review, there were several common approaches. The two simplest approaches were:

- Flat rate based on fill-ups/days/month
- Rates based on actual metered use

In the cases where it is a flat/fixed cost per fill up/day, the utilities generally would not meter the use. However, for those customers where there was a metered rate, the customer rented a hydrant meter that would track consumption for billing purposes. While no specific analysis was found for the rate development, in many cases the rate was similar to other consumption charges for the utility, and in some cases, appeared to be specifically developed for the water hauler service. For example, some utilities charge the same rate as all other commercial or irrigation customers. In addition to the hydrant fee and water unit fee, there are often other fees such as the following:

- Permit fee
- Set up fee
- Hydrant deposit
- Hydrant rental fee

Table 3 shows the hydrant permit rates at selected regional utilities.

Table 3
Hydrant Permit Rates at Selected Oregon and Other Pacific Northwest Utilities

Utility Name	Permit Fee ($)	Set Up Fee ($)	Hydrant Meter Deposit 3-inch ($)	Hydrant Meter Rental ($/Day)	Hydrant Meter Fee ($/Month)	Water Unit Fee (S/Usage)
State of Oregon						
City of Albany [1]		$25.00	$75.00		$95.56	$3.35/100 CF
City of Beaverton [2]		$25.00	$675.00			$2.97/100 CF
City of Bend [3]	$102.28				$44.25	$1.86/100 CF
City of Hillsboro			$675.00	$4.00		$2.00/1,000 Gals
City of Lake Oswego [4]	$550.00		$475.00	$10.00		$3.16/100 CF
City of Medford		$40.00		$10.00		
Portland Water Bureau						
Hydrant Meter Permit [5]	$360.00		$627.00	$3.60		$4.22/100 CF
Annual Permit [6]	$2,825.00					
City of Redmond	$85.00			$40.00	$57.23	$0.91/100 CF
City of Tigard [7]		$50.00	$650.00		$50.00	$7.75/Month
City of Tualatin [8]	$50.00		$700.00	$5.00	$50.00	$2.29/100 CF
Tualatin Valley Water District						
Three Month Permit	$65.00		$2,000.00			$4.06/100 CF
Six Month Permit	$90.00		$2,000.00			$4.06/100 CF
Twelve Month Permit	$140.00		$2,000.00			$4.06/100 CF
Other Utilities						
City of Bellevue, WA [9]						
Fire Hydrant	$100.00		$800.00		$50.00	$6.60/100 CF
Tank Lot (1 fill up per day)						$6.60/100 CF
City of Seattle, WA [10]	$214.00	$304.00			$45.00 or $57.00	$5.06/100 CF
City of Spokane, WA [11]	$50.00		$600.00			
City of Tacoma, WA [12]						
Fixed (Single) Site	$100.00		$1,000.00		$263.04	$1.945/100 CF
Multiple Site	$100.00				$263.04	$1.945/100 CF
Short Term (per truck, per day)					$50.00	
City of Vancouver, WA [13]						
Short Term < 15 Days	$100.00					$1.47/100 CF
Long Term > 15 Days	$100.00				$100.00	$1.47/100 CF
Truck Based					$100.00	$1.47/100 CF

[1] Albany fees for 2-inch meter.

[2] Beaverton set up fee of $25 charged for each use up to one month or $100 per year.

[3] Bend hydrant fee $25 per month; $100 per year. Backflow assembly required and included in fee price.

[4] Lake Oswego rental fee $10 per day with a maximum of $50 per month.

[5] Portland Water Bureau temporary hydrant 3-day minimum with one three-month extension. 700 cubic feet included in permit. Additional water charged at $4.22/100 cf.

[6] Portland Water Bureau – 2 vehicle tags (includes 60,000 cubic feet water); each additional tag under 1,000 gallons is $400, over 1,000 gallons is $835.

[7] Tigard water unit rate is based on irrigation rate.

[8] City of Tualatin permit fee is per truck for six months. Hydrant fee per month is per truck valid for six months.

[9] Bellevue water unit based one truck fill up per day.

[10] Seattle hydrant fee is one time not by month. If hydrant meter cannot be used, $45/month from Sept 16 to May 15, $57/month from May 16 to Sept 15.

[11] Spokane permit is daily charge of $50, $200 monthly, $450 yearly.

[12] Tacoma is for 2-inch meter. Water unit usage plus monthly readiness to serve charge of $263.04. Hydrant fee is per truck.

[13] Vancouver truck based also pay for meter and installation.

Hydrant permit programs have additional administrative and policy restrictions that would need to be enforced. Typically, the utility will have various fees and penalties in place to encourage certain positive behaviors or to discourage negative behaviors. Included in these miscellaneous fees may be a penalty for unauthorized water use, failure to not report water use or tank inspection, and deposit/rental for a backflow prevention device. Again, the various fees would depend on the ability of the utility to provide the service, either through a hydrant or other specified point. Table 4 shows additional miscellaneous charges at various regional utilities.

Table 4
Other Fees and Charges at Selected Oregon
and Other Pacific Northwest Utilities

Utility Name	Wrench Deposit /Rental	Backflow Deposit/Rental	Other Fees and Penalties
State of Oregon			
City of Albany	$25.00 deposit		$25.00 Relocation; $50 + $3.35 per 100 CF of unauthorized use
City of Beaverton	$25.00 deposit		$102.28 Relocation
City of Hillsboro		$250.00 deposit; $2.00 day rental	
Portland Water Bureau	$269.00 deposit; $3.60 day rental		
City of Salem		$404.00 deposit; $3.00 day rental	
Tualatin Valley Water District			$70 Other location tank inspection; $950 Uninspected tank; $500.00 Unauthorized use per occurrence; $15/Day Failure to report usage; damage to meter deducted from deposit; deposit forfeited if meter held more than 3 months.
Other Utilities			
City of Bellevue, WA	$25.00 deposit		Unauthorized use $500 per day per violation up to $5,000 per day for repeat violations
City of Spokane, WA	$75.00 deposit		$375.00 Unauthorized use
City of Tacoma, WA			$1,000.00 Unauthorized use
City of Vancouver, WA			$50.00 Relocation; $200 failure to report usage

The second approach of the use of a water filling station or bulk water station is limited in practice in the Pacific Northwest. The water from a filling station is charged by water unit or by the truck load. Table 5 is a summary of regional utilities with water filling stations and their rates.

Table 5 Water Filling Stations at Selected Oregon and Other Pacific Northwest Utilities			
Name of Utility	**Set up Fee**	**Key Deposit**	**Water Unit Charge**
State of Oregon			
City of Corvallis		$150.00	$20 per access
Eugene Water and Electric Board		$15.00	$4.00 per 1,000 gallons
Grant's Pass			$6.50 per 1,000 gallons
City of Salem			$0.75 per 1,000 gallons

Based on the review of regional hydrant permit programs, Table 6 provides a summary of the advantages and disadvantages of the various approaches. Keep in mind that this summary is based on the limited review of Oregon and other Pacific Northwest utilities. It is not an evaluation of the overall cost to the system.

Table 6
Review of Hydrant Permit Program Approaches

Establishes specific rules and regulations of the utility for hydrant permit meter use and filling stations

Metered Hydrant Use	**Un-Metered Hydrant Use**	**Water Filling Station**
Advantages – • Specific sites can be designated and identified. • Access points are spread across the service area. • Reduced need to monitor and track customer use. • Consumption is metered. • No self reporting since metered. **Disadvantages –** • Initial cost of meters for customer use. • Maintenance of equipment and damage to hydrant meters. • Higher customer cost for deposits, rental fees, etc. • Administration of additional fees and program.	**Advantages –** • Specific sites can be designated and identified. • Access points are spread across the service area. • Lower cost of metering equipment. • Lower maintenance costs of metering equipment. • Simple, low cost approach and program. **Disadvantages –** • Consumption is un-metered. • Reliance on customer self reporting to bill for usage. • Increased staff inspection and accounting effort to monitor customers.	**Advantages –** • All consumption is metered and tracked by customer. • Limits water access to specific locations. • Minimizes the need for hydrant meters and equipment. • Eliminates wear and tear on fire hydrants. • Easier to monitor location(s). **Disadvantages –** • Capital costs of establishing and maintaining station(s). • Additional operating costs for maintaining the station(s). • Required monitoring of trucks and access for permitted vehicles only. • Availability of sites and impact to locations.

Based on the initial review and comparison of TVWD's hydrant permit program to other utilities, TVWD's approach is similar to other utilities but may not include all the fees other utilities use to reflect the costs of the program. However, additional hydrant permit program options may be more expensive and not as flexible for TVWD's customers.

Addressing TVWD's Board Concerns

As noted, TVWD currently has approximately 76 active customers in the hydrant permit program. These customers used approximately 3,714 CCF in 2014 which resulted in approximately $13,000 in revenue. Compared to TVWD's total rate revenue of $35 million and annual metered sales of 9.8 million, these customers represented only 0.04% of revenues and 0.04% of the total metered sales in 2014.

The current issues related to the hydrant meter program are centered around the perception of leaking, poorly maintained filling equipment and the method used by the District to track the number of loads by the permit holder, and as previously noted, the inspection and process itself which District staff have noted could be improved through more automated processes. There are limited options available to TVWD to address the perception issues above but the latter items could be refined in order to reduce program expenses related to staff time.

In the case of hydrant meters for construction, TVWD's approach is typical of other utilities and the fee assessed against the metered usage appears reasonable. In the case of water haulers, there are alternative approaches available, such as the building of a water-filling station. Our experience suggests that the cost of constructing and maintaining a water filling station likely far exceeds the benefit to be derived. Requiring the use of a hydrant meter for a water hauler is certainly feasible but likely awkward and costly given the increase need to meet District permit demands. TVWD's use of designated hydrants and regular truck inspections appears to be a reasonable balance between the District's desire to protect its customers from water theft and most importantly, maintain public health, while meeting the water haulers' desire to be able to efficiently fill their trucks.

Summary

This paper provides an overview of the issue of hydrant programs and the associated rates and fees. It is intended to provide an understanding of the different approaches and programs currently being used across the Pacific Northwest. From this information the Rate Advisory Committee can begin to consider the issue of hydrant meter programs and whether TVWD should consider making any adjustments to its current program.

Issue Paper 4 –
Consolidated Consumption Billing

Issue Paper 4: Consolidated Consumption Billing and the Tualatin Valley Water District

Introduction

This issue paper will explore the practice of aggregating, or consolidating, consumption for the purpose of billing multiple metering points under an account as if they were a single metering point for non-residential customers. This issue paper will also review how consolidated consumption billing might apply specifically to the Tualatin Valley Water District (TVWD or the "District"). This issue is isolated to non-residential customers who have more than one metered account, and where multiple meters are currently billed to the same account/property owner. Currently, each metering point is treated as a separate billing, but under consolidation, the consumption from each meter would be combined when calculating the consumption bill under TVWD's current rate structure. The current fixed meter charge would be maintained and charged for each meter providing service.

Overview of the Issue

There are a number of consumption rate structures used by water utilities throughout the United States. The consumption rate structures can range, in the simplest form, from a uniform rate, a declining block (tiered) rate structure, or an increasing block (tiered) rate structure. TVWD's current non-residential rate structure is an increasing block rate structure with two blocks. The size of the first block is based on the customer's consumptive use up to 140% of the individual customer's 12-month moving average. During a billing period, all consumption over 140% of the 12-month moving average is billed at the second, and higher priced, block rate.

Combining consumptive use under a uniform rate structure would not be beneficial to the customer as all consumption is billed at the same rate regardless of the consumptive use. As a result, utilities with a uniform rate structure would not be impacted by the consolidation of consumption for billing purposes.

The consolidation of consumption can impact a customers bill when there is a block rate structure. Specifically, a declining block structure with fixed block sizes becomes less expensive as more consumption occurs given the higher consumption is priced at a lower rate. If the sizing of the blocks is similar to the approach used by TVWD, which is not strictly volume-based but rather peak use based, consolidation may or may not be advantageous. It would likely require a high peak use customer to be able to benefit from consolidation. However, TVWD does not have a declining block rate structure and therefore this is not a concern of this paper. Furthermore, declining block rate structures are becoming less common as water resources are now scarcer and conservation is an important goal of most utilities.

Under a typical increasing block rate structure, a customer generally would not benefit from consolidating consumption since block sizes are usually fixed amounts, and greater use simply means more consumption is billed in the last, and most expensive, block. For example, assume

a rate structure which has fixed block sizes of 0 – 30,000 CCF and over 30,000 CCF. The customer has two meters which both use an average of 20,000 CCF/month. Under the current billing, all consumption is billed in the first block since each meter does not exceed the 30,000 CCF threshold. However, under consolidated billing, the resulting bill would have the first 30,000 CCF billed at the lower priced block rate and the remaining 10,000 CCF at the higher priced block rate. In this case, the customer would not benefit from consolidated billing and would actually pay more.

In TVWD's case, block sizes are not fixed as provided in the above example. Under TVWD's rate structure, it is possible to combine or consolidate consumption and have a customer benefit. Whether this is a unique situation specific to certain customers or appropriate as a billing approach is the key issue to be reviewed and resolved. In reviewing this issue, TVWD will also need to determine the estimated revenue impact, if any.

Review of Other Non-Residential Rate Structures

To review this issue in more detail and gain an understanding of other utility practices, the rate structures of other utilities were reviewed to determine if consolidating consumption for multiple meters was applicable or if the utility had a specific policy related to consolidating consumption. Many of the utilities reviewed used uniform rates for all customers, or specifically for non-residential customers. A few utilities had block rates but also had written into their code that a customer cannot consolidate consumption in a way that would result in a reduction of their bill. Another variation in rate structure was the use of seasonal rates. Similar to a uniform rate, a customer would not typically benefit from consolidated consumption under a seasonal rate structure.

The following table provides a summary of the utilities reviewed and the rate designs for the non-residential customers along with those that include a policy for consolidated billing.

Table 1 Sample of Other Utility Non-Residential Rate Structures		
Utility	**Non-Residential Rate Structure**	**Consolidated Billing Policy**
State of Oregon		
Tualatin Valley Water District	2 Block Rate Structure Based on 12-Month Moving Average	No
Astoria Public Works Dept.	Uniform Rate Structure	No
Eugene Water & Elec. Board	Uniform Rate Structure	Yes
City of Gresham	Uniform Rate Structure	No
City of Medford	3 Block Rate Structure	Yes
Portland Water Bureau	Uniform Rate Structure	Yes
Salem Public Works	Uniform Rate Structure	Yes
Other Utilities		
Calif. Water Serv. Bakersfield	Uniform Rate Structure	No
Glendale (CA) Water & Power	Uniform Rate Structure	No
City of Aurora (CO)	2 Block Rate Structure Based on Average Demand	No
Dist. of Columbia W&S Auth.	Uniform Rate Structure	No
City of Henderson (NV)	4 Block Rate Structure based on meter Size	No
Las Vegas Valley Water Dist.	4 Block Rate Structure based on meter Size	No
Granger-Hunter Impr. Dist (UT)	Uniform Rate Structure	No
Alderwood W&S District (WA)	3 Block Rate Structure based on meter Size	No
Seattle Public Utilities	3 Block Seasonal Rate Structure	No
City of Spokane (WA)	4 Block Rate Structure	No
Tacoma Public Utilities (WA)	Uniform Rate Structure	No
City of Vancouver (WA)	Uniform Rate Structure	Yes

For those utilities that identified a specific policy on consolidation, none allowed for consolidating consumption for billing purposes. It should be noted that the reviewed utilities that did not specifically allow consolidation all had a uniform rate structure.

Examples of Consolidating Consumption Billing

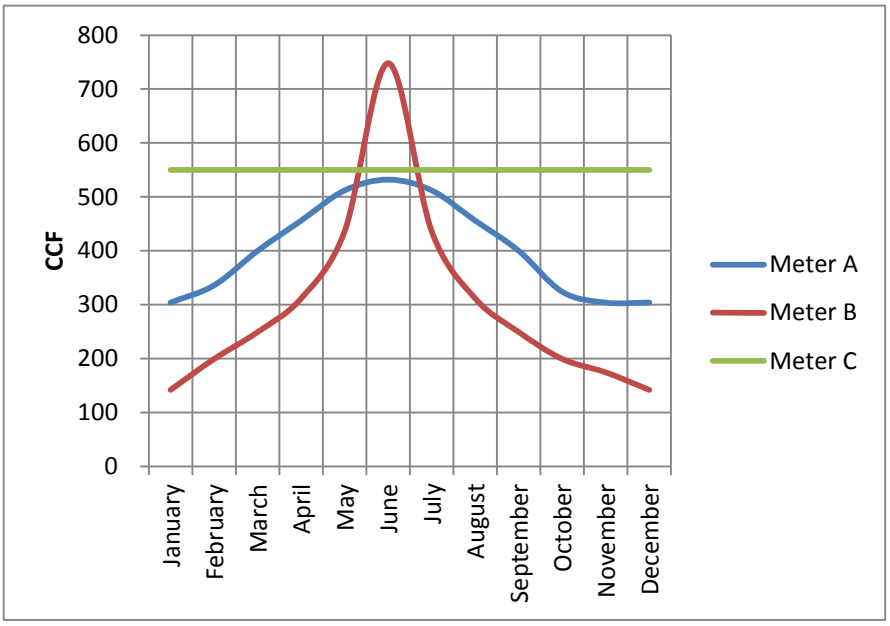
Given the method of establishing the block sizes for TVWD's non-residential customers, consolidating consumption could be an opportunity for some customers to reduce their overall bill depending on the specific consumption patterns of the customers' meters to be consolidated. An example of this would be if one meter had a flat demand while the other meter had a high peak demand. Under TVWD's rate structure, consolidating the metered consumption would average the two consumption patterns, and depending on the total use in each meter, could result in additional consumption staying within the first (lower priced) block. However, as noted previously, consolidation would only reduce the bill for those customers with specific

consumption patterns that under consolidation results in an increase in the block 1 size and reduction in block 2.

To better illustrate this unique circumstance, two fictitious customer profiles were developed to model how consolidating consumption may impact the bill. Variables that were modeled were for a customer with 3 meters, varying consumption patterns, and various levels of total consumption during the billing period. It should be noted that there are an unlimited number of possible scenarios where some customers may see no change in the overall bill, examples where a customer may see a reduction of minor proportions to a significant proportion, and there are some customers where it would not be beneficial to the customer to consolidate. Given that, customers would most likely not consolidate meters unless it was beneficial to their bill.

The following chart provides a scenario where there are three meters with various total consumption and different consumption patterns. This includes meters with a flat seasonal demand but high use, a moderate peak demand with moderate use, and a high peak demand with low overall use.

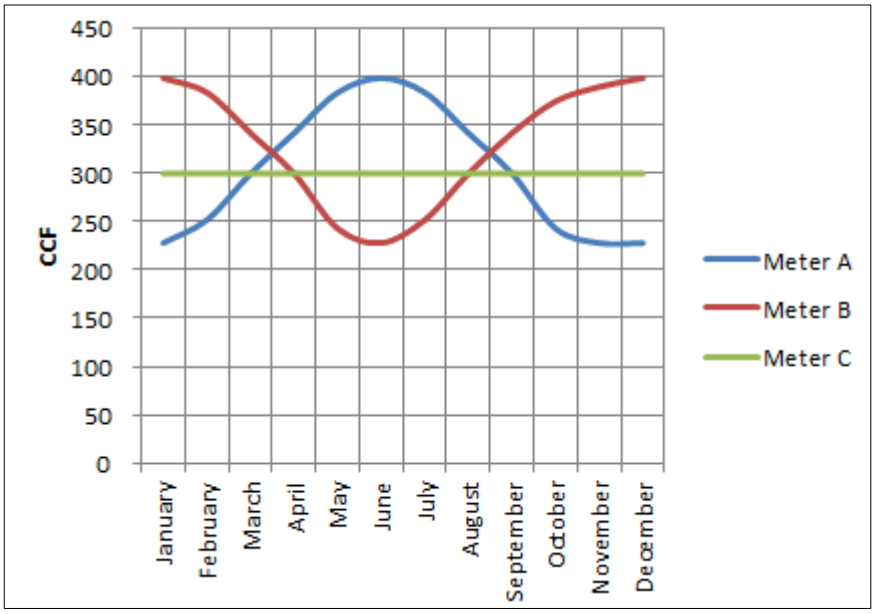
Chart 1
Diverse Loads



Using TVWD's rates, this particular example yields approximately a 0.8% reduction in overall bill, or an annual savings of approximately $400 out of a total combined bill of approximately $50,000.

Another scenario was modeled with three meters at separate properties where one meter has flat peak demand, and the other two meters have oposite peaks, offsetting one another. This scenario yielded no change in the annual bill.

Chart 2
Offsetting Loads



Cost of Service and Administrative Considerations

While a customer may benefit directly from the practice of consolidation, there may be other issues which should be taken into consideration. First, TVWD has established block rates with the intent of equitably assigning costs. Customers which place greater peak demands on the system should pay an equitable share of the capacity on the system. This not only has the benefit of providing an equitable allocation of costs to the customer, it provides a price signal to the customer regarding peak use. Peak use is the most expensive portion of consumption on the system since it requires investment in infrastructure to handle the highest peak demands, yet those high peak demands are for a short duration. Therefore, utilities want to encourage demand management from their customers. By consolidating consumption, a customer may not pay for the high peak demand they are placing on the system, and avoid the Block 2 pricing they incurred, but avoided, via consolidation. Some customers (i.e. those with the inability to consolidate consumption) may view that practice as inequitable.

One of the more challenging aspects of consolidation, and likely the reason it is not a common utility/business practice, is the administration of the consumption consolidation. The question is whether any customer with multiple meters should be automatically consolidated, even if it works to their disadvantage. At the same time, should consolidation be an optional approach? Administratively, it is much more straight-forward to bill each meter separately and avoid the complexity and administrative issues that come along with consolidation.

Conclusion

As discussed, the consolidation of consumption may or may not impact the annual bill for non-residential customers. It may be beneficial when the customer's multiple metering points have

consumption patterns and consumption levels which, when consolidated, result in a higher Block 1 size, and lower Block 2. Of the utilities researched, none explicitly stated that consolidated consumption was allowed and several explicitly disallowed the practice.

Another consideration discussed above is whether consolidation of consumption would violate the principles of an equitable allocation of costs. Cost of service principles dictate that those who create the peak demands should pay for the peak demands. Under consolidation, that may or may not be the case. It may be argued that a customer with off-setting loads does not place a large demand on the system. Demands are used to size supply and distribution facilities. Having an offsetting load might only be beneficial for the distribution system if the properties that are consolidated are adjacent or served from the same line. Conversely, if the properties are in entirely different locations relative to the local water distribution mains, there would be little or limited benefit to the distribution system.

In summary, consolidation of consumption for billing purposes does not appear to be a common industry practice and seems to ignore certain basic cost-of-service principles. While certain customers may benefit from consolidated consumptive billing, there may be many more customers that do not benefit.

Issue Paper 5 – Review of Multi-Family Billing Practices: Billing Duplex Customers

Issue Paper 5: Review of Multi-Family Billing Practices: Billing of Duplex Customers

Introduction

It is easy for most people to identify a duplex because it is a house which is divided into two living units, with a separate entrance for each living unit. However, for purposes of water utility billing, a duplex can pose some unique challenges, including identifying them in the billing system. The unique billing challenges posed by duplexes are addressed in different ways by different utilities. The purpose of this issue paper is to provide background information to the Tualatin Valley Water District (TVWD or the "District") Rate Advisory Committee (RAC) to aid in its review and discussion of a policy recommendation related to the classification of duplex customers for billing purposes. This issue paper will provide background information, key issues, and a review of how other utilities classify duplex customers and address them within the billing process.

One of the key billing challenges posed by this group of customers is related to their metering configuration. Not all duplexes are metered in the same configuration. Ideally, each living unit is metered and billed separately. Essentially, each living unit in these types of duplexes would be treated as any other single-family residence. In contrast to this, in some instances, a single meter is used to measure the water consumption of both living units of the duplex. This situation raises the question of which customer class these types of duplexes belong in. TVWD uses an industry standard definition for classifying duplexes; two-family dwellings are treated as residential customers.[1]

Our experience, along with the research conducted to develop this issue paper, has led us to conclude that there are no specific industry standards for how duplex customers should be metered, or more importantly, how they should be classified for billing purposes (e.g., residential or multi-family). As will be seen, the bill impacts can vary depending upon which rate schedule these customers are classified and billed under.

At TVWD, all customer classes have a two-block increasing rate structure, and the rates for each block are the same for all customer classes. However, the basis for the establishment of the size of the first block of consumption varies between TVWD's residential class and its multi-family class. In short, that is the crux of the issue in this case.

TVWD identified 434 duplex customers as part of the research into this issue. If those customers were to be re-classified as multi-family, it is estimated that the financial impact to the District and these duplex customers would be a reduction in bills and total revenue of approximately $9,250 per year (i.e., an average reduction of approximately $0.89/living unit/month). Provided below is a more detailed discussion of this issue and the research which has been conducted.

[1] American Water Works Association Manual M1: Principles of Water Rates, Fees, and Charges; Chapter 8 – Distributing Costs to Customer Classes.

Overview of the Issue

TVWD currently bills its customers on a bimonthly basis and it bills duplex customers as residential customers. Provided below in Table 1 is a summary of the District's current water rates.[2]

Table 1
Summary of the District's Current Water Rates [1]

Rate Component	Current Adopted Rate
Bi-Monthly Meter Charge	
5/8" Meter	$24.58/bi-month
3/4" Meter	27.06/bi-month
1" Meter	33.36/bi-month
1-1/2" Meter	44.82/bi-month
2" Meter	66.12/bi-month
Consumption Charges ($/CCF) [2]	
Block 1 Rates	$4.06/CCF
Block 2 Rates[3]	$5.79/CCF

[1] – Source: TVWD website – effective 11/1/16.
[2] – There are 748 gallons in one hundred cubic feet (CCF) of water
[3] – Block 2 rate applies to quantities used in excess of 28 CCF in a bi-monthly billing period for single-family residential customers or 140% of the past twelve-months average usage for multi-family, irrigation, commercial and production customers.

As can be seen in Table 1, the District's rates have fixed meter charges by meter size and consumption (volume) charges for two pricing blocks. As is footnoted in the table, the basis for establishing the volume of water included in the first block varies between residential and multi-family customers. For a residential customer, the first 28 CCF in the bi-monthly period is billed at the Block 1 rate ($4.06/CCF). Any usage over 28 CCF in the bi-monthly period is billed at the Block 2 rate ($5.79/CCF). For multi-family customers, the size of the first block of consumption is not a fixed volume. Rather, the size of the first block is based upon the past twelve months' average use and any volume up to 140% of that amount. Any usage during the bi-monthly period over and above the 140% (i.e., in excess of) is billed at the Block 2 rate. While the pricing is the same, the establishment of the size of the first block is slightly different.

This difference in billing approaches between residential and multi-family customers, while appearing to be minor, does in certain specific situations have a billing and financial impact to duplex customers.

Currently, where a duplex with a single meter has 28 CCF/bi-month of use within the first block, that amount is essentially split between two living units, effectively setting the first block size at

[2] A summary rate schedule was previously provided as a part of the first paper developed for the RAC - Overview and Background of Tualatin Valley Water District.

14 CCF/bi-month per living unit. Some duplex owners have questioned this inequity between duplex customers and other residential customers.

An obvious and possible solution to this inequity is to install a second meter on those duplexes which have only a single meter in place. While this sounds simple and beneficial, for a variety of reasons, this is likely not feasible, practical, or cost-effective. One feasible alternative is to move all duplex customers to the multi-family class (i.e., use the 12-month average approach). This is certainly feasible, but like any issue, there are arguments that can be made for and against changing the classification of duplex customers from residential to multi-family.

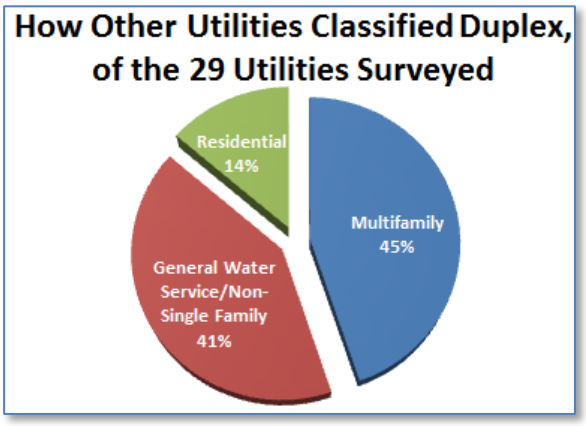
One duplex owner has approached the District and requested that this customer class issue be reviewed. Given that, it would appear to be appropriate to review whether there is an inequity, the extent of the inequity, and how best to address it, if at all.

Tualatin Valley Water District Prior Analysis

The District conducted a cursory analysis of the duplex billing issue in early 2016. The analysis consisted of determining the impacts of moving duplex customers from the residential class of service to the multi-family class. A key administrative issue with this review is the ability to identify duplex customers as the District's current billing system information does not identify whether a customer is a duplex or is not. Even with this short-coming, the District compiled duplex billing data by cross referencing the District's billing data with Clean Water Service's billing data for joint customers, or those customers that are both District and Clean Water Services customers. Using this method and 4 years of data, 434 customers were identified as duplexes, with two living units served through a single meter.

Based on the analysis completed by District staff, approximately 67% of the bills analyzed would have seen no change if billed under the multi-family rate structure. Approximately 27% of the bills would have been decreased and approximately 6% would have increased.

Industry and Other Utility Practices



Based upon our experience and research conducted as a part of this study, there does not appear to be a standardized practice or approach related to the classification of duplex customers. The American Water Works Association (AWWA) M1 manual suggests the classification of a customer should consider service characteristics and demand patterns when developing classes of service.

For this paper, a review of the current billing practices of duplex customers by other water utilities was undertaken. Our review included several Oregon utilities, as well as a small sample of utilities outside of Oregon. From the sample of utilities surveyed, the most common practice for duplex customers was to use a rate structure which included a fixed meter charge and a uniform consumption rate. The advantage of using a

uniform rate structure is that it avoids the issue of block sizes and block rates. There were a few other utilities that treat duplex customers in a manner similar to TVWD. That is, they were classified as a residential customer and utilized a block rate structure. Provided in Table 2 is a summary of duplex customer classification and rate structure of Oregon utilities reviewed as part of this paper.

Table 2
Sample of Utilities and Their Rate Structures Inside Oregon

Utility	Duplex Classified As:	Type of Fixed Charge	Volume Charge
City of Albany	Multi-family	Meter Charge	Three Block Rate Structure Based on Meter Size
City of Corvallis	Multi-family	Meter Charge	Three Block Rate Structure Based on Meter Size
City of Tigard	Multi-family	Meter Charge	Three Block Rate Structure Based on Meter Size
Tualatin Valley Water District	**Residential**	**Meter Charge**	**Two Block Rate Structure**
Portland Water Bureau	Retail Rate Class	Meter Charge	Uniform
City of Beaverton	General Water Service	Meter Charge	Uniform
City of Bend	General Water Service	Meter Charge	Uniform
City of Redmond	General Water Service	Meter Charge	Uniform
Astoria Public Works Dept.	General Water Service	Meter Charge	Uniform
Eugene Water & Elec. Board	General Water Service	Meter Charge	Uniform
City of Tualatin	General Water Service	Water Service/Facility Charge	Uniform
Grant's Pass	Multi-family	Meter Charge	Uniform
City of Hillsboro	Multi-family	Meter Charge	Uniform
City of Lake Oswego	Multi-family	Unit Charge + charge per additional unit	Uniform
City of Medford	Multi-family	Meter Charge	Seasonal Uniform
Salem Public Works	Multi-family (Individual/Shared Meter)	Meter Charge	Uniform
City of Gresham	Duplex/Triplex Rate	Meter Charge	Uniform

In viewing Table 2, most utilities classify a duplex as either a multi-family or a general service customer. A few of the Oregon utilities reviewed have some variances in the way their rates were structured. For the utilities with block rate structures (Albany, Corvallis and Tigard) there are some differences in approach. In the case of Albany, while it is a block rate similar to the residential rate, the multi-family blocks are larger than the single-family residential blocks and the rates for each of the three blocks are lower. In contrast, Corvallis and Tigard set the same

block sizes for residential and multi-family, but single-family pays a higher volume rate per block than multi-family.[3]

Many of the utilities surveyed had a uniform rate for duplexes (multi-family). In the case of Hillsboro and Lake Oswego, they utilize a uniform rate for multi-family, but do have a block residential rate structure. One unique feature that Lake Oswego has is a meter charge and then a living unit charge.

All Gresham classes of service pay a meter charge. Single family has a three-block consumption rate. Gresham has a specific duplex/triplex uniform rate which is the same rate as the single family's first block rate. Finally, Salem uses a uniform seasonal rate structure. In many respects, this is a form of a block rate in that summer usage is priced at a higher level and presumably driven by outdoor water irrigation use.

In summary, there does not appear to be a consistent or singular approach to the rate schedule under which duplexes are charged or the rate structure used to bill them. Provided in Table 3 is a summary of other utilities outside of Oregon and their duplex billing practices.

Table 3
Sample of Duplex Billing for Utilities Outside Oregon

Utility	Duplex Classified As:	Type of Fixed Charge	Volume Charge
Glendale (CA) Water & Power	Multi-family	Meter Charge	Two Block Rate Structure based on # of Units
Dist. of Columbia W&S Auth.	Residential (less than 4 Units)	Meter Charge	Two Block Rate Structure
City of Aurora (CO)	Multi-family (Less than 5 Units)	Meter Charge	Three Block Rate Structure
Alderwood W&S District (WA)	General Water Service	Meter Charge	Three Block Rate Structure based on Meter Size
City of Henderson (NV)	Multi-family	Meter Charge	Four Block Rate Structure (X # of Units)
Las Vegas Valley Water Dist.	Non-Single Family	Meter Charge	Four Block Rate Structure Based on Meter Size
City of Spokane (WA)	Residential	Fixed Charge per Unit	Four Block Rate Structure
Seattle Public Utilities	General Water Service	Meter Charge	Seasonal Two Block Rate Structure
Tacoma Public Utilities (WA)	Residential	Meter Charge per Unit (assumed 5/8")	Seasonal Three Block Rate Structure
Calif. Water Serv. Bakersfield	General Water Service	Meter Charge	Uniform
Granger-Hunter Impr. Dist (UT)	General Water Service	Meter Charge	Uniform
City of Vancouver (WA)	Multi-family	Meter Charge	Uniform

[3] The price difference in the tiers is generally reflective of differences in peak capacity use on the system. A single-family residential customer tends to have larger peak demands in relation to their typical or average use. This is primarily driven by outdoor irrigation use. In contrast, multi-family customers tend to have lower peak demands and as a result, place lower capacity-related costs on the system.

Like Table 2, Table 3 illustrates the same array of approaches to billing this group of customers. After reviewing the duplex billing practices of the utilities in Tables 2 and 3, it was apparent that there was not a singular approach or method related to the billing practices for duplex customers. Given that, the District has a broad array of choices as to how to bill duplex customers. However, an important policy consideration in that decision is to establish an approach which is reasonable, fair, and equitable to all duplex customers.

Potential Action/Solution

If the RAC concludes that there is an inequity of sufficient magnitude to warrant a change in the billing of duplex customers, the RAC may recommend that duplex customers with a shared meter be moved to the Multi-Family rate class. Advantages include the following:

- Addresses the current concern (perception)
- Only moves those customers with a shared meter
- Low cost solution; simple approach and administration
- Eliminates the fixed block size approach
- Utilizes multi-family block size approach

To act on this issue will likely incur some additional short-term implementation costs. This includes determining which customers are duplexes served by a single meter. In addition, the District will need to determine how to effectively communicate how and why the change is being made.

There are, of course, other potential methods to address this issue. However, the option described above reflects the District's current rate structure goals and objectives.

Summary

The initial issue raised as a part of this review is whether a duplex with a single meter is being treated inequitably from a billing perspective when compared to other multi-family customers. As this paper has discussed, there is no uniform or generally accepted approach for billing of duplexes and their classification within a customer class of service (i.e., rate schedule).

There likely is no simple or singular solution to resolve the perceived inequity. As noted, the alternative of moving duplex customers to the multi-family rate class would appear to only benefit approximately one quarter of the bills affected, while most of the bills would not see any change based on the analysis completed by the District. Whatever the District chooses to do in this situation, it is advisable for the District to clarify how new duplex customers are connected to the system, if it is not already. Some utilities have language requiring duplexes, triplex and similar types of housing units to be individually metered, which would help resolve this issue with future connections.